PEET Alkimos Pty Ltd

Native Vegetation Clearing Permit Application Supporting Document

Lot 6 Eglington

25 July 2019

5696203 / 123,439

JBS&G Australia Pty Ltd T/A Strategen-JBS&G

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Table of Contents

1. Introduction 1
   - 1.1 Purpose and scope 1
   - 1.2 Project background and description 1
   - 1.3 Clearing footprint 2
2. Overview of existing environment 6
   - 2.1 Geomorphology and topography 6
   - 2.2 Acid sulfate soils 6
   - 2.3 Hydrology 6
     - 2.3.1 Groundwater 6
     - 2.3.2 Surface water 6
     - 2.3.3 Wetlands 6
   - 2.4 Vegetation and flora 7
     - 2.4.1 Vegetation system associations and vegetation complexes 7
     - 2.4.2 Conservation significant vegetation 7
     - 2.4.3 Vegetation and flora field assessment 8
   - 2.5 Fauna and habitat 12
     - 2.5.1 Conservation significant fauna 13
   - 2.6 Aboriginal Heritage 13
3. Assessment against the ten clearing principles 15
4. Environmental approvals and management 17
   - 4.1 Environmental approvals 17
   - 4.2 Environmental management 17
5. Conclusion 18
6. Limitations 19
7. References 20

List of Tables

Table 2.1: Soil sub-systems mapped within the Project Area (Source: DAFWA 2012) 6

Table 2.2: Beard vegetation associations occurring within the Project Area (Source: GoWA 2019) 7

Table 2.3: Vegetation types and condition within the Project Area 9

Table 3.1: Assessment of proposed native vegetation clearing in accordance with the ten clearing principles 15

Table 6.1: Conservation significant and priority flora with potential to occur within a 5km radius of the Project Area 23

Table 6.2: Conservation significant and priority fauna with potential to occur within a 5km radius of the Project Area 25

List of Figures

Figure 1.1: Project Area 3
Figure 1.2: Subdivision Plan 4
Figure 1.3: Original BMP APZ 5
Plate 1: Photos of understory vegetation throughout the Project Area 10
Figure 2.1: Vegetation type and condition within the Project Area 11
Figure 2.2: Black Cockatoo habitat quality 14

Appendices

Appendix A Bushfire Management Plan Central 7 – Shorehaven, Alkimos
Appendix B Database Search Results
Appendix C Assessment of Conservation Significant within 5 km of the Project Area
Appendix D Flora, Vegetation and Fauna Survey (Strategen 2017) and species list of additional site visit 22 July 2019

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1. Introduction

1.1 Purpose and scope

This document provides supporting information for a Native Vegetation Clearing Permit (NVCP) application for a Purpose Permit to clear native vegetation.

Peet Alkimos Pty Ltd (Peet) is proposing to undertake clearing to a maximum of 0.675 ha of native vegetation for the propose of creating a bushfire asset protection zone (APZ) on part of part of 19 (Lot 6) Taronga Place, Eglinton (the Project Area; Figure 1.1), in the City of Wanneroo. Specifically, the bushfire APZ is required for Peet's residential development on Lot 9029 on Plan 411250, over which a subdivision approval is currently active (WAPC155700; Figure 1.2) for residential lots, roads and areas of active and managed public open space (POS).

This document has been prepared to support the NVCP application for the Project, for assessment under s51E of the *Environmental Protection Act 1986* (EP Act), and includes the following information relating to clearing impacts:

- an overview of the existing environmental conditions and values of the Project Area
- an evaluation of the proposed clearing against the '10 Clearing Principles' under Schedule 5 of the EP Act
- environmental approvals and management requirements.

1.2 Project background and description

The Project Area and Lot 9029 are currently zoned 'Urban' under the Metropolitan Region Scheme (MRS) and 'Urban Development' under the City of Wanneroo's Town Planning Scheme No. 2.

In developing residential lots on Lot 9029, the Bushfire Management Plan (Appendix A) states that to obtain the required Bushfire Attack Levels (BALs), an asset protection zone (APZ) of 100 m is to be established to create BAL rating of LOW and 12.5 across the northern most lots planned for on the subdivision plan (Figure 1.3 ; ecological 2019). Peet are nominating to reduce the proposed APZ clearing from 100 m to 25 m, acknowledging that lots adjacent to the APZ will be subject to a rating of BAL-29 and associated increased construction standards, as a consequent of the new BAL ratings the BMP for Peets subdivision development on Lot 9029, will be updated.

Vegetation associated with the proposed APZ to the north directly adjacent to Lot 9029, occurs on 19 (Lot 6) Taronga Place, Eglinton which is owned by Daws & Son Pty Ltd and is not subject to any current subdivision approvals. A Clearing Permit approval (CPS-922/1) is currently in-effect across portions of 19 Taronga Place; however, this is north of the Project Area and not covered by this application.

Vegetation to the east, south and west across Lot 9029, are within Peet's landholding and subject to the subdivision approval and therefore, clearing of this vegetation is exempt from requiring a native vegetation clearing permit.

The development of 19 Taronga Place, Eglington, which includes the Project Area, was referred to the Department of the Environment and Energy (DEE) in 2016. The DEE determined the referral was a controlled action and has granted approval (EPBC 2017/7872) subject to conditions relating to Matters of National Environmental Significance (MNES) values, namely:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris)*
- Banksia Woodlands of the Swan Coastal Plain ecological community

Clearing within the NVCP application area will not impact any MNES.

1.3 Clearing footprint

The Project will require clearing of no more than 0.675 ha of native vegetation, representing the Guilderton Complex. Vegetation within the Project Area is in a completely degraded condition (Strategen 2017). A 3 m wide firebreak track occurs along the length of the Project Area, this 3 m wide track has been excluded from the overall clearing calculation. The firebreak track extends the length of the Project Area east to west, regenerated native vegetation was observed growing on the boundary fence between Lot 9029 and the Project Area. Consequently, the native vegetation clearing along the boundary has been included in the Project Area while the fire access track, which has no regenerating vegetation, has been excluded.

Legend:

- Project area (0.675 ha)
- 3m access track
- Cadastral boundary
- Roads

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Job No: 56962

Client: Peet

Version: A	Date 8/10/2019
Drawn By: cthatcher	Checked By: CL

Scale 1:2,500

0 25 50
metres

Lot 6 Eglington

PROJECT AREA

FIGURE 1.1

File Name: \\008PMPMR004V001.jbsg.aust\JBS Perth\Projects\1)Open\Peet\56962 Shorehaven NVCP and EPBC assistance\GIS\Maps\R001_RevA\56962_01_ProjectArea.mxd
Reference: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Communitywww.nearmap.com© - Imagery Date: 7 September 2019

This plan has no formal approval status and has been prepared by CLE to demonstrate one potential land use scenario for the land which could be investigated further by the Client. Implementation in any form would be subject to the receipt of all appropriate approvals. The plan may be changed without notice and should not be relied upon. This plan remains the property of CLE.

Lot 9029 - 6.4471ha

Subject Area - 4.5400ha

Balance of Lot 9029 - 1.9071ha

Yield

Residential	-	53 lots
Balance	-	1 lot
Total	-	54 lots

0 10 20 30 40 50 60 70 80 90 100m

CLE Town Planning + Design
www.cleplan.com.au

PROPOSED FREEHOLD SUBDIVISION

Lot 9029 Maroon Avenue, Alkimos

plan no: **2348-399A-01**
date: 17 April 2019
scale: 1:1,500 @ A3, 1:750 @A1

N

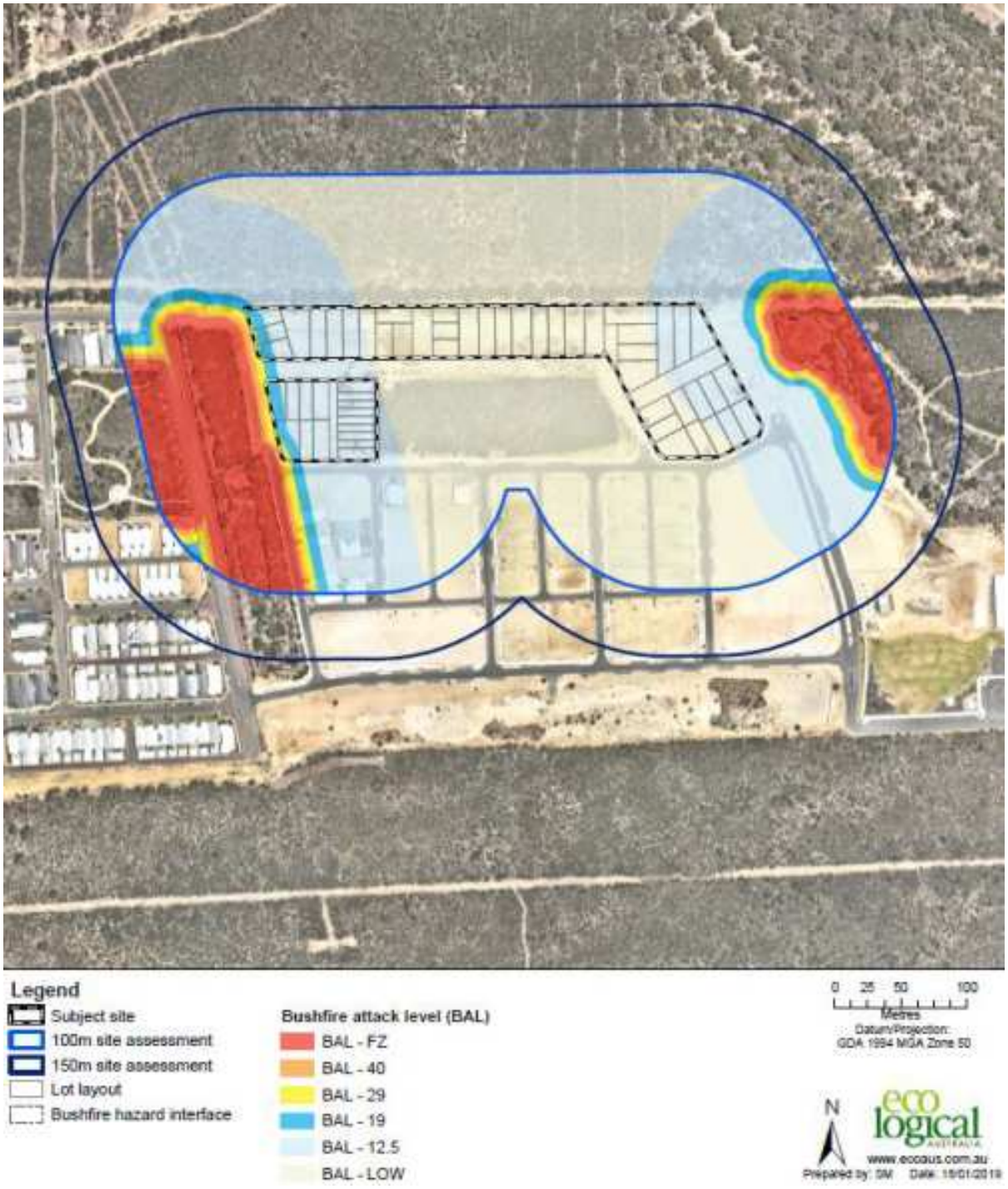

Figure 1.3: Original BMP APZ

2. Overview of existing environment

2.1 Geomorphology and topography

Regional geological mapping (DAFWA 2012) indicates that the Project Area is within the Spearwood System, underlain by Tamala Limestone. Sub-systems of the Spearwood System mapped within the Project Area are described below in Table 2.1.

Table 2.1: Soil sub-systems mapped within the Project Area (Source: DAFWA 2012)

Sub-system	Description
211Sp_Ky – Karrakatta sand yellow phase	Low, hilly to gently undulating terrain comprising yellow sand over limestone at depths of 1-2 m. .
211Sp_Kls – Karrakatta shallow soils phase	Low hills and ridges of bare limestone, or shallow siliceous or calcareous sand over limestone.

Topography across the Project Area ranges from a maximum of 22 m Australian Height Datum (AHD) in the north-east corner of the Project Area to approximately 50 mAHD towards the western portion of the Project Area.

A preliminary karst assessment was undertaken in 2016 by CMW Geosciences to quantify the presence of karst features and inform a geotechnical assessment (CMW 2016). The Project Area was identified as being susceptible to instability as a result of karst features (CMW 2016).

2.2 Acid sulfate soils

Regional acid sulfate soil (ASS) risk mapping conducted by the Department of Water and Environmental Regulation (DWER) identifies that there is no known risk of disturbing potentially acid-forming material less than 3 m from the ground surface within the Project Area (DWER 2016).

2.3 Hydrology

2.3.1 Groundwater

The Project Area is situated within the Perth groundwater area and the Eglington/Perth North Confined Subarea, and is underlain by three aquifers, listed below in descending order of depth from the natural surface:

- Superficial Swan
- Leederville (confined)
- Yarragadee North

Regional historical maximum groundwater contour mapping indicates that the groundwater level may reach up to 3 mAHD (DWER 1997). Based on regional topographic contour mapping, the depth to groundwater is approximately 2 m below the ground surface. Ground water levels are subject to seasonal variability determined largely by rainfall and local characteristics (ie. Topography); consequently, actual depth to groundwater will vary across localities.

The Project Area is situated within a Priority 3 Public Drinking Water Source Area (PDWSA), namely the Perth Coastal and Gwelup Underground Water Pollution Control Area.

2.3.2 Surface water

There are no surface water features present within the Project Area.

2.3.3 Wetlands

Wetlands of the Swan Coastal Plain are afforded varying degrees of protection and management based upon their assigned management category. There are no geomorphic wetlands within Project

Area; a Resource Enhancement wetland is situated approximately 700 m to the north of the Project Area, which is topographically up gradient from the Project Area.

2.4 Vegetation and flora

2.4.1 Vegetation system associations and vegetation complexes

Vegetation mapping produced by Beard (1981) provides state-wide, broad scale, native vegetation mapping at a scale of 1:1 000 000, depicting vegetation type and extent as it may have occurred at the time of European settlement (i.e. pre-European). Vegetation types are classified according to their association, which is determined by the dominant growth form, height, cover and species for the upper, mid and ground vegetation strata. This dataset formed the basis of several regional mapping systems, including the biogeographical region dataset (Interim Biogeographic Regionalisation for Australia) for Western Australia (DEE 2016), physiographic regions defined by Beard (1981), and System 6 Vegetation Complex mapping undertaken by Heddle et al. (1980).

The Project Area comprises one Beard (1981) vegetation association (Table 2.2). Remnant vegetation within the Project Area is mapped as vegetation association 'Guilderton_949' which is described as 'Low woodland; banksia', of which 57.28% remains within the Swan Coastal Plain IBRA region. This exceeds the 10% retention target for constrained areas such as the Swan Coastal Plain (DER 2014).

Table 2.2: Beard vegetation associations occurring within the Project Area (Source: GoWA 2019)

Pre-European Vegetation association	Pre-European (ha)	Current extent (ha)	Remaining pre-European extent (%)
IBRA Region Vegetation association No. 949 (Swan Coastal Plain IBRA region)	209,983 ha	120,287 ha	57.28
Local Government Authority Vegetation association No. 949 (City of Wanneroo)	3,165 ha	919 ha	29.05

2.4.2 Conservation significant vegetation

2.4.2.1 Conservation significant flora

A desktop assessment was conducted using the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) *Protected Matters Search Tool* (PMST) and *NatureMap* database to identify conservation significant, threatened and priority flora listed under the EPBC Act and *Biodiversity Conservation Act 2016* (BC Act) with potential to occur within a 5 km radius of the Project Area (Appendix C).

The following species are considered to have the potential to occur within the Project Area:

- *Leucopogon sp. Yanchep (M. Hislop 1986)*
- *Sphaerolobium calcicola*

2.4.2.2 Threatened and Priority Ecological Communities

A search of the EPBC PMST indicates that four EPBC listed Threatened Ecological Communities (TECs) have the potential to occur within a 5km radius of the Project Area:

- Aquatic Root Mat Community in Caves of the Swan Coastal Plain – Endangered
- Banksia Woodlands of the Swan Coastal Plain ecological community – Endangered
- Sedgelands in Holocene dune swales of the southern Swan Coastal Plain - Endangered
- Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community – Critically Endangered.

2.4.2.3 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are boundaries declared in the *Environmental protection Notice 2005* and relate to defined environmental and world heritage areas of important conservation value.

Mapping provided by the DWER clearing permit mapping tool (DWER 2019c), identified the Project Area is mapped as an ESA in relation to a buffer associated with a Threatened Ecological Community (TEC). Advice provided by the Department of Water and Environmental Regulation (DWER) identifies the ESA identified over the Project Area is due to an established buffer for a nearby TEC. According to DWER, a buffer of an ESA is not considered to be an ESA; therefore, the ESA boundary mapped across the Project Area, does not apply.

2.4.2.4 Bush Forever

There are no Bush Forever sites situated within the Project Area. Bush Forever site 288 occurs approximately 300 m to the north of the site

2.4.2.5 Regional Ecological Linkages

There are no Regional Ecological Linkages mapped within the Project Area (WALGA 2008). A north south corridor occurs along Wanneroo Road, approximately 750m to the east of the Project Area.

2.4.3 Vegetation and flora field assessment

Two flora and vegetation assessments were undertaken over the Project Area by a Strategen (now Strategen-JBS&G) ecologist in late October and early November 2016 (Strategen 2017). The survey identified only one vegetation type within the Project Area, Planted *Eucalyptus sp.* An additional site assessment was undertaken by Strategen-JBS&G on 22 July 2019 to provide finer scale mapping of the Project Area, inform the vegetation mapping for the purposes of this NVCP application and confirm the presence / absence of conservation significant flora (Table 2.3 & Figure 2.1).

Understory regeneration was evident across the length of the Project Area. *Xanthorrhoea preissii* (Native Grass Tree) was the dominant understory species with *Jacksonia sternbergiana*, *Hibbertia hypericoides* making up the bulk of the remainder of the native species observed. Groundcover largely consisted of invasive grasses with occasional herbaceous natives Plate **1**: Photos of understory vegetation throughout the Project Area .

A 3 m vehicle access track occurs along the length of the southern boundary of the Project Area and separates the Project Area from Lot 9092. Some native regeneration is evident along the boundary fence and is shown in Plate **1**: Photos of understory vegetation throughout the Project Area .

Mapping conducted by Strategen across 19 Taronga Place identified the vegetation condition within the Project Area was in a completely degraded condition (Strategen 2017). The site assessment undertaken on 22 July 2019, confirmed the vegetation condition to be completely degraded across the length of the Project Area (Table 2.3 & Figure 2.1).

During the 2019 site visit no conservation significant flora species were identified to occur within the Project Area; however, the 2019 flora site survey was not conducted at the appropriate flowering time for either of the conservation significant species identified above in 2.4.2.1. It is worthwhile to note, that previous flora surveys conducted in 2016 were undertaken at the appropriate flowering time for the conservation significant species identified in 2.4.2.1, none were recorded within the Project Area.

Due to the clearing history and degraded nature of the site it is considered unlikely that any conservation significant flora occurs within the Project Area.

Table 2.3: Vegetation types and condition within the Project Area

Vegetation type	Description	Vegetation Condition	Area (ha)
Planted trees	Planted **Eucalyptus globulus*. over regenerating understory of *Xanthorrhoea preissii*, *Jacksonia sternbergiana, Hibbertia hypericoides, *Ehrharta calycina, **Briza Maxima* and invasive grasses with cleared firebreak track	Completely Degraded	0.675
Total			0.675

Plate **1**: Photos of understory vegetation throughout the Project Area

Legend:

- Project area
- 3m access track
- Planted trees (0.52 ha)

Vegetation condition

- Completely Degraded (0.675 ha)

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Job No: 56962	
Client: Peet	
Version: A	Date 24/10/2019
Drawn By: cthatcher	Checked By: CL
Scale 1:2,000	

0 25 50
metres

Lot 6 Eglington

VEGETATION TYPE AND CONDITION

FIGURE 2.1

File Name: \\008PMPMR004V001.jbsg.aust\JBS Perth\Projects\1)Open\Peet\56962 Shorehaven NVCP and EPBC assistance\GIS\Maps\R001_RevA\56962_02_1_VegTypeCond.mxd
Reference: www.nearmap.com© - Imagery Date: 9 September 2019

2.4.3.1 Conservation significant species

No conservation significant species were observed during the previous spring surveys or the additional site visit across the Project Area (Strategen 2017).

2.4.3.2 Introduced species

A total of 6 introduced species were observed within the Project Area across both surveys (Appendix D). No Declared Plant species in Western Australia pursuant to the *Biosecurity and Agricultural Act 2007* (BAM Act) were recorded within the Project Area.

2.4.3.3 Threatened and Priority Ecological Communities

Due to the degraded nature of the Project Area, species richness was not consistent with community structures necessary to define them as any particular ecological community. Vegetation structure in the remnant vegetation to the north of the Project Area supports *Banksia Woodland of the Sean Coastal Plain*, which is listed as endangered under the EPBC Act. Statistical analysis conducted by Strategen (2017), on the adjacent bushland to the north, identified the Banksia Woodland community as Floristic Community Type (FCT) 24: *Northern Spearwood shrublands and woodlands*, which is listed as a Priority 3 (i), Priority Ecological Community under the *Biodiversity Conservation Act 2016* (BC Act).

A P3(i) Priority Ecological Community is described as:

communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation (DEC 2013).

Due to its proximity to the Project Area, control measures will be required during clearing to ensure clearing activities do no impact vegetation outside the Project Area.

2.5 Fauna and habitat

A desktop assessment was conducted using the EPBC Protected Matters Search Tool (PMST) and *NatureMap* database to identify conservation significant, threatened and priority fauna listed under the EPBC Act and BC Act with potential to occur within a 5 km radius of the Project Area (Appendix B).

An assessment of the database searches against the habitat requirements of the conservation significant species identified is available in Appendix C. Based upon the species known habitat requirements and available habitat, the below conservation significant species are considered to have the potential to occur within the Project Area:

- *Calyptorhynchus latirostris* (Carnaby's Cockatoo)
- *Isoodon fusciventer* (Quenda/Southern Brown Bandicoot)
- *Hesperocolletes douglasi* (Douglas' Broad-headed Bee)
- Neelaps calonotos (Black-striped snake)

In 2016, suitably qualified ecologists from Strategen undertook a Fauna survey over Lot 6, which included the Project Area. Only one habitat type was observed within the Project Area (Strategen 2017):

- planted *Eucalypt Sp.* with understory of pasture grasses

This habitat type is considered likely to provide foraging habitat for only one of the conservation significant species identified to potentially occur within the Project Area:

- Neelaps calonotos (Black-striped snake)

2.5.1 Conservation significant fauna

In 2016, suitably qualified ecologists from Strategen undertook a Black Cockatoo habitat assessment, which included the Project Area in 2016. The Project Area was identified to contain Nil foraging, roosting or Breeding value for Black Cockatoos (Figure 2.2).

Xanthorrhoea preissii is considered to provide very poor-quality foraging habitat for Carnabys Black Cockatoos (CBCs). Some juvenile *Banksia sessilis* were observed within the Project Area, which do provide good quality foraging habitat; however, the number of individuals within the Project Area totalled < 5, consequently, the Project Area has been classified as providing Nil quality Black Cockatoo habitat.

Isoodon fusciventer (Quenda) prefers Scrubby and often swampy vegetation with dense cover (DEC 2012). Habitat for this species does not occur within the Project Area. Directly adjacent to the Project Area suitable habitat does occur; consequently, clearing and construction activities will be managed to avoid potential impacts to the adjacent habitat.

Neelaps calonotos (Black-striped snake) is a highly mobile species feeding on worms and lizards. Both of which are also mobile, immediately surrounding the Project Area is abundant habitat in better condition; therefore, clearing within the Project Area is considered unlikely result in the loss of habitat critical to this species' survival. Clearing and construction activities will be managed to avoid potential impacts to the adjacent habitat.

2.6 Aboriginal Heritage

A search of the Aboriginal Heritage Inquiry System (DPLH 2019), identified that there are no Registered or Other heritage Places within or near to the Project Area.

Legend:

- Project area
- 3m access track

Black Cockatoo Habitat Quality

- Nil (0.675 ha)

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Job No: 56962

Client: Peet

Version: A	Date 8/10/2019
Drawn By: cthatcher	Checked By: CT

Scale 1:2,000

0 25 50
metres

Lot 6 Eglington

BLACK COCKATOO HABITAT QUALITY

FIGURE 2.2

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Reference: www.nearmap.com© - Imagery Date: 7 September 2019

3. Assessment against the ten clearing principles

An assessment of the proposed clearing against the ten clearing principles, as outlined in Schedule 5 of the EP Act, is provided in Table 3.1. The assessment has been undertaken in accordance with the guidelines set out by DWER.

Table 3.1: Assessment of proposed native vegetation clearing in accordance with the ten clearing principles

Clearing principle	Assessment	Conclusion
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity	The previous survey undertaken in 2016, identified that due to the degraded nature of the vegetation, species richness was not consistent with community structures necessary to define them as any ecological community. This observation was supported by the site visit undertaken in July 2019, which confirmed the vegetation to be in completed degraded condition and therefore, low in species richness. Clearing 0.675 ha within the Project Area will not result in a loss of a high level of biological diversity.	Unlikely to be at variance
(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia	Vegetation identified within the Project Area does not provide significant habitat for fauna indigenous to Western Australia. Construction activities will be guided by a Construction Environmental Management Plan, which will include measures to ensure clearing and potential impacts do not occur outside the Project Area.	Unlikely to be at variance
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora	Surveys conducted across the Project Area have not identified any rare flora. Based on historical clearing activities within the Project Area and the degraded nature of the site, the occurrence of rare flora within the Project Area is considered highly unlikely. Clearing within the Project Area is unlikely to result in impacts to rare flora.	Unlikely to be at variance
(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community	Surveys conducted across the Project Area have identified that the Project Area does not contain any Threatened Ecological Communities. Banksia Woodland of the Swan Coastal Plain, which is listed as Endangered under the EPBC Act, occurs directly adjacent to the Project Area, therefore, construction activities will be managed via a Construction Environmental Management Plan, to ensure impacts to vegetation do not occur outside the Project Area. Clearing 0.675 ha within the Project Area will not result in impacts to a Threatened Ecological Community.	Unlikely to be at variance
(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared	The vegetation within the Project Area is not considered significant. All of the overstory vegetation is introduced *Eucalyptus globulus.* Much of the vegetation in the understory is regenerated vegetation from the surrounding FCT 24, which is well represented regionally and locally. Clearing 0.675 ha within the Project Area will not result in the loss of significant remnant native vegetation.	Unlikely to be at variance
(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland	There is no water course within the Project Area. Clearing within the Project Area will not remove riparian or wetland vegetation.	Unlikely to be at variance
(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation	Vegetation clearing within the Project Area will result in the loss of 0.675 ha. This amount of land clearing will not result in appreciable land degradation.	Unlikely to be at variance

Clearing principle	Assessment	Conclusion
(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area	There is no adjacent or nearby conservation area. Clearing within the Project Area will not result in impacts to any adjacent or nearby conservation areas.	Unlikely to be at variance
(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water	Clearing within the Project Area will remove 0.675 ha of vegetation. This is highly unlikely to result in impacts to surface or groundwater quality.	Unlikely to be at variance
(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding	Clearing within the Project Area will not cause or exacerbate the incidence of flooding.	Unlikely to be at variance

4. Environmental approvals and management

4.1 Environmental approvals

Lot 6 Taronga Place was referred to the Department of the Environment and Energy in 2016 and received a controlled action for impacts to the following MNES:

- *Banksia Woodland of the Swan Coastal plain* TEC
- Black Cockatoos.

Consequently, a series of conditions have been imposed within the approval area in relation to the MNES listed above as part of EPBC 2017/7872. Due to the Project Area occurring within the approval boundary of EPBC 2017/7872, the actions proposed to be undertaken within this NVCP are required to comply with the conditions of EPBC 2017/7872, despite the MNES values listed above not occurring within the Project Area.

4.2 Environmental management

Clearing activities within the Project Area will be guided by a Construction Environmental Management Plan which will incorporate environmental management measures including:

- clearing and access control measures (such as demarcation of clearing boundaries)
- weed and dieback hygiene controls
- pre-clearing fauna inspections and clearance work
- staff inductions regarding fauna management
- reporting of any injured fauna to the Parks and Wildllife Wildcare Helpline
- erosion/sediment controls and surface water/ drainage management
- waste and fire management
- dust control.

5. Conclusion

Due to the small extent of native vegetation clearing proposed within the Project Area, the preparation and implementation of a Construction Environmental Management Plan to guide future clearing, direct and indirect impacts within the Project Area can be appropriately mitigated and managed. Further mitigation measures are not required due to the following project elements:

- the reduction of the Project Area from the original BMP proposed clearing, to the small extent of clearing proposed within the Project Area (0.675 ha)
- positioning of the Project Area within already degraded areas and along the fire access track, to negate the requirement for clearing for site access.

Through the Construction Environment Management Plan, direct and indirect impacts to the surrounding vegetation can be effectively managed negating the requirement for further mitigation measures.

Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

Strategen-JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by Strategen-JBS&G, and should not be relied upon by other parties, who should make their own enquires.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, Strategen-JBS&G reserves the right to review the report in the context of the additional information.

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Appendix A Bushfire Management Plan Central 7 – Shorehaven, Alkimos

Bushfire Management Plan

Central 7 – Shorehaven, Alkimos

Prepared for
Peet Alkimos Pty Ltd

22 January 2019

DOCUMENT TRACKING

Item	Detail
Project Name	Bushfire Management Plan, Central 7 – Shorehaven, Alkimos
Project Number	18PER-11794
Project Manager	Ian Mullins
Prepared by	Ian Mullins
Reviewed by	Daniel Panickar (BPAD37802-L2)
Approved by	Daniel Panickar (BPAD37802-L2)
Status	Final
Version Number	2
Last saved on	22 January 2019

This report should be cited as 'Eco Logical Australia 2019. *Bushfire Management Plan, Central 7 – Shorehaven, Alkimos*. Prepared for Peet Alkimos Pty Ltd.'

Contents

1 Introduction 5
1.1 Proposal details 5
1.2 Purpose and application of the plan 5
1.3 Environmental considerations 5

2 Bushfire assessment results 9
2.1 Bushfire assessment inputs 9
2.1.1 General 9
2.1.2 Fire Danger Index 9
2.1.3 Vegetation classification 9
2.1.4 Topography and slope under vegetation 10
2.2 Bushfire assessment outputs 13
2.2.1 BAL assessment 13
2.2.2 Method 1 BAL assessment 13
2.3 Identification of issues arising from the BAL assessment 15

3 Assessment against the Bushfire Protection Criteria 17
3.1 Compliance 17
3.2 Additional management strategies 19

4 Implementation and enforcement 21

References 23

Appendix A – EPBC 2017/7872 24

Appendix B – Daws and Sons letter for Lot 6 Taronga Place, Eglinton 25

Appendix C - Plates 26

Appendix D - Standards for Asset Protection Zones 49

Appendix E – Emergency Access Way (EAW) approval 51

Appendix F - Vehicular access technical requirements (WAPC 2017) 52

List of figures

Figure 1: Site Overview 7
Figure 2: Bushfire Prone Areas 8
Figure 3: Vegetation Classification 11
Figure 4: Vegetation Classification – Post Clearing 12
Figure 5: Bushfire Attack Level (BAL) Contours 16
Figure 6: Spatial representation of the bushfire management strategies 20
Figure 7: Illustrated tree canopy cover projection (WAPC 2017) 49

List of tables

Table 1: Method BAL Calculation (BAL contours) 13
Table 2: Summary of solutions used to achieve bushfire performance criteria 17
Table 3: Proposed work program 21

1 Introduction

1.1 Proposal details

Eco Logical Australia (ELA) was commissioned by Peet Alkimos Pty Ltd (herein referred to as Peet) to prepare a Bushfire Management Plan (BMP) to support a subdivision application being prepared for the Central 7 precinct in their Shorehaven Estate, Alkimos (hereafter referred to as the subject site; **Figure 1**).

The subject site is within a designated bushfire prone area as per the *Western Australia State Map of Bush Fire Prone Areas* (DFES 2018; Figure 2), which triggers bushfire planning requirements under *State Planning Policy 3.7 Planning in Bushfire Prone Areas* (SPP 3.7; WAPC 2015) and reporting to accompany submission of the subdivision application in accordance with the associated *Guidelines for Planning in Bushfire Prone Areas v 1.3* (the Guidelines; WAPC 2017).

This assessment has been prepared by ELA Bushfire Consultant Ian Mullins with quality assurance undertaken by Senior Bushfire Consultant, Daniel Panickar (FPAA BPAD Level 2 Certified Practitioner No. BPAD37802-L2).

1.2 Purpose and application of the plan

The primary purpose of this BMP is to act as a technical supporting document to inform planning assessment. This BMP is also designed to provide guidance on how to plan for and manage the bushfire risk to the subject site through implementation of a range of bushfire management measures in accordance with the Guidelines.

1.3 Environmental considerations

The subject site has been cleared of native vegetation and environmental values have been considered during the planning approvals process. Existing vegetation on site is shown in Figure 3 however further clearing of vegetation will occur following subdivision and prior to building construction as described below and shown in Figure 4. For the purposes of this BMP, where the timing of vegetation removal is outside of the control of Peet, such as within land managed by the Public Transport Authority (PTA) or land owned by the adjacent school, it has been assessed in its current state (i.e. fully vegetated). It is anticipated however, that this vegetation will also be removed prior to residential development, and BAL ratings on lots will be reassessed at building licence stage where necessary.

Lot 6 Taronga Place

Clearing of vegetation within the adjacent property to the north (Lot 6 Taronga Place, Eglinton) will occur up to and within 100 m of the northern boundary of the subject site. The subject vegetation has already been approved for clearing by the Commonwealth Department of Environment and Energy (DoEE) through approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC 2017/7872; **Appendix A**). Clearing of the vegetation will occur via a legal agreement between Daws & Son Pty Ltd (land owner) and Peet (currently under development; **Appendix B**), as well as a Native Vegetation Clearing Permit (NVCP) obtained under Part V, Division 2 of the *Environmental Protection Act 1986* (EP Act). This vegetation will be cleared following approval of the NVCP from the Department of Water and Environmental Regulation (DWER) and prior to building construction.

PTA rail easement and adjacent School

Vegetation within the PTA rail easement adjacent and to the west of the subject site is likely to be removed during 2019 for construction of Stage 1 of the Yanchep Rail Extension (YRE). In addition, vegetation to the north of the school (which lies adjacent and to the south east of the subject site) is likely to be cleared for associated development applications to be lodged by the school in the near future. Consequently, the classification of this vegetation and associated hazards as well as management measures prescribed in this BMP are temporary in nature. Once this expected clearing occurs, additional Bushfire Attack Level (BAL) assessments will be undertaken on remaining classifiable vegetation to redetermine BAL ratings on affected lots.

Central POS Area

The Central POS area, which is owned by Peet will be partially cleared of native vegetation in its western extent to install a drainage basin which will service the Central 7 and Central 5 developments. The drainage basin is proposed to be developed and managed in a low threat state as per clause 2.2.3.2 (f) of AS 3959-2009.

Figure 1: Site Overview

Legend

- Subject site
- 100m site assessment
- 150m site assessment
- Lot layout

0 75 150 300
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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Figure 2: Bushfire Prone Areas

Legend

- Subject site
- 100m site assessment
- 150m site assessment
- Lot layout
- Bushfire Prone Mapping (DFES 2018)

0 75 150 300

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

N

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2 Bushfire assessment results

2.1 Bushfire assessment inputs

The following section is a consideration of spatial bushfire risk and has been used to inform the bushfire assessment in this report.

2.1.1 General

The subject site is located in the City of Wanneroo, and is bound by:

- PTA rail easement to the west;
- Shorehaven Central 5 to the south;
- Lot 6 Taronga Place (Daws & Son Pty Ltd land) to the north including vegetation to be removed; and
- Cleared land and native vegetation to the east.

Visual assessment of the surrounding vegetation within the assessment area did not identify any recent fire scars and fire history was not able to be determined. Accumulation of vegetative matter over time, combined with the moderate to high risk of ignition associated with high levels of public access and proximity to urban areas would potentially facilitate a bushfire occurrence in this area.

2.1.2 Fire Danger Index

A blanket rating of FDI 80 is adopted for Western Australian environments, as outlined in AS 3959–2009 and endorsed by Australasian Fire and Emergency Service Authorities Council (AFAC).

2.1.3 Vegetation classification

Vegetation within the subject site and surrounding 150 m (the assessment area) was assessed in accordance with the Guidelines and AS 3959-2009 *Construction of Buildings in Bushfire Prone Areas* (SA 2009) with regard given to the *Visual guide for bushfire risk assessment in Western Australia* (DoP 2016). The site inspection was undertaken on 2 November 2018.

The following vegetation classes and exclusions were identified within the assessment area as depicted in **Figure 3** and listed below:

- Class A Forest;
- Class B Woodland;
- Class D Scrub;
- Class G Grassland;
- Exclusion as per clause 2.2.3.2 (b) (i.e. single area of vegetation less than 1 ha in area and not within 100 m of other areas of vegetation being classified); and
- Exclusions as per clause 2.2.3.2 (e) and (f) (i.e. non-vegetated areas and low-threat vegetation).

Photographs relating to each vegetation type are included in **Appendix A**.

Prior to residential development, the subject site and surrounding 100 m (excluding classifiable vegetation within the adjacent PTA and school sites) will be managed to a low threat standard. This includes land within Peet's ownership including the western portion of the central POS area proposed as a drainage basin as well as vegetation to the north (within Lot 6 Taronga Place) to be cleared in accordance with the legal agreement with Daws & Son Pty Ltd (Appendix B) and an NVCP (to be submitted and approved prior to development). The post-clearing vegetation classification is depicted in **Figure 4**.

2.1.4 Topography and slope under vegetation

Effective slope under vegetation was assessed for a distance of 150 m from the subject site in accordance with the Guidelines and AS 3959-2009 and is depicted in **Figure 3**. Slope under the vegetation in all directions from the subject site is flat/upslope.

Figure 3: Vegetation Classification

Legend

- Subject site
- 100m site assessment
- 150m site assessment
- Lot layout
- Contour (5m)
- Photo location

Vegetation classification

- Class A forest
- Class B woodland
- Class D scrub
- Class G grassland
- Excluded under 2.2.3.2 (e) and (f)

0 25 50 100
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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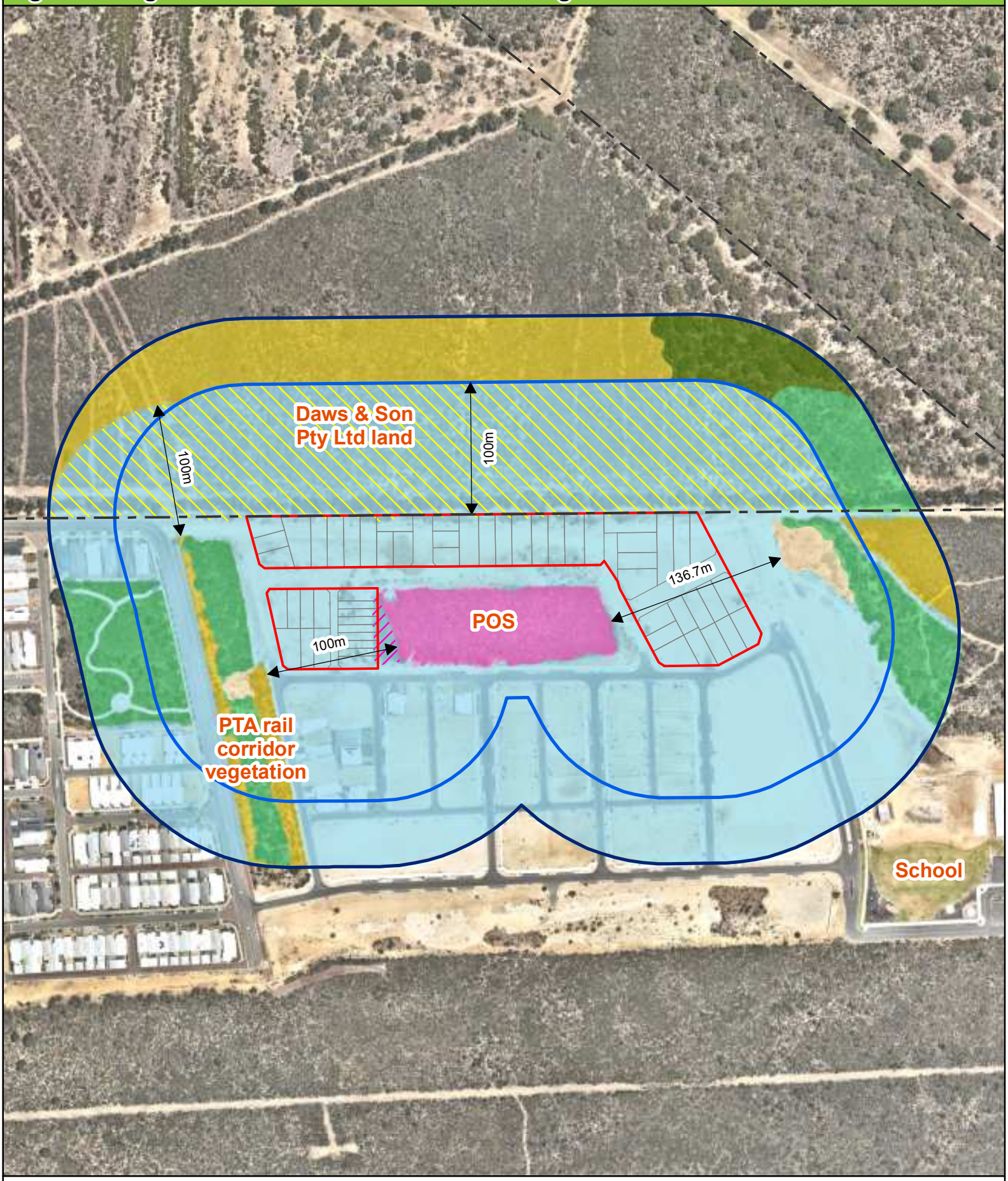
Figure 4: Vegetation Classification - Post Clearing



Legend

- Subject site
- 100m site assessment
- 150m site assessment
- Lot layout
- Urban Quarters land

Vegetation for removal

- Daws & Son Pty Ltd land (5.39 ha)
- POS (0.07 ha)

Vegetation classification

- Class A forest
- Class B woodland
- Class D scrub
- Class G grassland
- Excluded under 2.2.3.2 (b) (0.94 ha)
- Excluded under 2.2.3.2 (e) and (f)

0 25 50 100
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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2.2 Bushfire assessment outputs

A Bushfire Attack Level (BAL) assessment has been undertaken in accordance with SPP 3.7, the Guidelines, AS 3959-2009 and the bushfire assessment inputs in **Section 2.1**.

2.2.1 BAL assessment

All land located within 100 m of the classified vegetation depicted in **Figure 4** considered bushfire prone and is subject to a BAL assessment in accordance with AS 3959-2009.

A Method 1 BAL assessment (as outlined in AS 3959-2009) has been completed for the proposed development and incorporates the following factors:

- State adopted Fire Danger Index (FDI) rating;
- Vegetation class;
- Slope under classified vegetation; and
- Distance between proposed development area and the classified vegetation.

Based on the identified BAL, construction requirements for proposed buildings can then be assigned. The BAL rating gives an indication of the expected level of bushfire attack (i.e. radiant heat flux, flame contact and ember penetration) that may be received by proposed buildings and subsequently informs the standard of construction required to increase building survivability.

2.2.2 Method 1 BAL assessment

Figure 5 and Table 1 display the Method 1 BAL assessment (in the form of BAL contours) that has been completed for the proposed development in accordance with AS 3959-2009 methodology.

Prior to residential development, the subject site and surrounding 100 m (excluding classifiable vegetation within the adjacent PTA and school sites) will be managed to a low threat standard. This includes land within Peet's ownership including the western portion of the central POS area which will be developed as a drainage basin and vegetation to the north (within Lot 6 Taronga Place) which will be cleared and managed in accordance with the legal agreement with Daws & Son Pty Ltd (**Appendix B**) and a NVCP. As a result of this clearing, the Method 1 BAL assessment has resulted in BAL ratings of BAL-29 or less for all proposed lots.

Table 1: Method BAL Calculation (BAL contours)

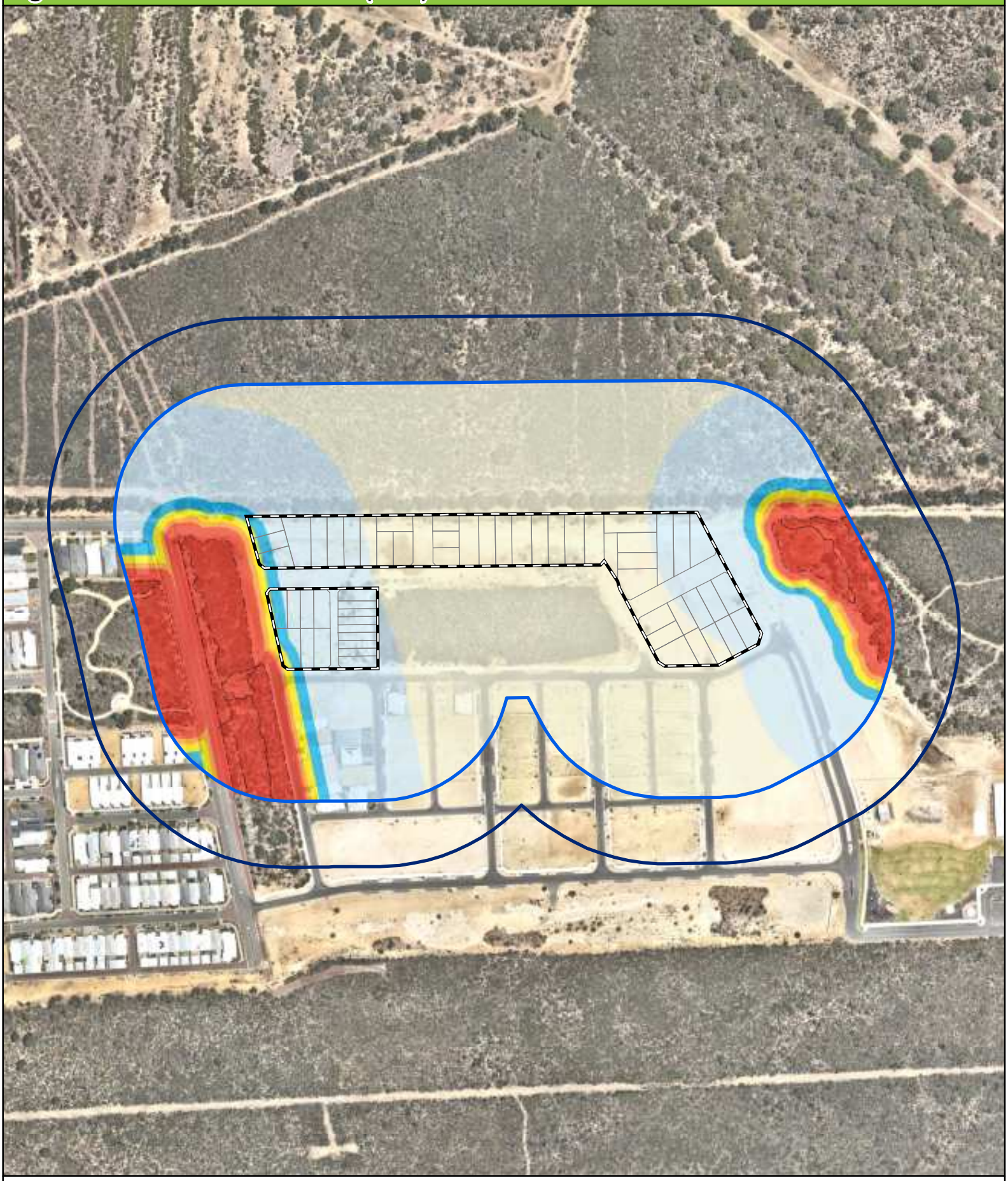
Plot and Vegetation classification	Effective slope	Hazard separation distance (m)	BAL rating	Comment
Plot 1 Class B Woodland	Upslope/flat	0-<10	BAL-FZ	No development proposed in this area
		10-<14	BAL-40	No development proposed in this area
		14-<20	BAL-29	Development proposed in this area
		20-<29	BAL-19	Development proposed in this area
		29-<100	BAL-12.5	Development proposed in this area
Plot 2 Class G Grassland	Upslope/flat	0-<6	BAL-FZ	No development proposed in this area
		6-<8	BAL-40	No development proposed in this area
		8-<12	BAL-29	No development proposed in this area
		12-<17	BAL-19	No development proposed in this area

Plot and Vegetation classification	Effective slope	Hazard separation distance (m)	BAL rating	Comment
		17-<50	BAL-12.5	Development proposed in this area
Plot 3 Class D Scrub	Upslope/flat	0-<10	BAL-FZ	No development proposed in this area
		10-<13	BAL-40	No development proposed in this area
		13-<19	BAL-29	Development proposed in this area
		19-<27	BAL-19	Development proposed in this area
		27-<100	BAL-12.5	Development proposed in this area
Plot 4 Class B Woodland	Upslope/flat	0-<10	BAL-FZ	No development proposed in this area
		10-<14	BAL-40	No development proposed in this area
		14-<20	BAL-29	No development proposed in this area
		20-<29	BAL-19	No development proposed in this area
		29-<100	BAL-12.5	Development proposed in this area
Plot 5 Class B Woodland	Upslope/flat	0-<10	BAL-FZ	No development proposed in this area
		10-<14	BAL-40	No development proposed in this area
		14-<20	BAL-29	No development proposed in this area
		20-<29	BAL-19	No development proposed in this area
		29-<100	BAL-12.5	Development proposed in this area
Plot 6 Class G Grassland	Upslope/flat	0-<6	BAL-FZ	No development proposed in this area
		6-<8	BAL-40	No development proposed in this area
		8-<12	BAL-29	No development proposed in this area
		12-<17	BAL-19	No development proposed in this area
		17-<50	BAL-12.5	Development proposed in this area
Plot 11 and Plot 12 Excluded as per clause 2.2.3.2 (b) of AS3959- 2009	N/A			
Plot 13 Excluded as per clause 2.2.3.2 (e) and (f) of AS3959- 2009	N/A			

2.3 Identification of issues arising from the BAL assessment

All proposed lots are located in areas subject to a BAL rating of BAL-29 or lower. It is anticipated that prior to residential development, vegetation within the PTA rail easement and vegetation to the north of the school will also be removed. Consequently, the bushfire hazards and associated BAL ratings on lots as shown in **Figure 5** are likely to change prior to residential development. It is therefore proposed that once the subject vegetation has been removed, additional Bushfire Attack Level (BAL) assessments are undertaken on remaining classifiable vegetation to redetermine BAL ratings on lots.

Figure 5: Bushfire Attack Level (BAL) Contours



Legend

- Subject site
- 100m site assessment
- 150m site assessment
- Lot layout
- Bushfire hazard interface

Bushfire attack level (BAL)

- BAL - FZ
- BAL - 40
- BAL - 29
- BAL - 19
- BAL - 12.5
- BAL - LOW

0 25 50 100
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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3 Assessment against the Bushfire Protection Criteria

3.1 Compliance

The proposed subdivision is required to comply with policy measures 6.2 and 6.4 of SPP 3.7 and the Guidelines. Implementation of this BMP is expected to meet objectives 5.1-5.4 of SPP 3.7.

In response to the above requirements of SPP 3.7 and the Guidelines, bushfire management measures, as outlined, have been devised for the proposed development in accordance with Guideline acceptable solutions to meet compliance with bushfire protection criteria.

The 'acceptable solutions assessment' is provided below to assess the proposed bushfire management measures against each bushfire protection criteria in accordance with the Guidelines and demonstrate that the measures proposed meet the intent of each element of the bushfire protection criteria. **Figure 6** depicts bushfire management strategies where necessary.

Table 2: Summary of solutions used to achieve bushfire performance criteria

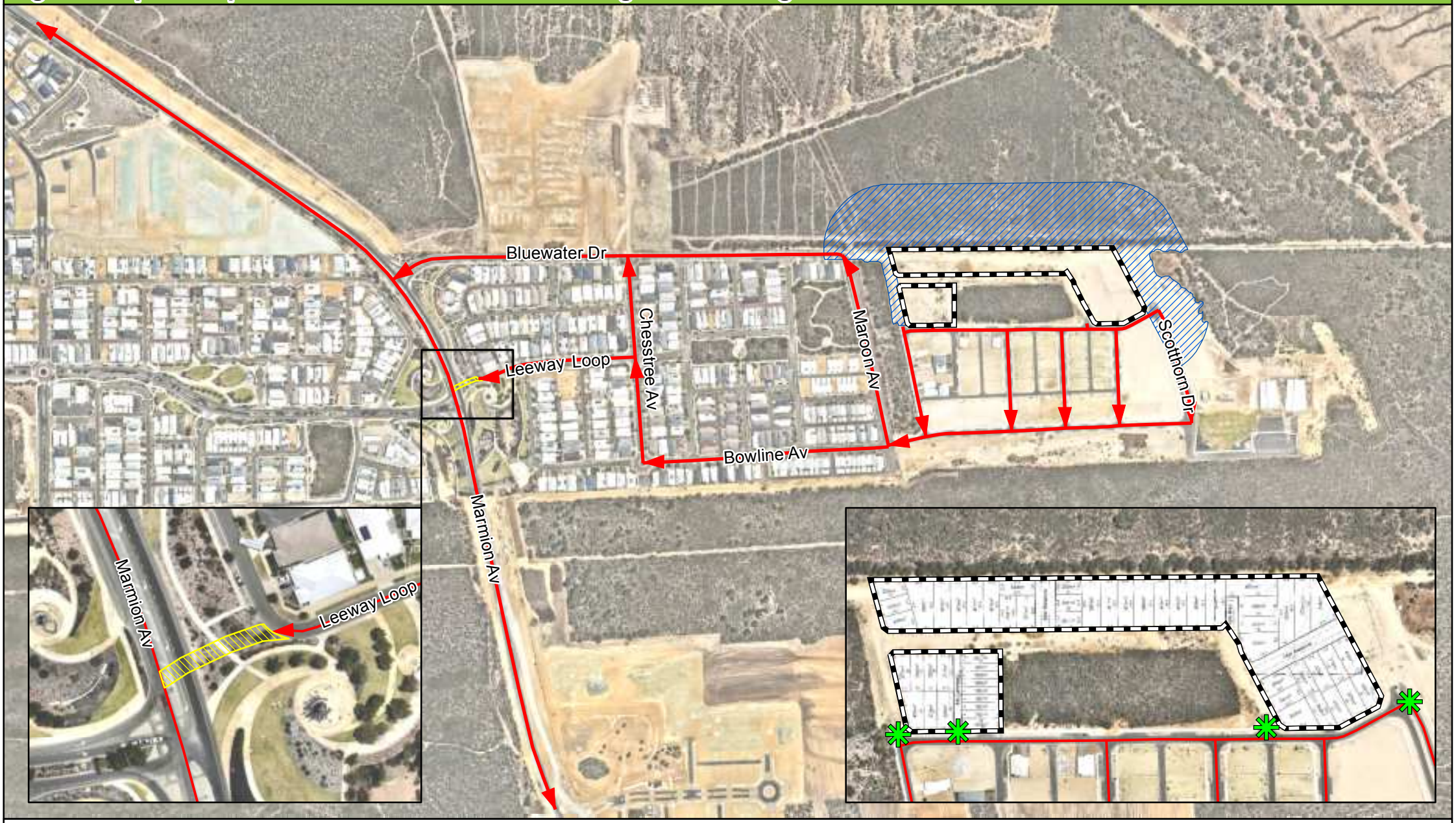
Bushfire Performance Criteria	AS	PS	N/A	Comment
Element 1: Location A1.1 Development location	☒	☐	☐	On development, all proposed lots are will be located in areas subject to BAL ratings of BAL-29 or lower. The proposed development is considered to be compliant with A1.1.
Element 2: Siting and design of development A2.1 Asset Protection Zone (APZ)	☐	☐	☒	Proposed APZs are shown in **Figure 6** and are of sufficient size to ensure that no future dwelling will be located in an area subject to a BAL rating greater than BAL-29. Within Peet's land ownership, APZs include roads and other hardstand areas as well as areas which will be managed in a low fuel state on an ongoing basis. Areas within the neighbouring Daws & Son Pty Ltd land will also be managed in a low fuel state in accordance with the legal with Peet. All APZ's will be managed in accordance with the requirements of *Standards for Asset Protection Zones'*. (WAPC 2017; **Appendix D**). The proposed development is considered to be compliant with A2.1.
Element 3: Vehicular access A3.1 Two access routes	☒	☐	☐	There are more than two access routes to/from the subject site associated with the existing road network and a previously approved Emergency Access Way (EAW) between Leeway Loop near Gangway

Bushfire Performance Criteria	AS	PS	N/A	Comment
				(**Figure 6**). This EAW was a requirement for Development Application for a nursing home which was approved by Metro North-West Joint Development Assessment Panel (**Appendix E**). The EAW will be constructed prior to residential development and the final Central 7 development design will not interfere with the current access network. The proposed development is considered to be compliant with A3.1.
Element 3: Vehicular access A3.2 Public road	☒	☐	☐	All public roads will comply with vehicular access requirements (refer to **Appendix F**).
Element 3: Vehicular access A3.3 Cul-de-sac	☐	☐	☒	No cul-de-sacs are proposed as part of the development.
Element 3: Vehicular access A3.4 Battle-axe	☐	☐	☒	No battle axe lots are proposed.
Element 3: Vehicular access A3.5 Private Driveway longer than 50 m	☐	☐	☒	No private driveways longer than 50 m are proposed.
Element 3: Vehicular access A3.6 Emergency Access way	☒	☐	☐	A previously approved Emergency Access Way (EAW) between Leeway Loop near Gangway and connecting to Marmion Avenue (**Appendix E**) will be constructed as an alternative link to a public road during emergencies (**Figure 6**). The EAW will comply with EAW vehicular access requirements (refer to **Appendix F**) and will be constructed to prior to residential development. The proposed development is considered to be compliant with A3.6.
Element 3: Vehicular access A3.7 Fire-service access routes	☐	☐	☒	No fire service access routes are required or proposed.
Element 3: Vehicular access A3.8 Firebreak width	☐	☐	☒	None of the proposed lots are greater than 0.4 hectares and therefore firebreaks are not required (CoW 2019).
Element 4: Water A4.1 Reticulated areas	☒	☐	☐	The subject site has a reticulated water supply that will be extended to all proposed lots. The proposed development is considered to be compliant with A4.1. A4.2 and A4.3 are not applicable to this proposed development. .

3.2 Additional management strategies

Future demonstration of compliance with the relevant requirements of SPP 3.7, the Guidelines and AS 3959-2009 will depend on the developer's ability to coordinate the timing of development works within the subject site. It is anticipated that classified vegetation within the PTA rail easement and to the north of the school will be cleared prior to residential development. Additional BAL assessments are proposed once this occurs and prior to building licensing stage of development to re-determine BAL ratings on lots. Additional risk management will include the maintenance of classified vegetation in line with this BMP.

Figure 6: Spatial representation of the bushfire management strategies



Legend

- Access point *(Refer to inset)
- Subject site
- Access / egress route
- Emergency Access Way
- Asset Protection Zone (APZ)

0 75 150 300
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

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4 Implementation and enforcement

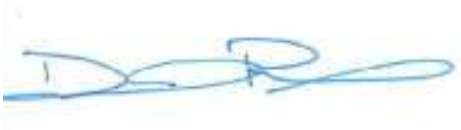
Implementation of the BMP applies to Peet, Daws & Son Pty Ltd (as it relates to their legal agreement with Peet for Lot 6 Taronga Place), the City of Wanneroo, building contractors and future landowners to ensure bushfire management measures are adopted and implemented on an ongoing basis. A summary of the bushfire management measures described in **Section 3**, as well as a works program, is provided in **Table 3**. These measures will be implemented to ensure the ongoing protection of life and property assets is achieved. Timing and responsibilities are also defined to assist with implementation of each measure.

Table 3: Proposed work program

No.	Bushfire management measure	Responsibility
Prior to issue of Titles		
1	Clear classified vegetation depicted in **Figure 5** to a low threat standard until residential development progresses	Peet Alkimos Pty. Ltd. (within Peet's land ownership)
		Daws & Son Pty Ltd and Peet (in accordance with legal agreement for Lot 6 Taronga Place)
2	Place Section 70A on title of all Lots within Bushfire Prone Areas	Peet Alkimos Pty. Ltd.
Prior to sale or occupancy		
3	Reassessment of BAL ratings on lots once PTA rail easement vegetation and vegetation north of the school has been cleared.	Peet Alkimos Pty. Ltd.
4	Maintenance of vegetation to a low threat standard	Peet Alkimos Pty. Ltd. until development completion
5	Implementation of increased building construction standards	Builders
6	Provision of reticulated water supply	Peet Alkimos Pty. Ltd. construction contractor
7	Compliance with current fire control order	Peet Alkimos Pty. Ltd. until development completion
Ongoing management		
8	Maintenance of vegetation to a low threat standard	Individual landowners (within property)
		City of Wanneroo (within public reserves)
9	Compliance with fire break order	Individual landowners (within property)
		City of Wanneroo (within public reserves)

Conclusion

In the author's professional opinion, the bushfire protection requirements listed in this assessment provide an adequate standard of bushfire protection for the proposed development. As such, the proposed development is consistent with the aim and objectives of SPP 3.7 and associated guidelines and is recommended for approval.



Daniel Panickar
Senior Bushfire Consultant
FPAA BPAD Certified Practitioner
No. BPAD37802-L2

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Appendix A – EPBC 2017/7872

Approval

Residential and Commercial Development on Lot 6 Taronga Place, Eglinton, Western Australia (EPBC 2017/7872)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted	Prime Eglinton Pty Ltd
proponent's ACN (if applicable)	ACN: 616 213 186
proposed action	To clear native vegetation to develop Lot 6, Taronga Place, Eglinton, Western Australia for residential and commercial land use [See EPBC Act Referral 2017/7872].

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 December 2028.

Decision-maker

name and position	Gregory Manning Assistant Secretary Assessments (WA, SA, NT) and Post Approvals Branch
signature	
date of decision	18 September 2018

Conditions attached to the approval

1. The **approval holder** must not **clear** more than 92.25 hectares of **Carnaby's Black Cockatoo habitat** or 41.29 hectares of **Banksia Woodlands TEC** within the project area shown at Attachment 1.

2. Within 7 days prior to **clearing** of any area of **Carnaby's Black Cockatoo habitat**, the **approval holder** must investigate and document all potential nesting trees within the area to be **cleared** to determine if there are any hollows that are being utilised, or are capable of being utilised, by the **Carnaby's Black Cockatoos** for nesting. The investigation must be undertaken by a **suitably qualified person**.

    a. If any **Carnaby's Black Cockatoo(s)** is detected utilising any hollow in any tree, the **approval holder** must:

        i. clearly identify and mark the nesting tree

        ii. maintain a register of nesting trees

        iii. only clear the identified nesting tree and vegetation within a 10 metre radius of that tree, if a **suitably qualified person** has verified that the hollow in the tree is no longer being used by the **Carnaby's Black Cockatoo**.

    b. For each **cleared** hollow that is being utilised, or capable of being utilised by the **Carnaby's Black Cockatoo**, the proponent must install at least three (3) artificial nesting hollows, where the artificial nesting hollows must be:

        i. installed within a 12 km radius of the **cleared** nesting tree(s)

        ii. constructed, positioned, erected and maintained in accordance with relevant **artificial hollow guidance**, to maximise the likelihood that the artificial nesting hollows are utilised by the **Carnaby's Black Cockatoo**

        iii. installed before the commencement of the following **breeding season** for the **Carnaby's Black Cockatoo**

        iv. inspected and maintained at least annually to check for condition and evidence of **Carnaby's Black Cockatoo** use.

3. To minimise impacts to the **Carnaby's Black Cockatoo** and the **Banksia Woodlands TEC**, the **approval holder** must, within 5 years of **commencement** of the action, provide the **Department** with written evidence that at least 8 hectares of **Carnaby's Black Cockatoo habitat** and **Banksia Woodlands TEC** has been transferred to the City of Wanneroo as **Public Open Space** for the purposes of conservation.

4. To mitigate impacts to the **Carnaby's Black Cockatoo** and the **Banksia Woodlands TEC,** the **approval holder** must prepare and submit a *Vegetation and Conservation Area Management Plan* (VCAMP) for the approval of the **Minister**. The **approval holder** must not **commence** the action unless the **Minister** has approved the VCAMP. The approved VCAMP must be implemented.

The VCAMP must be prepared in accordance with the **Department's Environmental Management Plan Guidelines** and include, but not be limited to:

a. measures to prevent impacts to **Carnaby's Black Cockatoo habitat** and **Banksia Woodlands TEC** during construction, including to:

    i. prevent and/or control site access, weeds, *Phytophthora* dieback, erosion, dust and fire

    ii. delineate vegetation to be retained through, for example, the erection of temporary fencing or signage to avoid accidental **clearing** or disturbance outside of the impact area

b. objectives, targets and completion criteria for post construction rehabilitation measures such as site clean-up and weed management, including information on the mapping, monitoring and removal of noxious weeds

c. access control measures (e.g. fencing) to prevent or manage access to the areas of **Public Open Space** proposed to be retained for conservation

d. bushfire control measures

e. design and engineering controls to ensure that stormwater is not directed toward retained and adjacent areas of vegetation and that stormwater is appropriately managed to reduce hydrological impacts and prevent the mobilisation of dieback or other contaminants

f. clear objectives and performance indicators for all management actions, mitigation measures and practices prescribed by the VCAMP including details of the monitoring to be undertaken to demonstrate the effectiveness of the measures

g. corrective actions for circumstances where an action, mitigation measure or practice prescribed by the VCAMP fails to meet, or is unlikely to meet, its prescribed objective, and trigger action points at which these corrective actions will be implemented

h. timeframes for implementing the above measures.

5. To compensate for the loss of up to 92.25 hectares of **Carnaby's Black Cockatoo habitat** and 41.29 hectares of **Banksia Woodlands TEC** the **approval holder** must, within one year after the **commencement** of the action provide the **Department** with:

    a. written evidence that

        i. 380 hectares of land at **Lot 5450 Wannamal Road West, Boonarring**

        ii. 117 hectares of **Carnaby's Black Cockatoo habitat** and **Banksia Woodlands TEC** at **Lot 3333 Mimegarra Road, Cataby**

    have both been purchased and are being managed for conservation by the **DBCA**, using monies provided by the proponent for that purpose.

b. the **offset attributes**, **shapefiles** and textual descriptions and maps to clearly define the location and boundaries of the **offset areas**, that the **approval holder** has transferred to the **DBCA**.

6. Within 30 days after the **commencement** of the action, the **approval holder** must advise the **Department** in writing of the actual date of **commencement**.

7. The **approval holder** must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the VCAMP required by this approval (Condition 4), and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the **EPBC Act**, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be published in the general media.

8. Within three months of every 12 month anniversary of the **commencement** of the action, the **approval holder** must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published. Reports must remain on the website for the life of this approval. The **approval holder** must continue to comply with this condition until such time as agreed to in writing by the **Minister**.

9. Upon the direction of the **Minister**, the **approval holder** must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the commencement of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.

10. The **approval holder** may choose to revise a management plan approved by the **Minister** under condition 4 without submitting it for approval under section 143A of the **EPBC Act**, if the taking of the action in accordance with the revised plan would not be likely to have a **new or increased impact**. If the **approval holder** makes this choice they must notify the **Department** in writing that the approved plan has been revised and provide the **Department**, at least four weeks before implementing the revised plan, with:

    a. an electronic copy of the revised plan;

    b. an explanation of the differences between the revised plan and the approved plan; and

    c. the reasons the **approval holder** considers that taking the action in accordance with the revised plan would not be likely to have a **new or increased impact**.

11. The **approval holder** may revoke their choice under condition 10 at any time by notice to the **Department**. If the **approval holder** revokes the choice to implement a revised plan,

without approval under section 143A of the Act, the plan approved by the **Minister** must be implemented.

12. If the **Minister** gives a notice to the **approval holder** that the **Minister** is satisfied that the taking of the action in accordance with the revised plan would be likely to have a **new or increased impact**, then:

    a. Condition 10 does not apply, or ceases to apply, in relation to the revised plan; and

    b. The **approval holder** must implement the plan approved by the **Minister**.

    To avoid any doubt, this condition does not affect any operation of conditions 10 and 11 in the period before the day the notice is given.

13. Conditions 10, 11 and 12 are not intended to limit the operation of section 143A of the **EPBC Act** which allows the **approval holder** to submit a revised plan to the **Minister** for approval.

14. Unless otherwise agreed to in writing by the **Minister**, the **approval holder** must publish all management plans referred to in these conditions of approval on their website for the duration of this approval. Each management plan must be published on the website within 1 month of being approved by the **Minister** or being submitted under condition 10 and must remain on the website for the life of this approval.

Definitions

a. **Approval holder** means the name of the person to whom this approval is granted.

b. **Artificial hollow guidance** means WA Department of Parks and Wildlife publications *"How to design and place artificial hollows for Carnaby's cockatoos"* (2015) and *"How to monitor and maintain artificial hollows for Carnaby's cockatoo"* (2015), or as otherwise updated from time to time.

c. **Banksia Woodlands TEC** is the **EPBC Act** listed Banksia Woodlands of the Swan Coastal Plain ecological community

d. **Breeding season** for the **Carnaby's Black Cockatoo** is the period between 1 July and 28 February of any year.

e. **Carnaby's Black Cockatoo** is the **EPBC Act** listed Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*).

f. **Carnaby's Black Cockatoo habitat** includes foraging, breeding, potential breeding and roosting habitat for **Carnaby's Black Cockatoo**, as defined in the *EPBC Act Referral Guidelines for three species of Western Australian black cockatoos: Carnaby's Black Cockatoo (Calyptorhynchus latirostris), (Endangered) Baudin's Black Cockatoo (Calyptorhynchus baudinii) (Vulnerable) and Forest Red-tailed Black Cockatoo (Calyptorhynchus banksii naso) (Vulnerable)* (October 2012).

g. **Clear, cleared or clearing** includes but is not limited to the cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of vegetation (but not including weeds – see the *Australian weeds strategy 2017 to 2027* available from http://www.agriculture.gov.au/pests-diseases-weeds/pest-

animals-and-weeds/review-aus-pest-animal-weed-strategy/aus-weeds-strategy for further guidance).

h. **Commence/Commencement of the action** is any works or actions (including but not limited to **clearing**, the use of construction or excavation equipment and any other site preparatory works) that will directly or indirectly impact on **Carnaby's Black Cockatoo habitat** and/or the **Banksia Woodlands TEC**, excluding any **clearing** done to support the Unexploded Ordinance Investigations provided this **clearing** only occurs in the area labled 'Clearing Area' in Attachment 5 and does not exceed 2 ha of **Carnaby's Black Cockatoo habitat** and/or the **Banksia Woodlands TEC**.

i. **Department** means the Commonwealth Department of Environment and Energy or any other agency that administers the **EPBC Act** from time to time and includes, where the context permits, the officers, delegates, employees and successors of the **Department**.

j. **Department's Environmental Management Plan Guidelines** is the Environmental Management Plan Guidelines, Commonwealth of Australia 2014. Available at: http://www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines.

k. **EPBC Act** means the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

l. **EPBC Environmental Offsets Policy** is the *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (October 2012), or as updated from time to time. Available at: http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy.

m. **Lot 5450 Wannamal Road West, Boonarring** means the 380 ha of land comprising 380 hectares of **Carnaby's Black Cockatoo habitat** and 165 hectares of **Banksia Woodlands TEC** as shown in Attachment 2.

n. **Lot 3333 Mimegarra Road, Cataby** means the 117 ha of **Carnaby's Black Cockatoo habitat** and **Banksia Woodlands TEC** as shown in Attachment 3.

o. **Minister** means the Minister administering the **EPBC Act** including any delegate of the Minister.

p. **New or increased impact** means a new or increased environmental impact or risk relating to any protected matter, when compared to the likely impact under an Action management plan that has been approved by the **Minister** (as outlined in the *Guidance on 'New or Increased Impact' relating to changes to approved management plans under EPBC Act environmental approvals (2017)* available from http://www.environment.gov.au/epbc/publications/new-increased-impact-guidance.

q. **Offset area** means the two offset sites at **Lot 5450 Wannamal Road West, Boonarring** and **Lot 3333 Mimegarra Road, Cataby**

r. **Offset attributes** is an excel file ('.xls') capturing relevant attributes of the **offset area**, including the corresponding **EPBC Act** reference ID number, the physical address of the **offset area**, coordinates of the boundary points in decimal degrees, the **EPBC Act** protected matters that the **offset area** compensates, any additional **EPBC Act** protected matters which benefit from the **offset area**, the size of the **offset area** in hectares and the legal mechanism used to protect and conserve the **offset area**.

s. **Public Open Space** are the areas of **Carnaby's Black Cockatoo habitat** and **Banksia Woodlands TEC**, totalling at least 8 hectares, which will be ceded to the City of Wanneroo for ongoing management. The vegetative condition of these areas must be at least Very-Good to Excellent as shown in Attachment 4.

t. **Shapefile** is an ESRI shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes of the **offset area**, including the shape, **EPBC Act** reference ID number and **EPBC Act** protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

u. **Suitably qualified person** means a person who has professional qualifications and at least three years of relevant work experience surveying for the **Carnaby's Black Cockatoo** and who can give authoritative assessment, advice and analysis on performance relative to the subject matter using relevant protocols, standards, methods or literature. If the person does not have appropriate professional qualifications, the person must have at least five years of work experience related to the subject matter and can give an authoritative assessment, advice and analysis on performance relative to the subject matter using relevant protocols, standards, methods or literature.

Attachment 1: Project Area

Attachment 2: Lot 5450 Wannamal Road West, Boonarring

Attachment 3: Lot 3333 Mimegarra Road, Cataby

Attachment 4: Vegetation Condition of the Project Area

Attachment 5: Unexploded Ordinance Investigation Area

Legend
- Project Area
- Freeway and Rail Reserve
- Black Cockatoo Habitat & Banksia Woodland TEC retention areas (Bhb)
- 20m Buffer
- 20m Grid
- POS area
- Clearing area
- Retained conservation areas

stategen ENVIRONMENTAL

Vegetation and Conservation Area Management Plan
Lot 6 Taronga Place, Eglinton
EPBC 2017/7872

Coordinate System: GDA 1994 MGA Zone 50
Date: 11/09/2018

Appendix B – Daws and Sons letter for Lot 6 Taronga Place, Eglinton

DAWS AND SONS

ABN: 23 008 749 942

All Correspondence to:
PO Box 131, West Perth
Western Australia 6872

Telephone: (08) 9322 0400
Fax: (08) 9481 4280

4th Floor
72 Kings Park Road
West Perth WA 6005

22 January 2019

City of Wanneroo
23 Dundebar Road
WANEROO, WA 6065

Dear City of Wanneroo,

RE: WAPC No. 157 568 – Shorehaven Central Stage 7, Bushfire Management Plan

Daws & Son Pty Ltd (Daws & Son) is the owner of Lot 6 Taronga Place (Lot 6 on DP 26989). Daws & Son is aware that Peet Alkimos Pty Ltd (Peet Alkimos) is proposing to subdivide and develop land to the south of Lot 6 (Shorehaven Central Stage 7) and in order to assist Peet Alkimos with managing the bushfire risk within Shorehaven Central Stage 7, we hereby provide our in-principle approval for the following works to be undertaken on Lot 6:

- Clearing of approximately 5.4ha of land as shown hatched yellow in Attachment A; and
- Ongoing management of the area hatched yellow in Attachment A to ensure the land remains in a low bushfire threat state as per clause 2.2.3.2 (f) of AS 3959-2009.

The above in-principle approval is subject to Peet Alkimos obtaining all necessary approvals at their cost and is also subject to Peet Alkimos and Daws & Son entering into a formal agreement for these works which will include conditions inter alia to extend 3 road connections to the southern boundary of Lot 6 & comply with all relevant environmental and planning conditions.

We trust this is sufficient to assist with the approval of Peet Alkimos's Bushfire Management Plan for Shorehaven Central Stage 7.

Kind Regards,

Nicholas Daws
Director

Required Clearing - Urban Quarter Land

Legend

- Subject site
- Lot Layout
- Property Boundary

Vegetation clearing

- Clearing Permit (5.39 ha)

0 25 50 100
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

N

eco logical AUSTRALIA
www.ecoaus.com.au

Prepared by: SM Date: 14/01/2019

Appendix C - Plates

Plot	Photo ID	Vegetation class	Photo
1	1	Class B Woodland	
1	2	Class B Woodland	
1	4	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
1	5	Class B Woodland *Scrub vegetation within Banksia spp. woodland.*	
1	6	Class B Woodland	
1	11	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
1	13	Class B Woodland	
2	3	Class G Grassland	
3	15	Class D Scrub *Planted embankment vegetation differs from sunken remnant woodland vegetation*	

Plot	Photo ID	Vegetation class	Photo
3	19	Class D Scrub	
3	17	Class D Scrub	
3	20	Class D Scrub	

Plot	Photo ID	Vegetation class	Photo
3	22	Class D Scrub	
3	24	Class D Scrub	
4	23	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
4	25	Class B Woodland	
4	32	Class B Woodland	
4	33	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
4	34	Class B Woodland	
4	35	Class B Woodland	
4	36	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
4	37	Class B Woodland	
5	50	Class B Woodland	
5	51	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
5	52	Class D Scrub	
5	55	Class D Scrub	
5	56	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
6	48	Class G Grassland	
7	53	Class D Scrub	
8	27	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
8	30	Class B Woodland	
8	45	Class B Woodland	
8	47	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
9	7	Class D Scrub *Approximately 4 overstory trees with plot containing dominant scrub vegetation structure*	
9	8	Class D Scrub	
9	9	Class D Scrub	

Plot	Photo ID	Vegetation class	Photo
9	28	Class D Scrub	
9	38	Class D Scrub	
9	39	Class D Scrub	

Plot	Photo ID	Vegetation class	Photo
9	40	Class D Scrub	
9	43	Class D Scrub	
9	46	Class D Scrub	

Plot	Photo ID	Vegetation class	Photo
10	44	Class A Forest	
11	58	Class D Scrub	
11	59	Class D Scrub	

Plot	Photo ID	Vegetation class	Photo
11	60	Class D Scrub	
11	61	Class D Scrub	
11	62	Class D Scrub	

Plot	Photo ID	Vegetation class	Photo
12	65	Class B Woodland	
12	66	Class B Woodland	
12	67	Class B Woodland	

Plot	Photo ID	Vegetation class	Photo
12	68	Class B Woodland	
12	69	Class B Woodland	
13	10	Excluded under Clause 2.2.3.2 (f) of AS 3959-2009	

Plot	Photo ID	Vegetation class	Photo
13	12	Excluded under Clause 2.2.3.2 (f) of AS 3959-2009	
13	14	Excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2009	
13	16	Excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2009	

Plot	Photo ID	Vegetation class	Photo
13	18	Excluded under Clause 2.2.3.2 (e) of AS 3959-2009	
13	21	Excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2009	
13	26	Excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2009	

Plot	Photo ID	Vegetation class	Photo
13	29	Excluded under Clause 2.2.3.2 (e) of AS 3959-2009	
13	31	Excluded under Clause 2.2.3.2 (e) of AS 3959-2009	
13	41	Excluded under Clause 2.2.3.2 (e) of AS 3959-2009	

Plot	Photo ID	Vegetation class	Photo
13	42	Excluded under Clause 2.2.3.2 (e) of AS 3959-2009	
13	49	Excluded under Clause 2.2.3.2 (e) of AS 3959-2009	
13	57	Excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2009	

Plot	Photo ID	Vegetation class	Photo
13	63	Excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2009	
13	64	Excluded under Clause 2.2.3.2 (e) & (f) of AS 3959-2009	

Appendix D - Standards for Asset Protection Zones

The following standards have been extracted from the *Guidelines for Planning in Bushfire Prone Areas v 1.2* (WAPC 2017).

Every habitable building is to be surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:

a. Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a fire does not exceed 29kW/m² (BAL 29) in all circumstances.

b. Location: the APZ should be contained solely within the boundaries of the lot on which a building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes).

c. Management: the APZ is managed in accordance with the requirements of '*Standards for Asset Protection Zones*' (below):

- Fences: within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire). It is recommended that solid or slatted non-combustible perimeter fences are used
- Objects: within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors
- Fine Fuel load: combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare
- Trees (> 5 metres in height): trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy (**Figure 7**).

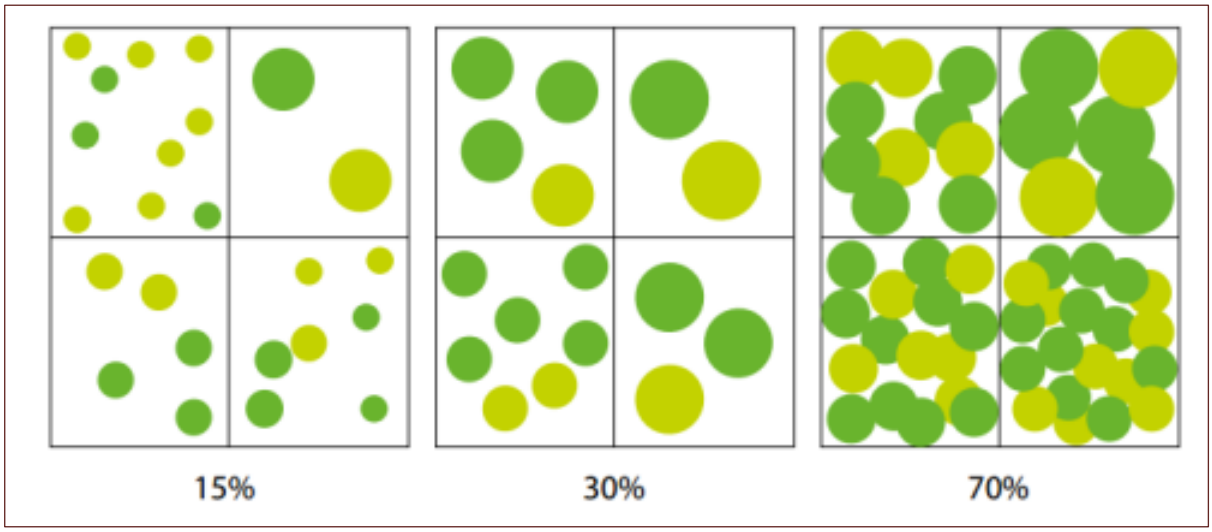

Figure 7: Illustrated tree canopy cover projection (WAPC 2017)

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

Additional notes

The Asset Protection Zone (APZ) is an area surrounding a building that is managed to reduce the bushfire hazard to an acceptable level. Hazard separation in the form of using subdivision design elements or excluded and low threat vegetation adjacent to the lot may be used to reduce the dimensions of the APZ within the lot.

The APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity. The APZ may include public roads, waterways, footpaths, buildings, rocky outcrops, golf courses, maintained parkland as well as cultivated gardens in an urban context, but does not include grassland or vegetation on a neighbouring rural lot, farmland, wetland reserves and unmanaged public reserves.

Appendix E – Emergency Access Way (EAW) approval

PEET

19 September 2017

Pas Bracone
Manager Planning Implementation
City of Wanneroo
23 Dunbebar Road
WANNEROO WA 6065

Dear Pas,

AEGIS HIGH CARE, LOT 1579 (4) MAGELLAN ROAD, ALKIMOS
DAP File No: DAP/17/01237

I refer to the DAP application reference DAP/17/01237 for the Aegis High Care at Lot 1579 (4) Magellan Road, Alkimos.

I write to re-affirm the strong support of Peet Limited in regard to the impending approval of the Aegis High Care Development Application. As you are aware, significant consultation was required in 2014/15 to provide both the City and the WAPC with the employment generating land uses that it required as part of the approval of Central 5-9. Following the approval of the Statutory Planning Committee, the subdivision approval and Local Development Plan identified the High Care Facility specifically within the approvals.

Peet is committed to the delivery of the High Care Facility for the community, noting that the site access conditions remain identical to the access that was in place at the time of the abovementioned approvals.

Notwithstanding, Peet confirms support to:

- Construct the proposed Option 1 as per the attached plan (if required by the City of Wanneroo), for the provision of an Emergency Access Way through the existing Public Open Space that is situated between Leeway Loop and Marmion Avenue;
- Construct the Emergency Access Way, subject to:
    - The construction being limited to the installation of a compacted limestone track; and
    - The location not requiring the removal or relocation of any structure within the Public Open Space.

If you have any queries or require and further information, please do not hesitate to contact the below on 9420 1111.

Yours sincerely
PEET LIMITED

RYAN HUNTER
SENIOR DEVELOPMENT MANAGER

MARMION

AVE

LEEWAY

LOOP

GANGWAY

PONTOON

WAY

CHESSTREE

AVE

TURN

338

337

448
Public Open Space

Public Open Space

OPTION 1
VIA LEEWAY LOOP

CONSTRUCT 6.0m WIDE
0.2m THICK LIMESTONE
ACCESS TRACK.

OPTION 2
VIA GANGWAY TURN

EXISTING
INFRASTRUCTURE
ASSETS.

EXISTING SHED
STRUCTURE.

CONSTRUCT 6.0m WIDE
0.2m THICK LIMESTONE
ACCESS TRACK.

437 420
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432 425
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430 427
429 428

419 402
418 403
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415 406
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447 446 445 444 443 442 441 440 439 438

453 454 455

N

PLAN
1:1000

Shorehaven Central Precinct
Proposed Bushfire Emergency Access

DRAWING NUMBER
2237-00-SK151

ISSUE
D

TABEC
Civil Engineering Consultants

TABEC PTY LTD
ACN 090 796 204

14 Wickham Street, East Perth WA 6004
t 08 9425 5900 e info@tabec.com.au
www.tabec.com.au

Plotted By: revans Plot Date: 06/09/17 - 16:37 Cad File: T:\Projects\2237\Design\CAD\Sketches\2237-00-Sk151 Central Fire Access.dwg

A3

Government of **Western Australia**
Development Assessment Panels

LG Ref: DA2017/760
DAP Ref: DAP/17/01237
Enquiries: (08) 6551 9919

Mr Tayne Evershed
Planning Solutions
GPO Box 2709
CLOISTERS SQUARE PO WA 6850

Dear Mr Evershed

METRO NORTH-WEST JDAP - CITY OF WANNEROO - DAP APPLICATION - DA2017/760 – DETERMINATION

Property Location:	Lot 1579 (14) Magellan Road, Alkimos
Application Details:	Nursing Home

Thank you for your Form 1 Development Assessment Panel (DAP) application and plans submitted to the City of Wanneroo on 16 June 2017 for the above-mentioned development.

This application was considered by the Metro North-West JDAP at its meeting held on 27 September 2017, where in accordance with the provisions of the City of Wanneroo Town Planning Scheme No.2, it was resolved to **approve** the application as per the attached notice of determination.

Should the applicant not be satisfied by this decision, an application may be made to amend or cancel this planning approval in accordance with regulation 17 and 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

Please also be advised that there is a right of review by the State Administrative Tribunal in accordance with Part 14 of the *Planning and Development Act 2005*. Such an application must be made within 28 days of the determination, in accordance with the *State Administrative Tribunal Act 2004*.

Should you have any queries with respect to the conditions of approval, please contact Mr Mitchell Hoad on behalf of the City of Wanneroo on 9405 5544.

Yours sincerely,

DAP Secretariat

2 October 2017

Encl. DAP Determination Notice
Approved plans

Cc: Mr Mitchell Hoad
City of Wanneroo

Government of Western Australia
Development Assessment Panels

Planning and Development Act 2005

City of Wanneroo Town Planning Scheme No.2

Metro North-West Joint Development Assessment Panel

Determination on Development Assessment Panel Application for Planning Approval

Property Location: Lot 1579 (14) Magellan Road, Alkimos
Application Details: Nursing Home

In accordance with regulation 8 of the *Planning and Development (Development Assessment Panels) Regulations 2011*, the above application for planning approval was **granted** on 27 September 2017, subject to the following:

> **Approve** DAP Application reference DAP/17/01237 and accompanying plans included in **Attachment 1 (SK201 – SK204, SK301, SK310, C1.101, C3.101, C3.102)** in accordance with Clause 68 of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the provisions of the City of Wanneroo's District Planning Scheme No. 2, subject to the following conditions.

Conditions

1. This decision constitutes planning approval only and is valid for a period of two years from the date of approval. If the subject development is not substantially commenced within the two year period, the approval shall lapse and be of no further effect.

2. The use of the development subject to this approval shall only be for the purpose of a Nursing Home, which is defined in the City's District Planning Scheme No. 2. A change of use from that outlined above may require the approval of the City.

3. The development is to be implemented in accordance with the recommendations of an amended Bushfire Management Plan, including access to an Emergency Access Way to the satisfaction of the City.

4. Access to the Emergency Access Way must be provided prior to the occupation of the development to the satisfaction of the City.

5. Parking areas, driveways and points of ingress and egress shall be designed and constructed in accordance with the Australian Standard for Offstreet Carparking (AS2890), and shall be drained, sealed and marked prior to occupation of the development.

6. The parking areas and associated access indicated on the approved plans shall not be used for the purpose of storage or obstructed in any way at any time, without the prior approval of the City.

7. Engineering drawings and specifications shall be submitted to and approved by the City, and works undertaken in accordance with the approved drawings and specifications for:
   a) The construction of the four on-street car parking bays within the Magellan Road verge adjacent to the subject site; and
   b) The relocation of the existing pedestrian crossing.

All costs associated with these works shall be at the applicants/landowners cost, and shall be completed prior to the occupation of the development, to the satisfaction of the City.

8. Kerbing shall be installed, and the verge to be reinstated with landscaping to the satisfaction of the City for the on-street car parking bays which are being removed within the Magellan Road verge adjacent to the subject site. All costs associated with these works shall be at the applicants/landowner cost, and shall be completed prior to the occupation of the development, to the satisfaction of the City.

9. Stormwater and any other water run-off from buildings or paved areas shall be collected and retained on site.

10. The applicant shall undertake adequate measures to minimise any impacts of dust and sand drift from the site.

11. All waste shall be stored within the designated bin enclosure and shall be collected from the site by a private contractor at the cost of the owner/occupier and the bin enclosure shall be designed and constructed in accordance with the City's specifications.

12. Detailed landscaping plans, for the subject site and adjacent road verges shall be lodged for approval by the City prior to the occupation of the development. Planting and installation shall be in accordance with the approved landscaping and reticulation plans, and thereafter maintained by the landowner to the City's satisfaction.

13. All earthworks shall be contained on-site and not encroach onto any adjoining road reserves. Any damage to the road reserves shall be made good, at the cost of the applicant/landowner.

14. Lighting shall be installed to pathways, areas of communal open space, and car parking areas, prior to the development being occupied, to the satisfaction of the City. Lighting shall be directed internally to avoid overspill to nearby lots.

15. Storage areas, plant and equipment shall be screened from view from streets, public places and adjacent properties.

16. A construction management plan shall be submitted for approval prior to the commencement of works, to the satisfaction of the City. This plan is to detail how construction will be managed to minimise disruption in the area and shall include:

    a. The delivery of and delivery times for material and equipment to the site;
    b. Storage of materials and equipment on site;
    c. Parking arrangements for contractors and sub-contractors;
    d. The impact on traffic movement;
    e. Construction and delivery times;
    f. Works proposed within the road reserve for the construction of on-street car parking and the relocation of the pedestrian crossing; and
    g. Any other matter required by the City.

Advice Notes

1. This is a planning approval only and is issued under District Planning Scheme No. 2 and the Metropolitan Region Scheme. It is the applicant's responsibility to comply with all other applicable legislation and obtain all the required approval, licence and permits prior to commencement of the development.

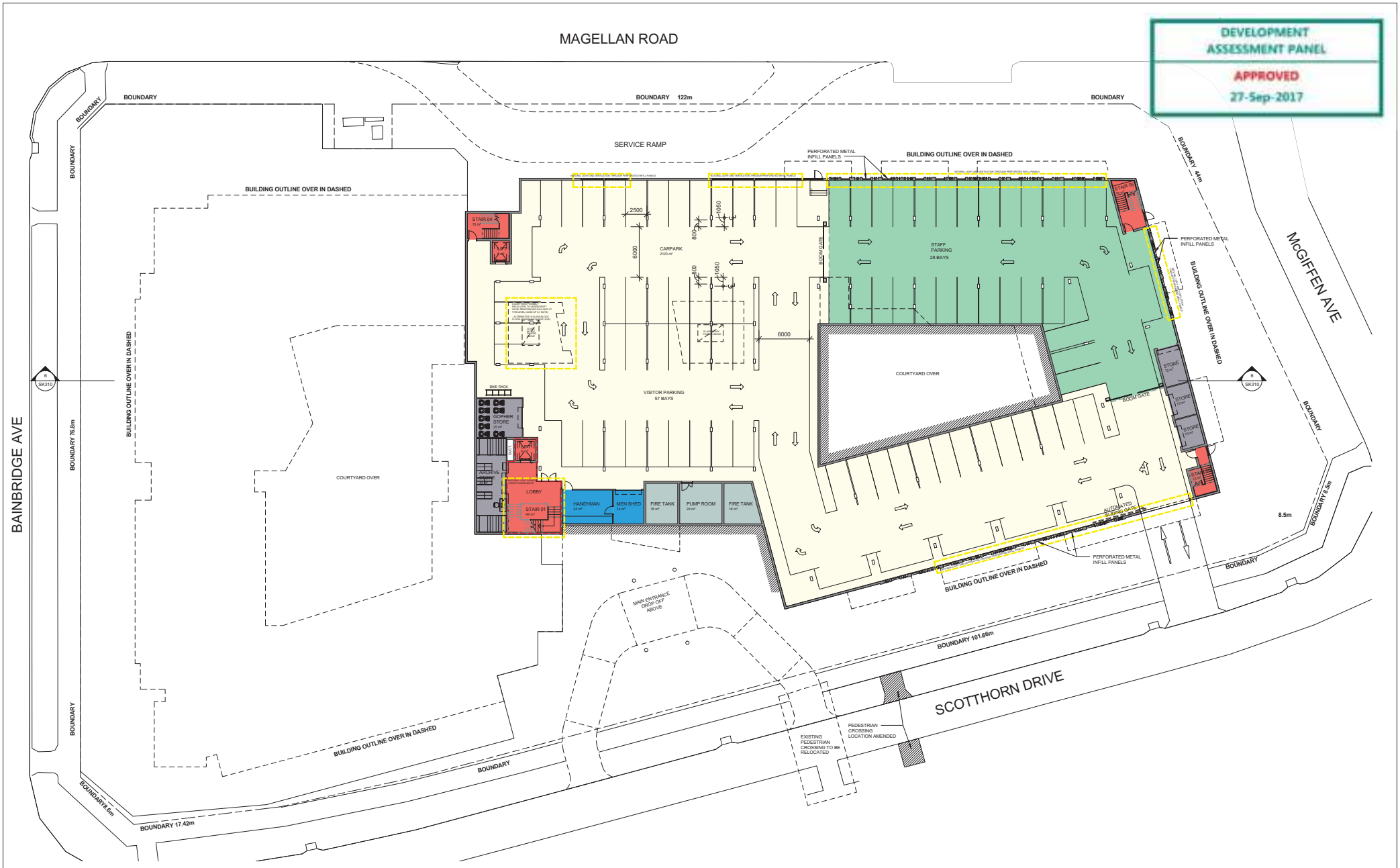
2. Adequate measure to minimise any impacts of dust and sand drift from the site include all requirements as stipulated within the Department of Environmental Regulations *'A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated site remediation and other related activities'.*

3. Where an approval has lapsed, no development must be carried out without further approval of the Metro North-West Joint Development Assessment Panel having first been sought and obtained.

4. If an applicant or owner is aggrieved by this determination there is a right of review by the State Administrative Tribunal in accordance with the *Planning and Development Act 2005* Part 14. An application must be made within 28 days of the determination.

5. In relation to Condition 5, markings shall identify a legible and continuous pedestrian movement network between car parking, lifts and stairwells.

Where an approval has so lapsed, no development shall be carried out without further approval having first been sought and obtained, unless the applicant has applied and obtained Development Assessment Panel approval to extend the approval term under regulation 17(1)(a) of the *Planning and Development (Development Assessment Panels) Regulations 2011*.



AEGIS Shorehaven
Alkimos
SCHEMATIC DESIGN
UNDERCROFT

peter hunt architect
08 JUNE 2017
SK201

0m 4m 8m 12m 16m 20m

SCALE 1:200 @ A1

REVISIONS

1. BASEMENT CARPARK ENTRY REALIGNED TO GIVE CLEARANCE TO SIDE ENTRY PIT.
2. 4 RELOCATED CAR BAYS.
3. SERVICE DRIVEWAY REDESIGNED TO INCREASE THE OBSERVATION ANGLE FOR EXITING VEHICLES.

SITE CONFIGURATION

TOTAL SITE AREA		: 9891m²
134 BED BUILDING SITE COVER AREA		**: 5300m²**
BUILDING GROSS FLOOR AREA OVER 2 LEVELS (excl. carparking bays)	=	APPROX. 8000m²
	=>	APPROX. 60m² PER BED
UNDERCROFT CARPARK	: 3600m²	: 85 CAR BAYS
GROUND FLOOR (incl. 160m² of Balconies)	: 5300m²	: 84 BEDS
FIRST FLOOR (incl. 250m² of Balconies)	: 2700m²	: 50 BEDS
TOTAL		**: 134 BEDS**

4 NEW OFF-STREET CAR BAYS

LANDSCAPE REQUIRED = 8% OF THE SITE AREA
LANDSCAPE PROVIDED = APPROX. 3000m² (30%)
(NOT INCLUDING HARD LANDSCAPING)

AEGIS Shorehaven
Alkimos
SCHEMATIC DESIGN
GROUND FLOOR PLAN

peter hunt architect
14 AUGUST 2017 **SK202**

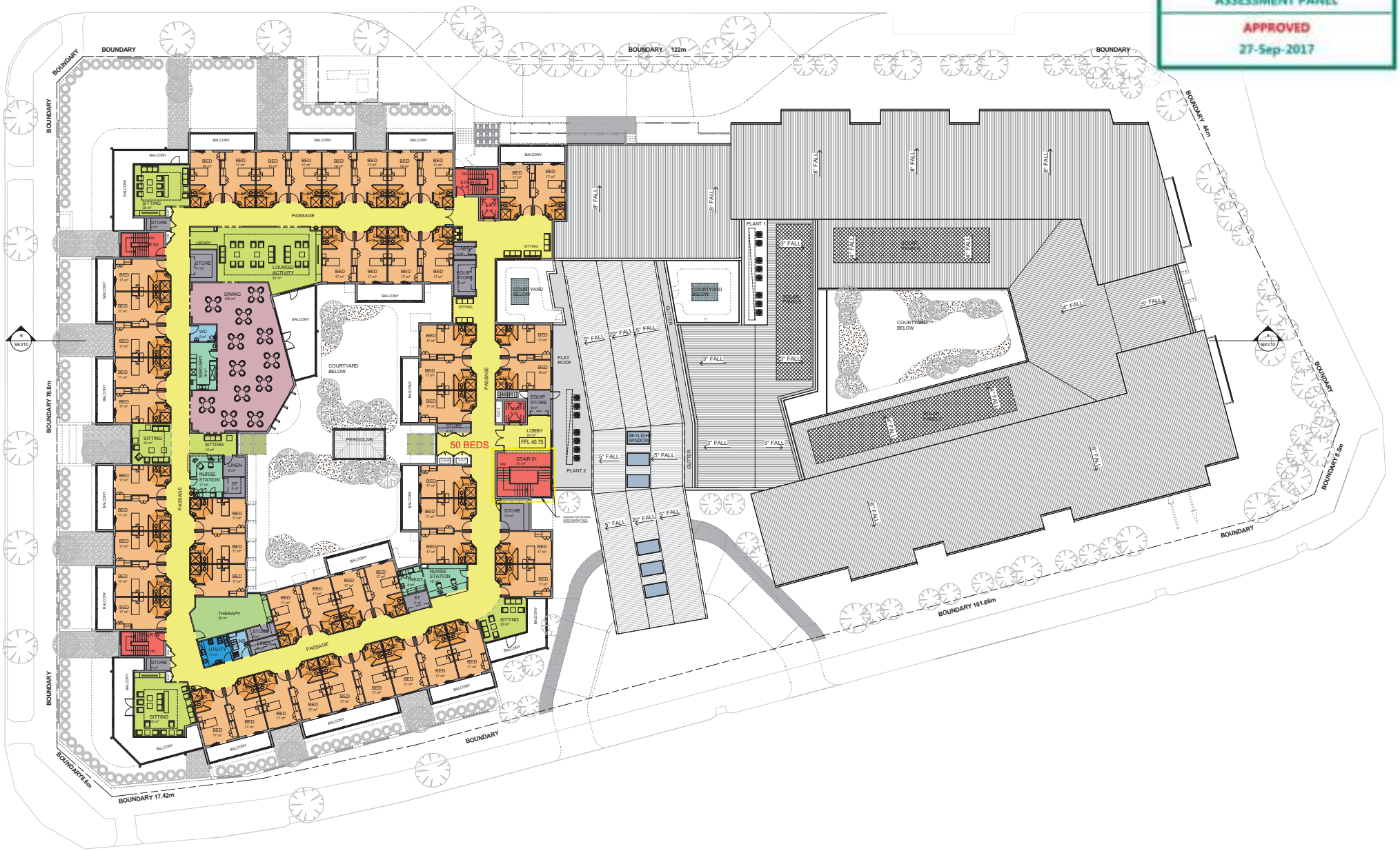
0m 4m 8m 12m 16m 20m

SCALE 1:200 @ A1

DEVELOPMENT ASSESSMENT PANEL

APPROVED

27-Sep-2017



aegis

AEGIS Shorehaven
Alkimos
SCHEMATIC DESIGN
LEVEL 1 FLOOR PLAN

peter hunt architect
08 JUNE 2017 **SK203**

0m 4m 8m 12m 16m 20m

SCALE 1:200 @ A1

DEVELOPMENT ASSESSMENT PANEL

APPROVED

27-Sep-2017

aegis aged care group

AEGIS Shorehaven
Alkimos
SCHEMATIC DESIGN
ROOF PLAN

peter hunt architect
08 JUNE 2017 **SK204**

0m 4m 8m 12m 16m 20m

SCALE 1:200 @ A1

EXTERNAL MATERIALS, FINISHES & COLOURS

EXTERNAL WALLING:
- RENDERED AND PAINTED MANSORY ("SAND" & "DRIFTWOOD GREY")
- FEATURE WALL PANELS IN HARDITEX BOARDED FINISH "SAND" IN COLOR.
- "CEDAR" TIMBER LININGS TO WALLS & CEILINGS SOFFIT OF BALCONIES

ROOFING:
- COLORBOND SURFMIST METAL DECK ROOF SHEETING ON STEEL ROOF FRAMING
- ROOF CAPPING AND FLASHING TO MATCH ROOF SHEETING
- PAINTED WHITE TO EAVES SOFFITS & FASCIAS

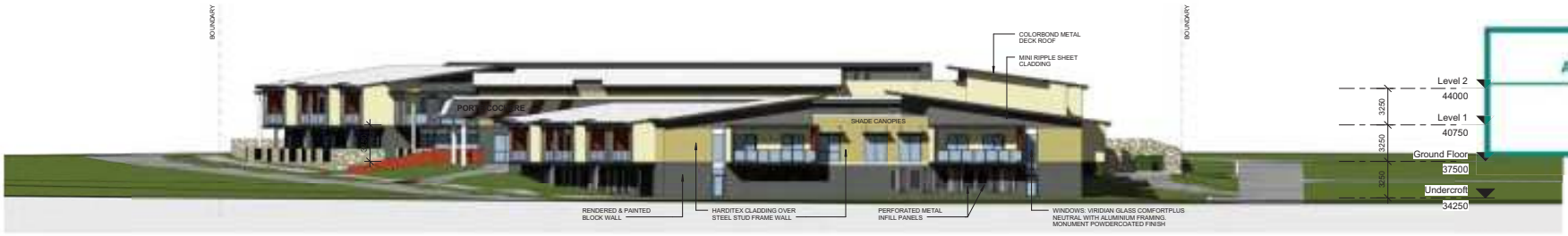
DOORS TYPICAL:
- FIRE RATED SOLID CORE DOORS AND FRAMES
- ALUMINIUM FRAMED GLAZED SLIDING DOORS. MONUMENT POWDERCOAT FINISH
- AUTOMATIC STEEL FRAMED SLIDING SECURITY GATE WITH POWDERCOATED FINISH TO UNDERCROFT CARPARK ENTRY

WINDOWS TYPICAL:
- VIRIDIAN GLASS COMFORTPLUS NEUTRAL WITH ALUMINIUM FRAMED WINDOWS. MONUMENT POWDERCOAT FINISH

BALUSTRADING:
- STAINLESS STEEL BALUSTRADES/ HANDRAILS WITH CLEAR GLASS INFILL PANELS

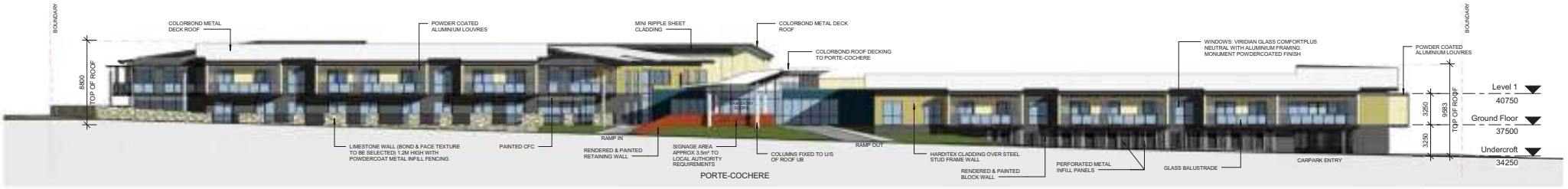
FENCING:
- LIMESTONE WALL (BOND & FACE TEXTURE TO BE SELECTED) 1.2M HIGH WITH POWDERCOAT METAL PALISADE INFILL FENCING

ELEVATION 2 - BAINBRIDGE AVE
SCALE 1 : 200



ELEVATION 4 - McGIFFEN AVE
SCALE 1 : 200

ELEVATION 3 - MAGELLAN ROAD
SCALE 1 : 200



ELEVATION 1 - SCOTTHORN DRIVE (FRONT)
SCALE 1 : 200

DEVELOPMENT ASSESSMENT PANEL
APPROVED
27-Sep-2017

aegis aged care group

AEGIS Shorehaven
Alkimos
SCHEMATIC DESIGN
ELEVATIONS

peter hunt architect
08 JUNE 2017 **SK301**

0m 4m 8m 12m 16m 20m
SCALE 1:200 @ A1

EXTERNAL MATERIALS, FINISHES & COLOURS

EXTERNAL WALLING:
- RENDERED AND PAINTED MASONRY ("SAND" & "DRIFTWOOD GREY")
- FEATURE WALL PANELS IN HARDITEX BOARDED FINISH "SAND" IN COLOR
- "CEDAR" TIMBER LININGS TO SHELLS & CEILINGS SOFFIT OF BALCONIES

ROOFING:
- COLORBOND SURFMIST METAL DECK ROOF SHEETING ON STEEL ROOF FRAMING
- ROOF CAPPING AND FLASHING TO MATCH ROOF SHEETING
- PAINTED WHITE TO EAVES SOFFITS & FASCIAS

DOORS TYPICAL:
- FIRE RATED SOLID CORE DOORS AND FRAMES
- ALUMINIUM FRAMED GLAZED SLIDING DOORS
- MONUMENT POWDERCOAT FINISH
- AUTOMATIC STEEL FRAMED SLIDING SECURITY GATE WITH POWDERCOATED FINISH TO UNDERCROFT CARPARK ENTRY

WINDOWS TYPICAL:
- VIRIDIAN GLASS COMFORTPLUS NEUTRAL 6/75 ALUMINIUM FRAMED WINDOWS. MONUMENT POWDERCOAT FINISH

BALUSTRADING:
- STAINLESS STEEL BALUSTRADED HANDRAILS WITH CLEAR GLASS INFILL PANELS

FENCING:
- LIMESTONE WALL (BOND & FACE TEXTURE TO BE SELECTED) 1.2M HIGH WITH POWDERCOAT METAL PALISADE INFILL FENCING

DEVELOPMENT ASSESSMENT PANEL

APPROVED

27-Sep-2017

ELEVATION 2 - BAINBRIDGE AVE

SCALE 1 : 200

ELEVATION 4 - McGIFFEN AVE

SCALE 1 : 200

ELEVATION 3 - MAGELLAN ROAD

SCALE 1 : 200

ELEVATION 1 - SCOTTHORN DRIVE (FRONT)

SCALE 1 : 200

aegis aged care group

AEGIS Shorehaven

Alkimos

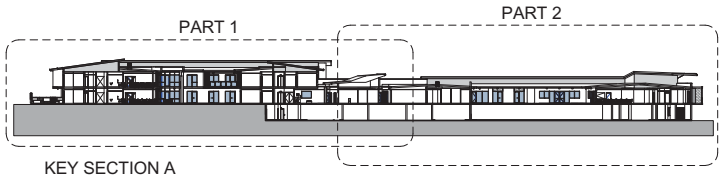
SCHEMATIC DESIGN

ELEVATIONS

peter hunt architect

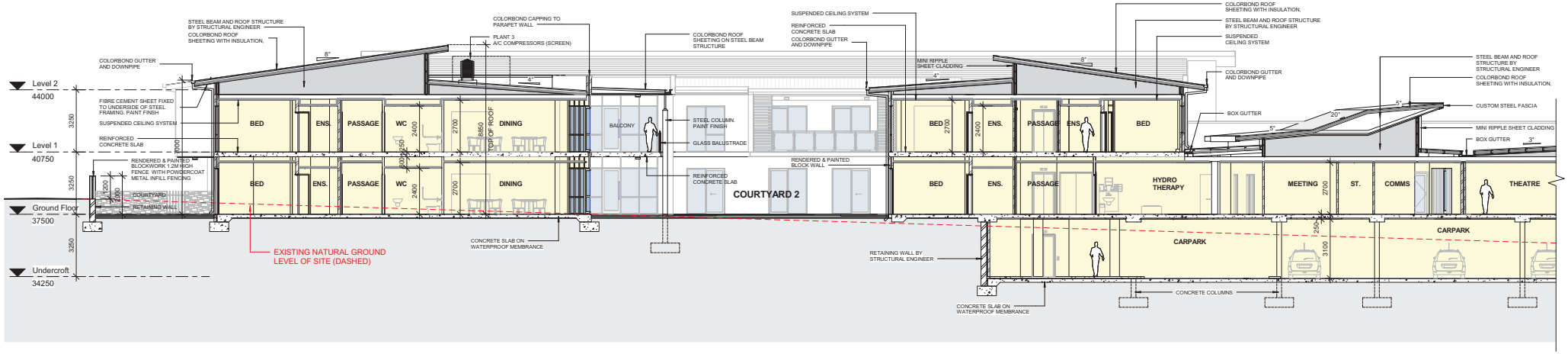
08 JUNE 2017 **SK301**

SCALE 1:200 @ A1

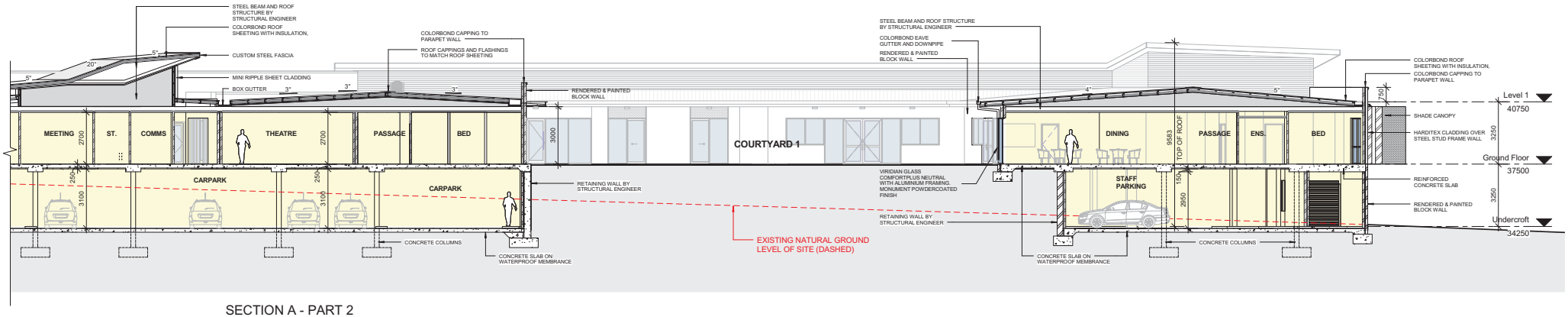


KEY SECTION A
SCALE 1 : 500

DEVELOPMENT ASSESSMENT PANEL
APPROVED
27-Sep-2017



SECTION A - PART 1
SCALE 1 : 100



SECTION A - PART 2
SCALE 1 : 100

aegis

AEGIS Shorehaven
Alkimos
SCHEMATIC DESIGN
SECTIONS

peter hunt architect
02 JUNE 2017 **SK310**

0m 2m 4m 6m 8m 10m
SCALE 1:100 @ A1

DEVELOPMENT ASSESSMENT PANEL

APPROVED

27-Sep-2017

- EXPOSED AGGREGATE PAVING WITH FEATURE EDGE BEAM
- FEATURE PAVING UNITS
- RAISED STEEL PLANTERS
- TURF
- GARDEN BED - LOW HEIGHT PLANTING
- GARDEN BED - MEDIUM HEIGHT PLANTING
- COOK ISLAND PINE ACCENT TREES
- STREET TREES
- COURTYARD TREES
- DECIDUOUS FEATURE TREES
- FLOWERING FEATURE TREES

1. MAIN ENTRY & PORTE COCHERE
2. DINING COURTYARD
3. FEATURE SHADE STRUCTURE
4. COMMUNITY GARDEN / VEGGIE GARDEN
5. EVENT / RELAXATION LAWN
6. INTERNAL CONTEMPLATIVE COURTYARDS
7. RESIDENT COURTYARDS
8. CHILDREN PLAY SPACE & ARTIFICIAL TURF

AEGIS - SHOREHAVEN

PREPARED FOR PETER HUNT ARCHITECT

LANDSCAPE CONCEPT PLAN

JOB NO. 1706701 C1.101 REV A JUN 2017

1:250 @ A1

0 2.5 5 10 15 25m

LANDSCAPE ARCHITECTS
414 ROKEBY RD SUBIACO WA 6008
T: (08) 9388 9566 E: mail@plane.com.au
LANDSPACE PTY LTD ACN 056 538 679

PLAN E

DEVELOPMENT ASSESSMENT PANEL
APPROVED
27-Sep-2017


CHILDRENS PLAYSPACE


FRUIT TREES TO COURTYARDS


OPEN LAWN AREAS


FLOWERING TREE SPECIES FOR SHADE (MANCHURIAN PEAR)


DECIDUOUS SHADE TREES TO COURTYARDS (HONEYLOCUST)


FEATURE POTS TO KEY AREAS


RAISED PLANTERS & WATER FEATURES TO LIGHT WELLS


TEXTURAL COASTAL PLANTING TO PERIMETER AREAS


ALFRESCO SEATING OUTSIDE DINING ROOMS


RAISED GARDEN TO COMMUNITY SPACE


SEASONAL FLOWERING PLANTS TO ENTRIES

AEGIS - SHOREHAVEN
PREPARED FOR PETER HUNT ARCHITECT

LANDSCAPE CONCEPT - MOOD BOARD

JOB NO. 17067-01 C3.101 REV A JUNE 2017

LANDSCAPE ARCHITECTS
414 ROKEBY RD SUBIACO WA 6008
T: (08) 9388 9566 E: mail@plane.com.au
LANDSPACE PTY LTD ACN 056 538 679

PLAN E

INTERNAL COURTYARD ACCENT SHRUBS & GROUNDCOVERS (low flowering plants/ cut flower garden)

Agapanthus 'Baby Pete'
Alstroemia 'Camilla'
Anigozanthos 'Bush Diamond'
Anigozanthos 'Bush Pearl'
Brachyscombe 'Mauve Delight'
Hemerocallis 'Stella Bella'
Liriope 'Amethyst'
Salvia 'Victoria White'
Salvia 'Victoria Blue'

INTERNAL COURTYARD (colourful and textural succulents for large pots)

Cotyledon 'Silver Waves'
Dichondra 'Silver Falls'
Echevaria 'Blue Curl'
Echevaria 'Chocolate
Echevaria 'Mauna Loa'
Kalanchoe 'Quicksilver'
Sedum 'Jellly Beans'
Sedum 'Little Gem'

DEVELOPMENT ASSESSMENT PANEL
APPROVED
27-Sep-2017

INTERNAL COURTYARD (sensory shrub planting up tp 1.2m high)

Agapanthus 'Tinkerbell'
Arctotis 'Cherry Velvet'
Arctotis 'Safari Mist'
Cineraria 'Silver Dust'
Lavandula 'Mis Donnington'
Tulbaghia violacea variegata

COURTYARD DECIDUOUS FEATURE TREES

Citrus 'Meyer Lemon'
Gleditsia 'Sundburst'
Jacaranda mimosifolia
Lagestroemia indica
Magnolia grandiflora 'Exmouth'
Magnolia 'Kay Parris'
Pyrus 'Red Spire'
Pyrus ussuriensis

PERIMETER FEATURE TREES

Banksia menzeisii
Hakea laurina
Eucalyptus caesia

PERIMETER SHRUBS & GROUNDCOVERS

Adenanthos cuneatus 'Coral Carpet'
Anigozanthos 'Kangaroo Paw'
Calothamnus quadrifidus
Dianella 'Cassa Blue'
Eremophilla glabra 'Kalbarri Carpet'
Hemiandra pungens 'Snake Bush'
Hibbertia scandens 'Snake Vine'
Ricinocarpus pinifolius 'Wedding Bush'
Scaevola 'Blueprint'
Templetonia retusa
Westringia 'Blue Gem'
Westringia 'Grey Box'

STREET TREES

Araucaria columnaris
Eucalyptus toruata

AEGIS - SHOREHAVEN
PREPARED FOR PETER HUNT ARCHITECT

LANDSCAPE CONCEPT - PLANTING PALETTE

JOB NO. 17067-01 C3.102 REV A JUL 2017

LANDSCAPE ARCHITECTS
414 ROKEBY RD SUBIACO WA 6008
T: (08) 9388 9566 E: mail@plane.com.au
LANDSPACE PTY LTD ACN 056 538 679

PLAN E

Appendix F - Vehicular access technical requirements (WAPC 2017)

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

* Refer to E3.2 Public roads: Trafficable surface

ecological AUSTRALIA

ISO 14001 Environmental Management

AS/NZS 4801:2001 Occupational Health and Safety Management

ISO 9001 Quality Management

HEAD OFFICE
Suite 2, Level 3
668-672 Old Princes Highway
Sutherland NSW 2232
T 02 8536 8600
F 02 9542 5622

CANBERRA
Level 2
11 London Circuit
Canberra ACT 2601
T 02 6103 0145
F 02 9542 5622

COFFS HARBOUR
22 Ray McCarthy Drive
Coffs Harbour NSW 2450
T 02 6651 5484
F 02 6651 6890

PERTH
Level 1, Bishop's See
235 St Georges Terrace
Perth WA 6000
T 08 9227 1070
F 02 9542 5622

MELBOURNE
Level 1, 436 Johnston St
Abbotsford, VIC 3076
T 1300 646 131

SYDNEY
Suite 1, Level 1
101 Sussex Street
Sydney NSW 2000
T 02 8536 8650
F 02 9542 5622

NEWCASTLE
Suites 28 & 29, Level 7
19 Bolton Street
Newcastle NSW 2300
T 02 4910 0125
F 02 9542 5622

ARMIDALE
92 Taylor Street
Armidale NSW 2350
T 02 8081 2685
F 02 9542 5622

WOLLONGONG
Suite 204, Level 2
62 Moore Street
Austinmer NSW 2515
T 02 4201 2200
F 02 9542 5622

BRISBANE
Suite 1, Level 3
471 Adelaide Street
Brisbane QLD 4000
T 07 3503 7192

HUSKISSON
Unit 1, 51 Owen Street
Huskisson NSW 2540
T 02 4201 2264
F 02 9542 5622

NAROOMA
5/20 Canty Street
Narooma NSW 2546
T 02 4302 1266
F 02 9542 5622

MUDGEE
Unit 1, Level 1
79 Market Street
Mudgee NSW 2850
T 02 4302 1234
F 02 6372 9230

GOSFORD
Suite 5, Baker One
1-5 Baker Street
Gosford NSW 2250
T 02 4302 1221
F 02 9542 5622

ADELAIDE
2, 70 Pirie Street
Adelaide SA 5000
T 08 8470 6650
F 02 9542 5622

1300 646 131
www.ecoaus.com.au

Appendix B Database Search Results

NatureMap Species Report

Created By Guest user on 05/08/2019

Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	115° 41' 22" E,31° 35' 56" S
Buffer	5km
Group By	Conservation Status

Conservation Status	Species	Records
Non-conservation taxon	444	2094
Priority 1	1	3
Priority 3	3	15
Priority 4	7	431
Protected under international agreement	9	13
Rare or likely to become extinct	6	143
TOTAL	**470**	**2699**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Rare or likely to become extinct					
1.	24784	*Calidris ferruginea (Curlew Sandpiper)*		T	
2.	24790	*Calidris tenuirostris (Great Knot)*		T	
3.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)*		T	
4.	48400	*Calyptorhynchus sp. (white-tailed black cockatoo)*		T	
5.	24092	*Dasyurus geoffroii (Chuditch, Western Quoll)*		T	
6.	25346	*Dermochelys coriacea (Leatherback Turtle)*		T	
Protected under international agreement					
7.	25736	*Arenaria interpres (Ruddy Turnstone)*		IA	
8.	24779	*Calidris acuminata (Sharp-tailed Sandpiper)*		IA	
9.	25738	*Calidris canutus (Red Knot, knot)*		IA	
10.	24788	*Calidris ruficollis (Red-necked Stint)*		IA	
11.	24789	*Calidris subminuta (Long-toed Stint)*		IA	
12.	30932	*Limosa lapponica (Bar-tailed Godwit)*		IA	
13.	24383	*Pluvialis squatarola (Grey Plover)*		IA	
14.	48597	*Thalasseus bergii (Crested Tern)*		IA	
15.	24808	*Tringa nebularia (Common Greenshank, greenshank)*		IA	
Priority 1					
16.	40801	*Leucopogon maritimus*		P1	
Priority 3					
17.	11461	*Hibbertia spicata subsp. leptotheca*		P3	
18.	48935	*Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)*		P3	
19.	13127	*Stylidium maritimum*		P3	
Priority 4					
20.	11388	*Conostylis pauciflora subsp. euryrhipis*		P4	
21.	11657	*Conostylis pauciflora subsp. pauciflora*		P4	
22.	24215	*Hydromys chrysogaster (Water-rat, Rakali)*		P4	
23.	48588	*Isoodon fusciventer (Quenda, southwestern brown bandicoot)*		P4	
24.	48022	*Notamacropus irma (Western Brush Wallaby)*		P4	
25.	24328	*Oxyura australis (Blue-billed Duck)*		P4	
26.	33992	*Synemon gratiosa (Graceful Sunmoth)*		P4	
Non-conservation taxon					
27.	3282	*Acacia cyclops (Coastal Wattle)*			
28.	3374	*Acacia huegelii*			
29.	3409	*Acacia lasiocarpa (Panjang)*			
30.	3502	*Acacia pulchella (Prickly Moses)*			
31.	15482	*Acacia pulchella var. goadbyi*			
32.	3525	*Acacia rostellifera (Summer-scented Wattle)*			
33.	3527	*Acacia saligna (Orange Wattle, Kudjong)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
34.	3584	*Acacia truncata*			
35.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
36.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
37.	24262	*Acanthiza inornata (Western Thornbill)*			
38.	1208	*Acanthocarpus preissii*			
39.	24560	*Acanthorhynchus superciliosus (Western Spinebill)*			
40.	25535	*Accipiter cirrocephalus (Collared Sparrowhawk)*			
41.	25536	*Accipiter fasciatus (Brown Goshawk)*			
42.		*Acercella falcipes*			
43.	25755	*Acrocephalus australis (Australian Reed Warbler)*			
44.	184	*Aira caryophyllea (Silvery Hairgrass)*	Y		
45.		*Akamptogonus novarae*			
46.	1728	*Allocasuarina fraseriana (Sheoak, Kondil)*			
47.	1732	*Allocasuarina humilis (Dwarf Sheoak)*			
48.		*Amblyomma triguttatum*			
49.	24310	*Anas castanea (Chestnut Teal)*			
50.	24312	*Anas gracilis (Grey Teal)*			
51.	24315	*Anas rhynchotis (Australasian Shoveler)*			
52.	24316	*Anas superciliosa (Pacific Black Duck)*			
53.	6314	*Andersonia lehmanniana*			
54.	47414	*Anhinga novaehollandiae (Australasian Darter)*			
55.	1409	*Anigozanthos humilis (Catspaw)*			
56.	1411	*Anigozanthos manglesii (Mangles Kangaroo Paw, Kurulbrang)*			
57.	11261	*Anigozanthos manglesii subsp. manglesii*			
58.	44629	*Anilios australis*			
59.	11725	*Anthocercis ilicifolia subsp. ilicifolia*			
60.	6949	*Anthocercis littorea (Yellow Tailflower)*			
61.	24561	*Anthochaera carunculata (Red Wattlebird)*			
62.	24562	*Anthochaera lunulata (Western Little Wattlebird)*			
63.	24991	*Aprasia repens (Sand-plain Worm-lizard)*			
64.	24285	*Aquila audax (Wedge-tailed Eagle)*			
65.		*Araneus cyphoxis*			
66.	41324	*Ardea modesta (great egret, white egret)*			
67.	24340	*Ardea novaehollandiae (White-faced Heron)*			
68.	24341	*Ardea pacifica (White-necked Heron)*			
69.	1264	*Arnocrinum preissii*			
70.	24353	*Artamus cyanopterus (Dusky Woodswallow)*			
71.	24356	*Artamus personatus (Masked Woodswallow)*			
72.	226	*Arundo donax (Giant Reed)*	Y		
73.	1201	*Asparagus officinalis (Asparagus)*	Y		
74.	6331	*Astroloma microcalyx (Native Cranberry)*			
75.		*Australomimetus djuka*			
76.		*Austrochthonius australis*			
77.	24318	*Aythya australis (Hardhead)*			
78.		*Baiami tegenarioides*			
79.	1800	*Banksia attenuata (Slender Banksia, Piara)*			
80.	1819	*Banksia grandis (Bull Banksia, Pulgarla)*			
81.	1834	*Banksia menziesii (Firewood Banksia)*			
82.	32076	*Banksia sessilis (Parrot Bush, Pudjak)*			
83.		*Barnardius zonarius*			
84.	743	*Baumea juncea (Bare Twigrush)*			
85.	48503	*Betaphycus speciosus*			
86.	25788	*Billardiera fraseri (Elegant Pronaya)*			
87.	24319	*Biziura lobata (Musk Duck)*			
88.	24251	*Bos taurus (European Cattle)*	Y		
89.	3710	*Bossiaea eriocarpa (Common Brown Pea)*			
90.	7878	*Brachyscome iberidifolia*			
91.	244	*Briza maxima (Blowfly Grass)*	Y		
92.	253	*Bromus rubens (Red Brome)*	Y		
93.	25714	*Cacatua pastinator (Western Long-billed Corella)*			
94.	25715	*Cacatua roseicapilla (Galah)*			
95.	25716	*Cacatua sanguinea (Little Corella)*			
96.	24729	*Cacatua tenuirostris (Eastern Long-billed Corella)*	Y		
97.	25598	*Cacomantis flabelliformis (Fan-tailed Cuckoo)*			
98.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
99.	1592	*Caladenia flava (Cowslip Orchid)*			
100.	5426	*Calothamnus quadrifidus (One-sided Bottlebrush, Kwowdjard)*			
101.	5429	*Calothamnus sanguineus (Silky-leaved Blood flower, Pindak)*			
102.	24254	*Camelus dromedarius (Dromedary, Camel)*	Y		
103.	48920	*Canis familiaris (Dog, Dingo)*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
104.	2798	*Carpobrotus virescens (Coastal Pigface, Kolboko, Bain)*			
105.	2951	*Cassytha flava (Dodder Laurel)*			
106.	2957	*Cassytha racemosa (Dodder Laurel)*			
107.	11799	*Cassytha racemosa forma racemosa*			
108.	26562	*Caulerpa fergusonii*			
109.	46993	*Caulerpa taxifolia var. distichophylla*			
110.	1125	*Centrolepis drummondiana*			
111.	2889	*Cerastium glomeratum (Mouse Ear Chickweed)*	Y		
112.	5498	*Chamelaucium uncinatum (Geraldton Wax)*			
113.	24377	*Charadrius ruficapillus (Red-capped Plover)*			
114.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
115.	47909	*Cheramoeca leucosterna (White-backed Swallow)*			
116.		*Cherax quinquecarinatus*			
117.	24980	*Christinus marmoratus (Marbled Gecko)*			
118.		*Chroicocephalus novaehollandiae*			
119.	24288	*Circus approximans (Swamp Harrier)*			
120.	24289	*Circus assimilis (Spotted Harrier)*			
121.	2929	*Clematis pubescens (Common Clematis)*			
122.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
123.	24399	*Columba livia (Domestic Pigeon)*	Y		
124.	4552	*Comesperma confertum*			
125.	1876	*Conospermum incurvum (Plume Smokebush)*			
126.	15611	*Conospermum stoechadis subsp. stoechadis (Common Smokebush)*			
127.	1885	*Conospermum triplinervium (Tree Smokebush)*			
128.	6348	*Conostephium pendulum (Pearl Flower)*			
129.	1418	*Conostylis aculeata (Prickly Conostylis)*			
130.	1427	*Conostylis candicans (Grey Cottonhead)*			
131.	1443	*Conostylis pauciflora (Dawesville Conostylis)*			
132.	1454	*Conostylis setigera (Bristly Cottonhead)*			
133.	20074	*Conyza sumatrensis*	Y		
134.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
135.	25592	*Corvus coronoides (Australian Raven)*			
136.	11283	*Corynotheca micrantha var. micrantha*			
137.	24671	*Coturnix pectoralis (Stubble Quail)*			
138.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
139.	25595	*Cracticus tibicen (Australian Magpie)*			
140.	25596	*Cracticus torquatus (Grey Butcherbird)*			
141.	42009	*Craspedia sp. Yalgorup National Park (G.J. Keighery 14449)*			
142.	3137	*Crassula colorata (Dense Stonecrop)*			
143.	11709	*Crassula colorata var. acuminata*			
144.	4802	*Cryptandra mutila*			
145.	4809	*Cryptandra pungens*			
146.	30893	*Cryptoblepharus buchananii*			
147.	25020	*Cryptoblepharus plagiocephalus*			
148.	25027	*Ctenotus australis*			
149.	25039	*Ctenotus fallens*			
150.	25825	*Cucurbita pepo*	Y		
151.	25087	*Cyclodomorphus celatus (Western Slender Blue-tongue)*			
152.	24322	*Cygnus atratus (Black Swan)*			
153.	30901	*Dacelo novaeguineae (Laughing Kookaburra)*	Y		
154.	7451	*Dampiera lavandulacea*			
155.	7454	*Dampiera linearis (Common Dampiera)*			
156.		*Daphnia carinata*			
157.	25673	*Daphoenositta chrysoptera (Varied Sittella)*			
158.	6218	*Daucus glochidiatus (Australian Carrot)*			
159.	3805	*Daviesia decurrens (Prickly Bitter-pea)*			
160.	3807	*Daviesia divaricata (Marno)*			
161.	30906	*Delma concinna (Javelin Legless Lizard)*			
162.	25766	*Delma fraseri (Fraser's Legless Lizard)*			
163.	24999	*Delma grayii*			
164.	25468	*Demansia psammophis (Yellow-faced Whipsnake)*			
165.	1259	*Dianella revoluta (Blueberry Lily)*			
166.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
167.	1287	*Dichopogon capillipes*			
168.	26763	*Dictyomenia tridens*			
169.	26767	*Dictyopteris plagiogramma*			
170.	7054	*Dischisma arenarium*	Y		
171.	24470	*Dromaius novaehollandiae (Emu)*			
172.	3095	*Drosera erythrorhiza (Red Ink Sundew)*			
173.	3118	*Drosera pallida (Pale Rainbow)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
174.	25251	*Echiopsis curta (Bardick)*			
175.	25096	*Egernia kingii (King's Skink)*			
176.	25100	*Egernia napoleonis*			
177.		*Egretta garzetta*			
178.		*Egretta novaehollandiae*			
179.	347	*Ehrharta calycina (Perennial Veldt Grass)*	Y		
180.		*Elanus axillaris*			
181.	1643	*Elythranthera brunonis (Purple Enamel Orchid)*			
182.	1644	*Elythranthera emarginata (Pink Enamel Orchid)*			
183.		*Eolophus roseicapillus*			
184.	24652	*Eopsaltria georgiana (White-breasted Robin)*			
185.	11570	*Epilobium billardiereanum subsp. billardiereanum (Smooth Willow Herb)*			
186.	6132	*Epilobium ciliatum*	Y		
187.	6133	*Epilobium hirtigerum (Hairy Willow Herb)*			
188.	14289	*Epilobium tetragonum subsp. tetragonum*	Y		
189.	376	*Eragrostis curvula (African Lovegrass)*	Y		
190.	7215	*Eremophila glabra (Tar Bush)*			
191.	1646	*Eriochilus dilatatus (White Bunny Orchid)*			
192.	4336	*Erodium moschatum (Musky Crowfoot)*	Y		
193.	24379	*Erythrogonys cinctus (Red-kneed Dotterel)*			
194.	5615	*Eucalyptus decipiens (Limestone Marlock, Moit)*			
195.	5649	*Eucalyptus foecunda (Narrow-leaved Red Mallee)*			
196.	5659	*Eucalyptus gomphocephala (Tuart, Duart)*			
197.	5708	*Eucalyptus marginata (Jarrah, Djara)*			
198.	13541	*Eucalyptus petrensis*			
199.	13511	*Eucalyptus rudis subsp. rudis*			
200.	5790	*Eucalyptus todtiana (Coastal Blackbutt)*			
201.	25621	*Falco berigora (Brown Falcon)*			
202.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
203.	25623	*Falco longipennis (Australian Hobby)*			
204.	24041	*Felis catus (Cat)*	Y		
205.	20216	*Ficinia nodosa (Knotted Club Rush)*			
206.	25727	*Fulica atra (Eurasian Coot)*			
207.	24761	*Fulica atra subsp. australis (Eurasian Coot)*			
208.	907	*Gahnia trifida (Coast Saw-sedge)*			
209.	25729	*Gallinula tenebrosa (Dusky Moorhen)*			
210.	24763	*Gallinula tenebrosa subsp. tenebrosa (Dusky Moorhen)*			
211.	42314	*Gavicalis virescens (Singing Honeyeater)*			
212.	25530	*Gerygone fusca (Western Gerygone)*			
213.	1520	*Gladiolus caryophyllaceus (Wild Gladiolus)*	Y		
214.	33620	*Glischrocaryon angustifolium*			
215.	3945	*Gompholobium aristatum*			
216.	3957	*Gompholobium tomentosum (Hairy Yellow Pea)*			
217.	6161	*Gonocarpus pithyoides*			
218.	24443	*Grallina cyanoleuca (Magpie-lark)*			
219.	2119	*Grevillea vestita*			
220.	2784	*Gyrostemon ramulosus (Corkybark)*			
221.	24487	*Haematopus longirostris (Pied Oystercatcher)*			
222.	1468	*Haemodorum laxum*			
223.	2146	*Hakea costata (Ribbed Hakea)*			
224.	2175	*Hakea lissocarpha (Honey Bush)*			
225.	2197	*Hakea prostrata (Harsh Hakea)*			
226.	2203	*Hakea ruscifolia (Candle Hakea)*			
227.	2214	*Hakea trifurcata (Two-leaf Hakea)*			
228.	2216	*Hakea varia (Variable-leaved Hakea)*			
229.	24295	*Haliastur sphenurus (Whistling Kite)*			
230.	24689	*Halobaena caerulea (Blue Petrel)*			
231.	3961	*Hardenbergia comptoniana (Native Wisteria)*			
232.	25410	*Heleioporus eyrei (Moaning Frog)*			
233.	3016	*Heliophila pusilla*	Y		
234.	6839	*Hemiandra pungens (Snakebush)*			
235.	25119	*Hemiergis quadrilineata*			
236.	26915	*Hennedya crispa*			
237.	5112	*Hibbertia aurea*			
238.	5135	*Hibbertia hypericoides (Yellow Buttercups)*			
239.	45534	*Hibbertia hypericoides subsp. hypericoides*			
240.	5162	*Hibbertia racemosa (Stalked Guinea Flower)*			
241.	47965	*Hieraaetus morphnoides (Little Eagle)*			
242.	25734	*Himantopus himantopus (Black-winged Stilt)*			
243.	24491	*Hirundo neoxena (Welcome Swallow)*			

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244.	6222	*Homalosciadium homalocarpum*			
245.	12859	*Hovea trisperma var. trisperma*			
246.	5216	*Hybanthus calycinus (Wild Violet)*			
247.	12007	*Hybanthus floribundus subsp. floribundus*			
248.	6232	*Hydrocotyle hispidula*			
249.	8086	*Hypochaeris glabra (Smooth Catsear)*	Y		
250.	9352	*Hypochaeris radicata (Flat Weed, Cats-ear)*	Y		
251.	917	*Isolepis marginata (Coarse Club-rush)*			
252.	3992	*Isotropis cuneifolia (Granny Bonnets)*			
253.	14783	*Jacksonia calcicola*			
254.	4029	*Jacksonia sternbergiana (Stinkwood, Kapur)*			
255.	4044	*Kennedia prostrata (Scarlet Runner)*			
256.	15498	*Kunzea glabrescens (Spearwood)*			
257.	16091	*Lachenalia bulbifera*	Y		
258.	29046	*Lactuca serriola forma serriola*	Y		
259.	18585	*Lagenophora huegelii*			
260.	24511	*Larus novaehollandiae subsp. novaehollandiae (Silver Gull)*			
261.	26998	*Laurencia brongniartii*			
262.	7580	*Lechenaultia linarioides (Yellow Leschenaultia)*			
263.	925	*Lepidosperma angustatum*			
264.	42742	*Lepidosperma calcicola*			
265.	933	*Lepidosperma gladiatum (Coast Sword-sedge, Kerbin)*			
266.	940	*Lepidosperma pubisquameum*			
267.	944	*Lepidosperma scabrum*			
268.	945	*Lepidosperma squamatum*			
269.	946	*Lepidosperma striatum*			
270.	2352	*Leptomeria preissiana*			
271.	17852	*Leptorhynchos scaber (Lanky Buttons)*			
272.	5857	*Leptospermum spinescens*			
273.	25133	*Lerista elegans*			
274.	25165	*Lerista praepedita*			
275.	6405	*Leucopogon insularis*			
276.	6427	*Leucopogon parviflorus (Coast Beard-heath)*			
277.	6434	*Leucopogon polymorphus*			
278.	6436	*Leucopogon propinquus*			
279.	25005	*Lialis burtonis*			
280.	25661	*Lichmera indistincta (Brown Honeyeater)*			
281.	25415	*Limnodynastes dorsalis (Western Banjo Frog)*			
282.	4362	*Linum marginale (Wild Flax)*			
283.	7408	*Lobelia tenuior (Slender Lobelia)*			
284.	27044	*Lobospira bicuspidata*			
285.	6515	*Logania vaginalis (White Spray)*			
286.	1223	*Lomandra caespitosa (Tufted Mat Rush)*			
287.	1228	*Lomandra hermaphrodita*			
288.	1231	*Lomandra maritima*			
289.	1239	*Lomandra preissii*			
290.	1246	*Lomandra suaveolens*			
291.	24132	*Macropus fuliginosus (Western Grey Kangaroo)*			
292.	85	*Macrozamia riedlei (Zamia, Djiridji)*			
293.	24326	*Malacorhynchus membranaceus (Pink-eared Duck)*			
294.	25651	*Malurus lamberti (Variegated Fairy-wren)*			
295.	24544	*Malurus lamberti subsp. assimilis (Variegated Fairy-wren)*			
296.	25652	*Malurus leucopterus (White-winged Fairy-wren)*			
297.	25654	*Malurus splendens (Splendid Fairy-wren)*			
298.	25758	*Megalurus gramineus (Little Grassbird)*			
299.	5920	*Melaleuca huegelii (Chenille Honeymyrtle)*			
300.	13271	*Melaleuca huegelii subsp. huegelii*			
301.	5959	*Melaleuca rhaphiophylla (Swamp Paperbark)*			
302.	18598	*Melaleuca systena*			
303.	4085	*Melilotus indicus*	Y		
304.	25184	*Menetia greyii*			
305.	15994	*Mentha x piperita var. citrata*	Y		
306.	24598	*Merops ornatus (Rainbow Bee-eater)*			
307.	955	*Mesomelaena pseudostygia*			
308.		*Microcarbo melanoleucos*			
309.	485	*Microlaena stipoides (Weeping Grass)*			
310.	8106	*Millotia tenuifolia (Soft Millotia)*			
311.	25240	*Morelia spilota subsp. imbricata (Carpet Python)*			
312.	25192	*Morethia obscura*			
313.	24223	*Mus musculus (House Mouse)*	Y		

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314.	7289	*Myoporum caprarioides (Slender Myoporum)*			
315.	25248	*Neelaps bimaculatus (Black-naped Snake)*			
316.	24738	*Neophema elegans (Elegant Parrot)*			
317.	2401	*Nuytsia floribunda (Christmas Tree, Mudja)*			
318.	25564	*Nycticorax caledonicus (Rufous Night Heron)*			
319.		*Occiperipatoides gilesii*			
320.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
321.	8127	*Olearia axillaris (Coastal Daisybush)*			
322.	7348	*Opercularia hispidula (Hispid Stinkweed)*			
323.	18255	*Opercularia vaginata (Dog Weed)*			
324.	27108	*Osmundaria spiralis*			
325.	34016	*Ovis aries (Sheep)*			
326.	4356	*Oxalis pes-caprae (Soursob)*	Y		
327.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
328.	33988	*Pachysaga munggai (cricket)*			
329.	25253	*Parasuta gouldii*			
330.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
331.	25682	*Pardalotus striatus (Striated Pardalote)*			
332.	532	*Paspalum urvillei (Vasey Grass)*	Y		
333.	5225	*Passiflora filamentosa*	Y		
334.	4343	*Pelargonium capitatum (Rose Pelargonium)*	Y		
335.	4346	*Pelargonium littorale*			
336.	24648	*Pelecanus conspicillatus (Australian Pelican)*			
337.	13911	*Persicaria decipiens*			
338.	2258	*Persoonia comata*			
339.	2273	*Persoonia saccata (Snottygobble)*			
340.	48061	*Petrochelidon nigricans (Tree Martin)*			
341.	48066	*Petroica boodang (Scarlet Robin)*			
342.	20368	*Petrophile axillaris*			
343.	2286	*Petrophile brevifolia*			
344.	2299	*Petrophile linearis (Pixie Mops)*			
345.	2301	*Petrophile macrostachya*			
346.	2309	*Petrophile serruriae*			
347.	19825	*Petrorhagia dubia*	Y		
348.	25697	*Phalacrocorax carbo (Great Cormorant)*			
349.	25698	*Phalacrocorax melanoleucos (Little Pied Cormorant)*			
350.	24667	*Phalacrocorax sulcirostris (Little Black Cormorant)*			
351.	25699	*Phalacrocorax varius (Pied Cormorant)*			
352.	24409	*Phaps chalcoptera (Common Bronzewing)*			
353.	25587	*Phaps elegans (Brush Bronzewing)*			
354.	48071	*Phylidonyris niger (White-cheeked Honeyeater)*			
355.	24596	*Phylidonyris novaehollandiae (New Holland Honeyeater)*			
356.	16177	*Phyllangium paradoxum*			
357.	4675	*Phyllanthus calycinus (False Boronia)*			
358.	2793	*Phytolacca octandra (Red Ink Plant)*	Y		
359.	5251	*Pimelea imbricata*			
360.		*Pinkfloydia harveii*			
361.	24841	*Platalea flavipes (Yellow-billed Spoonbill)*			
362.	25721	*Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)*			
363.	27155	*Plocamium cartilagineum*			
364.	573	*Poa drummondiana (Knotted Poa)*			
365.	25703	*Podargus strigoides (Tawny Frogmouth)*			
366.	25704	*Podiceps cristatus (Great Crested Grebe)*			
367.	8184	*Podotheca gnaphalioides (Golden Long-heads)*			
368.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
369.	24907	*Pogona minor subsp. minor (Dwarf Bearded Dragon)*			
370.	24681	*Poliocephalus poliocephalus (Hoary-headed Grebe)*			
371.	4691	*Poranthera microphylla (Small Poranthera)*			
372.	25731	*Porphyrio porphyrio (Purple Swamphen)*			
373.	24767	*Porphyrio porphyrio subsp. bellus (Purple Swamphen)*			
374.	24770	*Porzana pusilla subsp. palustris (Baillon's Crake)*			
375.	24771	*Porzana tabuensis (Spotless Crake)*			
376.		*Protochelifer cavernarum*			
377.	25261	*Pseudechis australis (Mulga Snake)*			
378.	8189	*Pseudognaphalium luteoalbum (Jersey Cudweed)*			
379.	25511	*Pseudonaja affinis (Dugite)*			
380.		*Pterostylis aff. nana*			
381.	15426	*Pterostylis aspera*			
382.	1693	*Pterostylis recurva (Jug Orchid)*			
383.	12217	*Pterostylis sanguinea*			

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384.	1698	*Pterostylis vittata (Banded Greenhood)*			
385.	2718	*Ptilotus drummondii (Narrowleaf Mulla Mulla)*			
386.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			
387.	40841	*Ptilotus stirlingii subsp. stirlingii*			
388.		*Purpureicephalus spurius*			
389.	25008	*Pygopus lepidopodus (Common Scaly Foot)*			
390.	2933	*Ranunculus muricatus (Sharp Buttercup)*	Y		
391.	24243	*Rattus fuscipes (Western Bush Rat)*			
392.	24776	*Recurvirostra novaehollandiae (Red-necked Avocet)*			
393.	2578	*Rhagodia baccata (Berry Saltbush)*			
394.	11341	*Rhagodia baccata subsp. baccata*			
395.	48096	*Rhipidura albiscapa (Grey Fantail)*			
396.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
397.	15035	*Rhodanthe corymbosa*			
398.	2433	*Rumex crispus (Curled Dock)*	Y		
399.	2440	*Rumex pulcher (Fiddle Dock)*	Y		
400.	2906	*Sagina apetala (Annual Pearlwort)*	Y		
401.	2356	*Santalum acuminatum (Quandong, Warnga)*			
402.	7606	*Scaevola crassifolia (Thick-leaved Fan-flower)*			
403.	13181	*Scaevola repens var. angustifolia*			
404.	13182	*Scaevola repens var. repens*			
405.	7647	*Scaevola thesioides*			
406.	997	*Schoenus lanatus (Woolly Bog-rush)*			
407.	25534	*Sericornis frontalis (White-browed Scrubwren)*			
408.	2909	*Silene gallica (French Catchfly)*	Y		
409.	25266	*Simoselaps bertholdi (Jan's Banded Snake)*			
410.	30948	*Smicrornis brevirostris (Weebill)*			
411.	6988	*Solanum americanum (Glossy Nightshade)*	Y		
412.	8231	*Sonchus oleraceus (Common Sowthistle)*	Y		
413.	1312	*Sowerbaea laxiflora (Purple Tassels)*			
414.	4828	*Spyridium globulosum (Basket Bush)*			
415.	9069	*Stackhousia huegelii*			
416.	4733	*Stackhousia monogyna*			
417.	48423	*Stauromenia lacerata*			
418.	2918	*Stellaria media (Chickweed)*	Y		
419.	3080	*Stenopetalum robustum*			
420.	24522	*Sterna bergii (Crested Tern)*			
421.	2316	*Stirlingia latifolia (Blueboy)*			
422.	25589	*Streptopelia chinensis (Spotted Turtle-Dove)*	Y		
423.	25590	*Streptopelia senegalensis (Laughing Turtle-Dove)*	Y		
424.	25518	*Strophurus spinigerus*			
425.	24942	*Strophurus spinigerus subsp. spinigerus*			
426.	7693	*Stylidium brunonianum (Pink Fountain Triggerplant)*			
427.	7694	*Stylidium bulbiferum (Circus Triggerplant)*			
428.	7696	*Stylidium calcaratum (Book Triggerplant)*			
429.	25837	*Stylidium purpureum (Purple Fountain Triggerplant)*			
430.	7785	*Stylidium repens (Matted Triggerplant)*			
431.	20521	*Stylidium rigidulum*			
432.	7798	*Stylidium schoenoides (Cow Kicks)*			
433.	15532	*Synaphea spinulosa subsp. spinulosa*			
434.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
435.	24682	*Tachybaptus novaehollandiae subsp. novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
436.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
437.		*Taphiassa robertsi*			
438.	24167	*Tarsipes rostratus (Honey Possum, Noolbenger)*			
439.	4256	*Templetonia retusa (Cockies Tongues)*			
440.	24845	*Threskiornis spinicollis (Straw-necked Ibis)*			
441.	1319	*Thysanotus arenarius*			
442.	1343	*Thysanotus patersonii*			
443.	25519	*Tiliqua rugosa*			
444.	25204	*Tiliqua rugosa subsp. aspera*			
445.	25207	*Tiliqua rugosa subsp. rugosa*			
446.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
447.	6280	*Trachymene pilosa (Native Parsnip)*			
448.	25723	*Trichoglossus haematodus (Rainbow Lorikeet)*			
449.	1361	*Tricoryne elatior (Yellow Autumn Lily)*			
450.	4292	*Trifolium campestre (Hop Clover)*	Y		
451.	152	*Triglochin trichophora*			
452.	11665	*Trymalium ledifolium var. ledifolium*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
453.	33418	*Trymalium odoratissimum subsp. odoratissimum*			
454.	24851	*Turnix velox (Little Button-quail)*			
455.	27347	*Tylotus obtusatus*			
456.	8255	*Ursinia anthemoides (Ursinia)*	Y		
457.	7125	*Utricularia australis*			
458.	24386	*Vanellus tricolor (Banded Lapwing)*			
459.	15725	*Verbesina encelioides*	Y		
460.	7110	*Veronica distans*			
461.	4325	*Viminaria juncea (Swishbush, Koweda)*			
462.	17042	*Vitis vinifera*	Y		
463.	24040	*Vulpes vulpes (Red Fox)*	Y		
464.	724	*Vulpia myuros (Rat's Tail Fescue)*	Y		
465.	33101	*Vulpia myuros forma myuros*	Y		
466.	7384	*Wahlenbergia capensis (Cape Bluebell)*	Y		
467.	8282	*Waitzia suaveolens (Fragrant Waitzia)*			
468.	1256	*Xanthorrhoea preissii (Grass tree, Palga)*			
469.	44861	*Xerochrysum macranthum*			
470.	25765	*Zosterops lateralis (Grey-breasted White-eye, Silvereye)*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

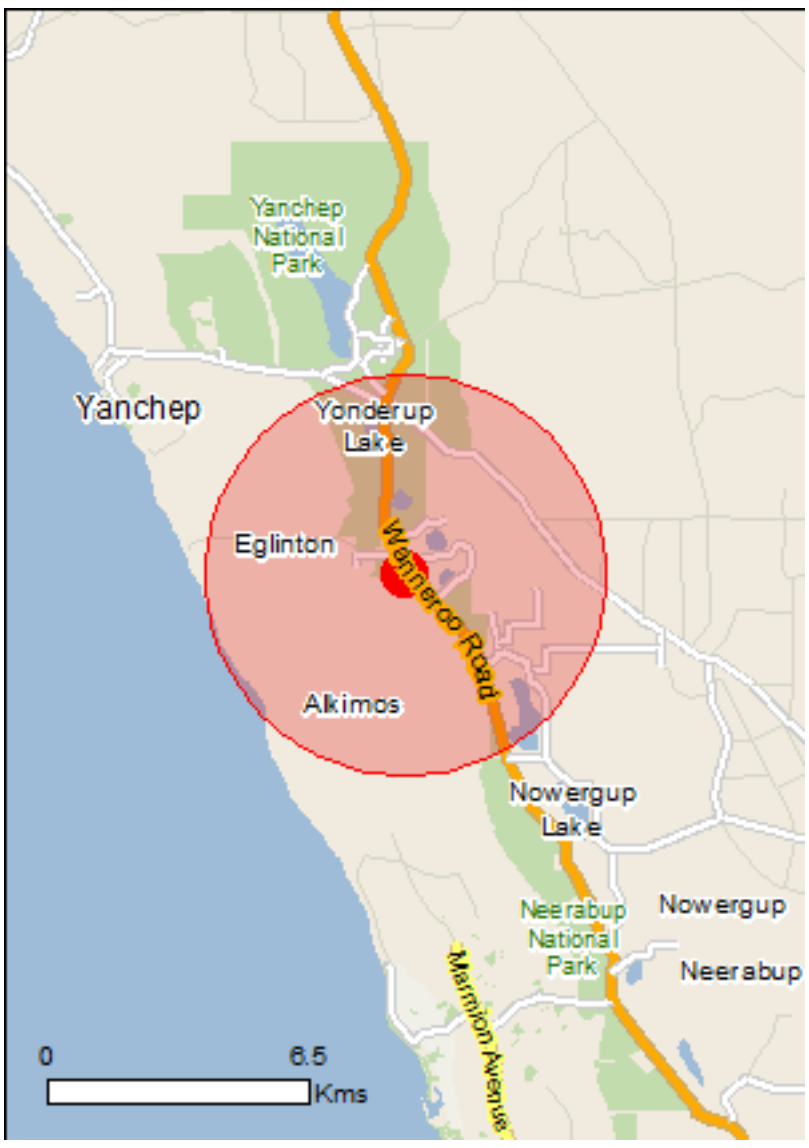
This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 08/07/19 13:48:20

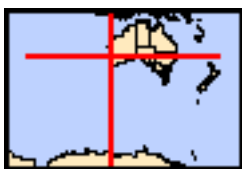
Summary
Details
Matters of NES
Other Matters Protected by the EPBC Act
Extra Information
Caveat
Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

Buffer: 5.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	43
Listed Migratory Species:	42

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	67
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	33
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Aquatic Root Mat Community in Caves of the Swan Coastal Plain	Endangered	Community known to occur within area
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area
Sedgelands in Holocene dune swales of the southern Swan Coastal Plain	Endangered	Community known to occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Status	Type of Presence
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri		
Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri		
Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli		
Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica		
Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebetria fusca		
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Rostratula australis		
Australian Painted-snipe, Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche cauta cauta		
Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta steadi		
White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris		
Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Insects		
Hesperocolletes douglasi		
Douglas' Broad-headed Bee, Rottnest Bee [66734]	Critically Endangered	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Dasyurus geoffroii		
Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Breeding known to occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
[Neophoca cinerea](#) Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat known to occur within area
Plants		
[Diuris micrantha](#) Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
[Diuris purdiei](#) Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat may occur within area
[Drakaea elastica](#) Glossy-leafed Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
[Eleocharis keigheryi](#) Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area
[Eucalyptus argutifolia](#) Yanchep Mallee, Wabling Hill Mallee [24263]	Vulnerable	Species or species habitat likely to occur within area
[Lepidosperma rostratum](#) Beaked Lepidosperma [14152]	Endangered	Species or species habitat likely to occur within area
Reptiles		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Sharks		
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
[Rhincodon typus](#) Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		

Name	Threatened	Type of Presence
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area

Name	Threatened	Type of Presence
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat may occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Sterna anaethetus Bridled Tern [814]		Foraging, feeding or related behaviour likely to occur within area
Sterna caspia Caspian Tern [59467]		Foraging, feeding or related behaviour known to occur within area
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta Tasmanian Shy Albatross [89224]	Vulnerable*	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse		Species or species

Name	Threatened	Type of Presence
[66235]		habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat known to occur within area
Reptiles		
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans [Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species

Name	Status	Type of Presence
		habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Neerabup	WA
Yanchep	WA

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Mammals		

Name	Status	Type of Presence
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands	[Resource Information]
Name	State
Loch McNess System	WA

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-31.58907 115.69419

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

Department of the Environment
GPO Box 787
Canberra ACT 2601 Australia
+61 2 6274 1111

Appendix C Assessment of Conservation Significant within 5 km of the Project Area

Table 6.1 below provides an assessment of the conservation significant flora species identified in the Naturemap and PMST database searches.

Table 6.1: Conservation significant and priority flora with potential to occur within a 5km radius of the Project Area

Species (Common name)	Conservation status		Description and preferred habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Acacia benthamii	Not listed	Priority 2	A shrub growing to 1m, producing yellow flowers. This species grows on sand and limestone breakaways.	**Unlikely** Habitat for this species does not occur within the Project Area
Baeckea sp. Limestone (N. Gibson & M.N. Lyons 1425)	Not listed	Priority 1	A woody shrub. This species grows on sand and limestone breakaways.	**Unlikely** Habitat for this species does not occur within the Project Area
Conostylis pauciflora subsp. euryrhipis	Not listed	Priority 4	A perennial grass-like herb growing 0.06-0.18 m high occurring on white or grey sand in consolidated dunes	**Unlikely** Historical clearing has degraded the Project Area and the herbaceous understory consists of weeds
Conostylis pauciflora subsp. pauciflora	Not listed	Priority 4	A perennial grass-like herb growing 0.06-0.18 m high occurring on grey sand on Limestone hillslopes and consolidated dunes	**Unlikely** Historical clearing has degraded the Project Area and the herbaceous understory consists of weeds
Diuris micrantha (Dwarf Bee Orchid)	Vulnerable	Vulnerable	The Dwarf Bee Orchid is found in small populations, on dark, grey to blackish, sandy clay-loam substrates in winter wet depressions or swamps. The bases of the flowering plants are often covered with shallow water	**Unlikely** Habitat for this species does not occur within the Project Area
Diuris purdiei (Purdie's Donkey Orchid)	Endangered	Endangered	The Purdie's Donkey Orchid grows on sand to sandy clay soils, in areas subject to winter inundation, and amongst native sedges and dense heath	**Unlikely** Habitat for this species does not occur within the Project Area
Drakaea elastica (Glossy-leafed Hammer Orchid)	Endangered	Critically Endangered	The species grows on bare patches of sand within otherwise dense vegetation in low-lying areas alongside winter-wet swamps, typically in banksia (Banksia menziesii, B. attenuata and B. ilicifolia) woodland or spearwood (Kunzea glabrescens) thicket vegetation.	**Unlikely** Habitat for this species does not occur within the Project Area

Species (Common name)	Conservation status		Description and preferred habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Eleocharis keigheryi (Keighery's Eleocharis)	Vulnerable	Vulnerable	Keighery's Eleocharis grows in small clumps in a substrate of clay or sandy loam. This species is emergent in freshwater creeks, and transient waterbodies such as drainage lines and claypans in water to approximately 15 cm deep.	**Unlikely** Habitat for this species does not occur within the Project Area
Eucalyptus argutifolia (Yanchep Mallee)	Vulnerable	Vulnerable	Yanchep Mallee grows on slopes or gullies close to the summits of limestone ridges, where soils are shallow, well drained and grey with outcrops of limestone.	**Unlikely** Habitat for this species does not occur within the Project Area
Hibbertia spicata subsp. leptotheca	Not listed	Priority 3	A small shrub growing 0.2-0.5 m high occurring on sand near coastal limestone ridges, outcrops and cliffs	**Unlikely** Historical clearing has degraded the Project Area and the herbaceous understory consists of weeds
Lepidosperma rostratum	Endangered	Endangered	A grass-like herb growing to 0.5 m high occurring on brown peaty sand and clay	**Unlikely** Habitat for this species does not occur within the Project Area
Lepidium pseudotasmanicum	Not listed	Priority 4	An annual or biennial herb growing 0.2-0.4 m high occurring on loamy sand	**Unlikely** Habitat for this species does not occur within the Project Area
Leucopogon maritimus	Not listed	Priority 1	*Leucopogon maritimus* occurs in deep, calcareous sands, on the mid to upper slopes of dunes or in shallow sand over limestone, but avoiding the thicker vegetation of the swales.	**Possible** however, the Project Area is flat and does not contain slopes, nor is it adjacent to slopes
Leucopogon sp. Yanchep (M. Hislop 1986)	Not listed	Priority 3	*Leucopogon sp. Yanchep* occurs on Light grey-yellow sand and brown loam amongst limestone ridges and granite on breakaways valley slopes and low hills	**Possible** however, the Project Area is flat and does not contain slopes, nor is it adjacent to slopes
Sphaerolobium calcicola	Not listed	Priority 3	*Sphaerolobium calcicole* occurs on white-gray sand, sandy clay over limestone and black peaty sandy clay amongst tall dunes, winter-wet flats, interdunal swamps and low-lying areas	**Possible, the** Project Area contains suitable habitat

Species (Common name)	Conservation status		Description and preferred habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Stylidium maritimum	Not listed	Priority 3	*Stylidium maritimum* occurs on sand over limestone and dune slopes and flats amongst coastal heath and shrubland and Banksia Woodland	**Unlikely** The vegetation complex required for this species does not occur within the Project Area

Table 6.2 below, provides and assessment of the conservation significant fauna species identified in the Naturemap and PMST database searches. A number of marine and migratory species were returned from the database searches, however, given that the Project Area is not set within a marine environment, they are not considered likely to occur and were removed from further consideration.

Table 6.2: Conservation significant and priority fauna with potential to occur within a 5km radius of the Project Area

Species (Common name)	Conservation status		Preferred Habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Anous tenuirostris subsp. melanops (Australian Lesser Noddy)	Vulnerable	Endangered	The Australian lesser noddy is only known to breed in Houtman Abrolhos, where colonies on Pelsaert (four colonies, total area 3.0 ha), Wooded (0.7 ha) and Morley (0.8 ha) Islands occupy a total of 5 ha.	**Unlikely** Habitat for this species does not occur within the Project Area
Austroconops mcmillani (McMillan's biting midge (Swan Coastal Plain), biting midge (southwest)	Not listed	Priority 2		
Bettongia penicillata subsp. Ogilbyi (Woylie, Brush-tailed Bettong)	Endangered	Critically Endangered	The remnant subpopulations in south-western Australia inhabit woodlands and adjacent heaths with a dense understorey of shrubs, particularly *Gastrolobium* spp. (poison pea). Woylies rest during the day in a well-concealed nest built over a shallow depression. The nest is most commonly built using long strands of grasses, but other material such as strips of bark are also used (in the forest) or dried seagrass and/or spinifex (in arid coastal areas)	**Unlikely** Habitat for this species does not occur within the Project Area
Botaurus poiciloptilus (Australasian Bittern)	Endangered	Endangered	The Australasian Bittern occurs mainly in freshwater wetlands and, rarely, in estuaries or tidal wetlands. It favours wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water.	**Unlikely** Habitat for this species does not occur within the Project Area
Calidris canutus (Red Knot)	Endangered	Endangered	The Red Knot is common in all the main suitable habitats around the coast of Australia, but is less numerous in south-west Australia than elsewhere	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat

Species (Common name)	Conservation status		Preferred Habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Calidris ferruginea (Curlew Sandpiper)	Critically Endangered	Critically Endangered	In Australia, curlew sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Calidris tenuirostris (Great Knot)	Critically Endangered	Critically Endangered	In Australia, great knots prefer sheltered coastal habitats with large intertidal mudflats or sandflats. This includes inlets, bays, harbours, estuaries and lagoons. They are occasionally found on exposed reefs or rock platforms, shorelines with mangrove vegetation, ponds in saltworks, at swamps near the coast, salt lakes and non-tidal lagoons.	**Unlikely** Habitat for this species does not occur within the Project Area
Calyptorhynchus banksii subsp. Naso (Forest Red-tailed Black Cockatoo)	Vulnerable	Vulnerable	The Forest Red-tailed Black Cockatoo inhabits the dense *Eucalyptus marginata* (Jarrah), E. *diversicolor* (Karri) and *Corymbia calophylla* (Marri) forests receiving more than 600mm of annual average rainfall	**Unlikely** Habitat for this species does not occur within the Project Area
Calyptorhynchus latirostris (Carnaby's Cockatoo)	Endangered	Endangered	During the non-breeding season (January to July) the majority of the birds migrate to the higher rainfall coastal regions of their range in the midwest coast, Swan Coastal Plain and south coast. Some non-breeding birds remain in non-breeding areas all year round. These areas have better natural water sources over the summer period and historically had extensive areas of proteaceous woodlands and shrublands to provide feed for young birds, and good resources for adult birds to stock up for the following breeding season.	**Confirmed** Habitat for this species does not occur within the Project Area; however, suitable foraging habitat occurs directly adjacent to the Project Area
Diomedea amsterdamensis (Amsterdam Albatross)	Endangered	Endangered	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Diomedea epomophora (Southern Royal Albatross)	Vulnerable	Endangered	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat

Species (Common name)	Conservation status		Preferred Habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Diomedea exulans (Wandering Albatross)	Vulnerable	Endangered	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Diomedea sanfordi (Northern Royal Albatross)	Endangered	Endangered	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Hesperocolletes douglasi (Douglas' Broad-headed Bee)	Critically Endangered	Critically Endangered	Foraging habitat can be described as an area of almost pristine Banksia woodland but dissected by roads and firebreaks; however the use of the habitat is unknown in regards to breeding and it is unknown if there is some other particular habitat requirement that may restrict the species to a specific area or location, i.e. they may require a specific substrate for making burrows, and the substrate may be associated with seasonal wetlands or seasonally inundated areas.	**Possible** Banksia Woodland occurs directly adjacent to the Project Area.
Hurleya sp. (Crystal Cave Crangonyctoid, cave shrimp)	Not listed	Critically Endangered	This species is found in permanently inundated cave systems	**Unlikely** Habitat for this species does not occur within the Project Area
Hydromys chrysogaster (Water-rat, Rakali)	Not listed	Priority 4	Australian water-rats occupy a wide variety of natural and man-made freshwater habitats, including swamps, ponds, lakes, rivers, creeks and irrigation channels. They also inhabit brackish estuaries and sheltered ocean beaches. They most commonly occur where dense vegetation provides cover on or near the banks – thick grass, low-growing shrubs or reed beds.	**Unlikely** Habitat for this species does not occur within the Project Area
Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)	Vulnerable	Priority 3	The shield-back spider typically inhabits clay soils of eucalypt woodlands and acacia vegetation, and relies heavily on leaf-litter and twigs to build its burrow	**Unlikely** Soil habitat for this species does not occur within the Project Area

Species (Common name)	Conservation status		Preferred Habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Isoodon fusciventer (Quenda, southwestern brown bandicoot)	Not listed	Priority 4	Scrubby, often swampy, vegetation with dense cover up to 1 m high, often feeds in adjacent forest and woodland that is burnt on a regular basis and in areas of pasture and cropland lying close to dense cover. Populations inhabiting Jarrah and Wandoo forests are usually associated with watercourses. Quenda will thrive in more open habitat subject to introduced predator control. On the Swan Coastal Plain, Quenda are often associated with wetlands.	**Possible** Suitable habitat occurs within the Project Area, however, a fauna survey of the larger area in 2016 identified no signs of this species and concluded that this species is likely to be a, infrequent visitor to the Project Area (Strategen 2016)
Leipoa ocellate (Malleefowl)	Vulnerable	Vulnerable	This species is found in woodlands and shrublands dominated by mallee and or acacia.	**Unlikely** suitable habitat occurs adjacent to the Project Area, however, fauna surveys conducted in 2016 did not identify any occurrence within the Project Area or evidence of their presence within the larger area.
Limosa lapponica bauera (Bar-tailed Godwit)	Vulnerable	Migratory Species	The bar-tailed godwit occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats	**Unlikely** Habitat for this species does not occur within the Project Area
Limosa lapponica menzbieri (Northern Siberian Bar-tailed Godwit)	Critically Endangered	Migratory Species	The bar-tailed godwit occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats	**Unlikely** Habitat for this species does not occur within the Project Area
Macronectes giganteus (Southern Giant Petrel)	Endangered	Endangered	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat

Species (Common name)	Conservation status		Preferred Habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Macronectes halli (Northern Giant Petrel)	Vulnerable	Vulnerable	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Neelaps calonotos (Black-striped snake)	Not listed	Priority 3	*Neelaps calonotos* occurs on sandy soils	**Possible,** suitable habitat occurs within the Project Area
Notamacropus Irma (Western Brush Wallaby)	Not listed	Priority 4	The western brush wallaby's optimum habitat is open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland, and is uncommon in karri forest.	**Unlikely** some suitable habitat occurs adjacent to the Project Area, however, fauna surveys conducted in 2016 did not identify any occurrence within the Project Area or evidence of their presence within the larger area.
Numenius madagascariensis (Eastern Curlew)	Critically Endangered	Critically Endangered	During the non-breeding season in Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (Zosteraceae). Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Oxyura australis (Blue-billed duck)	Not listed	Priority 4	Oxyura australis occupies permanent deep water-bodies in southern Australia	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Pachyptila turtur subantarctica (Fairy Prion)	Vulnerable	Migratory Species	The burrows of fairy prions (southern) are usually in crevices, in hollows beneath cushions of *Colobanthus muscoides* (a perennial herb that can form dense mats or cushions up to 250 mm thick and sometimes up to several metres across) or in burrows in peaty soil held together by a thick cover of *Cotula plumosa* (a short, feathery perennial herb).	**Unlikely** Habitat for this species does not occur within the Project Area

Species (Common name)	Conservation status		Preferred Habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Phoebetria fusca (Sooty Albatross)	Vulnerable	Migratory Species	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Rostratula australis (Australian Painted Snipe)	Endangered	Migratory Species	The Australian painted snipe occurs in shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, generally with a good cover of grasses, rushes and reeds, low scrub, *Muehlenbeckia* spp. (lignum), open timber or samphire	**Unlikely** Habitat for this species does not occur within the Project Area
Sternula nereis (Australian Fairy Tern)	Vulnerable	Migratory Species	Fairy Terns nest above the high water mark often in clear view of the water and on sites where the substrate is sandy and the vegetation low and sparse. Nests typically consist of a shallow scrape in the sand which is often lined with small shells and vegetation.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Synemon gratiosa (Graceful Sunmoth)	Not listed	Priority 4	This species is found in coastal heathland associated with *Lomandra maritima* (a perennial reed plant), a species closely related to the original host plant L. *hermaphrodita. Lomandra maritima* is locally abundant in coastal vegetation.	**Unlikely** Habitat for this species does not occur within the Project Area
Thalassarche cauta (Shy Albatross)	Vulnerable	Threatened	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Thalassarche cauta steadi (White-capped Albatross)	Vulnerable	Threatened	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat

Species (Common name)	Conservation status		Preferred Habitat	Likelihood of occurrence
	EPBC Act	BC Act		
Thalassarche impavida (Campbell Albatross)	Vulnerable	Threatened	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Thalassarche melanophris (Black-browed Albatross)	Vulnerable	Threatened	Albatross and giant petrel species exhibit a broad range of diets and foraging behaviours, and hence their at-sea distributions are diverse. Combined with their ability to cover vast oceanic distances, all waters within Australian jurisdiction can be considered foraging habitat, however the most critical foraging habitat is considered to be those waters south of 25 degrees where most species spend the majority of their foraging time.	**Unlikely** The Project Area occurs 3 km from the coast and does not contain suitable foraging habitat
Tyto novaehollandiae subsp. Novaehollandiae (Masked Owl (southwest))	Not listed	Priority 3	The masked owl occurs mainly in eucalypt tall open forests, but also roosts in monsoon rainforests, and forages in more open vegetation types, including grasslands. Although it may roost in dense foliage, it more typically roosts, and nests, in tree hollows.	**Unlikely** Habitat for this species does not occur within the Project Area

Appendix D Flora, Vegetation and Fauna Survey (Strategen 2017) and species list of additional site visit 22 July 2019

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19 (Lot 6) Taronga Place, Eglinton

Environmental Assessment

Prepared for
Urban Quarter
by Strategen

February 2017

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19 (Lot 6) Taronga Place, Eglinton

Environmental Assessment

Strategen is a trading name of
Strategen Environmental Consultants Pty Ltd
Level 1, 50 Subiaco Square Road Subiaco WA 6008
ACN: 056 190 419

February 2017

Limitations

Scope of services

This report ("the report") has been prepared by Strategen Environmental Consultants Pty Ltd (Strategen) in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, Strategen has relied upon data 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 expressly stated in the report, Strategen has not verified the accuracy or 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. Strategen has also not attempted to determine whether any material matter has been omitted from the data. Strategen 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 Strategen. The making of any assumption does not imply that Strategen has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

Client: Urban Quarter

Report Version	Revision No.	Purpose	Strategen author/reviewer	Submitted to Client	
				Form	Date
Draft Report	A	For client review	C Courtauld / A Welker	Electronic	13 Jan 2017
Final Draft Report	B	For client review	D Panickar / D Walsh	Electronic	16 Feb 2017
Final Report	**0**	**For submission**	**D Panickar / D Walsh**	**Electronic**	**21 Feb 2017**

Filename: URQ16447_01 R003 Rev 0 - 21 February 2017

Table of contents

1. Introduction **1**
1.1 Background 1
1.2 Environmental context 1
1.2.1 Topography, Landform and Soils 1
1.2.2 Groundwater and surface water 4
1.2.3 Biodiversity and natural assets 7
1.2.4 Bushfire management 18
1.3 Cultural heritage 19
2. Conclusions and Potential constraints **20**
3. References **21**

List of tables

Table 1: Vegetation types and black cockatoo foraging species within the survey area 18
Table 2: Definition of black cockatoo foraging habitat within the survey area 18

List of figures

Figure 1: Topography and landforms 2
Figure 2: Preliminary Karst management (CMW 2016) 3
Figure 3: Acid Sulphate Soils risk 5
Figure 4: Groundwater and surface water 6
Figure 5: Vegetation Type 9
Figure 6: Vegetation condition 10
Figure 7: Banksia TEC 13
Figure 8: Bush Forever sites 14
Figure 9: Black cockatoo habitat 17

1. Introduction

1.1 Background

Urban Quarter is proposing to develop 19 (Lot 6) Taronga Place, Eglinton, in the City of Wanneroo for residential and commercial development (the project). A Structure Plan has been prepared for a portion of the subject site which includes residential lots, roads and areas of active and managed public open space (POS).

This environmental assessment shall assist the Local Structure Plan (LSP) for the site as well as the environmental approvals process associated with the project. The results of the environmental assessment for the LSP area are summarised below.

1.2 Environmental context

1.2.1 Topography, Landform and Soils

The topography of the LSP area is undulating and ranges from 29 m to 44 m Australian Height Datum (AHD) (Figure 1). The soil type is characteristic of the Spearwood dunes and ranges from white to yellow sands to light brown sandy loam.

Based on a survey undertaken in 2007 by the Western Australian Speleological Group, karstic features are present with the LSP area (WASG 2007). Information provided in this survey, although restricted, suggests the presence of small karstic features across the LSP area as well as two caves outside the LSP area, one of which is located in the Resource Enhancement Wetland adjacent to the northern boundary of the Lot (Figure 1).

A preliminary karst assessment was undertaken in 2016 by CMW Geosciences to quantify the presence of karst features and inform a geotechnical assessment (CMW 2016). Everything east of the line shown on Figure 2 was assessed as being susceptible to instability as a result of karst features (CMW 2016). Areas west of the line were assessed as posing a very low risk to instability due to karst and can be managed by normal geotechnical investigation and design processes. The majority of the LSP area is considered to be very low risk.

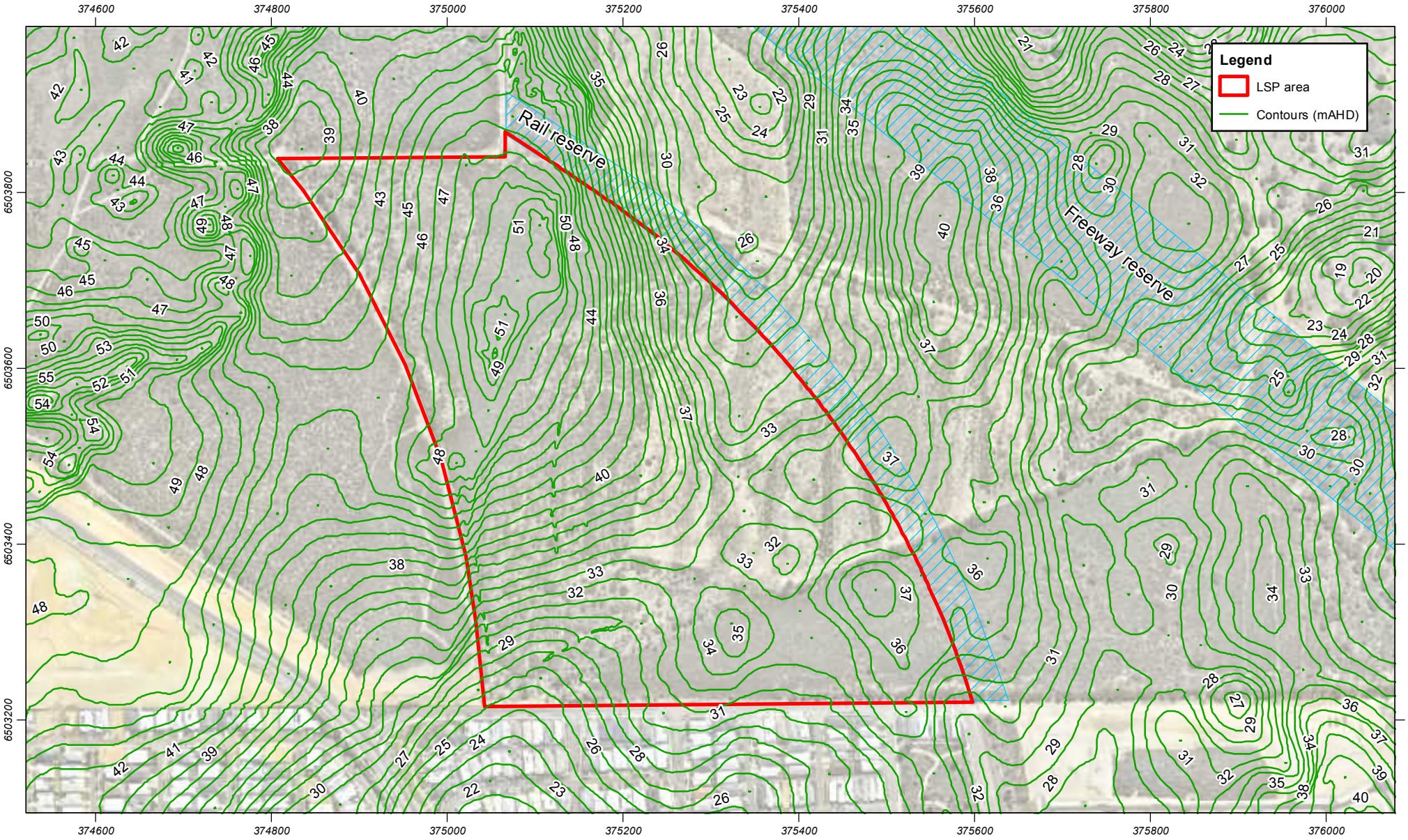

Figure 1: Topography and landforms

Scale 1:6,000 at A4

0 50 100 150 200 250 m

N

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 17/01/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016.

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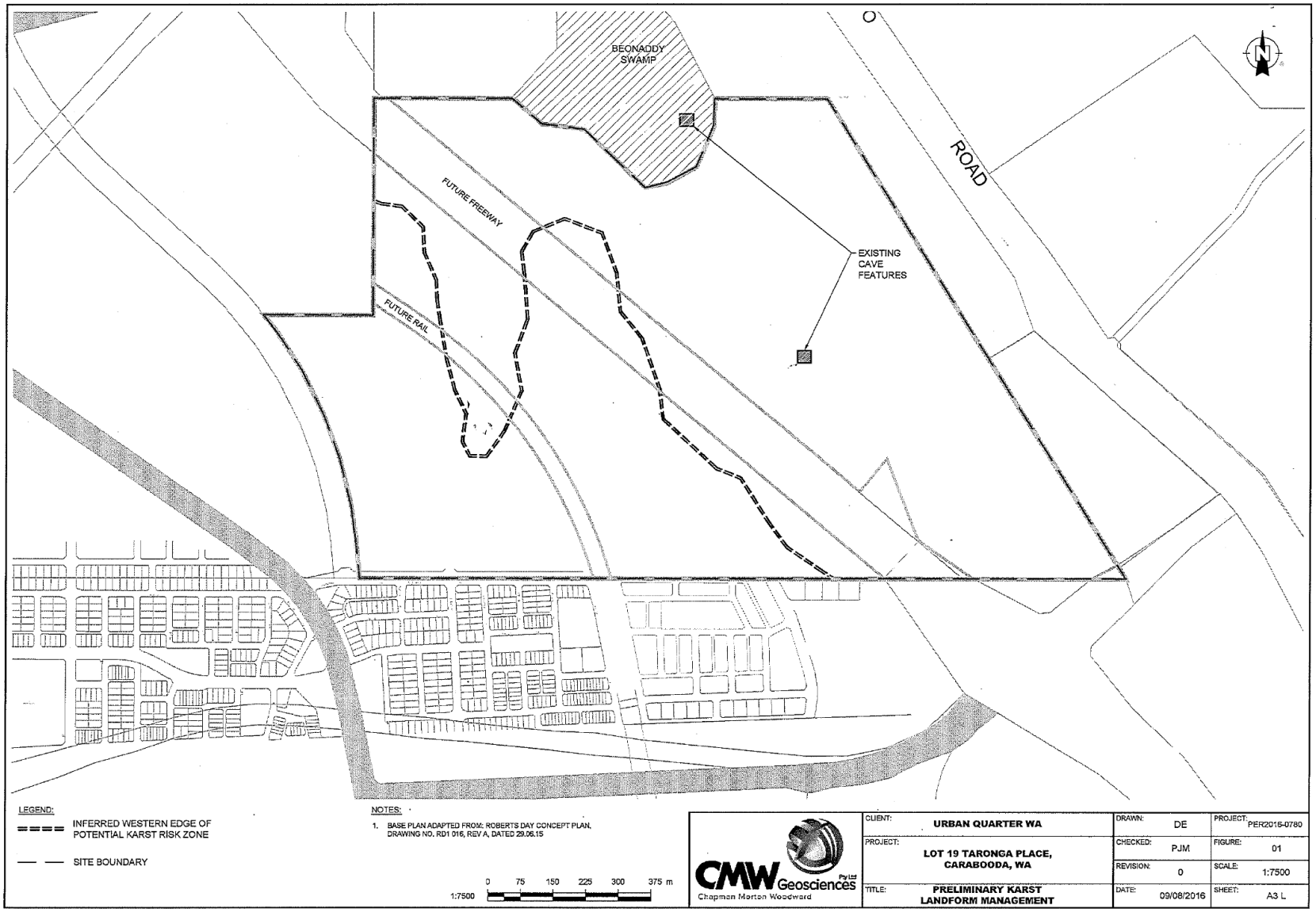

Source: CMW Geosciences

Figure 2: Preliminary Karst management

Acid Sulphate Soils

A search of the Swan Coastal Plain ASS risk mapping (Landgate 2016) identified no known risk of Acid Sulphate Soils (ASS) occurring within 3 m of the natural soil surface of the LSP area (Figure 3). As such and in consideration of the known geology, ASS investigations are not considered necessary for the LSP area.

Contamination

The Department of Environmental Regulation Contaminated Sites Database does not list the site as being a known or suspected contaminated site. A review of historical aerial photography from 1965 to present day shows that a portion of the site has been used for broad acre agricultural purposes with the majority of the site supporting native vegetation since 1965 (Landgate 2016).

1.2.2 Groundwater and surface water

Groundwater

Maximum groundwater level ranges from 2 m to 4 m AHD within Lot 6 Taronga Place and groundwater flows across the LSP area from east to west (DoW 2016, Figure 4). The depth to groundwater is over 20 m across the entire lot (DoW 2016).

The LSP area is located in a Priority 3 Public Drinking Water Source Area (PDWSA) as depicted in Figure 4. Residential and commercial developments are considered compatible with Priority 3 areas, although some commercial land uses such as service stations and warehouses may have specific conditions applied to manage water quality.

The southwest corner of the LSP area is located within a Wellhead Protection Zone (WHPZ), which are 300 m zones around wells in Priority 3 PDWSAs. The Department of Water (DoW) advises that contaminating land uses such as service stations and dry cleaners should be avoided in WHPZ in Priority 3 areas. The proposed residential development is a permitted use within the Wellhead Protection Zone (WHPZ) and therefore is not a constraint to development.

Surface water

There are no surface water bodies within the LSP area. The nearest wetland is a Sumpland Resource Enhancement Wetland (UFI 8016) adjacent to the northern boundary of Lot 6 Taronga Place (Figure 4).

The EPBC Protected Matters Search Tool indicates that there are no declared Ramsar wetlands present within 5 km of the LSP area and no Wetlands of International Importance present within 2 km of the LSP area (DEE 2016a). A Conservation Category Sumpland Wetland (UFI 8012) is located approximately 1 km north of the LSP area.

Figure 3: Acid Sulphate Soils risk

Scale 1:6,000 at A4

0 50 100 150 200 250 m

N

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 21/02/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016.

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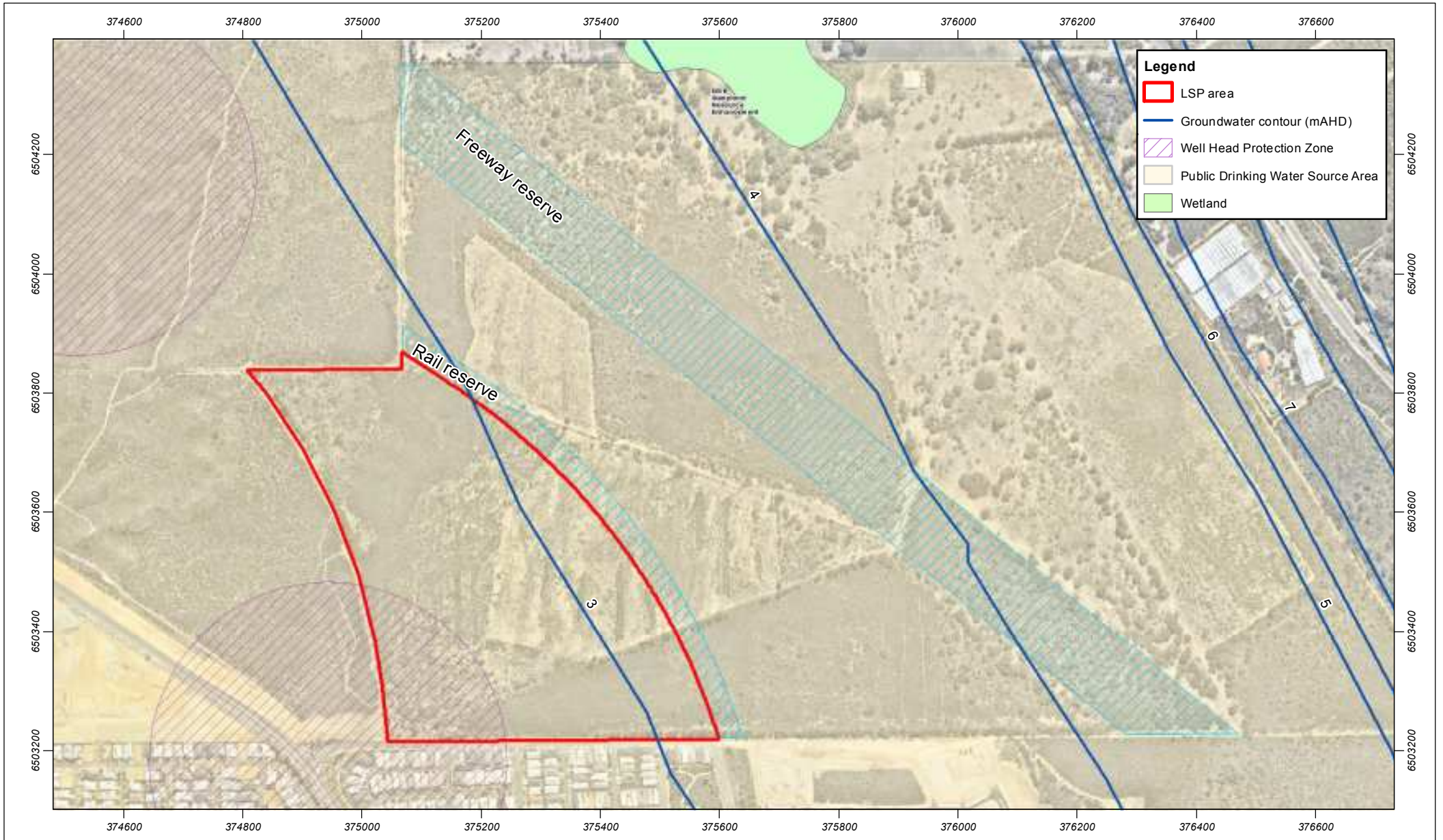

Figure 4: Groundwater and surface water

Scale 1:8,669 at A4

0 50 100 150 200 250 m

N

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 17/01/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016. WHPZ, PDWSA: DOW 2016.

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1.2.3 Biodiversity and natural assets

The LSP area comprises remnant vegetation and cleared areas, reflecting the site's previous rural use. Semi cleared rural properties and low density residential development are located on the northern and southern bounds of Lot 6 Taronga Place, respectively. The surrounding area comprises large conservation areas including Yanchep National Park to the north, The Foreshore (coastal reserve), Alkimos masterplan conservation areas, Bush Forever sites to the north and east and Neerabup Nature Reserve to the south. These surrounding conservation parks and reserves provide extensive areas for retention of native vegetation.

Flora and vegetation

A flora and vegetation assessment was undertaken over the LSP area over two events; in late October and early November 2016 (Strategen 2016). The results of the surveys and information on the flora and vegetation within the LSP area are summarised below.

Vegetation Complex

The patterning of plant and animal distributions on the Swan Coastal Plain (SCP) is closely related to the geology, geomorphology and soils of the SCP. The LSP area is located on the Spearwood dunes, characterised by the Cottesloe Complex – Central and South. The Cottesloe Complex – Central and South has 35% of its pre-clearing extent remaining, with 18.5% proposed for protection through Bush Forever. This complex consists of mosaics of woodland of *Eucalyptus gomphocephala* and open forest of *Eucalyptus gomphocephala- Eucalyptus marginata-Corymbia calophylla*; closed heath on the limestone outcrops.

Vegetation types

The flora and vegetation survey identified nine vegetation types (VTs) within Lot 6 Taronga Place as listed below (Figure 5):

- BaBmEt – *Banksia attenuata, Banksia menziesii* and *Eucalyptus todtiana* Low Woodland over Open Heath of *Allocasuarina humilis* and *Xanthorrhoea preissii* over Low Open Shrubland of *Hibbertia hypericoides* over mixed Herbland
- BaBmBp – Banksia attenuata, Banksia menziesii, Banksia prionotes Open Low Woodland over Open Low Shrubland of Xanthorrhoea preissii and Hibbertia hypericoides over mixed Herbland including *Pelargonium capitatum and exotic grasses
- Bs – Tall Open Scrub of *Banksia sessilis* and occasional *Melaleuca huegelii* over Low Shrubland of *Melaleuca systena, Grevillea preissii* and *Calothamnus quadrifidus* over Open Sedgeland of *Lomandra maritima, Desmocladus asper, Mesomelaena pseudostygia* and *Lepidosperma squamatum*
- Ed – Woodland of *Eucalyptus decipiens* with scattered *E. todtiana* and *Allocasuarina fraseriana*, over Open Heath to Open Shrubland of *Hibbertia hypericoides* and *Calothamnus quadrifidus*
- EdBs – Woodland of *Eucalyptus decipiens* over Tall Open Scrub to Shrubland of *Banksia sessilis* and *Jacksonia sternbergiana* over Open Heath to Open Shrubland of *Hibbertia hypericoides* and *Calothamnus quadrifidus*
- EdBa – Woodland to Low Open Woodland of *Eucalyptus decipiens* and *Banksia attenuata* with Scattered *Eucalyptus todtiana* and *Allocasuarina fraseriana*, over Tall Open Scrub to Shrubland of *Banksia sessilis* and *Jacksonia sternbergiana* over Open Heath to Open Shrubland of *Allocasuarina humilis, Acacia saligna* and *Xanthorrhoea preissii* over Low Shrubland of *Hibbertia hypericoides* and *Calothamnus quadrifidus*
- Pasture – Scattered remnant *Eucalyptus* spp. and *Banksia* spp. over pasture weeds
- Planted trees – Planted *Eucalyptus* spp. over pasture weeds
- Regrowth - Recently cleared with re-emergent understory species including *Hibbertia hypericoides, Acacia pulchella, Allocasuarina humilis, Calothamnus quadrifidus* and *Conostylis aculeata.*

Of these vegetation types, five occur within the LSP area including:

- BaBmEt (8.61 ha)
- BaBmBp (1.63 ha)
- Bs (9.01 ha)
- planted trees (0.37 ha)
- regrowth (8.54 ha).

Vegetation condition

The LSP area contains approximately 28.16 ha of vegetation in varying condition, ranging from Excellent through to Completely Degraded as per the condition scale outlined in Keighery 1994 (Figure 6). Historical land use (e.g. agriculture) has impacted the vegetation condition via the introduction and spread of weeds and other human disturbance (e.g. fly tipping, vehicle use).

Conservation significant vegetation

A desktop assessment was conducted using Florabase, Parks and Wildlife, and Department of the Environment (DEE) databases to identify the possible occurrence of Threatened Ecological Communities (TECs), Priority Ecological Communities (PECs) and Threatened and Priority flora potentially occurring within the survey area. Reports that document regional flora, vegetation and fauna within the surrounds of the survey area were also reviewed prior to the field assessment. A database search request was also submitted to the Threatened Communities Branch of Parks and Wildlife to identify any potential TECs or PECs within 5 km of the survey area.

A TEC is defined under the *Environmental Protection Act 1986* (EP Act) as an ecological community listed, designated or declared under a written law or a law of the Australian Government as Threatened, Endangered or Vulnerable. There are four State categories of TECs (DEC 2010)[1]:

- presumed totally destroyed (PD)
- critically endangered (CR)
- endangered (EN)
- vulnerable (VU).

Ecological communities identified as Threatened, but not listed as TECs, are classified as PECs. These communities are under threat, but there is insufficient information available concerning their distribution to make a proper evaluation of their conservation status. Parks and Wildlife categorises PECs according to their conservation priority, using five categories, P1 (highest conservation significance) to P5 (lowest conservation significance), to denote the conservation priority status of such ecological communities (DEC 2010). A list of current PECs can be viewed at the Parks and Wildlife (2015b) website.

Four TECs and two PECs were identified within 5 km of the LSP area;

- *Banksia woodlands of the Swan Coastal Plain* (Endangered – EPBC Act)
- SCP 01: *Aquatic Root Mat Community Number 1 of Caves of the Swan Coastal Plain* (Endangered – EPBC Act, Critically Endangered – WC Act)
- FCT 26a; *Melaleuca huegelii - Melaleuca acerosa (currently M. systena) shrublands on limestone ridges* (Endangered – WC Act)
- FCT 19b: *Woodlands over sedgelands in Holocene dune swales of the southern Swan Coastal Plain* (Endangered – EPBC Act, Critically Endangered – WC Act)
- FCT 24: *Northern Spearwood shrublands and woodlands* (Priority 3)
- FCT 30b: *Quindalup Eucalyptus gomphocephala and/or Agonis flexuosa woodlands* (Priority 3).

[1] The Department of Environment and Conservation is still listed as the author of all TEC and PEC databases and have been referred to as such in this document instead of the Department of Parks and Wildlife (Parks and Wildlife).

Figure 5: Vegetation types

Scale 1:8,500 at A4

0 50 100 150 200 250 m

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 18/01/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016.

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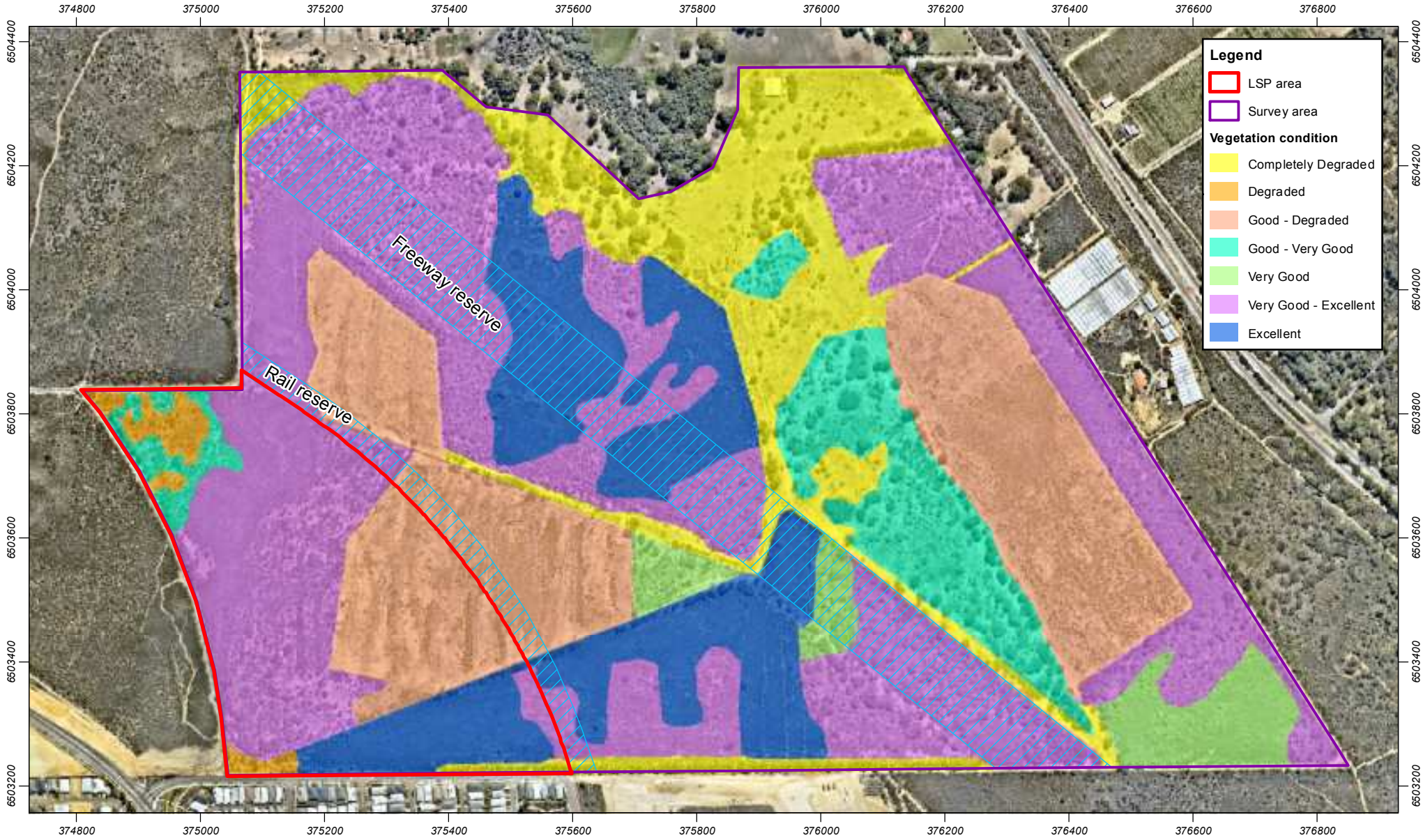

Figure 6: Vegetation condition

Scale 1:8,500 at A4

0 50 100 150 200 250 m

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 18/01/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016.

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Based on an analysis of vegetation mapping undertaken by Strategen (2016); approximately 10.24 ha of the LSP area contains the *Banksia woodlands of the Swan Coastal Plain* TEC, corresponding to VT BaBmEt and VT BaBmBp (Figure 7).

The Banksia Woodland TEC identified within the proposed action area resembles Floristic Community Type (FCT) 24: *Northern Spearwood shrublands and woodlands*, a Priority 3 PEC. This community occurs as heaths with scattered *Eucalyptus gomphocephala* on deeper soils. The community is found on the western Swan Coastal Plain, mostly on the Cottesloe unit of the Spearwood system and extends from Yanchep south to Singleton. The banksias found in this community include *Banksia attenuata* and *B. menziesii.* Typical flora species of FCT24 may include *Banksia sessilis, Calothamnus quadrifidus, Melaleuca systena, Xanthorrhoea preissii, Lepidosperma squamatum, Hardenbergia comptoniana*, and P*hyllanthus calycinus* with herbs, sedges and grasses including *Conostylis aculeata, Dianella revoluta, Lomandra maritima, Schoenus grandiflorus, Desmocladus flexuosa* and *Austrostipa flavescens*.

FCT24 has an average species richness (ASR) of 38.9 species (TSSC 2016). The ASR recorded within VT BaBmEt, VT BaBmBp and VTEdBa (i.e. vegetation types representing the Banksia TEC) was 24.0, approximately 61.7% of the ASR of FCT24. The comparatively low ASR recorded within the proposed action area reflects the historical clearing and subsequent regeneration of Banksia woodland within the area. The majority of the vegetation of the site is therefore not a high quality representation of the FCT.

Vegetation Type Bs within the LSP area bears resemblance to FCT 24 due to the presence of typical flora (e.g. *B. sessilis*), however it does not represent the *Banksia woodlands of the Swan Coastal Plain* TEC as it does not contain indicator species or a woodland structure as per the TSSC (2016). VT BaBmEt, BaBmBp and VT Bs are well represented in the surrounding vegetation and nearby conservation reserves; therefore the proposed development is not expected to impact the overall conservation status of these community types within the LSP area.

The LSP area has the potential to contain the EPBC Act listed TEC, *Aquatic Root Mat Community of Caves of the Swan Coastal Plain*. This TEC is known from caves at Yanchep which contain permanent streams/pools which provide habitat for a species rich assemblage of microflora and invertebrates. A cave has been recorded within Lot 6 Taronga Place (CMW 2016); however the cave is not within the LSP area therefore will not be impacted as a result of the development and the significant depth to groundwater on site makes the presence of this community highly unlikely.

FCT 26a and FCT 24 also have the potential to be present based on locations of such communities in the broader locality. The results of the Strategen surveys show that vegetation within the LSP area has less than 1% similarity to FCT 26a and is missing a key indicator species of the community; *Melaleuca huegelii.* It is also worth noting that the closest recording of FCT 26a to Lot 6 Taronga Place is located approximately 2 km west, in a coastal vegetation type which is more representative of the typical habitat for the TEC than what is contained within the LSP area (PGV 2012).

Vegetation within the LSP area did not resemble FCT 30b or FCT 19b.

Bush Forever

Bush Forever Sites are considered regionally significant urban bushland areas and appropriate management of them is outlined in the draft Bushland Policy for the Perth Metropolitan Region Statement of Planning Policy No 2.8 (Western Australian Planning Commission, 2010) and more specifically in Planning Bulletin No. 69 (Western Australian Planning Commission, 2004b).

No Bush Forever (BF) sites occur within the LSP area; however BF Sites 288 (Yanchep National Park and Adjacent Bushland, Yanchep), 129 (Bernard Rd, Carabooda) and 130 (link between Yanchep and Neerabup National Parks, Carabooda) occur within 1 km of the site (Figure 8). A number of conservation significant FCTs are inferred within these BF sites including FCT 19, FCT 23b, FCT 26a and FCT 28. The vegetation within the LSP area is well represented within the surrounding BF sites.

Flora

A total of 199 native vascular plant taxa from 56 plant families have the potential to occur within the LSP area (Parks and Wildlife 2007-; DEE 2015). The majority of taxa were from within the Fabaceae (19 taxa) and Proteaceae (18) families. Five Priority species have the potential to occur within the LSP area; *Leucopogon maritimus* (P1), *Hibbertia spicata* subsp*. Leptotheca* (P3)*, Stylidium maritimum* (P3), *Conostylis pauciflora* subsp*. euryrhipis* (P4) and *Conostylis pauciflora subsp. pauciflora* (P4).

A total of 103 taxa were recorded within Lot 6 Taronga Place, 18 of which were introduced species (weeds). No Threatened flora species as listed under section 178 of the EPBC Act or pursuant to Schedule 1 of the WC Act and as listed by Parks and Wildlife (2015) were recorded within the Lot. No Priority flora species as listed by Western Australian Herbarium (1998-) were recorded within the Lot. The LSP is considered to contain a small fraction of the species recorded over the entire Lot.

Introduced species

A total of 18 introduced species were recorded within Lot 6 Taronga Place. None of these species are Declared Plant species in Western Australia pursuant to section 22 of the *Biosecurity and Agriculture Management Act 2007* (BAM Act) according to the Western Australian Department of Agriculture and Food (DAFWA 2016).

Figure 7: Banksia Woodland TEC

Scale 1:6,000 at A4

0 50 100 150 200 250 m

N

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 17/01/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016.

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Figure 8: Bush Forever sites

Scale 1:8,500 at A4

0 50 100 150 200 250 m

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Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 17/01/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016.

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Fauna

Conservation significant fauna

A desktop survey identified 19 conservation significant fauna comprising 15 bird species, three mammal species and one insect species that have a potential to occur within the LSP area. This included four Threatened species (EPBC Act), 11 migratory species (EPBC Act) and four priority species (WC Act). Based on habitat requirements, the following species were considered likely to occur within the LSP area:

- *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo [CBC]) – Threatened
- *Isoodon obesulus* (Southern Brown Bandicoot) – P5.

Evidence of foraging by CBC was observed during the 2016 surveys. No evidence of Southern Brown Bandicoots was recorded within the LSP area. The majority of the Migratory species are likely to be vagrant visitors to the site therefore potential impacts to these species are likely to be minimal as a result of the proposed development.

Black cockatoo habitat

Lot 6 Taronga Place was inspected for black cockatoo habitat during the 2016 supplementary surveys by three Strategen personnel with relevant experience as specified by the *EPBC Act Referral guidelines for three threatened black cockatoo species* (DSEWPaC 2012). The inspection included:

- a vegetation assessment to identify vegetation communities and potential black cockatoo foraging species
- a significant tree assessment to identify any trees with the potential to be utilised by black cockatoos for roosting or breeding.

The Lot occurs in the known habitat range of Carnaby's Black Cockatoo (CBC), based on the Carnaby's Cockatoo Recovery Plan (Parks and Wildlife 2013). CBC is listed as Threatened under the State WC Act and as Endangered under the EPBC Act. According to the *EPBC Act Referral guidelines for three threatened black cockatoo species* (DSEWPaC 2012), the Lot is not situated within the range of Forest Red-Tailed Black Cockatoos or Baudin's Black Cockatoos.

The Lot was divided into nine different VTs, five of which fall within the LSP area. Three VTs within the LSP area (BaBmEt, Bs, regrowth) contain flora species which are considered to be utilised by CBC for foraging; therefore approximately 27.8 ha of potential foraging habitat for CBC exists within the LSP area (Groom 2011, Johnstone 2010) (Figure 9). No potentially significant trees (Diameter at Breast Height [DBH] >50 cm) were recorded during the surveys therefore no potential black cockatoo breeding or roosting habitat occurs within the LSP area.

Foraging habitat for black cockatoos is generally defined as the availability of plant food sources within an area (Finn 2012). Food availability for black-cockatoos is a function of the diversity, abundance, distribution, energetic and nutritional qualities, and seasonality (phenology) of the food sources within a particular area. Table 1 summarises the value of each VT in terms of the quality of foraging habitat provided for black cockatoos. Table 2 provides a justification for how foraging values were defined.

The highest quality foraging habitat for black cockatoos was noted within BaBmEt which contained high densities of black cockatoo food species including *Banksia attenuata, Banksia menziesii, Eucalyptus todtiana* and *Banksia sessilis* at canopy and midstorey levels as well as *Mesomelaena pseudostygia* and other suitable food species in the understorey. The lowest quality foraging habitat for black cockatoos (not including cleared areas) was noted within Ed, which contained scattered *E. todtiana* and patches of *Allocasuarina fraseriana* and Pasture containing *Lupinus* sp. and scattered *Banksia* spp. and *Eucalyptus* spp., which provide limited food resources for CBC only.

Based on the results of the foraging assessment, the LSP area is considered to contain 10.2 ha of Excellent quality foraging habitat, 9.0 ha of Good quality foraging habitat, 8.5 ha of Very Poor quality foraging habitat and 0.4 ha of Nil foraging habitat for CBC.

Based on the vegetation types and condition recorded within the proposed action area, the overall habitat value for black cockatoos (i.e. foraging, breeding and roosting habitat) has been assessed and is presented in Figure 9. Overall black cockatoo habitat value within the proposed action area ranged from Nil to Good, which incorporates ratings regarding the quality foraging habitat present as well as the lack of breeding and roosting habitat within the proposed action area. The overall habitat for CBC included 10.2 ha Good quality habitat, 9.0 ha Moderate quality habitat, 8.5 ha Poor quality and 0.4 ha Nil habitat.

Figure 9: Black Cockatoo habitat

Scale 1:5,492 at A4

0 50 100 150 200 250 m

N

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 18/01/2017
Author: JCrute
Source: Aerial image: Nearmap, flown 04/2016.

Path: Q:\Consult\2016\URQ\URQ16477\ArcMap_documents\R003\RevA\URQ16477_01_R003_RevA_F009.mxd

strategen
ENVIRONMENTAL
info@strategen.com.au
www.strategen.com.au

Table 1: Vegetation types and black cockatoo foraging species within the survey area

Vegetation type	CBC foraging species	Foraging quality	Area (ha)
BaBmEt	*Banksia attenuata, B. menziesii, Eucalyptus todtiana, B. sessilis, Xanthorrhoea preissii, Mesomelaena pseudostygia.*	Excellent	10.2
Bs	*B. sessilis.*	Good	9.0
Regrowth	*X. Preissii.*	Very Poor	8.5
Planted	Nil.	Nil	0.4

Table 2: Definition of black cockatoo foraging habitat within the survey area

Foraging quality	Justification
Excellent	High density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species >60%) and presence of food sources at several strata (i.e. canopy, midstorey and understorey).
Good	High density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species >60%) but food sources only present at one or two strata (i.e. canopy and midstorey).
Moderate	Moderate foraging value density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species 20-40%) and food sources only present at one or two strata (i.e. canopy and midstorey).
Poor	Low density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species 10-20%) and presence of food sources at only one stratum (i.e. canopy).
Very poor	Very low density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species <10%) and presence of food sources at only one stratum (i.e. canopy).
Nil	Cleared areas - no suitable vegetation present.

1.2.4 Bushfire management

The LSP area is located in a designate bushfire prone area as per the Western Australia State Map of Bush Fire Prone Areas (DFES 2016). As a result, Strategen has prepared a Bushfire Management Plan (BMP) to support the Structure Plan in accordance with *State Planning Policy 3.7: Planning in Bushfire Prone Areas*. The BMP will be updated concurrently with future planning stages, including at Structure Plan and subdivision stage.

Vegetation surrounding the LSP area will have the greatest impacts on bushfire management outcomes for the site. This vegetation has led to the designation of bushfire prone land on most boundaries of the LSP area. Vegetation with a 'Moderate' or 'Extreme' bushfire hazard level is considered bushfire prone and any proposed development within 100 m of the bushfire prone vegetation extent will require application of Australian Standard AS 3959-2009 *Construction of Buildings in Bushfire-prone Areas* (SA 2009) via implementation of increased building construction standards in response to the assessed Bushfire Attack Level (BAL). Once the project area is cleared of vegetation in preparation of development there will only be a small proportion of the project area which will be located within bushfire prone land, which will require a BAL response in accordance with AS 3959-2009. This is largely consistent with findings of the *WA State Map of Bush Fire Prone Areas*.

Retained vegetation or revegetated areas within the LSP area will potentially trigger the application of BAL ratings on lots within 100 m of the vegetated areas. Clearing will occur throughout the LSP area on a staged basis and in advance where necessary to ensure building construction levels are not conflicted by temporary vegetation extent located within adjacent development stages yet to be cleared. This can be achieved by ensuring each approved stage subject to construction is surrounded by an on-site cleared or low threat buffer prior to development (not including vegetation proposed to be retained). Once the buffers are created, they will need to be maintained on a regular and ongoing basis at a fuel load less than 2 t/ha to achieve a low threat minimal fuel condition all year round until such time that the buffer area is developed as part of the next development stage. This will also assist in managing the current on-site woodland bushfire hazards in proximity to proposed development.

Individual lots adjacent to vegetation outside of the LSP area will be located outside of the BAL FZ and BAL 40 contours therefore meeting the intent of State Planning Policy 3.7 *Planning in Bushfire Prone Areas*. The width of hazard separation has been determined on the basis of compliance with a BAL 12.5, BAL 19 and BAL 29 rating under AS 3959–2009. Hazard separation zones will be maintained between all proposed lots and classified vegetation in the form of road reserves, landscaped buffers and cleared land. Full 80 m wide Hazard Separation Zones (HSZs) are not required in this instance, since proposed construction for each proposed dwelling meets the standard appropriate to the BAL for that location and does not exceed BAL 29 (WAPC 2015b).

1.3 Cultural heritage

Aboriginal heritage

The Department of Aboriginal Affairs Aboriginal Heritage Inquiry System (AHIS) did not identify any Registered Sites or Other Heritage Places within the LSP area (DAA 2016). Similarly, there are no listings of Heritage areas under the Municipal Heritage Inventory or the Heritage List as per the City of Wanneroo District Planning Scheme No. 2.

Two Aboriginal heritage sites occur within 1 km of Lot 6 Taronga Place, site 17451 occurs 0.5 km to the north of the site and site 1018 occurs 1 km to the east (DAA 2016). These sites will not be impacted by the development. The Aboriginal Heritage Inquiry System identified no other Heritage Places present in or within 2 km of the Lot (DAA 2016).

European heritage

There are no places listed in the Commonwealth Heritage Places Register within the LSP area (DEE2016b).

2. Conclusions and Potential constraints

The environmental values and attributes of Lot 6 Taronga Place and the LSP area have been investigated to support the preparation of an LSP for the proposed Urban Quarter development.

The key findings and conclusions of the environmental assessment are as follows:

- no ASS risk was identified therefore no further investigations are required
- the identified Karst poses low risk and can be adequately managed
- five vegetation types are found within the LSP area including 0.37 ha of planted trees and 8.54 ha of regrowth
- historical land use (e.g. agricultural use and other human disturbance) has impacted the vegetation condition via the introduction and spread of weeds
- there are no Bush Forever sites occurring with the structure plan area
- no Threatened flora species were recorded within the LSP area
- no potentially significant trees were recorded during the surveys and therefore no potential black cockatoo breeding or roosting habitat occurs within the LSP area
- no conservation significant wetlands occur within the LSP area
- no registered Aboriginal sites or European heritage sites occur within the LSP area
- bushfire risk can be managed within the site to achieve compliance with State Planning Policy 3.7.

Environmental considerations are limited to those associated with vegetation clearing on the site. Based on the assessment undertaken within the LSP area, the proposed development will potentially impact the following:

- up to 28.2 ha of native vegetation
- up to 10.2 ha of Good and 9.0 ha of Moderate black cockatoo habitat
- up to 10.2 ha of Banksia Woodland TEC.

Based on the constraints listed above, Urban Quarter has referred the proposed development under the EPBC Act for approval. This approvals process is separate to the LSP approval. An environmental offset package has also been developed as part of this approval process. Where possible, vegetation will be retained within Public Open Space areas. Further measures to manage and mitigate potential impacts will be proposed during the detailed design of the project.

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