

SUPPLEMENTARY INFORMATION

1. Project Status and Context

It is proposed to clear a portion of the vegetation (“the clearing footprint”) within Lot 28 Barfield Road, Hammond Park (“the subject area”) to reduce bushfire risk to the adjacent lot (Lot 29 Barfield Road, Hammond Park) associated with the presence of bushfire prone vegetation. Both Lots 28 and 29 Barfield Road are mapped as Bushfire Prone Areas (DFES, 2017).

The subject area is located approximately 24 km south of the Perth CBD and is located within the City of Cockburn (Figure 1). It is mapped as ‘Urban’ under the Metropolitan Region Scheme (MRS) and zoned ‘Development’ under the City’s Town Planning Scheme No. 3. A high voltage powerline easement lies over the eastern portion of the subject area (Figure 2).

2. Previous Environmental Investigations

Flora and Vegetation Survey

A flora and vegetation survey was undertaken for the proposed clearing area (across the whole of Lot 28 Barfield Road, Hammond Park) on 19 October 2017 by Coterra Environment. A summary of the results of this survey are provided in Section 6 and the full report is provided in Attachment E.

Fauna Survey

A fauna and habitat survey was undertaken for the proposed clearing area on 6 November 2017 by Coterra Environment. A summary of the results of this survey are provided in Section 6 and the full report is provided in Attachment E.

3. Existing Clearing Permits Within the Proposed Area

There are no existing NVCPs valid within the subject area.

A NVCP has been granted within the high voltage power line easement located on Lots 37, 38, 39, 40 and 41 Barfield Road (for the purpose of Hazard Reduction or Fire Control), to the immediate south of Lot 28.

4. Native Vegetation Clearing Permit Application

The enclosed application is seeking approval for the clearing of 0.22 ha of native vegetation. The proposed clearing footprint is shown in Figure 3.

5. Site Characteristics

The clearing footprint is relatively flat, with topography ranging from 26 to 28 m AHD. The soils are representative of the Bassendean dune system, consisting of S₈ sand – very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well-sorted, of aeolian origin (Gozzard, 1983).

The clearing footprint is not mapped within an Environmentally Sensitive Area (DWER, 2017).

6. Vegetation, Flora and Fauna

The vegetation within the clearing footprint was partly cleared during the 1970s, and then again in the early 1980s, within the eastern portion of the subject area associated with the high voltage powerline easement (Landgate, 2017).

Regional Vegetation Complex

Regionally, the vegetation within the clearing footprint is mapped as Beard vegetation association 1001, described as 'Medium very sparse woodland; jarrah, with low woodland; banksia & casuarina' (Shepherd et al, 2001). Approximately 22% of this association is remaining within the Interim Biogeographic Regionalisation of Australia (IBRA) Swan Coastal Plain subregion (Government of Western Australia, 2016).

Hedde vegetation complex mapping indicates that vegetation in this area is mapped as Bassendean Complex - Central and South, which ranges from woodland of jarrah (*E. marginata*), *Allocasuarina fraseriana*, *Banksia attenuata*, *B. grandis* and *B. menziesii* on the sand dunes to low woodland of *Melaleuca preissiana*, *B. ilicifolia* and *B. littoralis* and sedgeland on the low-lying moister sites. This area includes the transition of jarrah to coastal blackbutt (*E. todtiana*) in the Perth vicinity and jarrah to marri (*Corymbia calophylla*) on the moister soils. Other plant species include *Kunzea ericifolia*, *Hypocalymma angustifolium*, *Adenanthos obovatus* and *Verticordia* species (Hedde et al, 1980).

Table 1 provides details regarding the remaining extent of this regional vegetation complex on the Swan Coastal Plain.

Table 1: Extent of Regional Vegetation Complex on the Swan Coastal Plain

Vegetation Association	Pre-European Extent (ha)	Current Extent (ha)	% Remaining	% of Remaining in Conservation Reserve
Coonambidgee	87,393	24,206	27.7%	9.3%

Source: Local Biodiversity Program (2013)

It is also noted that remnant vegetation within the subject area has been identified as a Local Natural Area (LNA) by the City of Cockburn (WALGA, 2017).

Vegetation Units

The following vegetation units were recorded and mapped by Coterra Environment within the survey area (Figure 4) (Coterra Environment, 2017):

- Western portion of survey area:
 - Open Low Forest of *Banksia attenuata*, *B. ilicifolia* and *B. menziesii* with scattered *Allocasuarina fraseriana* over Open Tall Shrubland to Tall Shrubland of *Xanthorrhoea preissii*, with occasional pockets of *Kunzea glabrescens* tall shrubs, over Open Shrubland to Shrubland of *Stirlingia latifolia* over Open Low Shrubland of *Hibbertia hypericoides* or

Hypocalymma robustum and *Bossiaea eriocarpa* or over a mixed Sedgeland/Herbland including *Phlebocarya ciliata*, and/or *Desmocladius flexuosus* and *Lepidosperma pubisquamum* on midslope flats, on loamy sands.

- Eastern portion of survey area (associated with high voltage powerline easement)
 - Scattered *Banksia menziesii* and *Banksia ilicifolia* over Shrubland to tall Shrubland of *Adenanthos cygnorum* over Open Grassland of introduced species *Ehrharta calycina* with scattered native low shrubs, on midslope sandy flats.

Vegetation Condition

The vegetation condition across the survey area ranges from Completely Degraded (cleared tracks) to Very Good in some locations (Figure 5). The eastern portion of the subject area within the high voltage powerline easement has been assessed as Degraded to Completely Degraded (Coterra Environment, 2017).

Table 2: Condition Rating Scale (Keighery, 2000)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management.
6	Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species.

Threatened and Priority Ecological Communities

Vegetation onsite was not identified to represent any Threatened or Priority Ecological Communities listed by the WA Department of Biodiversity, Conservation and Attractions (DBCA).

A portion of the vegetation within the survey area is considered to be representative of the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community, listed under the federal *Environment Protection and Biodiversity Conservation Act 1999* (Figure 4). This patch of vegetation meets the following diagnostic criteria for this TEC (as described in the draft guidance for referral prepared by the Department of the Environment and Energy (DotEE):

- Location and physical environment – Swan Coastal Plain IBRA bioregion

- Soils and landform – sandy soils of the Bassendean dune system, flat topography
- Structure – vegetation structure consists of a dominant layer of *Banksia attenuata* with a native understorey
- Composition – dominant tree species include *Banksia attenuata*, *Banksia ilicifolia*, *Banksia menziesii*, *Eucalyptus marginata*, *Allocasuarina fraseriana*

Approximately two thirds of the vegetation within the proposed clearing area (~0.16 ha) is inferred to be representative of the Banksia Woodlands TEC (in Good and Very Good condition). However given the very small area of the vegetation, and its location on the outer edge of a patch, it is not considered that any significant impacts to this community are likely.

Threatened and Priority Flora

No flora species of conservation significance were observed or recorded during the survey. The survey was undertaken during the peak spring flowering period, within the optimum published timing for searching for conservation significant orchid species such as *Caladenia huegelii* (DBCA, 2017 & Brown, 2008). *Caladenia* species observed on site are suspected to be *C. flava* or *C. arenicola* (Coterra Environment, 2017).

Fauna and Fauna Habitat

Fauna habitat was assessed by Coterra Environment on 6 November 2017 (Coterra Environment, 2017). Conservation significant species that may inhabit the survey area, based on the presence of fauna habitats and known species ranges, included:

- *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo)
- *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo)
- *Calyptorhynchus baudinii* (Baudin's black cockatoo)
- *Merops ornatus* (Rainbow Bee-eater)
- *Isoodon obesulus fusciventer* (Quenda)
- *Lerista lineata* (Perth Lined Skink)
- *Neelaps calonotos* (Black-striped Snake)

The main fauna habitat present within the survey area consisted of banksia woodland over sandy soils. This vegetation type is known to support populations of bushland birds (particularly honeyeaters), snakes and other reptiles utilising sandy soils and mammals including quenda and western grey kangaroo. No evidence of the conservation significant species listed above was noted during the fauna survey (Coterra Environment, 2017).

7. Assessment against Clearing Principles

Table 3 provides assessment of the proposed clearing against the EPA's ten clearing principles, as provided in Schedule 5 of the *Environmental Protection Act 1986*.

Table 3: Assessment Against Clearing Principles

Native Vegetation Clearing Principles	Assessment of Proposed Clearing
<p>1. Native vegetation should not be cleared if it comprises a high level of biological diversity</p>	<p>The flora and vegetation survey undertaken by Coterra Environment in October 2017 (Coterra Environment, 2017) found the following vegetation type occurring within the clearing area:</p> <ul style="list-style-type: none"> ▪ Open Low Forest of <i>Banksia attenuata</i>, <i>B. ilicifolia</i> and <i>B. menziesii</i> with scattered <i>Allocasuarina fraseriana</i> over Open Tall Shrubland to Tall Shrubland of <i>Xanthorrhoea preissii</i>, with occasional pockets of <i>Kunzea glabrescens</i> tall shrubs, over Open Shrubland to Shrubland of <i>Stirlingia latifolia</i> over Open Low Shrubland of <i>Hibbertia hypericoides</i> or <i>Hypocalymma robustum</i> and <i>Bossiea eriocarpa</i> or over a mixed Sedgeland/Herbland including <i>Phlebocarya ciliata</i>, and/or <i>Desmocladius flexuosus</i> and <i>Lepidosperma squamatum</i> on midslope flats, on loamy sands. <p>Quadrat 2 (10m x 10m) was located within the clearing area and recorded 31 native vegetation species and 3 introduced species. The vegetation within the proposed clearing area (0.22 ha) is partly Degraded, with areas of Good and Very Good vegetation (Figure 4) (Coterra Environment, 2017).</p>
<p>2. 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</p>	<p>Coterra Environment completed a fauna assessment of the proposed clearing area and surrounds (entirety of Lot 28 Barfield Road) (Coterra Environment, 2017). This survey concluded that the following conservation significant fauna may be present within or near the survey area:</p> <ul style="list-style-type: none"> ▪ Three species of WA black cockatoos (<i>Calyptorhynchus banksia naso</i>, <i>C. baudinii</i>, <i>C. latirostris</i>) ▪ Rainbow bee-eater (<i>Merops ornatus</i>) ▪ Quenda (<i>Isodon obesulus fusciventer</i>) ▪ Perth lined skink (<i>Lerista lineata</i>) ▪ Black-striped Snake (<i>Neelaps calonotos</i>) <p>Potential impacts to black cockatoo and other fauna habitat from the proposed clearing is anticipated to be low, primarily because little, if any, habitat of importance will be impacted. Additionally, there is significant habitat available within the local area including:</p> <ul style="list-style-type: none"> ▪ The adjacent land to the south (~4 ha) ▪ Harry Waring Marsupial Reserve, Wattleup (Beeliar Regional Park) (Bush Forever 392, 280 ha) ▪ Thompsons Lake Nature Reserve and Adjacent Bushland, Beeliar (Beeliar Regional Park) (Bush Forever 391, 746 ha) ▪ Lyon Road Bushland, Banjup (Jandakot Regional Park) (Bush Forever 492, 38.5 ha)
<p>3. Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora</p>	<p>No threatened or priority flora were identified occurring within the proposed clearing area during the vegetation and flora survey undertaken by Coterra Environment in October 2017 (Coterra Environment, 2017).</p>

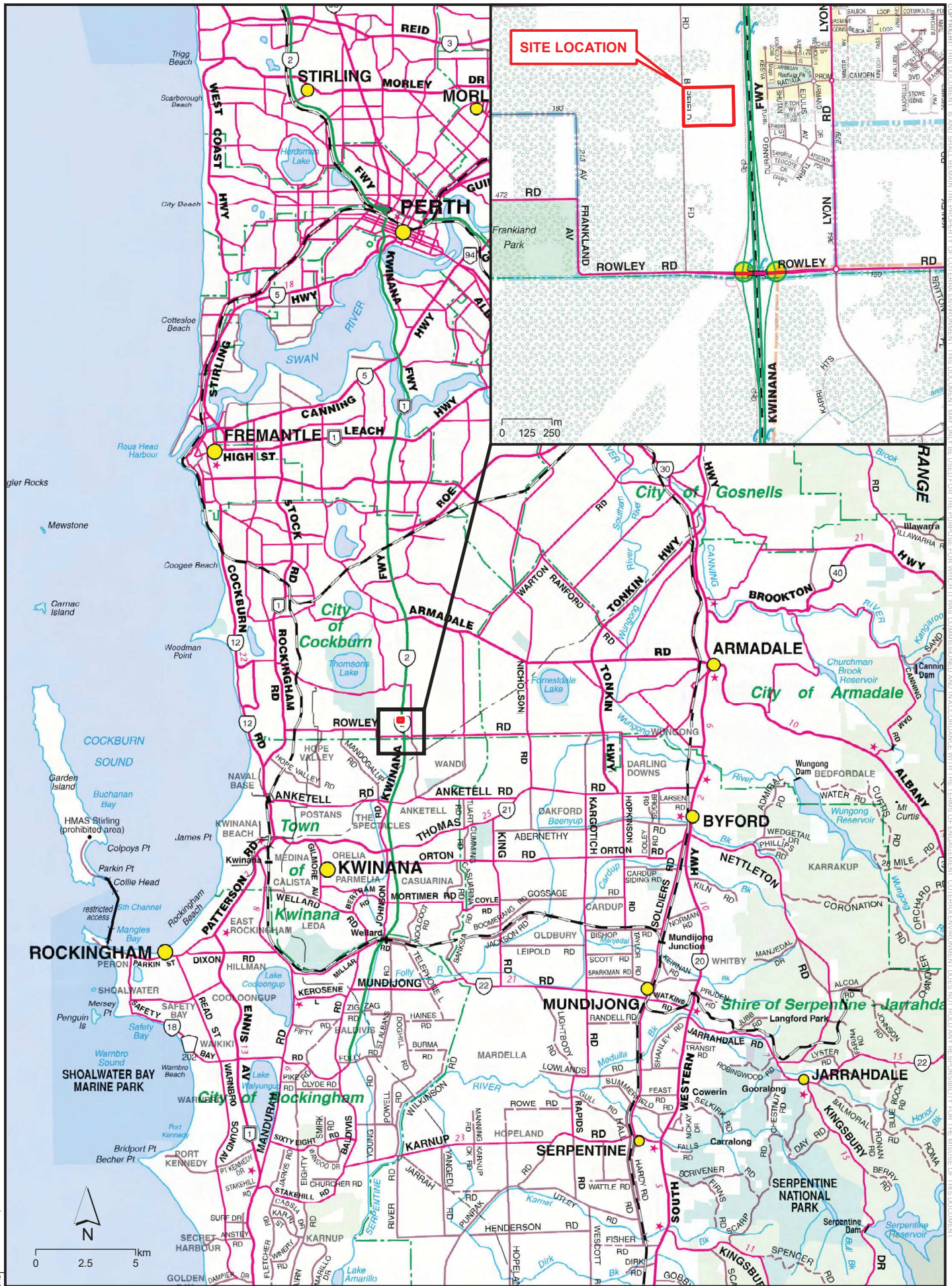
Native Vegetation Clearing Principles	Assessment of Proposed Clearing
<p>4. Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community</p>	<p>Vegetation onsite does not represent at Threatened or Priority Ecological Communities as identified by the WA DBCA.</p> <p>A portion of the vegetation within the proposed clearing area (~0.16 ha) is inferred to be representative of the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community. This TEC is listed at the federal level under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act). Given the small area, the proposed clearing is not considered likely to have a significant impact on this community.</p>
<p>5. Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared</p>	<p>The proposed clearing area lies within the Beard Vegetation association 1001 which is described as 'Medium very sparse woodland; jarrah, with low woodland; banksia & casuarina'. More than 22% of this association is remaining within the Interim Biogeographic Regionalisation of Australia (IBRA) subregion (Local Biodiversity Project, 2017).</p> <p>Regional scale vegetation complex mapping indicates that vegetation in this area is mapped as Bassendean Complex – Central and South of which approximately 28% of the original extent is remaining. This is above the threshold of 10% remaining applied to vegetation complexes within the metropolitan region. This complex is considered relatively well-represented.</p>
<p>6. Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or a wetland</p>	<p>There are no surface water features noted within the subject area.</p> <p>There is a Conservation Category Wetland (CCW) (UFI 10895; dampland) located 800 m west of the proposed clearing area.</p>
<p>7. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation</p>	<p>It is unlikely that the proposed clearing of the native vegetation will result in land degradation, due to the narrow width of the clearing area (for bushfire protection purposes). The cleared extent will be maintained on an ongoing basis by the developer of Lot 29 Barfield Road (adjacent to the proposed clearing area). Maintenance activities will include:</p> <ul style="list-style-type: none"> - Provision of fencing between Lots 28 and 29 Barfield Road - Removal of weed and native vegetation regrowth, to remove associated bushfire risk - Management of the land surface to reduce erosion and sand drift risk, with hydromulch (unseeded) to be applied as necessary).
<p>8. Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact</p>	<p>The proposed clearing area is not located within an Environmentally Sensitive Area (Local Biodiversity Project, 2017).</p> <p>The nearest conservation area is the Harry Waring Marsupial Reserve, approximately 1 km west of the proposed clearing</p>

Native Vegetation Clearing Principles	Assessment of Proposed Clearing
on the environmental values of any adjacent or nearby conservation areas	area. No impacts on nearby conservation areas are expected to occur as a consequence of the proposed clearing.
9. Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of the surface or underground water	Given the minimal extent of clearing proposed and the sandy nature of the soils in the area, the proposed clearing is not likely to have any impact on the quality of surface water or groundwater.
10. Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding	Given the minimal extent of clearing proposed and the sandy nature of the soils in the area, the proposed clearing is not likely to have any impact on the potential for the area to experience flooding.

8. References

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- Western Australian Local Government Association (WALGA) (2017). Environmental Planning Tool. Perth Biodiversity Project. Perth, WA.

FIGURES



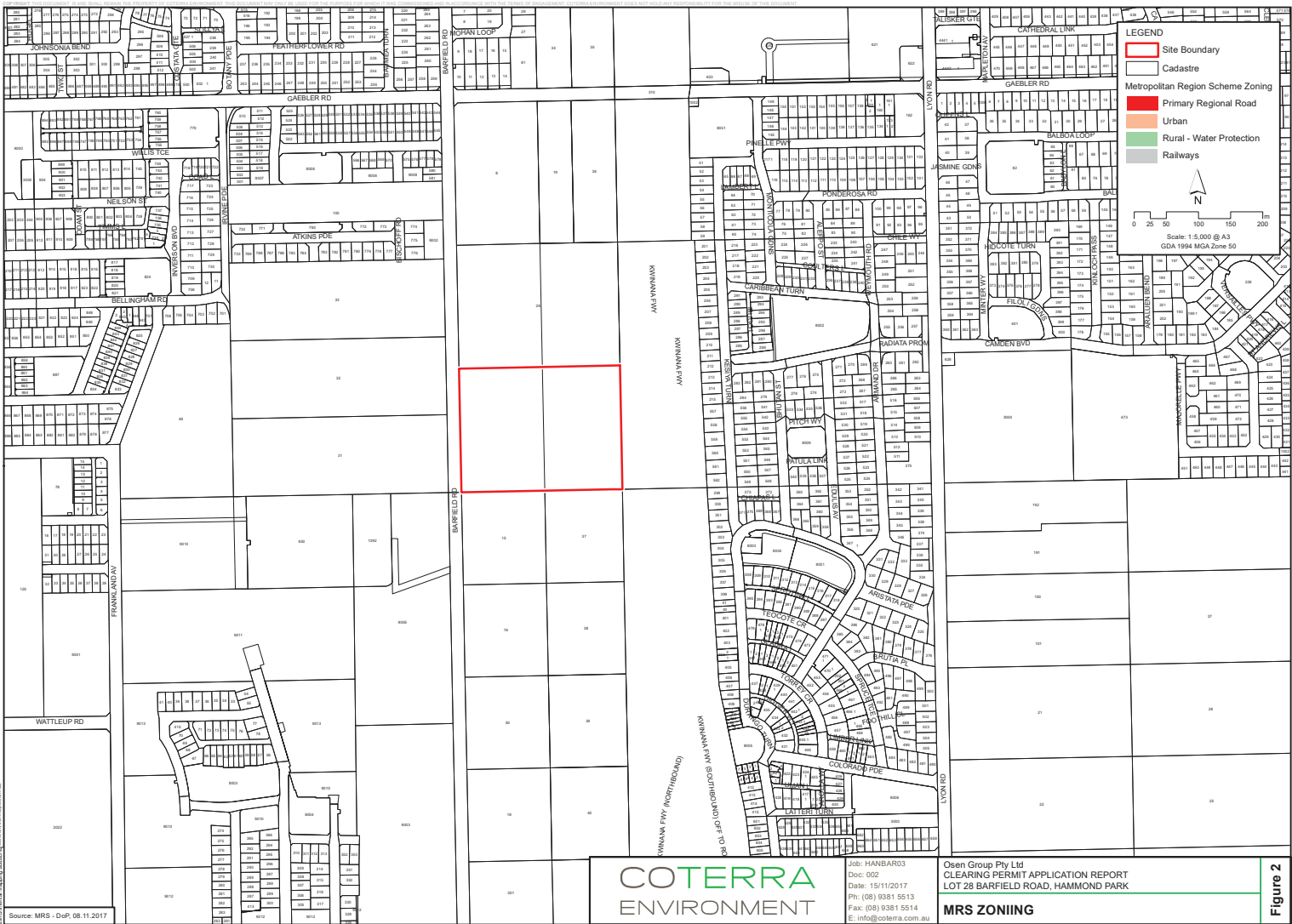
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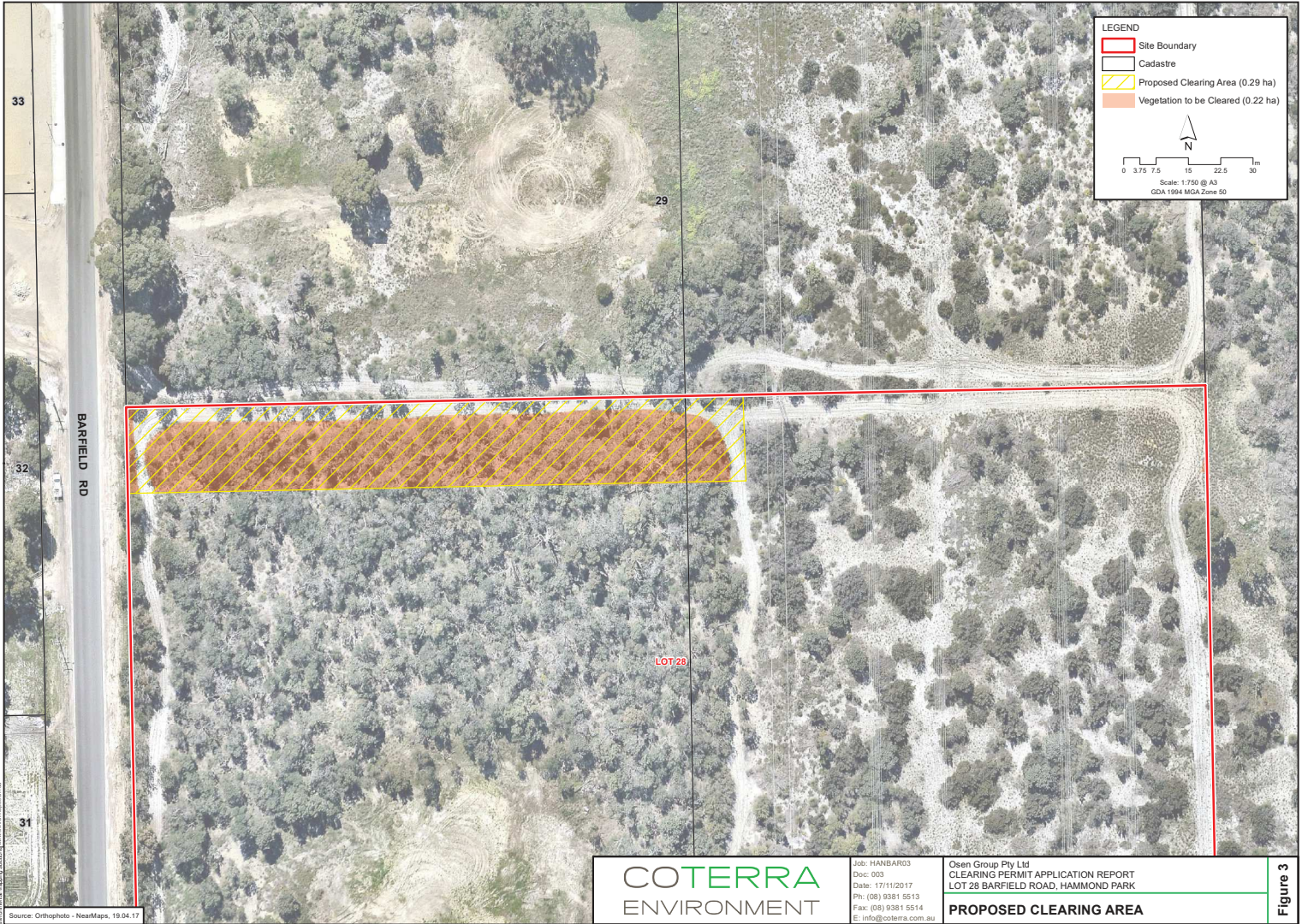
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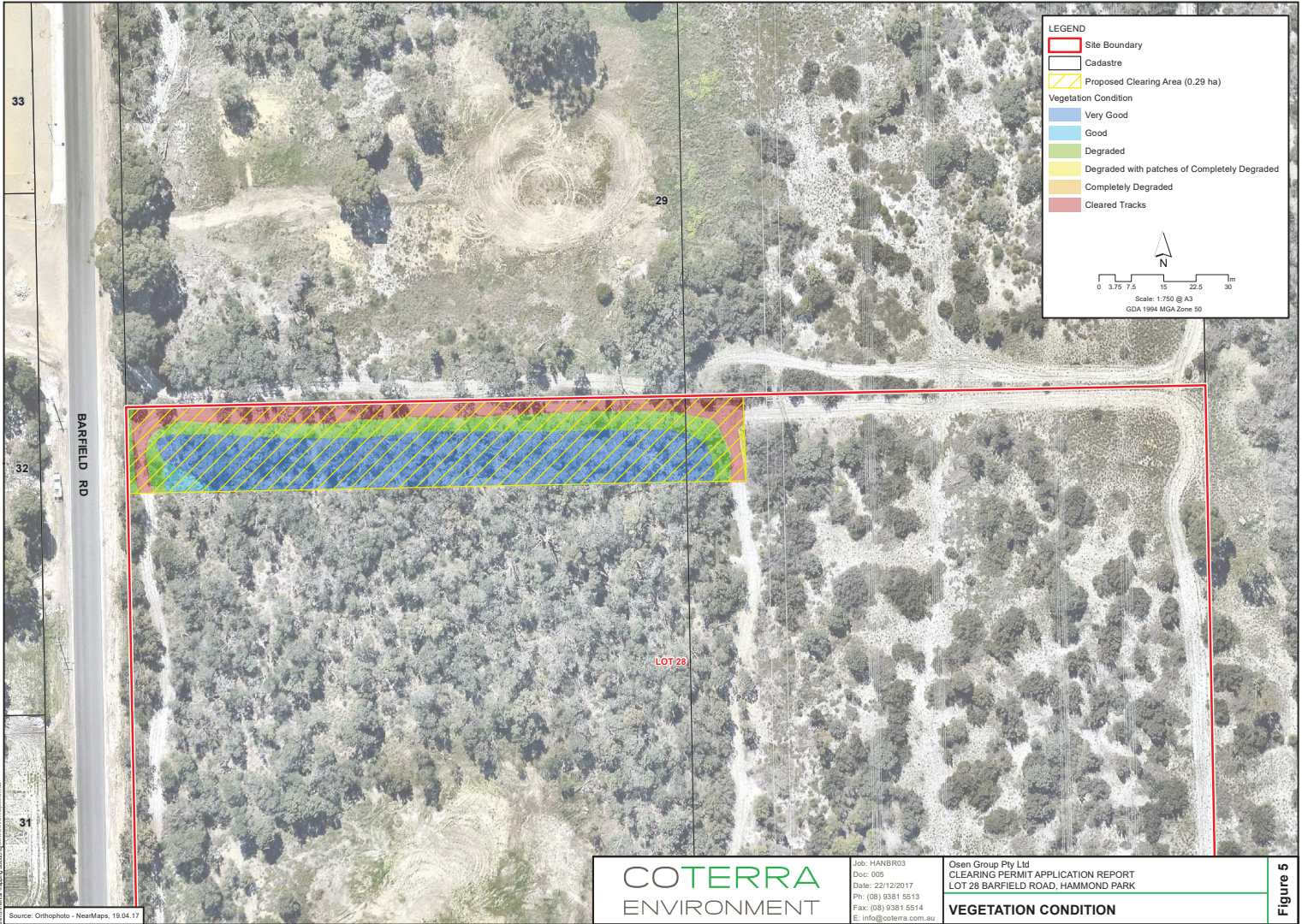
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CLEARING PERMIT APPLICATION REPORT
LOT 28 BARFIELD ROAD, HAMMOND PARK

SITE LOCATION

Figure 1







LEGEND

- Site Boundary
- Cadastre
- Proposed Clearing Area (0.29 ha)

Vegetation Condition

- Very Good
- Good
- Degraded
- Degraded with patches of Completely Degraded
- Completely Degraded
- Cleared Tracks

0 3.75 7.5 15 22.5 30 m

 Scale: 1:750 @ A3

 GDA 1994 MGA Zone 50

ENVIRONMAPS © 2017
 Source: Orthophoto - NearMaps, 19.04.17

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Osen Group Pty Ltd
 CLEARING PERMIT APPLICATION REPORT
 LOT 28 BARFIELD ROAD, HAMMOND PARK

VEGETATION CONDITION

Figure 5

ATTACHMENT E - ECOLOGICAL SURVEY REPORT, LOT 28 BARFIELD RD



COTERRA ENVIRONMENT



Ecological Survey Report

Lot 28 Barfield Road, Hammond Park

Rev 0, December 2017

CALIBRE | COMMITMENT | COLLABORATION

Ecological Survey Report

Lot 28 Barfield Road, Hammond Park

Rev 0, December 2017

This report was prepared by:

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Report Version: Rev 0
Date: December, 2017

This report was prepared for:

Condor Nominees Pty Ltd
c/o Michael Glendinning Property

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TABLE OF CONTENTS		Page
1.0	INTRODUCTION	1
1.1	Background.....	1
	1.1.1 Planning Context.....	1
1.2	Report Objectives	1
1.3	EXISTING ENVIRONMENT.....	2
1.4	Biogeographic Region.....	2
1.5	Climate and Rainfall	2
1.6	Landform, Geology and Soils	2
1.7	Hydrology	2
	1.7.1 Surface Water and Wetlands.....	2
	1.7.2 Groundwater.....	2
1.8	Vegetation and Flora.....	3
	1.8.1 Vegetation Complexes.....	3
	1.8.2 Bush Forever and Ecological Linkages.....	3
2.0	LEVELS OF FLORA AND FAUNA CONSERVATION SIGNIFICANCE	5
3.0	FLORA AND VEGETATION SURVEY.....	7
3.1	Methods.....	7
	3.1.1 Desktop Review	7
	3.1.2 Field Survey	7
3.2	Results.....	8
	3.2.1 Flora	8
	3.2.2 Vegetation Types	8
	3.2.3 Vegetation Condition.....	8
	3.2.4 Conservation Significant Flora and Ecological Communities	9
4.0	FAUNA SURVEY.....	13
4.1	Methods.....	13
	4.1.1 Desktop Review	13
	4.1.2 Field Survey	14
4.2	Results.....	14

4.2.1	Fauna Species	14
4.2.2	Fauna Habitat	26
5.0	ECOLOGICAL IMPACT MANAGEMENT AND RECOMMENDATIONS.....	31
6.0	CONCLUSION	33
7.0	LIMITATIONS.....	34
8.0	REFERENCES.....	35

TABLES (Compiled within the report) Page

Table 1:	IUCN Categories as used for the EPBC Act 1999 and the WC Act 1950	5
Table 2:	Schedules used in WC Act 1950 and associated notices.....	5
Table 3:	DBCAs (formerly DPaW) Priority Descriptions.....	6
Table 4:	Databases Searched as part of Flora and Vegetation Desktop Study.....	7
Table 5:	Conservation significant flora species recorded as potentially occurring within the subject area.....	9
Table 6:	Databases Searched as part of Fauna Desktop Study.....	13
Table 7:	Conservation significant fauna species recorded as potentially occurring within the subject area.....	17
Table 8:	Dominant tree and shrub species present that may provide foraging habitat to black cockatoos.....	27
Plate 2:	Banksia woodland (eastern, degraded portion of subject area).....	28
Plate 3:	Banksia woodland (western portion of subject area).....	28
Plate 4:	Banksia woodland (western portion of subject area).....	29
Plate 5:	Banksia woodland (western portion of subject area).....	29
Table 9:	Potential limitations of ecological surveys	34

PLATES (Compiled within the report) Page

Plate 1:	Kangaroo scats recorded onsite	16
Plate 2:	Banksia woodland (eastern, degraded portion of subject area).....	28
Plate 3:	Banksia woodland (western portion of subject area).....	28

Plate 4: Banksia woodland (western portion of subject area)	29
Plate 5: Banksia woodland (western portion of subject area)	29

FIGURES (Compiled at the end of the report)

Figure 1:	Site Location
Figure 2:	Subject Area
Figure 3:	Topography, Geology and Soils
Figure 4:	Bush Forever Sites and Ecological Linkages
Figure 5:	Vegetation Types
Figure 6:	Vegetation Condition

APPENDICES

Appendix A:	Ecological Database Search Results
Appendix B:	Flora Species Inventory
Appendix C:	Flora Species Inventory (By Location)
Appendix D:	Quadrat Data
Appendix E:	Fauna Species Inventory
Appendix F:	Foraging Habitat Quadrat Data
Appendix G:	Potential Habitat Tree Survey Data

1.0 INTRODUCTION

1.1 Background

Lot 28 (157) Barfield Road, Hammond Park (“the subject area”) encompasses an area of approximately 4.81 ha within the City of Cockburn, and is located approximately 25 km south of the Perth CBD (Figure 1). It is bound by Barfield Road to the west, urban undeveloped lots to the north and south and Kwinana Freeway to the east (Figure 2). The lot is currently unoccupied (building previously present have been demolished) and almost entirely vegetated, with some tracks located throughout. Aerial imagery is provided in Figure 2.

1.1.1 Planning Context

The subject area is zoned Urban under the Metropolitan Region Scheme (MRS) and Development Zone (Special Use 23) under the City of Cockburn Town Planning Scheme No. 3 (TPS3).

1.2 Report Objectives

The primary objective of this Ecological Survey Report is to provide information to the developer and the City of Cockburn regarding the potential for the proposed development of the subject area to impact on native flora, vegetation, fauna and habitats. It will advise the local structure planning process and development site layout.

The flora and fauna surveys have been undertaken in accordance with the following Environmental Protection Authority (EPA) Guidance Statements:

- EPA Technical Guidance: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016a)
- EPA Technical Guidance: Terrestrial Fauna Surveys for Environmental Impact Assessment (EPA, 2016b)
- EPA & Department of Environment and Conservation Technical Guide: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA & DEC, 2010)
- EPA Position Statement 3: Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA, 2002)

1.3 EXISTING ENVIRONMENT

1.4 Biogeographic Region

The subject area is located within the Swan Coastal Plain biogeographic region, under the Interim Biogeographic Regions of Australia (IBRA) (Thackway & Cresswell, 1995). These bioregions are classified due to geographic distinctions in the common climate, geology, landform, native vegetation and local species information of the area. It lies within the Swan Coastal Plain 2 (SWA2) sub-region.

1.5 Climate and Rainfall

The climate of the region within which the subject area occurs is Mediterranean, experiencing the majority of its rainfall over the winter months, with hot, dry summer months. The nearest meteorological station to the subject area is the Medina Research Centre (Station No: 9194), which records an annual mean rainfall of 745.5 mm and an annual mean maximum temperature of 24.5°C based on data collected between 1983 and 2017 (BOM, 2017).

1.6 Landform, Geology and Soils

The topography of the subject area is gently sloping, with the lowest point occurring on the northern boundary at approximately 24 mAHD, reaching a high point of 34 m AHD in the south-eastern corner of the subject area (Figure 3). The aspect of the subject area is generally west.

The subject area is located within the Bassendean Dune system of the Swan Coastal Plain. The primary soil type across the subject area is S₈, which is described as: SAND – very light grey at surface, yellow at depth, fine to medium-grained, sub-rounded quartz, moderately well sorted, of Aeolian origin (Figure 3). The equivalent unit on geological maps is Qpb – Bassendean Sand (Gozzard, 1983).

The subject area is mapped as having a Moderate to Low Risk of Acid Sulfate Soils (ASS) occurring within 3 m of the soil surface (WALGA, 2017).

1.7 Hydrology

1.7.1 Surface Water and Wetlands

There are no wetlands or watercourses recorded by the Department of Biodiversity Conservation and Attractions (DBCA) Geomorphic Wetlands Database located within the subject area. No signs of water pooling or flowing across the subject area were noted during the ecological surveys.

1.7.2 Groundwater

The Perth Groundwater Map (DWER, 2017) records indicate that the maximum groundwater levels across the subject area range from approximately 21 to 22 m AHD, flowing in a general westerly direction. Based on the mapped topography of the subject

area, groundwater is likely to occur between 3 and 12 metres below ground level (mbgl).

1.8 Vegetation and Flora

1.8.1 Vegetation Complexes

Heddle et al. (1980) described the vegetation complexes of the Darling System at a scale of 1:250 000. There was found to be a distinct pattern of plant distribution linked to landforms, soils and climate. The mapping indicates that one vegetation complex would originally have occurred across the subject area, described as:

- Bassendean Complex – Central and South:

Vegetation ranges from woodland of jarrah (*Eucalyptus marginata*), *Allocasuarina fraseriana*, *Banksia attenuata*, *B. grandis* and *B. menziesii* on the sand dunes to low woodland of *Melaleuca preissiana*, *B. ilicifolia* and *B. littoralis* and sedgelands on the low-lying moister sites. This area includes the transition of jarrah to coastal blackbutt (*E. todtiana*) in the Perth vicinity and jarrah to marri (*Corymbia calophylla*) on the moister soils. Other plant species include *Kunzea ericifolia*, *Hypocalymma angustifolium*, *Adenanthos obovatus* and *Verticordia* species.

Prior to European settlement, this complex occupied 87,393 ha across the Swan Coastal Plain, and currently occupies 24,206 ha (27.7% of the pre-European extent) (Local Biodiversity Program, 2013).

1.8.2 Bush Forever and Ecological Linkages

The subject area is located within a greater context of native bushland areas, fragmented by major transport infrastructure and urban development. A number of regional and local reserves are found nearby, many of which are also classed as Bush Forever (BF) sites (DEP, 2000). These areas of protected bushland are provided in the list below and in Figure 4:

- BF 263 – Banjup Bushland, Banjup
- BF 267 – Mandogalup Road Bushland, Hope Valley
- BF 268 - Mandogalup Road Bushland, Mandogalup
- BF 344 – Dennis De Young Reserve and Gibbs Road Swamp Bushland, Banjup / Forrestdale (Jandakot Regional Park)
- BF 391 – Thompsons Lake Nature Reserve and Adjacent Bushland, Beeliar (Beeliar Regional Park)
- BF 392 – Harry Waring Marsupial Reserve, Wattleup (Beeliar Regional Park)
- BF 393 – Wattleup Lake and Adjacent Bushland, Wattleup / Mandogalup
- BF 492 – Lyon Road Bushland, Banjup (Jandakot Regional Park)

The subject area is found near an intersection of ecological linkages (Perth Ecological Linkage network) (Figure 4), however does not form a component of these linkages (WALGA, 2017).

2.0 LEVELS OF FLORA AND FAUNA CONSERVATION SIGNIFICANCE

The conservation status of Australian flora and fauna species is identified at a federal level under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and at a state level under the Western Australian *Wildlife Conservation Act 1950* (WC Act). The conservation significance levels for flora and fauna listed on the EPBC Act List are those recommended by the International Union for the Conservation of Nature and Natural Resources (IUCN, 2001) (Table 1). The WC Act employs a set of Schedules (Table 2) but also classifies species using some of the IUCN categories.

Table 1: IUCN Categories as used for the EPBC Act 1999 and the WC Act 1950

Conservation Category	Definition
Extinct	Taxa not definitely located in the wild during the past 50 years.
Extinct in the Wild	Taxa known to survive only in captivity / cultivation or as a naturalised population well outside the past range.
Critically Endangered	Taxa facing an extremely high risk of extinction in the wild in the immediate future.
Endangered	Taxa facing a very high risk of extinction in the wild in the near future.
Vulnerable	Taxa facing a high risk of extinction in the wild in the medium term future.
Near Threatened	Taxa at risk of becoming Vulnerable in the wild.
Least Concern	Taxa that are not threatened (widespread and abundant).
Data Deficient (Insufficiently Known)	Taxa suspected of being Rare, Vulnerable or Endangered, but whose true status cannot be determined without more information.
Not Evaluated	Taxa not yet evaluated against the relevant criteria.

Table 2: Schedules used in WC Act 1950 and associated notices

Conservation Category	Definition
Threatened (T)	Declared Rare Flora
Schedule 1 (S1)	Critically endangered species
Schedule 2 (S2)	Endangered species
Schedule 3 (S3)	Vulnerable species
Schedule 4 (S4)	Presumed extinct species
Schedule 5 (S5)	Migratory birds protected under an international agreement
Schedule 6 (S6)	Conservation dependent fauna

Conservation Category	Definition
Schedule 7 (S7)	Other specially protected fauna

The EPBC Act provides protection for migratory fauna species that are recognised under international treaties, such as the China-Australia Migratory Bird Agreement (CAMBA), the Japan-Australia Migratory Bird Agreement (JAMBA), the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention). Marine fauna species are also protected under the EPBC Act.

In Western Australia, the Department of Biodiversity Conservation and Attractions (DBCA) recognises a list of Priority Flora and Fauna - species that are not considered Threatened (CE, E or V) under the WC Act, but are cause for concern. Some Priority species however, are also assigned to the IUCN Conservation Dependent category. Levels of Priority are described in Table 3. Assessments in this report are based on the most recent version of the DBCA (formerly Department of Parks and Wildlife) Threatened and Priority flora and fauna species list (January 2017).

Table 3: DBCA (formerly DPaW) Priority Descriptions

Conservation Category	Definition
Priority 1 (P1)	Taxa with few, poorly known populations on threatened lands.
Priority 2 (P2)	Taxa with few, poorly known populations on conservation lands; or taxa with several, poorly known populations not on conservation lands.
Priority 3 (P3)	Taxa with several, poorly known populations, some on conservation lands.
Priority 4 (P4)	Taxa in need of monitoring. Taxa which are considered to have been adequately surveyed, or for which sufficient knowledge is available, and which are considered not currently threatened or in need of special protection, but could be if present circumstances change. May be rare or near threatened.

In addition to species categorised by the IUCN, EPBC Act, WC Act and DBCA as 'conservation significant', other species that are at the limit of their distribution, that have a very restricted range and / or that occur in breeding colonies, such as some waterbirds, are also considered of conservation significance, although this level of significance has no legislative or published recognition and is based on the interpretation of information regarding their ecology, distribution and life history.

DEP (2000) has also provided a list of bird species that are considered to be locally significant within the Perth Metropolitan region of the Swan Coastal Plain.

3.0 FLORA AND VEGETATION SURVEY

3.1 Methods

A survey of the flora and vegetation within the subject area was undertaken by Coterra's botanist on 19th October 2017. As per the EPA Technical Guidance for Flora and Vegetation Survey (EPA, 2016a), a Detailed Survey was undertaken. Three 10 x 10 m vegetation quadrats were established in the western portion of the subject area, which was in significantly better condition than the eastern portion. Targeted searches for flora and opportunistic sampling were undertaken over the entire subject area, and the vegetation type and condition mapped, using the Keighery (1994) condition scale as referred to in the EPA Technical Guidance (EPA, 2016a).

3.1.1 Desktop Review

A database search was undertaken to identify any flora species that may potentially occur within the area. The databases searched are provided in Table 4, and results are included in Appendix A.

Table 4: Databases Searched as part of Flora and Vegetation Desktop Study

Database (Governing Body)	Type of Records Held	Area Searched
EPBC Act database - EPBC Protected Matters Search Tool (Department of the Environment and Energy (DotEE))	Records and distribution information on matters protected under the EPBC Act, including threatened species and conservation estate	Subject area plus 5 km buffer
NatureMap Database (DBCAs)	Records on all flora species, based on location (area) or species	Central point plus 5 km circle buffer

Aerial photography and Bush Forever (Government of WA, 2000) findings for nearby sites were reviewed prior to the site survey, along with lists of potential Threatened or other significant flora for the area.

3.1.2 Field Survey

The field survey of the subject area was undertaken on 19 October 2017 by Carolyn Harding (Coterra Environment). The survey was undertaken in accordance with the following guidance:

- EPA Technical Guidance: Terrestrial Flora Surveys for Environmental Impact Assessment (EPA, 2016a)

3.1.2.1 Conditions

The survey was undertaken in spring, following a year with early rainfall, and a later cold winter period.

3.1.2.2 Licenses / Permits

The flora and vegetation survey involved flora specimen collections for identification purposes taken under the botanist's DPaW (now DBCA) Licence for Scientific or Other Prescribed Purposes (SOPP) number SL012169.

3.2 Results

3.2.1 Flora

89 species from 30 families were recorded or observed during the survey of the subject area (Appendix B and Appendix C). Of these, 79 were native and 10 were introduced species. A large mature *Eucalyptus gomphocephala* (Tuart) was recorded in the cleared central area of the western portion of the site, and scattered *Eucalyptus marginata* (Jarrah) were observed in the south-western and north-eastern fringes of the subject area. One mature tree of *Schinus terebinthifolius* (Pepper Tree) was found during the survey, close to the road on the western side of the subject area. This species is not listed as a Declared Plant by DaFWA (2017).

Quadrat data from each of the recorded locations across the subject area is provided in Appendix D. These locations are also mapped in Figures 5 and 6.

3.2.2 Vegetation Types

Two vegetation types were observed within the survey area (Figure 5):

- An Open Low Forest of *Banksia attenuata*, *B. ilicifolia* and *B. menziesii* with scattered *Allocasuarina fraseriana* over Open Tall Shrubland to Tall Shrubland of *Xanthorrhoea preissii*, with occasional pockets of *Kunzea glabrescens* tall shrubs, over Open Shrubland to Shrubland of *Stirlingia latifolia* over Open Low Shrubland of *Hibbertia hypericoides* or *Hypocalymma robustum* and *Bossia eriocarpa* or over a mixed Sedgeland/Herbland including *Phlebocarya ciliata*, and/or *Desmocladius flexuosus* and *Lepidosperma squamatum* on midslope flats, on loamy sands, was recorded predominantly in the western portion of the subject area.
- Scattered *Banksia menziesii* and *B. ilicifolia* over Shrubland to tall Shrubland of *Adenanthos cygnorum* over Open Grassland of introduced species *Ehrharta calycina* with scattered native low shrubs, on midslope sandy flats was recorded predominantly in the eastern portion of the subject area.

3.2.3 Vegetation Condition

Vegetation condition within the subject area was assessed using Table 2 from the EPA Flora Technical Guidelines (EPA, 2016a) and was found to be markedly different in the eastern and western portions of the subject area. The vegetation in the western portion was in predominantly Very Good or Good Condition with the exception of the central cleared circular area, and vegetation in the eastern portion in the vicinity of the high voltage powerline easement was in predominantly Degraded to Completely Degraded Condition (Figure 6). Some small amounts of scattered rubbish were observed within the subject area, and some remnants from previous dwelling(s) remained in the cleared central area in the western portion of the subject area.

Introduced species were recorded near the edges of the vegetation (more predominantly in the degraded eastern side of the subject area, with the grass species *Ehrharta calycina* at a higher density in the understorey).

3.2.4 Conservation Significant Flora and Ecological Communities

3.2.4.1 Flora

Conservation significant flora species with the potential to occur within the subject area are presented in Table 5. These results have been sourced from the databases listed in Table 4 and are based on known species distributions and habitat availability. They consist of species protected under State or Federal legislation, or listed as conservation priorities by DBCA on the Current List of Threatened and Priority Flora Rankings (March 2017).

Table 5: Conservation significant flora species recorded as potentially occurring within the subject area

Species	Common Name	Status (WA)	Status (EPBC)	Description (Florabase, 2017) unless otherwise referenced)
<i>Andersonia gracilis</i>	Slender Andersonia	T	E	Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Fl. white-pink-purple, Sep to Nov. White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps. Likelihood of occurrence is low.
<i>Caladenia huegelii</i>	King Spider-orchid	T	E	Tuberous, perennial, herb, 0.25-0.6 m high. Fl. green & cream & red, Sep to Oct. Grey or brown sand, clay loam. Likelihood of occurrence is high.
<i>Cyathochaeta teretifolia</i>		P3		Rhizomatous, clumped, robust perennial, grass-like or herb (sedge), to 2 m high, to 1.0 m wide. Fl. brown. Grey sand, sandy clay. Swamps, creek edges. Likelihood of occurrence is low.
<i>Diuris micrantha</i>	Dwarf Bee-orchid	T	V	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown, Sep to Oct. Brown loamy clay. Winter-wet swamps, in shallow water. Likelihood of occurrence is low.
<i>Diuris purdiei</i>	Purdie's Donkey-orchid	T	E	Tuberous, perennial, herb, 0.15-0.35 m high. Fl. yellow, Sep to Oct. Grey-black sand, moist. Winter-wet swamps. Likelihood of occurrence is low.
<i>Dodonaea hackettiana</i>	Hackett's Hopbush	P4		Erect shrub or tree, 1-5 m high. Fl. yellow-green/red, mainly Jul to Oct. Sand. Outcropping limestone. Likelihood of occurrence is low.

Species	Common Name	Status (WA)	Status (EPBC)	Description (Florabase, 2017) unless otherwise referenced)
<i>Drakaea elastica</i>	Glossy-leafed Hammer Orchid	T	E	Tuberous, perennial, herb, 0.12-0.3 m high. Fl. red & green & yellow, Oct to Nov. White or grey sand. Low-lying situations adjoining winter-wet swamps. Likelihood of occurrence is low.
<i>Drakaea micrantha</i>	Dwarf Hammer-orchid	T	V	Tuberous, perennial, herb, 0.15-0.3 m high. Fl. red & yellow, Sep to Oct. White-grey sand. Likelihood of occurrence is moderate.
<i>Eleocharis keigheryi</i>	Keighery's Eleocharis	T	V	Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Fl. green, Aug to Nov. Clay, sandy loam. Emergent in freshwater: creeks, claypans. Likelihood of occurrence is low.
<i>Jacksonia gracillima</i>		P3		Shrub ~1m. Banksia woodland. Flat near winter-wet swamp, grey sand. Likelihood of occurrence is moderate.
<i>Kennedia beckxiana</i>	Cape Arid Kennedia	P4		Prostrate or twining shrub or climber. Fl. red, Sep to Dec. Sand, loam. Granite hills & outcrops. Likelihood of occurrence is low.
<i>Lepidosperma rostratum</i>	Beaked Lepidosperma	T	E	Rhizomatous, tufted perennial, grass-like or herb (sedge), 0.5 m high. Fl. brown. Peaty sand, clay. Likelihood of occurrence is moderate.
<i>Pimelea calcicola</i>		P3		Erect to spreading shrub, 0.2-1 m high. Fl. pink, Sep to Nov. Sand. Coastal limestone ridges. Likelihood of occurrence is low.
<i>Pithocarpa corymbulosa</i>	Corymbose Pithocarpa	P3		Erect to scrambling perennial, herb, 0.5-1 m high. Fl. white, Jan to Apr. Gravelly or sandy loam. Amongst granite outcrops. Likelihood of occurrence is low.
<i>Stylidium paludicola</i>		P3		Reed-like perennial, herb, 0.35-1 m high, Leaves tufted, linear or subulate or narrowly oblanceolate, 0.5-4 cm long, 0.5-1.5 mm wide, apex acute, margin entire, glabrous. Scape mostly glabrous, inflorescence axis glandular. Inflorescence racemose. Fl. pink, Oct to Dec. Peaty sand over clay. Winter wet habitats. Marri and Melaleuca woodland, Melaleuca shrubland. Likelihood of occurrence is low.
<i>Tripterococcus sp. Brachylobus</i> (A.S. George 14234)		P4		Perennial herb to 0.6 m with yellow flowers. Sand overlay. Likelihood of occurrence is low.

Species	Common Name	Status (WA)	Status (EPBC)	Description (Florabase, 2017) unless otherwise referenced)
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>		P4		Erect shrub, 0.2-0.75 m high. Fl. pink, May or Nov to Dec or Jan. Sand, sandy clay. Winter-wet depressions. Likelihood of occurrence is low.

No flora species of conservation significance were observed or recorded during the survey. The survey was undertaken during the peak spring flowering period, within the optimum published timing for searching for conservation significant orchid species such as *Caladenia huegelii* (DBCA, 2017 & Brown, 2008).

Given the Very Good to Good condition of much of the Banksia woodland in the western portion of the subject area, and suitable habitat for the presence of orchid species in various states of development and flowering, the potential remains for species such as *C. huegelii* to be present within the subject area if they had flowered early. It is noted that the exact flowering time, as with all species, varies from year to year depending on rainfall and temperature, and the exact timing of flowering for any species is unknown until a survey is conducted.

The flora and vegetation survey undertaken in spring (27 September) 2016 for Lot 29 Barfield Road directly north of the subject area recorded no occurrences of *Caladenia huegelii* (or any other DRF or priority flora). Other *Caladenia* species recorded included *C. flava* and *C. arenicola* (360 Environmental, 2016). Given the proximity of this survey area to the subject area and the fact that the vegetation of Lot 29 is part of the same patch of vegetation in Lot 28, it is considered unlikely that the *Caladenia sp.* specimens recorded within Lot 28 are *C. huegelii*. NatureMap (2017) records the nearest *C. huegelii* in locations 3 – 4 km north-west and east of the subject area.

3.2.4.2 Ecological Communities

According to the advice and criteria outlined in the Approved Conservation Advice for the Banksia Woodlands of the Swan Coastal Plain ecological community (DotEE, 2016) and shown below, Banksia woodland in the western portion of the subject area meets the criteria for the EPBC-listed Banksia woodlands of the Swan Coastal Plain Threatened Ecological Community. The criteria are addressed as follows:

- The criteria of vegetation condition is met, with the Banksia woodland in the western portion of the subject area in Very Good and Good Condition (Figure 6).
- The criteria of patch size is met, with the areas of Very Good and Good Condition mapped as 1.16 ha and 0.23 ha in size respectively.
- The criteria of an upper layer of trees of Banksia dominated or co-dominated species is met, with the tree canopy layer dominated by *Banksia attenuata*, *Banksia menziesii* and *Banksia ilicifolia*.
- The criteria of a species-rich and diverse understory is met, with 75 native understorey species recorded in this floristic community within the subject area.
- Key species in the sclerophyllous shrub layer of the ecological community including *Bossiaea eriocarpa* (common brown pea), *Daviesia* spp., *Daviesia*

triflora, *Eremaea pauciflora*, *Gompholobium tomentosum* (hairy yellow pea), *Hibbertia hypericoides* (yellow buttercups), *Kunzea glabrescens*, *Petrophile linearis* (pixie mops), *Philothea spicata* (pepper and salt), *Stirlingia latifolia* (blueboy), *Phlebocarya ciliata*, *Hypolaena exsulca* and *Xanthorrhoea preissii* (balga) were recorded (Appendix B and Appendix C).

Key species in the herbaceous ground layer including *Amphipogon turbinatus* (tufted beard grass), *Burchardia congesta* (milkmaids), *Caladenia* spp. (spider orchids), *Dasyogon bromeliifolius* (pineapple bush), *Desmocladius flexuosus*, *Drosera erythrorhiza* (red ink sun dew), *Lepidosperma squamatum* (a tufted sedge), *Lomandra hermaphrodita*, *Lyginia imberbis*, *Mesomelaena pseudostygia* (semaphore sedge), *Patersonia occidentalis* (purple flag), *Stylidium brunonianum* (pink fountain trigger plant), *Stylidium piliferum* (common butterfly trigger plant), *Trachymene pilosa* (dwarf parsnip), and *Xanthosia huegelii* (heath xanthosia) were recorded (Appendix B and Appendix C).

4.0 FAUNA SURVEY

4.1 Methods

The fauna survey incorporates the following components:

- a comprehensive search of available fauna databases and a literature review of other studies and published or unpublished research;
- compilation of background information relevant to the subject area;
- compilation of an inventory of fauna species potentially occurring in the subject area;
- identification of fauna of conservation significance potentially occurring in the subject area;
- identification of broad fauna habitats and sensitive fauna habitats that may be expected to occur over the subject area (based on aerial photography, vegetation mapping and site reconnaissance survey);
- an opportunistic fauna reconnaissance survey of the subject area, recording observations of fauna species, evidence of habitation, evidence of feeding, tracks, scats, bones, feathers, and any other relevant signs;
- provision of recommendations of management measures to minimise impacts of the proposed development on fauna and associated habitats in the subject area.

4.1.1 Desktop Review

A database search was undertaken to identify any fauna species that may potentially occur within and utilise the resources of the area for foraging and / or shelter. A comprehensive potential fauna species list is included in Appendix E. The databases searched are provided in Table 6, and results are included in Appendix A.

Table 6: Databases Searched as part of Fauna Desktop Study

Database (Governing Body)	Type of Records Held	Area Searched
EPBC Act database - EPBC Protected Matters Search Tool (Department of the Environment and Energy (DotEE))	Records and distribution information on matters protected under the EPBC Act, including threatened species and conservation estate	Subject area plus 5 km buffer
NatureMap Database (DBCAs)	Records on all fauna species, based on location (area) or species	Central point plus 5 km circle buffer
Species Profile and Threats (SPRAT) Database (DotEE)	Information and records on all federally protected species	Search conducted by species, not area.

4.1.2 Field Survey

The reconnaissance field survey of the subject area was undertaken on 6 November 2017 by Emma McSweeney (Coterra Environment). The survey was undertaken in accordance with the following Environmental Protection Authority (EPA) Guidance Statements:

- EPA Technical Guidance: Terrestrial Fauna Surveys for Environmental Impact Assessment (EPA, 2016b)
- EPA & Department of Environment and Conservation Technical Guide: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA & DEC, 2010)
- EPA Position Statement 3: Terrestrial Biological Surveys as an Element of Biodiversity Protection (EPA, 2002)

4.1.2.1 Conditions

The survey was undertaken in fine, hot weather with a slight breeze.

4.1.2.2 Licenses and Permits

No permit or license was required to undertake the survey.

4.2 Results

4.2.1 Fauna Species

4.2.1.1 Fauna Species Inventory

A list of the fauna species that were identified to potentially occur within the subject area is provided in Appendix E. The databases searched are provided in Table 6, and are included in Appendix A.

Birds

The Swan region (including the Swan Coastal Plain and Jarrah Forest bioregions) contains a high proportion of all the bird species found across the south-west of Western Australia. Many birds now occupying the region have been introduced from the eastern states (ANRA, 2009). A total of 166 bird species were identified as potentially occurring as a result of the desktop survey and site reconnaissance survey (Appendix E).

Four bird species were recorded (observed) during the field survey, namely:

- *Lichenostomus virescens* (Singing Honeyeater)
- *Lichmera indistincta* (Brown Honeyeater)
- *Phylidonyris novaehollandiae* (New Holland Honeyeater)
- *Rhipidura leucophrys* (Willie Wagtail)

It is noted that the hot weather on the day of the survey and preceding days is likely to have impacted the number of bird species observed. These species are common and widespread throughout south-western Western Australia.

No bird species of conservation significance under state or federal legislation or DBCA prioritisation were recorded during the field survey. However, there are 33 conservation significant bird species that, according to the desktop survey, have the potential to occur within the subject area. The likelihood of their occurrence within the subject area is discussed in Table 7.

Herpetofauna

The Swan region (including the Swan Coastal Plain and Jarrah Forest bioregions) is well known for its diverse herpetofauna, including 16 frogs, 2 freshwater turtles, 51 lizards and 24 snakes (Perth NRM, 2017). A search of the databases listed in Table 6 identified 38 species previously recorded in the area or expected to occur due to known range and habitat (Appendix E).

It is possible that conservation significant reptiles Perth lined skink (*Lerista lineata*) and black-striped snake (*Neelaps calonotos*) may occur within the subject area, despite evidence of inhabitation not being noted during the fauna survey. These species and other conservation significant species that may potentially occur within the subject area are discussed further in Table 7.

Mammals

Within the Swan Coastal Plain bioregion, 40 mammal species are known to occur. However, of these, 10 are presumed extinct (ANRA, 2009). The desktop survey identified 21 mammals (native and introduced) that could potentially occur within the subject area (Appendix E). Of these, four are introduced pest species.

One mammal was recorded (evidence of presence, scats (Plate 1)) during the site reconnaissance survey:

- Western Grey Kangaroo (*Macropus fuliginosus*)

It is possible that quenda, a conservation significant mammal, may occur within the subject area, although no signs of runnels or diggings were noted during the survey. This species and other conservation significant species that may potentially occur within the subject area are discussed further in Table 7.



Plate 1: Kangaroo scats recorded onsite

Amphibians

The desktop survey identified seven frog species that are considered to potentially occur within the subject area (Appendix E). It is possible that these species inhabit the site, however it is likely that they rely on alternative nearby habitat areas due to the lack of wetlands within the subject area. No conservation significant amphibian species were identified as likely to occur in the vicinity of the subject area.

Invertebrates

Twenty three invertebrate species were identified during the desktop survey as potentially occurring within the subject area (mostly spider species). One of these (graceful sunmoth) is a conservation significant species, however habitat to support this species was not found to be present during the flora and vegetation and fauna surveys (discussed further in Table 7).

4.2.1.2 Conservation Significant Fauna Species

Conservation significant fauna with the potential to occur within the subject area are presented in Table 7. These results have been sourced from the databases listed in Table 6 and are based on known species distributions and habitat availability. A fauna survey report prepared for Lot 29 Barfield Road, Hammond Park (adjacent to the subject area) (360 Environmental, 2016) was also reviewed to determine the species recorded in the surrounding area. They consist of species protected under State or Federal legislation, or listed as conservation priorities by DPaW on the Current List of Threatened and Priority Fauna Rankings (January 2017). Other species considered to be of local significance are indicated in the species list in Appendix E.

Table 7: Conservation significant fauna species recorded as potentially occurring within the subject area

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
Birds				
<i>Actitis hypoleucos</i>	Common Sandpiper	-	Mi, Ma	Occurs along entire Australian coastline and inland in some areas, in widespread but small populations. Utilises a wide range of coastal wetlands and inland wetlands, fresh to saline. It is mostly recorded around muddy margins or rocky shores, rarely on mudflats. Occurs in estuaries and deltas of streams, around lakes, pools, reservoirs, dams and claypans, and occasionally piers and jetties. Forages in shallow water and on bare soft mud at the edges of wetlands; sometimes forages in grassy areas adjoining wetlands. Unlikely to inhabit the subject area due to lack of habitat.
<i>Apus pacificus</i>	Fork-tailed Swift	S5	Mi, Ma	Widespread across coastal and subcoastal areas, scattered distribution on southern coast and inland areas. Scattered across Pilbara and Kimberley, sparse records inland (Goldfields). Nests in rock caves or cliffs, but does not breed in Australia. Almost exclusively aerial over almost all habitat types. Could potentially occur in transitory capacity on most sites. Occurs mostly over inland plains but sometimes above coastal cliffs. Forages aerially on insects (DotEE, 2017; Pizzey and Knight, 2007). May occur in a transitory capacity but unlikely to be impacted by development.
<i>Ardea alba</i>	Great Egret	S5	Ma	Widespread across the state, avoiding the dry and hot interior. Breeding records in south-western WA and Kimberley region. Wide range of wetland habitats (fresh/saline, inland/coastal, open/vegetated, permanent/ephemeral). In south-western Australia breeding colonies nest predominantly in Melaleuca swamps in Nov/Dec. Forage by wading in shallow to relatively deep water or walking over dry ground. Unlikely to inhabit the subject area due to lack of habitat.
<i>Ardea ibis</i>	Cattle Egret	S5	Ma	Widespread across the state, avoiding the dry and hot interior. Breeding records between Wyndham in WA and Arnhem Land in the NT. Wide range of wetland habitats (fresh/saline, inland/coastal, open/vegetated, permanent/ephemeral). Commonly found in cattle fields and other farm areas that contain livestock. Forages in pastured or grassy areas. Unlikely to inhabit the subject area due to lack of habitat.

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Botaurus poiciloptilus</i>	Australasian Bittern	S2	E	Occurs in wetlands on Swan Coastal Plain, in the southern coastal region from Augusta to east of Albany and inland to some wetlands in the jarrah forest belt. Often found in beds of tall rush mixed with or near short fine sedge or open pools. Generally inhabits densely vegetated freshwater and occasionally estuaries and tidal wetlands, breeding in vegetated areas of swamps and pools. Forages in still shallow water up to 0.3 m in depth, often at the water's edge, or from platforms or mats of flattened vegetation over deeper water. Unlikely to inhabit the subject area due to lack of habitat.
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	S5	Mi, Ma	Widespread across coastal Australia in summer months. Inhabits fresh or saltwater wetlands - tidal mudflats, saltmarshes, mangrove swamps, inland wetlands and flood plains in Australia over summer months (breeds in Siberia). Forages on grasslands and mudflats. Unlikely to inhabit the subject area due to lack of habitat.
<i>Calidris canutus</i>	Red Knot	S5	E, Mi, Ma	Commonly observed on the Kimberley coast, Ningaloo and Barrow Island. Less common in south-western Australia, but still numerous on large wetlands. Inhabits intertidal mudflats, sand flats, estuaries, inlets and sheltered beaches or bays and rarely inhabiting inland freshwater lakes or swamps (breeds overseas). Forages in soft land near the edge of water on intertidal mudflats or sandflats exposed by low tide. At high tide will feed at nearby lakes, sewage ponds and floodwaters. Unlikely to inhabit the subject area due to lack of habitat.
<i>Calidris ferruginea</i>	Curlew Sandpiper	S3	CE, Mi, Ma	Widespread across the coast but is also common at inland sites. Inhabits intertidal mudflats in sheltered coastal areas, such as estuaries, inlets, bays, as well as swamps and lakes. Breeds in Siberia and migrates south during Australia summer. Forages on bare areas of mud or sand. Unlikely to inhabit the subject area due to lack of habitat.
<i>Calidris melanotos</i>	Pectoral Sandpiper	S5	Mi, Ma	Rarely recorded in WA. Records exist from Peel Inlet in SW WA, Pilbara, Kimberley and Gasgoyne. Breeds in Siberia and the American arctic, migrating to South America, Japan and Australasia between the months of August and May. In Australia, it inhabits shallow vegetated freshwater wetlands, swamps and occasionally tidal areas and saltmarshes. Uncommon summer migrant to Australia. Peel Inlet is considered significant habitat. Forage in water on grass fringing wetlands. Unlikely to inhabit the subject area due to lack of habitat.

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Calidris ruficollis</i>	Red-necked Stint	S5	Mi, Ma	<p>The Peel Inlet and Alfred Cove Nature Reserve are both significant sites for the red-necked stint in south-western Australia. Generally found in coastal areas, including sheltered inlets, bays and estuaries, with mud- or sandflats for foraging. Breeds in Siberia and overwinters in Australia. Forages on mud or sandflats.</p> <p>Unlikely to inhabit the subject area due to lack of habitat.</p>
<i>Calidris subminuta</i>	Long-toed Stint	S5	Mi, Ma	<p>Disperses between temporary wetlands, moving from the north-west to anywhere between the Pilbara and the coast of South Australia. Tend to congregate around drying wetlands in Western Australia during late summer. Breeds in Siberia before migrating south to South East Asia and Australia (arriving in Australia from August). Inhabits shallow wetlands, streams and sewage ponds. Commonly found on the fringes of drying ephemeral lakes and wetlands. Forages in shallow water and drying wetland fringes.</p> <p>Unlikely to inhabit the subject area due to lack of habitat.</p>
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black Cockatoo	S3	V	<p>Occurs on the Swan Coastal Plain and south-west in small fragmented populations. Inhabits remnant native eucalypt woodlands. It nests in tall eucalypts with hollows for breeding. Favours open habitats for roosting, sourcing small clumps of marri trees or sites adjacent to rocky outcrops or fields / open tracks. Feeds on seeds, nectar and fruit, particularly of <i>Eucalyptus</i> and <i>Corymbia calophylla</i>.</p> <p>May occur within the subject area, no evidence of inhabitation observed during survey.</p>
<i>Calyptorhynchus baudinii</i>	Baudin's Black Cockatoo	S2	V	<p>Only known to occur in the south-west corner of Western Australia. Range extends from Albany in the south to Mundaring east of Perth. Occurs in heavily forested areas, generally associated with large gums such as marri, karri and jarrah trees, also occurring in woodlands characterised by other <i>Eucalyptus</i> species. Nesting is generally confined to areas containing karri trees, although research has confirmed that breeding also occurs in southern jarrah-marri forests, with some birds nesting as far north as Perth. Forages in marri trees and other proteaceous trees / shrubs (such as <i>Banksia</i>), occasionally sourcing seeds and grubs from the ground.</p> <p>May occur within the subject area, no evidence of inhabitation observed during survey.</p>

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Calyptorhynchus latirostris</i>	Carnaby's Black Cockatoo	S2	E	<p>Occurs in subpopulations across south-west WA. Residential in high-rainfall areas. Inhabits remnant native eucalypt woodlands, primarily in the semi-arid region and southern jarrah-marri forests. Is a seasonal visitor to pine plantations where it feeds on pine seeds. It nests in tall eucalypts with hollows for breeding. Feeds on seeds, nectar and fruit of Banksia, Dryandra, Pinus, Eucalyptus and <i>Corymbia calophylla</i>.</p> <p>May occur within the subject area, no evidence of inhabitation observed during survey.</p>
<i>Charadrius dubius</i>	Little Ringed Plover	S5	Mi, Ma	<p>Rare but regular visitor to WA. SCP and south coast of WA. Migrant in Australia between September and March, after spending breeding months across Eurasia. Occupies open muddy or sandy shores or fringes of saline or freshwater lakes, swamps, estuaries and inlets. Forages at water's edge on muddy shores.</p> <p>Unlikely to inhabit the subject area due to lack of habitat.</p>
<i>Charadrius ruficapillus</i>	Red-capped Plover	-	Ma	<p>Widespread across Australia, occurring where there is suitable habitat (both coastal and inland). Sandy and shelly beaches, open and bare margins of saline wetland and lakes, saltmarshes, tidal mud- and sandflats. Not known to occur in freshwater habitats. Breeds between July and January in southern Australia, laying eggs in scrapes on sandy beaches, or beside inland lakes or salt pans. Forages on edges of water bodies.</p> <p>Unlikely to inhabit the subject area due to lack of habitat.</p>
<i>Falco peregrinus</i>	Peregrine Falcon	S7		<p>Widespread distribution across much of Australia, but is uncommon. Distribution often depends on the abundance of prey. Inhabits woodlands, watercourses, grasslands and coastal cliffs, preferring tall structures on which to perch and nest. Nests in recesses of cliff faces, tree hollows or in large abandoned nests of other birds. Predates heavily on other birds.</p> <p>Unlikely to inhabit the subject area, though may occur in a transitory capacity for foraging.</p>
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	-	Ma	<p>Distributed along the coastline, and is restricted to a narrow band of coastline in south-western Australia. Australian population is estimated at 500 mating pairs. Found in coastal habitats and tends to occupy dunes, tidal flats, woodlands, forests and grasslands (generally in areas associated with large bodies of water). Often occupies urban areas. Nests constructed in large trees, cliffs, rocky outcrops, mangroves, caves or on artificial structures, usually coastal but sometimes terrestrial. Forages opportunistically over large expanses of open water, though they are also known to forage over terrestrial habitats. Carnivorous.</p> <p>Unlikely to inhabit the subject area, though may occur in a transitory capacity for foraging.</p>

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Himantopus himantopus</i>	Black-winged Stilt	-	Ma	Well-distributed across Australia, occurring in all areas containing suitable habitat. Inhabits freshwater swamps, marshes and wetlands, shallow lake and river margins, floodplains, claypans, dams, tidal estuaries and sand- and mudflats. Prefers shallow wetlands (fresh or saline). Breeds between August and December, building nests of water plants and weeds, often on low hummocks in water, dead bushes or in a depression on dry ground. Forages on wetland margins and in shallow water. Unlikely to inhabit the subject area due to lack of habitat.
<i>Ixobrychus dubius</i>	Australian Little Bittern	P4		Previously considered a subspecies of <i>I. minutus</i> . Occurs SW WA. Rarely sighted. Inhabits vegetated freshwater wetlands, swamps, lakes and rivers, forming nests in fringing rushes usually over water. It also occurs in brackish-saline mangroves, salt marsh and coastal lagoons. Breeds from October to January. Forages at water's edge in dense vegetation. Unlikely to inhabit the subject area due to lack of habitat.
<i>Leipoa ocellata</i>	Malleefowl	S3	V	Occurs in the semi-arid and arid regions of southern Australia. Inhabits shrublands and low woodlands that are dominated by mallee vegetation and/or low-growing multi-stemmed eucalypt species. Occasionally inhabit Acacia shrublands. Due to lack of habitat and known range, highly unlikely to occur within subject area.
<i>Limosa limosa</i>	Black-tailed Godwit	S5	Mi, Ma	Occurs across most of Australia, with a primarily coastal distribution. Generally found in small numbers in WA, and there are scattered inland records. Inhabits bays, estuaries, tidal mud- and sandflats, or inland on large, fresh or brackish wetlands. Near-coastal wetlands are often inhabited if sufficiently shallow and sparsely-vegetated. Has been recorded on rocky coasts and exposed coral reef. Utilises sandy or muddy edges of water bodies and shallow water for feeding. Unlikely to inhabit the subject area due to lack of habitat.
<i>Merops ornatus</i>	Rainbow Bee Eater	S5	Ma	Known to occur across the majority of the mainland. Migrates between Australia, Eastern Indonesia and Japan, and has formed a colony on Rottneest Island. Tends to occupy open forests and woodlands, cleared or semi-cleared areas and farmland, in usually timbered landscapes, often in close proximity to water. Nest is an enlarged chamber at the end of a long burrow that is excavated from flat or loping ground, cliff faces or mounds of gravel. They generally remain unlined. It perches in the open, foraging by scanning for flying insects. May occur within the subject area, no evidence of inhabitation observed during survey.

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Motacilla cinerea</i>	Grey Wagtail	S5	Mi	<p>Non-breeding summer visitor to mostly northern Australia. Inhabits areas near running water, in disused quarries, sandy or rocky streams, rainforests, sewage ponds and ploughed fields.</p> <p>Due to lack of habitat and known range, highly unlikely to occur within subject area.</p>
<i>Numenius madagascariensis</i>	Eastern Curlew	S3	CE, Mi, Ma	<p>Discontinuous distribution along the coast of the Australian continent, rarely recorded inland. Common migrant to northern parts of Australia, less common in the south-west of WA. Active at night and inhabits estuaries, tidal mudflats, sandspits, saltmarshes, mangrove swamps and occasional fresh or brackish lakes. Forages on soft sheltered intertidal sandflats or mudflats.</p> <p>Due to known range and lack of habitat, highly unlikely to occur within subject area.</p>
<i>Pandion haliaetus</i>	Eastern Osprey	S5	Mi, Ma	<p>Breeds from April to February in Australia. The breeding range extends around the northern coast of Australia from Albany to Lake Macquarie in NSW with a second isolated breeding population on the coast of South Australia. Non-breeding range extends east to Esperance. Occurs in coastal habitats and terrestrial wetlands, occasionally travelling inland along major rivers.</p> <p>Unlikely to occur in the subject area due to lack of habitat.</p>
<i>Philomachus pugnax</i>	Ruff	S5	Mi, Ma	<p>Patchy distribution, occurring in the south-west and Kimberley coast in Western Australia. Rare but regular visitor to Australia. Inhabits fresh, brackish or saline wetlands with exposed mudflats at their edges as well as bays, beaches and estuaries, and roosts amongst short, riparian vegetation. Forages in water, dry substrate and amongst dead or dying vegetation at the edge of the water. Diurnal and nocturnal.</p> <p>Unlikely to occur in the subject area due to lack of habitat.</p>
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet	-	Ma	<p>Widespread (coastal) but occurs irregularly across WA. Breeds at inland locations moving coast-ward during the summer when inland ephemeral wetlands begin to dry up. Preferred habitat includes estuaries, tidal mudflats, swamps, lakes, claypans and sewage ponds (salt and freshwater). Feeds by wading through shallow water making sweeping motion with bill.</p> <p>Unlikely to occur in the subject area due to lack of habitat.</p>

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Rostratula australis</i>	Australian Painted Snipe	S2	E, Mi, Ma	Dispersive/part-migratory, dependent on local conditions. Patchy distribution in the south-west of WA. Occupies shallow wetlands (generally freshwater or brackish) and flooded plains, usually requiring areas of bare, wet mud and dense undergrowth and canopy cover. Also known to inhabit flooded grasslands, paddocks or crops as a secondary habitat. Forages in dense cover or on mudflats and grasslands. Unlikely to occur in the subject area due to lack of habitat and known range.
<i>Thinornis rubricollis</i>	Hooded Plover	P4	Ma	Occurs from Israelite Bay west to Jurien Bay in the north, confined to suitable coastal habitat. Breeds from Cape Naturaliste to Eyre and inland lakes up to Yalgorup NP in the north. Inhabits broad sandy beaches, occurring occasionally on tidal flats. Requires plentiful seaweed and adjacent dunes. The breeding season occurs from September to January, and nests (scrapes) are created on sandy or pebbled beaches. In WA also occurs on inland lakes and breeds on lake shores. Forage at water's edge for polychaetes, molluscs, seeds, crustaceans. Unlikely to occur in the subject area due to lack of habitat.
<i>Tringa glareola</i>	Wood Sandpiper	S5	Mi, Ma	Tend to disperse across the northern part of the country, with visitations to the southern regions less common. Occurs inland where there is suitable habitat. Migrates south from Eurasia after breeding; regular summer migrant to Australia in September to April. Inhabits well-vegetated, shallow, freshwater wetlands, with emergent or submerged vegetation. Feed in muddy flats on the margins of wetlands. Unlikely to occur in the subject area due to lack of habitat.
<i>Tringa nebularia</i>	Common Greenshank	S5	Mi, Ma	This species does not breed within Australia, but overwinters in all states, including Western Australia between Cape Arid on the south coast and Carnarvon in the north-west, as well as further north within the Kimberley region. Most widespread waterbird species in Australia, occupying all types of wetlands and coastal areas. Forages in shallow water on the edges of water bodies and water courses, feeding on a range of molluscs, crustaceans, insects, and occasionally fish and frogs. Unlikely to occur in the subject area due to lack of habitat.
<i>Tringa stagnatilis</i>	Marsh Sandpiper	S5	Mi, Ma	Scattered distribution in Western Australia; largely confined to coastal areas. The Peel Inlet is a national site of importance for this species. Occurs on saline, brackish or freshwater wetlands, estuaries, inlets, commercial salt fields and sewage ponds. Coastal or inland wetlands. Prefer freshwater in WA. Forages in shallow water. Unlikely to occur in the subject area due to lack of habitat.

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
Mammals				
<i>Dasyurus geoffroii</i>	Chuditch	S3	V	<p>Only known to occur in WA and is generally restricted to the south-west with some populations in the Wheatbelt and scattered in the Goldfields. Inhabits eucalypt forests (particularly jarrah), dry woodland and mallee shrubland. Utilises fallen hollow logs and burrows for dens in wooded habitats.</p> <p>Unlikely to occur in the subject area due to lack of habitat and fragmented nature of subject area.</p>
<i>Falsistrellus mackenziei</i>	Western False Pipistrelle	P4		<p>Occurs from the western margin of the Wheatbelt north to Perth, occupying the forested corner of the south-west of WA. Inhabits wet sclerophyll forests dominated by karri in the southern-most extent of its range, as well as jarrah and tuart forests and woodlands further north. Marri, sheoak and peppermint trees are also often associated with habitat areas. Roosts in small colonies in the hollows of old trees, branches and stumps (Environment Australia, 1999).</p> <p>Unlikely to occur in the subject area due to lack of habitat and known range.</p>
<i>Hydromys chrysogaster</i>	Water-rat			<p>Occurs across the northern area of Australia, in the south-western corner and across the eastern states coastline. It is not found within the hot interior or the mid-western coastline. This species is adapted to live in both fresh and saline water bodies, and is partly diurnal (Breed and Ford, 2007). The rakali constructs its nests in hollow logs or at the end of tunnels built into banks of wetlands and rivers, and breeds throughout the year, though most often in spring to late summer. Feeds opportunistically, foraging for large aquatic invertebrates, fish, frogs, lizards, small mammals and birds, and fresh carrion (DEC, 2012).</p> <p>Unlikely to occur in the subject area due to lack of habitat.</p>
<i>Isoodon obesulus fusciventer</i>	Quenda	P4	-	<p>Widespread in the south-west of WA, ranging from Guilderton to east of Esperance. Patchy distribution on the Swan Coastal Plain and in the jarrah and karri forests of the south-west, and inland towards Hyden. Inhabits areas with dense, swampy understorey vegetation, particularly near fresh-water sources. In habitat areas, runnels can be observed that have been formed by quenda through undergrowth. Forages nocturnally in the undergrowth, feeding on invertebrates and subterranean plant and fungi material (DEC, 2012).</p> <p>May occur within the subject area, no evidence of inhabitation observed during survey.</p>

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Macropus eugenii derbianus</i>	Tammar Wallaby	P4		<p>Distributed throughout most of the south-west of the state, from Kalbarri to Cape Arid on the southern coast near Esperance, with occurrences in western areas of the Wheatbelt. Also found on Garden Island and the Middle and North Twin Peak Islands. Inhabits coastal scrub, eucalypt woodland, heath and mallee forest/thickets, utilising low, dense vegetation for shelter during the daytime hours. Only known from a small number of sites on the mainland. Occupies open grasslands when feeding, foraging nocturnally on grasses (DEC, 2012).</p> <p>Unlikely to occur in the subject area due to lack of habitat and known range / distribution (locally extinct).</p>
<i>Macropus irma</i>	Western Brush Wallaby	P4		<p>Distributed from Kalbarri in the north-west to Cape Arid National Park in the south-east. Prefers open forest and woodlands as habitat, often inhabiting seasonally wet flats with open thickets. Found in some mallee and heathland areas, and uncommon in karri forest. Forages nocturnally on plants species (DEC, 2012).</p> <p>Unlikely to occur in the subject area due to lack of habitat and known range / distribution.</p>
<i>Myrmecobius fasciatus</i>	Numbat	S2	V	<p>Previously widespread across southern arid and semi-arid Australia; few remaining wild populations. Generally restricted to the drier areas of the jarrah forests of the south-west, and some remnant vegetation in the Wheatbelt. Two remnant populations at Dryandra and Perup, as well as reintroduced populations at Boyagin Nature Reserve, Tutanning Nature Reserve and Karroun Hill Nature Reserve. Inhabits eucalypt forests and woodlands, particularly those dominated by jarrah, marri, Banksia and wandoo. Dens are constructed in hollow logs or burrows.</p> <p>Unlikely to occur in the subject area due to lack of habitat and known range / distribution (locally extinct).</p>
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum	S1	V	<p>Restricted to the south-western corner of WA, with a distribution from Collie to Two People's Bay. The most inland population occurs at Perup. Inhabits coastal woodlands and forests (Busselton to Albany), particularly those characterised by peppermint trees, and often with an overstorey of tuart, jarrah and/or marri. It is usually found near water bodies.</p> <p>Unlikely to occur in the subject area due to lack of habitat and known range / distribution (locally extinct).</p>
Reptiles				
<i>Lerista lineata</i>	Lined Skink	P3	-	<p>Known to occur on the Swan Coastal Plain and Geraldton Sandplains. Requires sandy substrates for it to inhabit an area, and is thought to prefer habitat characterised by open forest and open heath (Bush et al., 1995).</p> <p>May occur within the subject area.</p>

Species	Common Name	Status (WA)	Status (EPBC)	Description and likelihood of occurrence (DotEE (2017) unless otherwise referenced)
<i>Neelaps calonotos</i>	Black-striped Snake	P3	-	Endemic to Western Australia, occurring along the south-western coast from Lancelin to Mandurah, extending inland to the Darling Scarp area (Bullsbrook and Caversham) and Riverton. Typically inhabits coastal sand plains, often in association with Banksia species. Feeds on <i>Lerista</i> species (Bush et al., 1995). May occur within the subject area.
Invertebrates				
<i>Synemon gratiosa</i>	Graceful Sunmoth	P4	-	Occurs on the Swan Coastal Plain and the south western areas of Western Australia. Nests in two highly specific plant species. <i>Lomandra maritima</i> is abundant on secondary sand dunes characterised by coastal heathland vegetation (Quindalup dune landform unit), whilst <i>L. hermaphrodita</i> tends to be found in Banksia and eucalypt woodlands (Spearwood and Bassendean dune landform units). The two <i>Lomandra</i> species provide the sole food source for this species in larval stage. Adults do not feed. Larvae tunnel into the rhizomes of these host plants. Unlikely to occur in the subject area due to lack of habitat.

Of the species listed in Table 7, the following species may occur or are likely to occur within the subject area:

- *Calyptorhynchus latirostris* (Carnaby's Black Cockatoo)
- *Calyptorhynchus banksii naso* (Forest Red-tailed Black-Cockatoo)
- *Isoodon obesulus fusciventer* (Quenda)
- *Merops ornatus* (Rainbow Bee-eater)
- *Lerista lineata* (Lined Skink)
- *Neelaps calonotos* (Black-striped Snake)

4.2.2 Fauna Habitat

4.2.2.1 Banksia Woodland

The banksia woodland vegetation present across the majority of the subject area is in Good and Very Good condition in some areas of the western portion of the subject area, with the eastern portion being in Degraded to Completely Degraded condition (Figure 6). The vegetation types are described as:

- Western portion of survey area:
 - An Open Low Forest of *Banksia attenuata*, *B. ilicifolia* and *B. menziesii* with scattered *Allocasuarina fraseriana* over Open Tall Shrubland to Tall Shrubland of *Xanthorrhoea preissii*, with occasional pockets of *Kunzea glabrescens* tall shrubs, over Open Shrubland to Shrubland of

Stirlingia latifolia over Open Low Shrubland of *Hibbertia hypericoides* or *Hypocalymma robustum* and *Bossia eriocarpa* or over a mixed Sedgeland/Herbland including *Phlebocarya ciliata*, and/or *Desmocladius flexuosus* and *Lepidosperma squamatum* on midslope flats, on loamy sands

- Eastern portion of survey area (associated with high voltage powerline easement)
 - Scattered *Banksia menziesii* and *B. ilicifolia* over Shrubland to tall Shrubland of *Adenanthos cygnorum* over Open Grassland of introduced species *Ehrharta calycina* with scattered native low shrubs, on midslope sandy flats.

Black Cockatoo Habitat

The banksia species present, as well as some scattered jarrah (*Eucalyptus marginata*), sheoak (*Allocasuarina fraseriana*) and grasstree (*Xanthorrhoea preissii*) provide potential foraging habitat to some or all of the protected black cockatoo species possibly present in the area. This is detailed in Table 8.

Table 8: Dominant tree and shrub species present that may provide foraging habitat to black cockatoos

Tree / Shrub Species	CBC	BBC	FRTBC
<i>Banksia attenuata</i>	X	X	
<i>Banksia menziesii</i>	X	X	
<i>Banksia ilicifolia</i>	X	X	
<i>Eucalyptus marginata</i>	X	X	X
<i>Allocasuarina fraseriana</i>		X	X
<i>Xanthorrhoea preissii</i>	X	X	

CBC = Carnaby's black cockatoo

BBC = Baudin's black cockatoo

FRTBC = Forest red-tailed black cockatoo

Sources: (DotEE, 2017; DEC, 2011; DSEWPC, 2012)

During the fauna survey undertaken on 6 November 2017, no signs of foraging were observed, despite targeted searching.

A foraging habitat density analysis of the subject area was undertaken to determine the relative quality of foraging habitat, with three 10 x 10 m quadrats set up, within which the number of banksia and other relevant foraging species were counted and canopy cover estimated (Appendix F). From the quadrats and general inspection of the subject area, it is estimated that the density of foraging habitat ranges from 50 (in the eastern, degraded portion of the subject area) to 1000 food plants per ha. The *Banksia sp.* canopy cover across the subject area appeared to average at around 10 - 30% cover (low to moderate foraging value for black cockatoos). Further examples of the cover present are shown in Plates 2 to 5.



Plate 2: Banksia woodland (eastern, degraded portion of subject area)



Plate 3: Banksia woodland (western portion of subject area)



Plate 4: Banksia woodland (western portion of subject area)



Plate 5: Banksia woodland (western portion of subject area)

Breeding habitat available to black cockatoo species known to breed in this area (ie. forest red-tailed black cockatoos and Carnaby's black cockatoos) within the site is very scarce. Two tuarts and one jarrah were recorded with a Diameter at Breast Height (DBH) of greater than 500 mm (details provided in Appendix G). None of these trees contained hollows suitable for black cockatoo breeding.

DEC (2010) previously mapped existing known or potential habitat for black cockatoos within the Metropolitan Region Scheme area. According to this mapping, a known Carnaby's black cockatoo roosting site is located in Wandi, approximately 4 km east of the subject area. Four other known roosting sites are located approximately 6 km north of the subject area, in Beiliar / Success.

Other Fauna

Banksia woodlands are known habitat for a number of native fauna species. Small birds such as honeyeaters and wattlebirds are likely to forage on flowering trees and shrubs located across the subject area (these birds dominated those observed during the survey). Despite targeted searching, no nest burrows or presence of rainbow bee-eaters was observed during the survey, however they are known to occur in a widespread manner in the surrounding region.

No signs of quenda inhabitation (such as runnels and diggings) were found in the area, however they are known to move along the Kwinana Freeway road reserve and as such, may occasionally inhabit the subject area due to the presence of suitable dense undergrowth onsite.

Banksia and eucalypt woodlands of the Swan Coastal Plain are known to support a wide range of reptiles and some frog species (Bush et al, 1995), particularly where there is dense undergrowth.

5.0 ECOLOGICAL IMPACT MANAGEMENT AND RECOMMENDATIONS

The potential impacts to ecological values as a result of urban development of the subject area are listed below, with a discussion related to the management of these potential impacts.

Loss of Native Vegetation / Habitat Through Clearing

The clearing of native vegetation affects the biodiversity of an area by removing flora species and vegetation structure, and impacting fauna species that rely on this vegetation for habitat. When habitat is lost, displaced fauna may not survive due to lack of available habitat in the remaining surrounding environment (Gleeson & Gleeson, 2012). In this location, there is limited bushland located nearby. This may then have implications for flora and fauna populations, particularly those that occur in discrete pockets.

In this instance, a large portion of the bushland within the subject area is in Very Good to Good condition, having high levels of diversity and providing potential foraging habitat for black cockatoos and other bushland birds. Where possible, clearing should be minimised with vegetation in Very Good and Good condition retained where possible onsite in POS and in lots, if sufficiently large. It is noted however that the subject area is located within a greater area of likely future urban development (based on current zoning), therefore native vegetation retention in this general area is likely to be limited to discrete areas of POS. To maximise the benefit of retained vegetation in this environment, the following recommendations are made:

- Locate areas of retained vegetation adjacent to other vegetated land (ie. adjacent to retained vegetation within the high voltage powerline easement and the Kwinana freeway road reserve)
- Retain vegetation of greatest conservation significance where possible
- Retain consolidated areas of vegetation rather than multiple small patches (see section below relating to Vegetation Degradation and Edge Effects)

Should the future clearing of the subject area be considered likely to trigger the significant impact guidelines under the federal EPBC Act (particularly with regard to the Banksia Woodlands of the Swan Coastal Plain TEC and black cockatoo species), referral of the clearing action to the DotEE is required.

Vegetation and Habitat Fragmentation

Fragmentation, caused by clearing areas of native vegetation, can result in barriers to movement and dispersal of flora and fauna, division of populations, isolation of habitat resources, loss of genetic interchange, and in some cases, extinction of species (Gleeson & Gleeson, 2012). Whilst there is a network of bushland through this general area, there are a number of urban development projects at various stages of progress in the area and the vegetation is already quite fragmented. The subject area lies outside of an existing ecological linkage that connects the Harry Waring Marsupial Reserve with areas of regional reserve and Bush Forever to the south (Figure 4).

Vegetation Degradation and Edge Effects

Where areas of vegetation are cleared, leaving smaller patches of vegetation, this can often lead to degradation as a result of the impacts of the surrounding land uses (edge effects). It is recommended that vegetation be retained and rehabilitated within a large, consolidated Public Open Space (POS) area (with a low perimeter:area ratio) as opposed to a number of small patches of native vegetation, with measures to minimise the impact of edge effects.

Measures may include providing a hard edge, such as a road, path, low wall, kerb or mower strip, to separate areas of bushland from urban development / residential lots. This will inhibit the encroachment of weeds and the potential for erosion of sandy soil. If the POS area is to be retained as bushland, rehabilitation including weed control and revegetation of the middle-storey and understorey (if necessary) should be considered.

Physical Trauma to Fauna during Clearing

The clearing of native vegetation for land development has the potential to result in injuries and fatalities of native fauna currently inhabiting the site, particularly ground- or tree-dwelling mammals and lizards, if no impact management measures are established. The following recommendations are made:

- Clearing should, if possible, be undertaken outside of the main breeding season for bushland birds (ie. between July and November), to avoid inflicting damage to nesting birds and their young.
- Clearing should be undertaken in the direction of remaining vegetation wherever possible.
- Felled trees should be observed for any fauna that may be trapped, injured or occupying an unseen hollow, and should, if feasible, be left in situ overnight to allow the escape of any resident fauna species before removal.
- Loud noises (e.g. air horns) should be made just prior to commencement of clearing to encourage fauna movement away from this area.

Introduction of Weeds and Feral Fauna

Where urban development is undertaken and human activities become prevalent, environmental weeds and introduced fauna species (particularly rabbits and foxes) tend to colonise, due to the inadvertent creation of habitat and food resources (Gleeson & Gleeson, 2012). Domestic pets may also pose a problem for native fauna in bushland areas adjacent to development.

Weed control should be undertaken within any native vegetation areas proposed to be retained, and access to these areas should be controlled through the use of fencing and / or paths. The development design should aim to exclude domestic and feral fauna from remnant or rehabilitated / created bushland areas. This can be achieved by installing physical barriers where in keeping with the development design and educating residents with regard to the control of domestic animals (signage, resident introduction packages etc.).

6.0 CONCLUSION

The flora and vegetation survey and fauna survey undertaken across the subject area have indicated that there is vegetation and fauna habitat of considerable value present within the subject area, despite the fragmentation and degradation of vegetation that has occurred in the general surrounding area. In order to retain these values within planned future development, it is recommended that POS areas within the development are designed to retain bushland values and connectivity where possible.

Prior to clearing being undertaken within the subject area, approvals may be required at the state (subdivision approval or Native Vegetation Clearing Permit) and federal (EPBC Act referral assessment) level.

7.0 LIMITATIONS

Some potential limitations ecological survey, as proposed in EPA (2016a and 2016b) are addressed in Table 9.

Table 9: Potential limitations of ecological surveys

Scope	Constraint	Comment - Flora and Vegetation Survey	Comment - Fauna Survey
Survey timing / weather / season / cycle	Minor	Spring survey to capture flowering period of majority of conservatipon significant flora and allow identification of ecological communities.	Survey undertaken in spring. Hot weather in the preceding days may have resulted in fewer opportunistic observations of bushland birds.
Competency/experience of the consultant carrying out the survey	None	Survey undertaken by Carolyn Harding, who has over 15 years' experience in undertaking fauna surveys in Western Australia.	Survey undertaken by Emma McSweeney, who has over 8 years' experience in undertaking fauna surveys in Western Australia.
Scope	None	Detailed survey with quadrat and opportunistic sampling completed.	Desktop and reconnaissance survey completed.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data	None	A number of resources were available, eg. NatureMap records, EPBC Protected Matters Search Tool, previous ecological surveys undertaken.	A number of resources were available, eg. NatureMap records, EPBC Protected Matters Search Tool, previous ecological surveys undertaken.
Proportion of the task achieved and further work which might be needed	None	Survey completed to required level.	Survey completed to required level.
Disturbances which affected results of survey	None		
Intensity / survey effort	None	Survey completed to required level.	Survey completed to required level.
Completeness / survey area / site selection	None	Entire impact area surveyed.	Entire impact area surveyed.
Resources	None		
Remoteness and/or access problems	None	Subject area was entirely accessible.	Subject area was entirely accessible.
Availability of contextual (e.g. biogeographic) information on the region	None		

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FIGURES

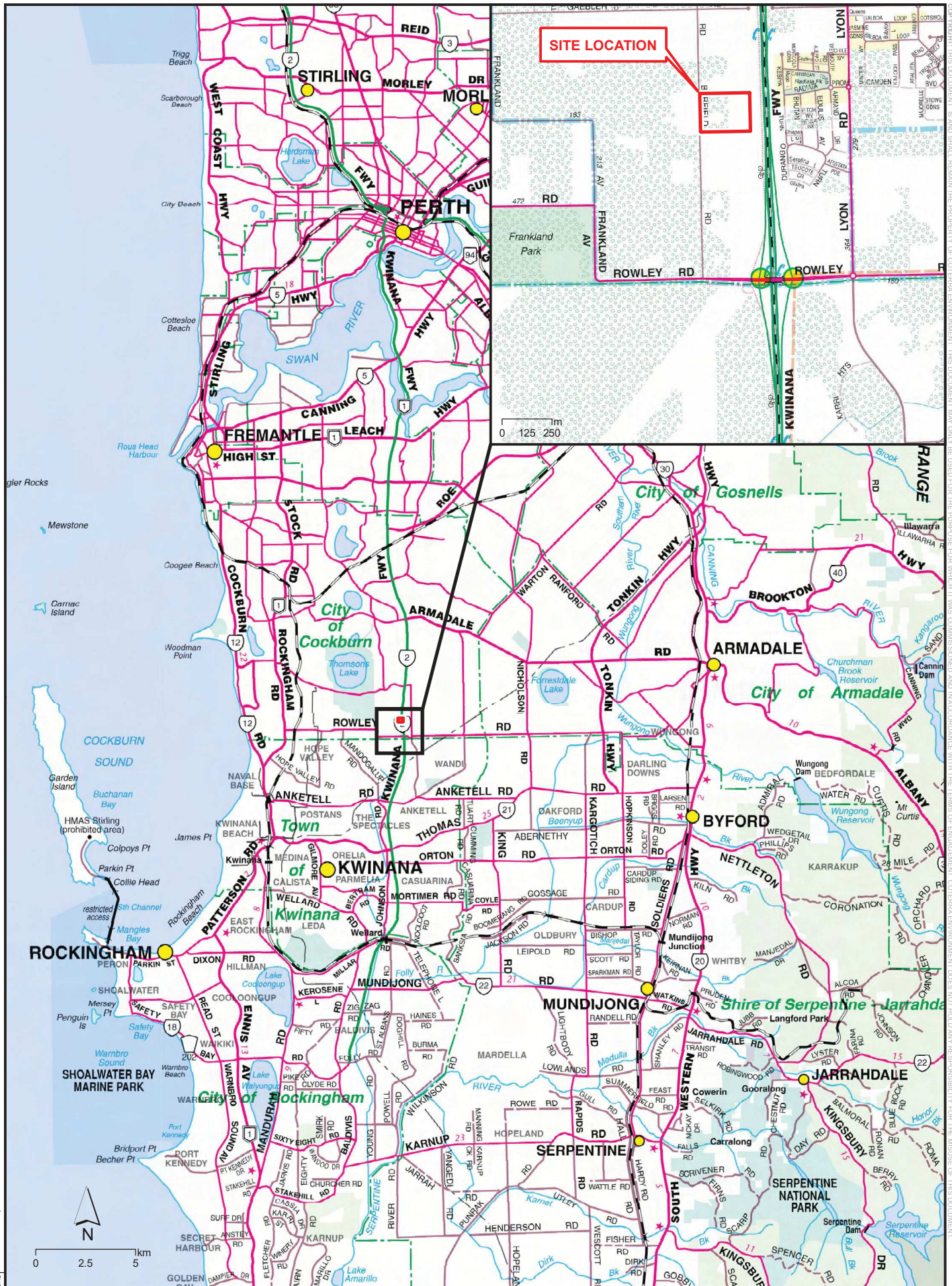




Figure 2

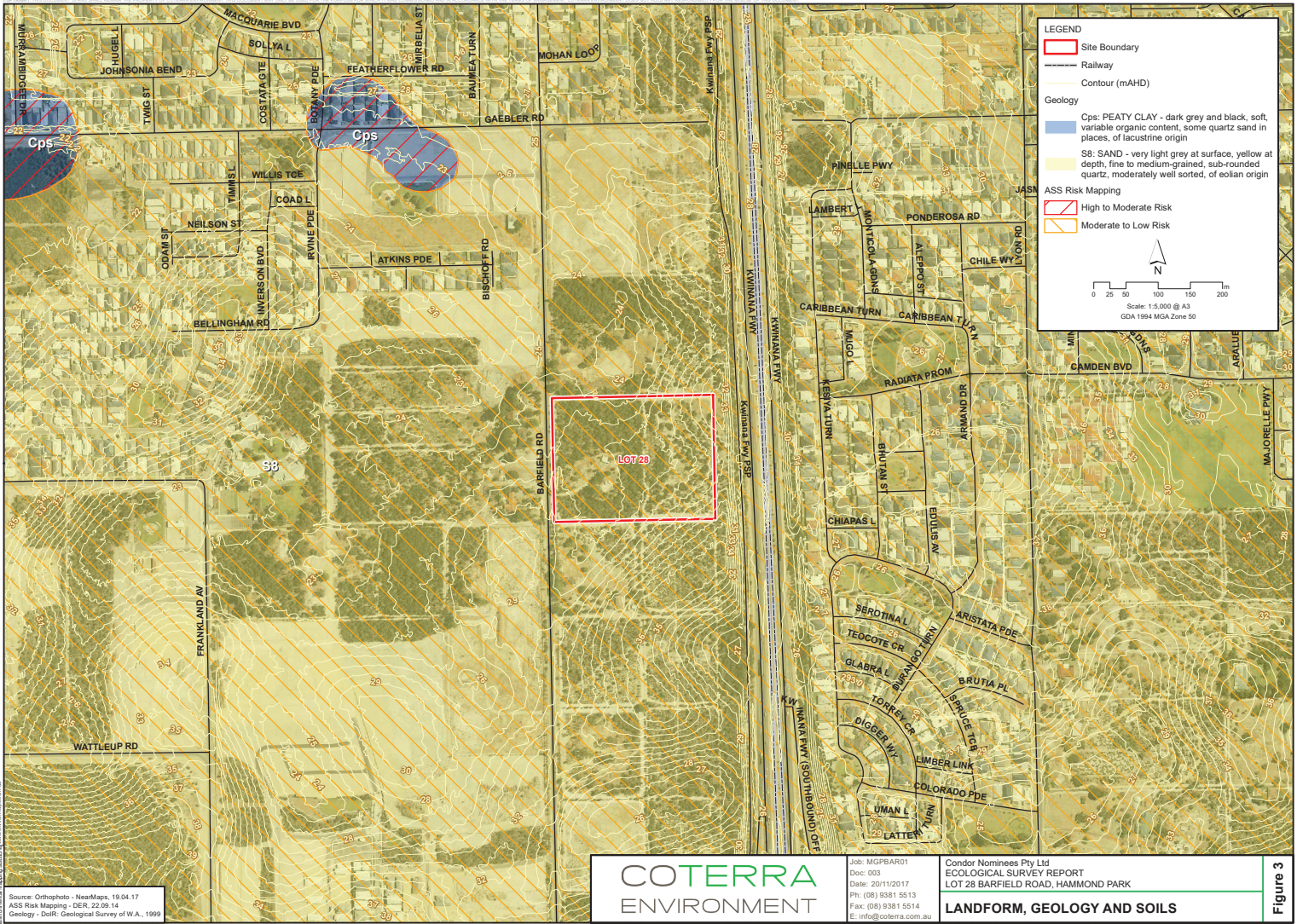
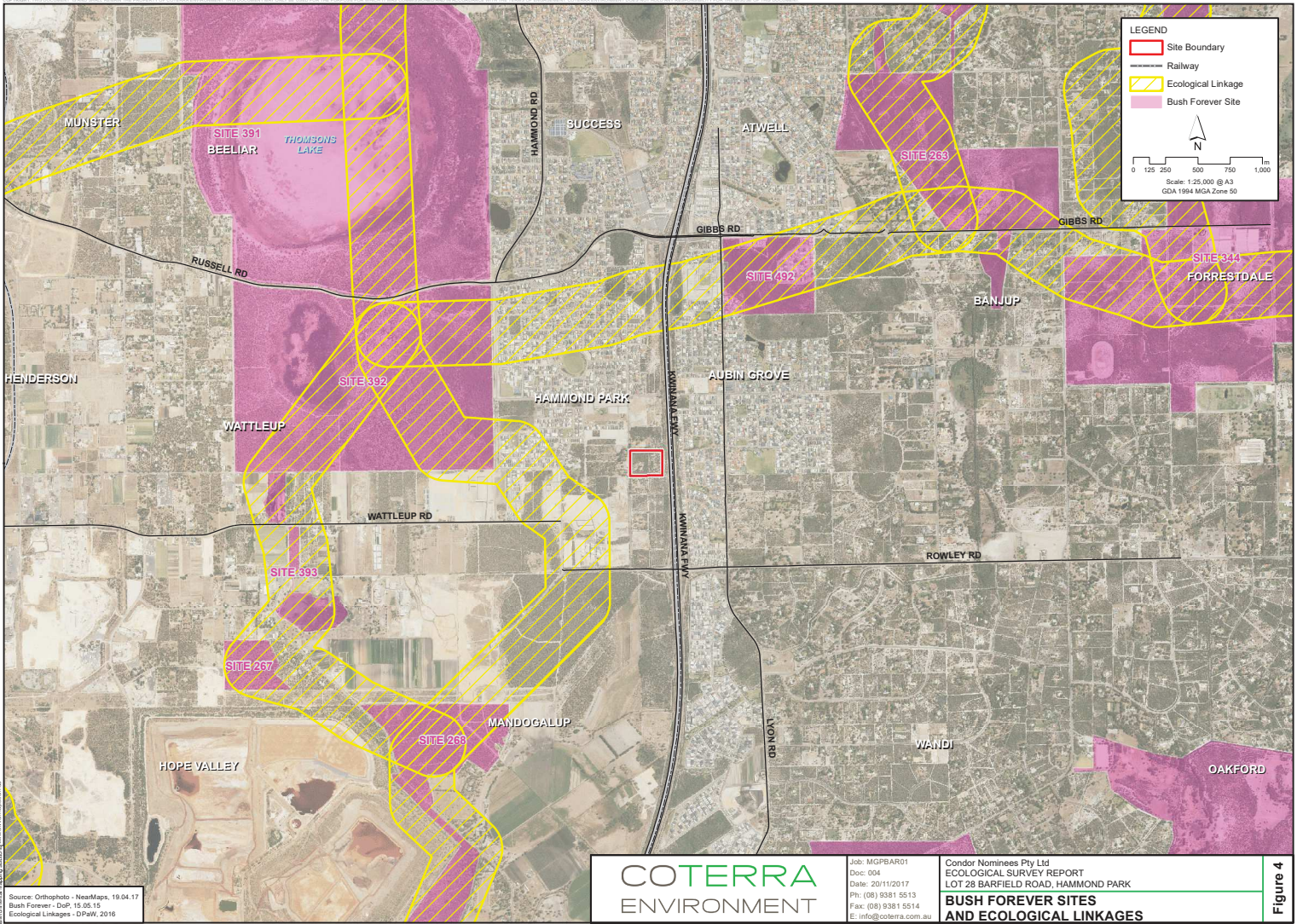


Figure 3



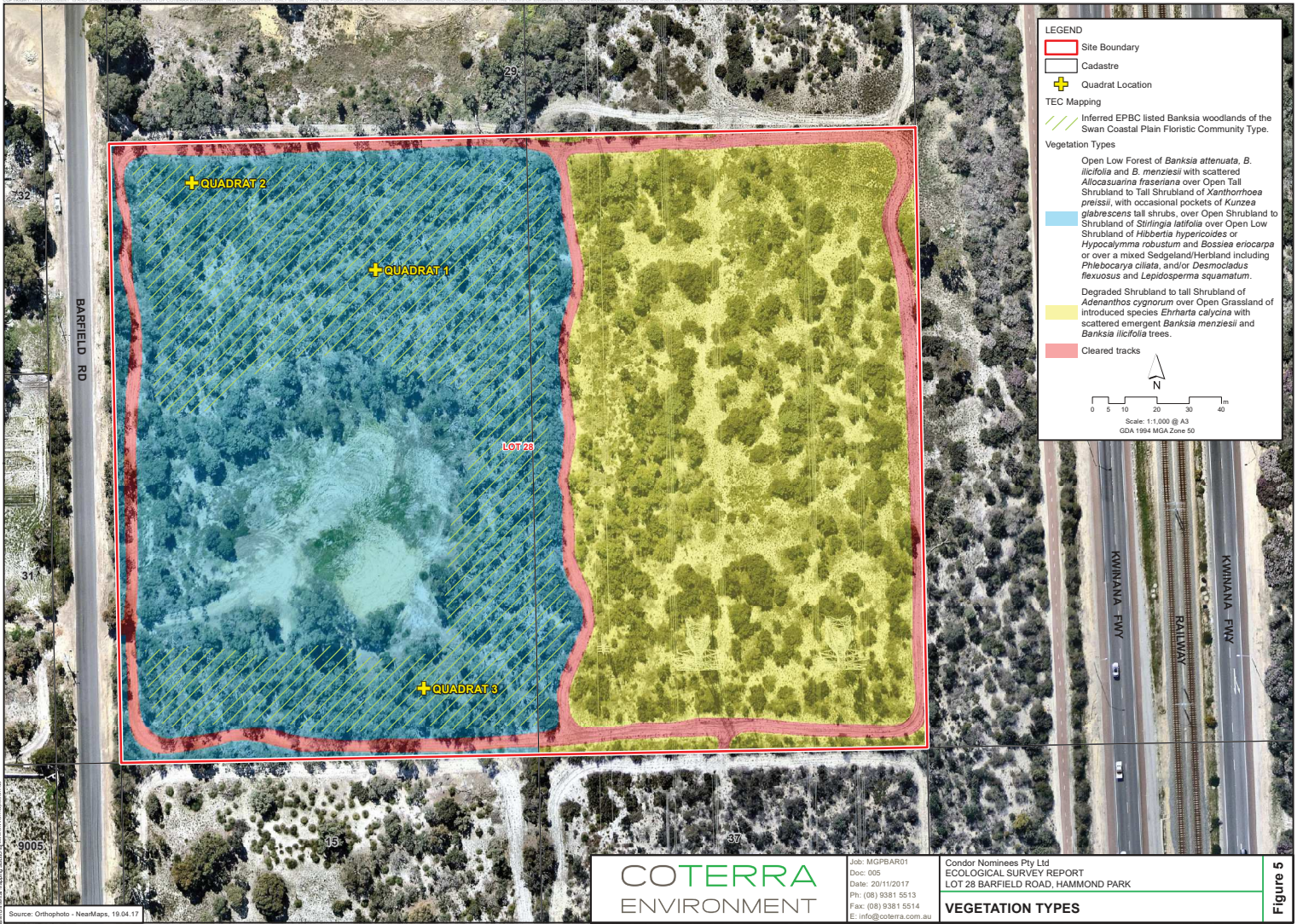
ENVIRONMAPS
 Source: Orthophoto - NearMaps, 19.04.17
 Bush Forever - DoP, 15.05.15
 Ecological Linkages - DPW, 20.16

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Condor Nominees Pty Ltd
 ECOLOGICAL SURVEY REPORT
 LOT 28 BARFIELD ROAD, HAMMOND PARK
**BUSH FOREVER SITES
 AND ECOLOGICAL LINKAGES**

Figure 4



LEGEND


- Site Boundary
- Cadastre
- + Quadrat Location

TEC Mapping

- /// Inferred EPBC listed Banksia woodlands of the Swan Coastal Plain Floristic Community Type.

Vegetation Types

- Open Low Forest of *Banksia attenuata*, *B. illicifolia* and *B. menziesii* with scattered *Allocasuarina fraseriana* over Open Tall Shrubland to Tall Shrubland of *Xanthorrhoea preissii*, with occasional pockets of *Kunzea glabrescens* tall shrubs, over Open Shrubland to Shrubland of *Stirlingia latifolia* over Open Low Shrubland of *Hibbertia hypericoides* or *Hypocalymma robustum* and *Bossia eriocarpa* or over a mixed Sedgeland/Herbland including *Phlebocarya ciliata*, and/or *Desmocladius flexuosus* and *Lepidosperma squamatum*.
- Degraded Shrubland to tall Shrubland of *Adenanthos cygnorum* over Open Grassland of introduced species *Ehrharta calycina* with scattered emergent *Banksia menziesii* and *Banksia illicifolia* trees.
- Cleared tracks



Scale: 1:1,000 @ A3
GDA 1984 MGA Zone 50

ENVIRONMAPS 180 900 000
www.environmentmaps.com.au

Source: Orthophoto - NearMaps, 19.04.17

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ECOLOGICAL SURVEY REPORT
LOT 28 BARFIELD ROAD, HAMMOND PARK

VEGETATION TYPES

Figure 5



LEGEND


- Site Boundary
- Cadastre

TEC Mapping

- Inferred EPBC listed Banksia woodlands of the Swan Coastal Plain Floristic Community Type.

Vegetation Condition

- Very Good
- Good
- Degraded
- Degraded with patches of Completely Degraded
- Completely Degraded
- Cleared Tracks



Scale: 1:1,000 @ A3
GDA 1994 MGA Zone 50

ENVIRONMAPS
Source: Orthophoto - NearMaps, 19.04.17

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ECOLOGICAL SURVEY REPORT
LOT 28 BARFIELD ROAD, HAMMOND PARK

VEGETATION CONDITION

Figure 6

APPENDIX A - ECOLOGICAL DATABASE SEARCH RESULTS

NatureMap Species Report

Created By Guest user on 26/09/2017

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 115° 51' 18" E, 32° 10' 25" S
Buffer 5km
Group By Kingdom

Kingdom	Species	Records
Animalia	238	8246
Fungi	1	14
Plantae	463	2459
Protozoa	5	5
TOTAL	707	10724

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
Animalia				
1.	24260 <i>Acanthiza apicalis</i> (Broad-tailed Thornbill, Inland Thornbill)			
2.	24261 <i>Acanthiza chrysorrhoa</i> (Yellow-rumped Thornbill)			
3.	24262 <i>Acanthiza inornata</i> (Western Thornbill)			
4.	24560 <i>Acanthorhynchus superciliosus</i> (Western Spinebill)			
5.	25535 <i>Accipiter cirrocephalus</i> (Collared Sparrowhawk)			
6.	25536 <i>Accipiter fasciatus</i> (Brown Goshawk)			
7.	42368 <i>Acritoscincus trilineatus</i> (Western Three-lined Skink)			
8.	25755 <i>Acrocephalus australis</i> (Australian Reed Warbler)			
9.	24310 <i>Anas castanea</i> (Chestnut Teal)			
10.	24312 <i>Anas gracilis</i> (Grey Teal)			
11.	24313 <i>Anas platyrhynchos</i> (Mallard)			
12.	24315 <i>Anas rhynchotis</i> (Australasian Shoveler)			
13.	24316 <i>Anas superciliosa</i> (Pacific Black Duck)			
14.	47414 <i>Anhinga novaehollandiae</i> (Australasian Darter)			
15.	24561 <i>Anthochaera carunculata</i> (Red Wattlebird)			
16.	24562 <i>Anthochaera lunulata</i> (Western Little Wattlebird)			
17.	24991 <i>Aprasia repens</i> (Sand-plain Worm-lizard)			
18.	24285 <i>Aquila audax</i> (Wedge-tailed Eagle)			
19.	<i>Arachnura higginsii</i>			
20.	41324 <i>Ardea modesta</i> (great egret, white egret)		IA	
21.	24340 <i>Ardea novaehollandiae</i> (White-faced Heron)			
22.	24341 <i>Ardea pacifica</i> (White-necked Heron)			
23.	25566 <i>Artamus cinereus</i> (Black-faced Woodswallow)			
24.	24353 <i>Artamus cyanopterus</i> (Dusky Woodswallow)			
25.	<i>Artoria flavimana</i>			
26.	<i>Austracantha minax</i>			
27.	24318 <i>Aythya australis</i> (Hardhead)			
28.	<i>Barnardius zonarius</i>			
29.	24319 <i>Biziura lobata</i> (Musk Duck)			
30.	42381 <i>Brachyuropis semifasciatus</i> (Southern Shovel-nosed Snake)			
31.	25716 <i>Cacatua sanguinea</i> (Little Corella)			
32.	24729 <i>Cacatua tenuirostris</i> (Eastern Long-billed Corella)	Y		
33.	25598 <i>Cacomantis flabelliformis</i> (Fan-tailed Cuckoo)			
34.	42307 <i>Cacomantis pallidus</i> (Pallid Cuckoo)			
35.	24779 <i>Calidris acuminata</i> (Sharp-tailed Sandpiper)		IA	
36.	24784 <i>Calidris ferruginea</i> (Curlew Sandpiper)		T	
37.	24786 <i>Calidris melanotos</i> (Pectoral Sandpiper)		IA	
38.	24788 <i>Calidris ruficollis</i> (Red-necked Stint)		IA	
39.	24789 <i>Calidris subminuta</i> (Long-toed Stint)		IA	
40.	25717 <i>Calyptorhynchus banksii</i> (Red-tailed Black-Cockatoo)			
41.	24731 <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> (Forest Red-tailed Black-Cockatoo)		T	
42.	24734 <i>Calyptorhynchus latirostris</i> (Carnaby's Cockatoo (short-billed black-cockatoo), Carnaby's Cockatoo)		T	

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
43.	48400 <i>Calyptorhynchus</i> sp. (white-tailed black cockatoo)		T	
44.	24186 <i>Chalinolobus gouldii</i> (Gould's Wattled Bat)			
45.	24377 <i>Charadrius ruficapillus</i> (Red-capped Plover)			
46.	43380 <i>Chelodina colliei</i> (South-western Snake-necked Turtle)			
47.	24321 <i>Chenonetta jubata</i> (Australian Wood Duck, Wood Duck)			
48.	33939 <i>Cherax cainii</i> (Marron)			
49.	<i>Cherax destructor</i>			
50.	<i>Cherax preissii</i>			
51.	<i>Cherax quinquecarinatus</i>			
52.	<i>Cherax</i> sp.			
53.	41332 <i>Chlidonias leucopterus</i> (White-winged Black Tern)		IA	
54.	24980 <i>Christinus marmoratus</i> (Marbled Gecko)			
55.	<i>Chroicocephalus novaehollandiae</i>			
56.	24288 <i>Circus approximans</i> (Swamp Harrier)			
57.	24774 <i>Cladorhynchus leucocephalus</i> (Banded Stilt)			
58.	25675 <i>Colluricincla harmonica</i> (Grey Shrike-thrush)			
59.	24399 <i>Columba livia</i> (Domestic Pigeon)	Y		
60.	25568 <i>Coracina novaehollandiae</i> (Black-faced Cuckoo-shrike)			
61.	<i>Cormocephalus novaehollandiae</i>			
62.	25592 <i>Corvus coronoides</i> (Australian Raven)			
63.	24671 <i>Coturnix pectoralis</i> (Stubble Quail)			
64.	25701 <i>Coturnix ypsilophora</i> (Brown Quail)			
65.	24420 <i>Cracticus nigrogularis</i> (Pied Butcherbird)			
66.	25595 <i>Cracticus tibicen</i> (Australian Magpie)			
67.	24422 <i>Cracticus tibicen</i> subsp. <i>dorsalis</i> (White-backed Magpie)			
68.	25596 <i>Cracticus torquatus</i> (Grey Butcherbird)			
69.	25399 <i>Crinia glauerti</i> (Clicking Frog)			
70.	25400 <i>Crinia insignifera</i> (Squelching Froglet)			
71.	<i>Crustulina bicrucata</i>			
72.	30893 <i>Cryptoblepharus buchananii</i>			
73.	25020 <i>Cryptoblepharus plagiocephalus</i>			
74.	30899 <i>Ctenophorus adelaidensis</i> (Southern Heath Dragon, Western Heath Dragon)			
75.	25027 <i>Ctenotus australis</i>			
76.	25039 <i>Ctenotus fallens</i>			
77.	24322 <i>Cygnus atratus</i> (Black Swan)			
78.	<i>Cyrtophora parnasia</i>			
79.	30901 <i>Dacelo novaeguineae</i> (Laughing Kookaburra)	Y		
80.	25673 <i>Daphoenositta chrysoptera</i> (Varied Sittella)			
81.	24092 <i>Dasyurus geoffroii</i> (Chuditch, Western Quoll)		T	
82.	25766 <i>Delma fraseri</i> (Fraser's Legless Lizard)			
83.	25296 <i>Demansia psammophis</i> subsp. <i>reticulata</i> (Yellow-faced Whipsnake)			
84.	25100 <i>Egernia napoleonis</i>			
85.	<i>Egretta garzetta</i>			
86.	<i>Egretta novaehollandiae</i>			
87.	<i>Elanus axillaris</i>			
88.	47937 <i>Eiseyornis melanops</i> (Black-fronted Dotterel)			
89.	<i>Eolophus roseicapillus</i>			
90.	24567 <i>Epthianura albifrons</i> (White-fronted Chat)			
91.	<i>Eriophora biapicata</i>			
92.	24379 <i>Erythronyx cinctus</i> (Red-kneed Dotterel)			
93.	25621 <i>Falco berigora</i> (Brown Falcon)			
94.	25622 <i>Falco cenchroides</i> (Australian Kestrel, Nankeen Kestrel)			
95.	25623 <i>Falco longipennis</i> (Australian Hobby)			
96.	25624 <i>Falco peregrinus</i> (Peregrine Falcon)		S	
97.	24189 <i>Falsistrellus mackenziei</i> (Western False Pipistrelle, Western Falsistrelle)		P4	
98.	24041 <i>Felis catus</i> (Cat)	Y		
99.	25727 <i>Fulica atra</i> (Eurasian Coot)			
100.	24761 <i>Fulica atra</i> subsp. <i>australis</i> (Eurasian Coot)			
101.	25729 <i>Gallinula tenebrosa</i> (Dusky Moorhen)			
102.	24763 <i>Gallinula tenebrosa</i> subsp. <i>tenebrosa</i> (Dusky Moorhen)			
103.	25730 <i>Gallirallus philippensis</i> (Buff-banded Rail)			
104.	24959 <i>Gehyra variegata</i>			
105.	47954 <i>Gelochelidon nilotica</i> (Gull-billed Tern)		IA	
106.	25530 <i>Gerygone fusca</i> (Western Gerygone)			
107.	47962 <i>Glyciphila melanops</i> (Tawny-crowned Honeyeater)			
108.	24443 <i>Grallina cyanoleuca</i> (Magpie-lark)			
109.	24293 <i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)			
110.	24295 <i>Haliastur sphenurus</i> (Whistling Kite)			
111.	25410 <i>Heleioporus eyrei</i> (Moaning Frog)			
112.	25119 <i>Hemiergis quadrilineata</i>			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
113.	<i>Heurodes turritus</i>			
114.	47965 <i>Hieraaetus morphnoides</i> (Little Eagle)			
115.	25734 <i>Himantopus himantopus</i> (Black-winged Stilt)			
116.	24491 <i>Hirundo neoxena</i> (Welcome Swallow)			
117.	24215 <i>Hydromys chrysogaster</i> (Water-rat, Rakali)		P4	
118.	<i>Idiomata blackwalli</i>			
119.	25478 <i>Isoodon obesulus</i> (Southern Brown Bandicoot)		P4	
120.	24153 <i>Isoodon obesulus</i> subsp. <i>fusciventer</i> (Quenda, Southern Brown Bandicoot)		P4	
121.	<i>Isopeda leishmanni</i>			
122.	47975 <i>Ixobrychus dubius</i> (Australian Little Bittern)		P4	
123.	<i>Kangarosa properipes</i>			
124.	24511 <i>Larus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Silver Gull)			
125.	25133 <i>Lerista elegans</i>			
126.	25147 <i>Lerista lineata</i> (Perth Slider, Lined Skink)		P3	
127.	25005 <i>Lialis burtonis</i>			
128.	25661 <i>Lichmera indistincta</i> (Brown Honeyeater)			
129.	25415 <i>Limnodynastes dorsalis</i> (Western Banjo Frog)			
130.	25741 <i>Limosa limosa</i> (Black-tailed Godwit)		IA	
131.	25378 <i>Litoria adelaidensis</i> (Slender Tree Frog)			
132.	25388 <i>Litoria moorei</i> (Motorbike Frog)			
133.	25683 <i>Lonchura castaneothorax</i> (Chestnut-breasted Mannikin)			
134.	<i>Lophoictinia isura</i>			
135.	<i>Lycosa ariadnae</i>			
136.	24131 <i>Macropus eugenii</i> subsp. <i>derbianus</i> (Tamar Wallaby (WA subsp))		P4	
137.	24133 <i>Macropus irma</i> (Western Brush Wallaby)		P4	
138.	24326 <i>Malacorhynchus membranaceus</i> (Pink-eared Duck)			
139.	25651 <i>Malurus lamberti</i> (Variegated Fairy-wren)			
140.	25654 <i>Malurus splendens</i> (Splendid Fairy-wren)			
141.	25758 <i>Megalurus gramineus</i> (Little Grassbird)			
142.	25663 <i>Melithreptus brevirostris</i> (Brown-headed Honeyeater)			
143.	25184 <i>Menetia greyii</i>			
144.	24598 <i>Merops ornatus</i> (Rainbow Bee-eater)		IA	
145.	<i>Microcarbo melanoleucos</i>			
146.	25693 <i>Microeca fascinans</i> (Jacky Winter)			
147.	25191 <i>Morethia lineocellata</i>			
148.	25192 <i>Morethia obscura</i>			
149.	24223 <i>Mus musculus</i> (House Mouse)	Y		
150.	25420 <i>Myobatrachus gouldii</i> (Turtle Frog)			
151.	24146 <i>Myrmecobius fasciatus</i> (Numbat, Walpurti)		T	
152.	<i>Nanometa gentilis</i>			
153.	25248 <i>Neelaps bimaculatus</i> (Black-naped Snake)			
154.	25249 <i>Neelaps calonotos</i> (Black-striped Snake, black-striped burrowing snake)		P3	
155.	24738 <i>Neophema elegans</i> (Elegant Parrot)			
156.	<i>Nephila edulis</i>			
157.	25252 <i>Notechis scutatus</i> (Tiger Snake)			
158.	25564 <i>Nycticorax caledonicus</i> (Rufous Night Heron)			
159.	24194 <i>Nyctophilus geoffroyi</i> (Lesser Long-eared Bat)			
160.	24407 <i>Ocyphaps lophotes</i> (Crested Pigeon)			
161.	24085 <i>Oryctolagus cuniculus</i> (Rabbit)	Y		
162.	24328 <i>Oxyura australis</i> (Blue-billed Duck)		P4	
163.	25680 <i>Pachycephala rufiventris</i> (Rufous Whistler)			
164.	25253 <i>Parasuta gouldii</i>			
165.	25681 <i>Pardalotus punctatus</i> (Spotted Pardalote)			
166.	25682 <i>Pardalotus striatus</i> (Striated Pardalote)			
167.	24642 <i>Passer montanus</i> (Eurasian Tree Sparrow)	Y		
168.	24648 <i>Pelecanus conspicillatus</i> (Australian Pelican)			
169.	48061 <i>Petrochelidon nigricans</i> (Tree Martin)			
170.	48066 <i>Petroica boodang</i> (Scarlet Robin)			
171.	24659 <i>Petroica goodenovii</i> (Red-capped Robin)			
172.	24663 <i>Phaethon rubricauda</i> (Red-tailed Tropicbird)		P4	
173.	25697 <i>Phalacrocorax carbo</i> (Great Cormorant)			
174.	25698 <i>Phalacrocorax melanoleucos</i> (Little Pied Cormorant)			
175.	24667 <i>Phalacrocorax sulcirostris</i> (Little Black Cormorant)			
176.	25699 <i>Phalacrocorax varius</i> (Pied Cormorant)			
177.	24409 <i>Phaps chalcoptera</i> (Common Bronzewing)			
178.	48071 <i>Phylidonyris niger</i> (White-cheeked Honeyeater)			
179.	24596 <i>Phylidonyris novaehollandiae</i> (New Holland Honeyeater)			
180.	24841 <i>Platalea flavipes</i> (Yellow-billed Spoonbill)			
181.	24842 <i>Platalea regia</i> (Royal Spoonbill)			
182.	25720 <i>Platyercus icterotis</i> (Western Rosella)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
183.	24843 <i>Plegadis falcinellus</i> (Glossy Ibis)		IA	
184.	25509 <i>Pletholax gracilis</i> (Keeled Legless Lizard)			
185.	25007 <i>Pletholax gracilis</i> subsp. <i>gracilis</i> (Keeled Legless Lizard)			
186.	25703 <i>Podargus strigoides</i> (Tawny Frogmouth)			
187.	25704 <i>Podiceps cristatus</i> (Great Crested Grebe)			
188.	25510 <i>Pogona minor</i> (Dwarf Bearded Dragon)			
189.	24907 <i>Pogona minor</i> subsp. <i>minor</i> (Dwarf Bearded Dragon)			
190.	24681 <i>Poliocephalus poliocephalus</i> (Hoary-headed Grebe)			
191.	25722 <i>Polytelis anthopeplus</i> (Regent Parrot)			
192.	25731 <i>Porphyrio porphyrio</i> (Purple Swamphen)			
193.	24767 <i>Porphyrio porphyrio</i> subsp. <i>bellus</i> (Purple Swamphen)			
194.	24769 <i>Porzana fluminea</i> (Australian Spotted Crane)			
195.	25732 <i>Porzana pusilla</i> (Baillon's Crane)			
196.	24771 <i>Porzana tabuensis</i> (Spotless Crane)			
197.	25511 <i>Pseudonaja affinis</i> (Dugite)			
198.	25259 <i>Pseudonaja affinis</i> subsp. <i>affinis</i> (Dugite)			
199.	<i>Purpureicephalus spurius</i>			
200.	25008 <i>Pygopus lepidopodus</i> (Common Scaly Foot)			
201.	24243 <i>Rattus fuscipes</i> (Western Bush Rat)			
202.	24245 <i>Rattus rattus</i> (Black Rat)	Y		
203.	<i>Raveniella peckorum</i>			
204.	24776 <i>Recurvirostra novaehollandiae</i> (Red-necked Avocet)			
205.	48096 <i>Rhipidura albiscapa</i> (Grey Fantail)			
206.	25614 <i>Rhipidura leucophrys</i> (Willie Wagtail)			
207.	25534 <i>Sericornis frontalis</i> (White-browed Scrubwren)			
208.	25266 <i>Simoselaps bertholdi</i> (Jan's Banded Snake)			
209.	30948 <i>Smicromis brevirostris</i> (Weebill)			
210.	24329 <i>Stictonetta naevosa</i> (Freckled Duck)			
211.	25597 <i>Strepera versicolor</i> (Grey Currawong)			
212.	25589 <i>Streptopelia chinensis</i> (Spotted Turtle-Dove)	Y		
213.	25590 <i>Streptopelia senegalensis</i> (Laughing Turtle-Dove)	Y		
214.	33992 <i>Synemon gratiosa</i> (Graceful Sunmoth)		P4	
215.	25705 <i>Tachybaptus novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
216.	24682 <i>Tachybaptus novaehollandiae</i> subsp. <i>novaehollandiae</i> (Australasian Grebe, Black-throated Grebe)			
217.	24207 <i>Tachyglossus aculeatus</i> (Short-beaked Echidna)			
218.	24331 <i>Tadorna tadornoides</i> (Australian Shelduck, Mountain Duck)			
219.	24167 <i>Tarsipes rostratus</i> (Honey Possum, Noolbenger)			
220.	48135 <i>Thinornis rubricollis</i> (Hooded Plover, Hooded Dotterel)		P4	
221.	24845 <i>Threskiornis spinicollis</i> (Straw-necked Ibis)			
222.	25203 <i>Tiliqua occipitalis</i> (Western Bluetongue)			
223.	25519 <i>Tiliqua rugosa</i>			
224.	25204 <i>Tiliqua rugosa</i> subsp. <i>aspera</i>			
225.	25207 <i>Tiliqua rugosa</i> subsp. <i>rugosa</i>			
226.	25549 <i>Todiramphus sanctus</i> (Sacred Kingfisher)			
227.	48141 <i>Tribonyx ventralis</i> (Black-tailed Native-hen)			
228.	25723 <i>Trichoglossus haematodus</i> (Rainbow Lorikeet)			
229.	25521 <i>Trichosurus vulpecula</i> (Common Brushtail Possum)			
230.	24158 <i>Trichosurus vulpecula</i> subsp. <i>vulpecula</i> (Common Brushtail Possum)			
231.	24806 <i>Tringa glareola</i> (Wood Sandpiper)		IA	
232.	24808 <i>Tringa nebularia</i> (Common Greenshank, greenshank)		IA	
233.	48147 <i>Turnix varius</i> (Painted Button-quail)			
234.	<i>Urodacus novaehollandiae</i>			
235.	24386 <i>Vanellus tricolor</i> (Banded Lapwing)			
236.	25218 <i>Varanus gouldii</i> (Bungarra or Sand Monitor)			
237.	<i>Venator immansueta</i>			
238.	25765 <i>Zosterops lateralis</i> (Grey-breasted White-eye, Silveryeye)			

Fungi

239.	<i>Phytophthora cinnamomi</i>			
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Plantae

240.	11731 <i>Acacia browniana</i> var. <i>browniana</i>			
241.	3262 <i>Acacia cochlearis</i> (Rigid Wattle)			
242.	3282 <i>Acacia cyclops</i> (Coastal Wattle)			
243.	3374 <i>Acacia huegelii</i>			
244.	17861 <i>Acacia longifolia</i>	Y		
245.	3502 <i>Acacia pulchella</i> (Prickly Moses)			
246.	15481 <i>Acacia pulchella</i> var. <i>glaberrima</i>			
247.	30032 <i>Acacia saligna</i> subsp. <i>saligna</i>			
248.	3557 <i>Acacia stenoptera</i> (Narrow Winged Wattle)			

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249.	3581 <i>Acacia trigonophylla</i>			
250.	3602 <i>Acacia willdenowiana</i> (Grass Wattle)			
251.	1775 <i>Adenanthos cygnorum</i> (Common Woollybush)			
252.	11837 <i>Adenanthos cygnorum</i> subsp. <i>cygnorum</i> (Common Woollybush)			
253.	1791 <i>Adenanthos obovatus</i> (Basket Flower)			
254.	17202 <i>Agonis flexuosa</i> var. <i>flexuosa</i>			
255.	184 <i>Aira caryophyllea</i> (Silvery Hairgrass)	Y		
256.	<i>Aira caryophyllea/cupaniana</i> group			
257.	185 <i>Aira cupaniana</i> (Silvery Hairgrass)	Y		
258.	187 <i>Aira praecox</i> (Early Hairgrass)	Y		
259.	1728 <i>Allocasuarina fraseriana</i> (Sheoak, Kondii)			
260.	1732 <i>Allocasuarina humilis</i> (Dwarf Sheoak)			
261.	198 <i>Amphipogon laguroides</i>			
262.	20184 <i>Amphipogon laguroides</i> subsp. <i>laguroides</i>			
263.	200 <i>Amphipogon turbinatus</i>			
264.	7833 <i>Angianthus preissianus</i>			
265.	1409 <i>Anigozanthos humilis</i> (Catspaw)			
266.	11434 <i>Anigozanthos humilis</i> subsp. <i>humilis</i>			
267.	1411 <i>Anigozanthos manglesii</i> (Mangles Kangaroo Paw, Kurulbrang)			
268.	<i>Anigozanthos</i> sp.			
269.	3688 <i>Aotus gracillima</i>			
270.	3692 <i>Aotus procumbens</i>			
271.	7838 <i>Arctotheca calendula</i> (Cape Weed, African Marigold)	Y		
272.	1264 <i>Arnocrinum preissii</i>			
273.	8779 <i>Asparagus asparagoides</i> (Bridal Creeper)	Y		
274.	20283 <i>Astartea scoparia</i> (Common Astartea)			
275.	7851 <i>Asteridea pulverulenta</i> (Common Bristle Daisy)			
276.	6334 <i>Astroloma pallidum</i> (Kick Bush)			
277.	2471 <i>Atriplex prostrata</i> (Hastate Orache)	Y		
278.	17234 <i>Austrostipa compressa</i>			
279.	17240 <i>Austrostipa flavescens</i>			
280.	17245 <i>Austrostipa mollis</i>			
281.	17253 <i>Austrostipa semibarbata</i>			
282.	37421 <i>Austrostipa</i> sp. <i>Marchagee</i> (B.R. Maslin 1407)			
283.	233 <i>Avena barbata</i> (Bearded Oat)	Y		
284.	36441 <i>Babingtonia camphorosmae</i> (Camphor Myrtle)			
285.	1800 <i>Banksia attenuata</i> (Slender Banksia, Piara)			
286.	32580 <i>Banksia dallanneyi</i> var. <i>dallanneyi</i>			
287.	1822 <i>Banksia ilicifolia</i> (Holly-leaved Banksia)			
288.	1830 <i>Banksia littoralis</i> (Swamp Banksia, Pungura)			
289.	1834 <i>Banksia menziesii</i> (Firewood Banksia)			
290.	32077 <i>Banksia sessilis</i> var. <i>cygnorum</i>			
291.	1852 <i>Banksia telmatiaea</i> (Swamp Fox Banksia)			
292.	741 <i>Baumea articulata</i> (Jointed Rush)			
293.	743 <i>Baumea juncea</i> (Bare Twigrush)			
294.	5382 <i>Beaufortia elegans</i> (Elegant Beaufortia)			
295.	749 <i>Bolboschoenus caldwellii</i> (Marsh Club-rush)			
296.	4413 <i>Boronia crenulata</i> (Aniseed Boronia)			
297.	16636 <i>Boronia crenulata</i> subsp. <i>viminea</i>			
298.	11503 <i>Boronia crenulata</i> var. <i>crenulata</i>			
299.	4417 <i>Boronia dichotoma</i>			
300.	11381 <i>Boronia ramosa</i> subsp. <i>anethifolia</i>			
301.	3710 <i>Bossiaea eriocarpa</i> (Common Brown Pea)			
302.	6341 <i>Brachyloma preissii</i> (Globe Heath)			
303.	30142 <i>Brachyloma preissii</i> subsp. <i>obtusifolium</i>			
304.	30136 <i>Brachyloma preissii</i> subsp. <i>preissii</i>			
305.	8661 <i>Brachypodium distachyon</i> (False Brome)	Y		
306.	3000 <i>Brassica tournefortii</i> (Mediterranean Turnip)	Y		
307.	244 <i>Briza maxima</i> (Blowfly Grass)	Y		
308.	245 <i>Briza minor</i> (Shivery Grass)	Y		
309.	249 <i>Bromus diandrus</i> (Great Brome)	Y		
310.	12770 <i>Burchardia congesta</i>			
311.	1276 <i>Caesia micrantha</i> (Pale Grass Lily)			
312.	1277 <i>Caesia occidentalis</i>			
313.	<i>Caesia</i> sp.			
314.	15330 <i>Caladenia arenicola</i>			
315.	1586 <i>Caladenia discoidea</i> (Dancing Orchid)			
316.	1592 <i>Caladenia flava</i> (Cowslip Orchid)			
317.	15352 <i>Caladenia georgei</i>			
318.	1596 <i>Caladenia huegelii</i> (Grand Spider Orchid)			

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Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
319.	1599 <i>Caladenia latifolia</i> (Pink Fairy Orchid)			
320.	2848 <i>Calandrinia corrigioloides</i> (Strap Purslane)			
321.	2856 <i>Calandrinia liniflora</i> (Parakeelya)			
322.	19309 <i>Calectasia narragara</i>			
323.	34942 <i>Callitriche brutia</i> subsp. <i>brutia</i>	Y		
324.	36600 <i>Callitriche pyramidalis</i> (Swamp Cypress)			
325.	5411 <i>Calothamnus hirsutus</i>			
326.	<i>Calytrix ?flavescens</i>			Y
327.	5439 <i>Calytrix angulata</i> (Yellow Starflower)			
328.	5458 <i>Calytrix flavescens</i> (Summer Starflower)			
329.	5460 <i>Calytrix fraseri</i> (Pink Summer Calytrix)			
330.	5476 <i>Calytrix sapphirina</i>			
331.	2795 <i>Carpobrotus edulis</i> (Hottentot Fig)	Y		
332.	1162 <i>Cartonema phylloides</i>			
333.	2951 <i>Cassytha flava</i> (Dodder Laurel)			
334.	2957 <i>Cassytha racemosa</i> (Dodder Laurel)			
335.	11799 <i>Cassytha racemosa</i> forma <i>racemosa</i>			
336.	41568 <i>Cenchrus setaceus</i> (Fountain Grass)	Y		
337.	6542 <i>Centaurium tenuiflorum</i>	Y		
338.	1125 <i>Centrolepis drummondiana</i>			
339.	1134 <i>Centrolepis polygyna</i> (Wiry Centrolepis)			
340.	2889 <i>Cerastium glomeratum</i> (Mouse Ear Chickweed)	Y		
341.	18156 <i>Chamaecytisus palmensis</i> (Tagasaste)	Y		
342.	1280 <i>Chamaescilla corymbosa</i> (Blue Squill)			
343.	2490 <i>Chenopodium glaucum</i> (Glaucous Goosefoot)	Y		
344.	7937 <i>Cirsium vulgare</i> (Spear Thistle, Scotch Thistle)	Y		
345.	4550 <i>Comesperma calymega</i> (Blue-spike Milkwort)			
346.	1858 <i>Conospermum amoenum</i> (Blue Smokebush)			
347.	15611 <i>Conospermum stoechadis</i> subsp. <i>stoechadis</i> (Common Smokebush)			
348.	6348 <i>Conostephium pendulum</i> (Pearl Flower)			
349.	6349 <i>Conostephium preissii</i>			
350.	1418 <i>Conostylis aculeata</i> (Prickly Conostylis)			
351.	11826 <i>Conostylis aculeata</i> subsp. <i>aculeata</i>			
352.	1436 <i>Conostylis juncea</i>			
353.	1454 <i>Conostylis setigera</i> (Bristly Cottonhead)			
354.	11597 <i>Conostylis setigera</i> subsp. <i>setigera</i>			
355.	7939 <i>Conyza bonariensis</i> (Flaxleaf Fleabane)	Y		
356.	<i>Conyza</i> sp.			
357.	20074 <i>Conyza sumatrensis</i>	Y		
358.	48259 <i>Cortaderia seloana</i> subsp. <i>seloana</i>	Y		
359.	1285 <i>Corynotheca micrantha</i> (Sand Lily)			
360.	7945 <i>Cotula coronopifolia</i> (Waterbuttons)	Y		
361.	3137 <i>Crassula colorata</i> (Dense Stonecrop)			
362.	11709 <i>Crassula colorata</i> var. <i>acuminata</i>			
363.	3139 <i>Crassula exserta</i>			
364.	3140 <i>Crassula glomerata</i>	Y		
365.	16245 <i>Cyathochaeta teretifolia</i>		P3	
366.	19625 <i>Cymbalaria muralis</i> subsp. <i>muralis</i>	Y		
367.	806 <i>Cyperus polystachyos</i> (Bunchy Sedge)	Y		
368.	816 <i>Cyperus tenuiflorus</i> (Scaly Sedge)	Y		
369.	7454 <i>Dampiera linearis</i> (Common Dampiera)			
370.	7462 <i>Dampiera pedunculata</i>			
371.	35618 <i>Darwinia</i> sp. <i>Karonie</i> (K. Newbey 8503)			
372.	1218 <i>Dasyogon bromeliifolius</i> (Pineapple Bush)			
373.	3832 <i>Daviesia physodes</i>			
374.	3845 <i>Daviesia triflora</i>			
375.	16595 <i>Desmocladus flexuosus</i>			
376.	299 <i>Deyeuxia quadriseta</i> (Reed Bentgrass)			
377.	1259 <i>Dianella revoluta</i> (Blueberry Lily)			
378.	1287 <i>Dichopogon capillipes</i>			
379.	17838 <i>Dielsia stenostachya</i>			
380.	9027 <i>Diplolaena drummondii</i>			
381.	19649 <i>Disa bracteata</i>	Y		
382.	<i>Diuris corymbosa/magnifica</i>			
383.	12938 <i>Diuris micrantha</i>		T	
384.	4763 <i>Dodonaea hackettiana</i> (Hackett's Hopbush)		P4	
385.	1639 <i>Drakaea elastica</i> (Glossy-leaved Hammer Orchid)		T	
386.	3095 <i>Drosera erythrorhiza</i> (Red Ink Sundew)			
387.	3098 <i>Drosera glanduligera</i> (Pimpernel Sundew)			
388.	3106 <i>Drosera macrantha</i> (Bridal Rainbow)			

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389.	14298 <i>Drosera macrantha</i> subsp. <i>macrantha</i>			
390.	3109 <i>Drosera menziesii</i> (Pink Rainbow)			
391.	13216 <i>Drosera menziesii</i> subsp. <i>penicillaris</i>			
392.	3117 <i>Drosera paleacea</i> (Dwarf Sundew)			
393.	13188 <i>Drosera paleacea</i> subsp. <i>paleacea</i>			
394.	3118 <i>Drosera pallida</i> (Pale Rainbow)			
395.	29178 <i>Drosera porrecta</i>			
396.	<i>Drosera</i> sp. "climbing"			
397.	3135 <i>Drosera zonaria</i> (Painted Sundew)			
398.	<i>Ehrharta</i> ? <i>longiflora</i>			Y
399.	347 <i>Ehrharta calycina</i> (Perennial Veldt Grass)	Y		
400.	349 <i>Ehrharta longiflora</i> (Annual Veldt Grass)	Y		
401.	<i>Ehrharta</i> sp.			
402.	1643 <i>Elythranthera brunonis</i> (Purple Enamel Orchid)			
403.	1645 <i>Epiblema grandiflorum</i> (Babe-in-a-cradle)			
404.	6133 <i>Epilobium hirtigerum</i> (Hairy Willow Herb)			
405.	13950 <i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i>			
406.	5541 <i>Eremaea pauciflora</i>			
407.	14104 <i>Eremaea pauciflora</i> var. <i>pauciflora</i>			
408.	6219 <i>Eryngium pinnatifidum</i> (Blue Devils)			
409.	15446 <i>Eryngium pinnatifidum</i> subsp. <i>pinnatifidum</i>			
410.	5615 <i>Eucalyptus decipiens</i> (Limestone Marlock, Moit)			
411.	5708 <i>Eucalyptus marginata</i> (Jarrah, Djara)			
412.	13547 <i>Eucalyptus marginata</i> subsp. <i>marginata</i> (Jarrah)			
413.	5763 <i>Eucalyptus rudis</i> (Flooded Gum, Kulurda)			
414.	13511 <i>Eucalyptus rudis</i> subsp. <i>rudis</i>			
415.	<i>Eucalyptus</i> sp.			
416.	5790 <i>Eucalyptus todtiana</i> (Coastal Blackbutt)			
417.	3872 <i>Euchilopsis linearis</i> (Swamp Pea)			
418.	20014 <i>Euphorbia hyssopifolia</i>	Y		
419.	4638 <i>Euphorbia peplus</i> (Petty Spurge)	Y		
420.	4648 <i>Euphorbia terracina</i> (Geraldton Carnation Weed)	Y		
421.	3880 <i>Eutaxia virgata</i>			
422.	1747 <i>Ficus carica</i> (Common Fig)	Y		
423.	2969 <i>Fumaria capreolata</i> (Whiteflower Fumitory)	Y		
424.	<i>Fumaria</i> sp.			
425.	7323 <i>Galium murale</i> (Small Goosegrass)	Y		
426.	20475 <i>Gastrolobium capitatum</i>			
427.	20483 <i>Gastrolobium linearifolium</i>			
428.	1520 <i>Gladiolus caryophyllaceus</i> (Wild Gladiolus)	Y		
429.	6587 <i>Gomphocarpus fruticosus</i> (Narrowleaf Cottonbush)	Y		
430.	3957 <i>Gompholobium tomentosum</i> (Hairy Yellow Pea)			
431.	6161 <i>Gonocarpus pithyoides</i>			
432.	7538 <i>Goodenia pulchella</i>			
433.	14282 <i>Gratiola pubescens</i>			
434.	2032 <i>Grevillea leucopteris</i> (White Plume Grevillea)			
435.	1475 <i>Haemodorum spicatum</i> (Mardja)			
436.	2197 <i>Hakea prostrata</i> (Harsh Hakea)			
437.	2216 <i>Hakea varia</i> (Variable-leaved Hakea)			
438.	3961 <i>Hardenbergia comptoniana</i> (Native Wisteria)			
439.	6710 <i>Heliotropium europaeum</i> (Common Heliotrope)	Y		
440.	6839 <i>Hemiandra pungens</i> (Snakebush)			
441.	38320 <i>Hemiandra</i> sp. <i>Jurien</i> (B.J. Conn & M.E. Tozer BJC 3885)			
442.	1293 <i>Hensmania turbinata</i>			
443.	5134 <i>Hibbertia huegelii</i>			
444.	5135 <i>Hibbertia hypericoides</i> (Yellow Buttercups)			
445.	45534 <i>Hibbertia hypericoides</i> subsp. <i>hypericoides</i>			
446.	5162 <i>Hibbertia racemosa</i> (Stalked Guinea Flower)			
447.	48381 <i>Hibbertia striata</i>			
448.	5173 <i>Hibbertia subvaginata</i>			
449.	5176 <i>Hibbertia vaginata</i>			
450.	444 <i>Holcus lanatus</i> (Yorkshire Fog)	Y		
451.	6222 <i>Homalosciadium homalocarpum</i>			
452.	3966 <i>Hovea pungens</i> (Devil's Pins, Puyenak)			
453.	12859 <i>Hovea trisperma</i> var. <i>trisperma</i>			
454.	12741 <i>Hyalosperma cotula</i>			
455.	5216 <i>Hybanthus calycinus</i> (Wild Violet)			
456.	5817 <i>Hypocalymma angustifolium</i> (White Myrtle, Kudjid)			
457.	35070 <i>Hypocalymma angustifolium</i> subsp. <i>Swan Coastal Plain</i> (G.J. Keighery 16777)			
458.	5825 <i>Hypocalymma robustum</i> (Swan River Myrtle)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
459.	8086 <i>Hypochaeris glabra</i> (Smooth Catsear)	Y		
460.	9352 <i>Hypochaeris radicata</i> (Flat Weed, Cats-ear)	Y		
461.	1070 <i>Hypolaena exsulca</i>			
462.	17841 <i>Hypolaena pubescens</i>			
463.	<i>Iridaceae</i> sp.			Y
464.	20200 <i>Isolepis cernua</i> var. <i>setiformis</i>			
465.	917 <i>Isolepis marginata</i> (Coarse Club-rush)			
466.	3992 <i>Isotropis cuneifolia</i> (Granny Bonnets)			
467.	4012 <i>Jacksonia furcellata</i> (Grey Stinkwood)			
468.	20462 <i>Jacksonia gracillima</i>		P3	
469.	4029 <i>Jacksonia sternbergiana</i> (Stinkwood, Kapur)			
470.	1178 <i>Juncus bufonius</i> (Toad Rush)	Y		
471.	1186 <i>Juncus microcephalus</i>	Y		
472.	1188 <i>Juncus pallidus</i> (Pale Rush)			
473.	1190 <i>Juncus planifolius</i> (Broadleaf Rush)			
474.	4035 <i>Kennedia beckxiana</i> (Cape Arid Kennedia)		P4	
475.	4044 <i>Kennedia prostrata</i> (Scarlet Runner)			
476.	5832 <i>Kunzea ericifolia</i> (Spearwood, Pondil)			
477.	15498 <i>Kunzea glabrescens</i> (Spearwood)			
478.	20019 <i>Lachnagrostis filiformis</i>			
479.	8096 <i>Lactuca serriola</i> (Prickly Lettuce)	Y		
480.	18585 <i>Lagenophora huegelii</i>			
481.	467 <i>Lagurus ovatus</i> (Hare's Tail Grass)	Y		
482.	4052 <i>Latrobea tenella</i>			
483.	1307 <i>Laxmannia ramosa</i> (Branching Lily)			
484.	11911 <i>Laxmannia ramosa</i> subsp. <i>ramosa</i>			
485.	11464 <i>Laxmannia sessiliflora</i> subsp. <i>australis</i>			
486.	1309 <i>Laxmannia squarrosa</i>			
487.	7572 <i>Lechenaultia expansa</i>			
488.	7574 <i>Lechenaultia floribunda</i> (Free-flowering Leschenaultia)			
489.	44490 <i>Leontodon rhagadioloides</i>	Y		
490.	925 <i>Lepidosperma angustatum</i>			
491.	937 <i>Lepidosperma longitudinale</i> (Pithy Sword-sedge)			
492.	940 <i>Lepidosperma pubisquameum</i>			
493.	944 <i>Lepidosperma scabrum</i>			
494.	<i>Lepidosperma</i> sp. <i>terete</i>			
495.	945 <i>Lepidosperma squamatum</i>			
496.	946 <i>Lepidosperma striatum</i>			
497.	1653 <i>Leporella fimbriata</i> (Hare Orchid)			
498.	1077 <i>Leptocarpus canus</i> (Hoary Twine-rush)			
499.	1080 <i>Leptocarpus scariosus</i>			
500.	2342 <i>Leptomeria cunninghamii</i>			
501.	2344 <i>Leptomeria empetriformis</i>			
502.	2350 <i>Leptomeria pauciflora</i> (Sparse-flowered Currant Bush)			
503.	5850 <i>Leptospermum laevigatum</i> (Coast Teatree)	Y		
504.	6360 <i>Leucopogon australis</i> (Spiked Beard-heath)			
505.	6374 <i>Leucopogon conostephioides</i>			
506.	6436 <i>Leucopogon propinquus</i>			
507.	7676 <i>Levenhookia pusilla</i> (Midget Stylewort)			
508.	<i>Levenhookia pusilla</i> / <i>stipitata</i>			
509.	7677 <i>Levenhookia stipitata</i> (Common Stylewort)			
510.	9289 <i>Lobelia anceps</i> (Angled Lobelia)			
511.	7408 <i>Lobelia tenuior</i> (Slender Lobelia)			
512.	6515 <i>Logania vaginalis</i> (White Spray)			
513.	478 <i>Lolium rigidum</i> (Wimmera Ryegrass)	Y		
514.	<i>Lomandra</i> ? <i>caespitosa</i>			
515.	<i>Lomandra</i> ? <i>hermaphrodita</i>			Y
516.	<i>Lomandra</i> ? <i>nigricans</i>			Y
517.	<i>Lomandra</i> ? <i>preissii</i>			
518.	<i>Lomandra</i> ? <i>suaveolens</i>			Y
519.	1223 <i>Lomandra caespitosa</i> (Tufted Mat Rush)			
520.	<i>Lomandra caespitosa</i> / <i>suaveolens</i>			Y
521.	1228 <i>Lomandra hermaphrodita</i>			
522.	1232 <i>Lomandra micrantha</i> (Small-flower Mat-rush)			
523.	1234 <i>Lomandra nigricans</i>			
524.	1239 <i>Lomandra preissii</i>			
525.	1243 <i>Lomandra sericea</i> (Silky Mat Rush)			
526.	<i>Lomandra</i> sp.			
527.	1246 <i>Lomandra suaveolens</i>			
528.	8564 <i>Lotus subbiflorus</i>	Y		

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
529.	4065 <i>Lupinus angustifolius</i> (Narrowleaf Lupin)	Y		
530.	1198 <i>Luzula meridionalis</i> (Field Woodrush)			
531.	1097 <i>Lyginia barbata</i>			
532.	<i>Lyginia barbata/imberbis</i>			
533.	18049 <i>Lyginia imberbis</i>			
534.	1656 <i>Lyperanthus serratus</i> (Rattle Beak Orchid)			
535.	36375 <i>Lysimachia arvensis</i> (Pimpernel)	Y		
536.	6456 <i>Lysinema ciliatum</i> (Curry Flower)			
537.	5281 <i>Lythrum hyssopifolia</i> (Lesser Loosestrife)	Y		
538.	2838 <i>Macarthuria apetala</i>			
539.	2839 <i>Macarthuria australis</i>			
540.	18119 <i>Macrozamia fraseri</i>			
541.	85 <i>Macrozamia riedlei</i> (<i>Zamia</i> , Djirdji)			
542.	4079 <i>Medicago polymorpha</i> (Burr Medic)	Y		
543.	5900 <i>Melaleuca cuticularis</i> (Saltwater Paperbark)			
544.	13271 <i>Melaleuca huegelii</i> subsp. <i>huegelii</i>			
545.	13273 <i>Melaleuca incana</i> subsp. <i>incana</i>			
546.	5926 <i>Melaleuca lateritia</i> (Robin Redbreast Bush)			
547.	5946 <i>Melaleuca pauciflora</i>			
548.	5952 <i>Melaleuca preissiana</i> (Moonah)			
549.	5964 <i>Melaleuca seriata</i>			
550.	18598 <i>Melaleuca systema</i>			
551.	5978 <i>Melaleuca teretifolia</i> (Banbar)			
552.	5980 <i>Melaleuca thymoides</i>			
553.	4085 <i>Melilotus indicus</i>	Y		
554.	953 <i>Mesomelaena graciliceps</i>			
555.	955 <i>Mesomelaena pseudostygia</i>			
556.	957 <i>Mesomelaena tetragona</i> (Semaphore Sedge)			
557.	485 <i>Microlaena stipoides</i> (Weeping Grass)			
558.	1658 <i>Microtis atrata</i> (Swamp Mignonette Orchid)			
559.	10954 <i>Microtis media</i> (Tall Mignonette Orchid)			
560.	15419 <i>Microtis media</i> subsp. <i>media</i>			
561.	4666 <i>Monotaxis occidentalis</i>			
562.	6189 <i>Myriophyllum crispatum</i>			
563.	6199 <i>Myriophyllum tillaeoides</i>			
564.	492 <i>Neurachne alopecuroidea</i> (Foftail Mulga Grass)			
565.	6974 <i>Nicotiana glauca</i> (Tree Tobacco)	Y		
566.	2401 <i>Nuytsia floribunda</i> (Christmas Tree, Mudja)			
567.	6140 <i>Oenothera mollissima</i>	Y		
568.	18255 <i>Opercularia vaginata</i> (Dog Weed)			
569.	36177 <i>Ornduffia albiflora</i>			
570.	4113 <i>Ornithopus compressus</i> (Yellow Serradella)	Y		
571.	7090 <i>Parentucellia viscosa</i> (Sticky Bartsia)	Y		
572.	527 <i>Paspalum dilatatum</i>	Y		
573.	1550 <i>Patersonia occidentalis</i> (Purple Flag, Koma)			
574.	30471 <i>Patersonia occidentalis</i> var. <i>angustifolia</i>			
575.	30472 <i>Patersonia occidentalis</i> var. <i>occidentalis</i>			
576.	4343 <i>Pelargonium capitatum</i> (Rose Pelargonium)	Y		
577.	4346 <i>Pelargonium littorale</i>			
578.	6006 <i>Pericalymma ellipticum</i> (Swamp Teatree)			
579.	16477 <i>Pericalymma ellipticum</i> var. <i>ellipticum</i>			
580.	2273 <i>Persoonia saccata</i> (Snottygobble)			
581.	2299 <i>Petrophile linearis</i> (Pixie Mops)			
582.	2301 <i>Petrophile macrostachya</i>			
583.	2312 <i>Petrophile striata</i>			
584.	19825 <i>Petrorhagia dubia</i>	Y		
585.	18529 <i>Philothea spicata</i> (Pepper and Salt)			
586.	1478 <i>Phlebocarya ciliata</i>			
587.	16177 <i>Phyllangium paradoxum</i>			
588.	4675 <i>Phyllanthus calycinus</i> (False Boronia)			
589.	2793 <i>Phytolacca octandra</i> (Red Ink Plant)	Y		
590.	5237 <i>Pimelea calcicola</i>		P3	
591.	18117 <i>Pimelea rosea</i> subsp. <i>rosea</i>			
592.	8163 <i>Pithocarpa corymbulosa</i> (Corymbose Pithocarpa)		P3	
593.	6249 <i>Platysace compressa</i> (Tapeworm Plant)			
594.	6253 <i>Platysace filiformis</i>			
595.	4524 <i>Platytheca galioides</i>			
596.	<i>Poaceae</i> sp.			
597.	8175 <i>Podolepis gracilis</i> (Slender Podolepis)			
598.	8182 <i>Podotricha angustifolia</i> (Sticky Longheads)			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
599.	8183 <i>Podotheca chrysantha</i> (Yellow Podotheca)			
600.	8184 <i>Podotheca gnaphalioides</i> (Golden Long-heads)			
601.	<i>Podotheca</i> sp.			
602.	2905 <i>Polycarpon tetraphyllum</i> (Fourleaf Allseed)	Y		
603.	582 <i>Polypogon monspeliensis</i> (Annual Beardgrass)	Y		
604.	4691 <i>Poranthera microphylla</i> (Small Poranthera)			
605.	<i>Poranthera microphylla</i> /moorokatta			
606.	1670 <i>Prasophyllum drummondii</i> (Swamp Leek Orchid)			
607.	10853 <i>Prasophyllum plumiforme</i>			
608.	8189 <i>Pseudognaphalium luteoalbum</i> (Jersey Cudweed)			
609.	15426 <i>Pterostylis aspera</i>			
610.	44723 <i>Pterostylis glebosa</i>			
611.	12217 <i>Pterostylis sanguinea</i>			
612.	4177 <i>Pultenaea ochreatea</i>			
613.	4181 <i>Pultenaea reticulata</i>			
614.	16367 <i>Pyrorchis nigricans</i> (Red beaks, Elephants ears)			
615.	8195 <i>Quinetia urvillei</i>			
616.	6012 <i>Regelia ciliata</i>			
617.	4822 <i>Rhamnus alaternus</i> (Buckthorn)	Y		
618.	13300 <i>Rhodanthe citrina</i>			
619.	14485 <i>Romulea flava</i> var. <i>minor</i>	Y		
620.	1556 <i>Romulea rosea</i> (Guildford Grass)	Y		
621.	14924 <i>Romulea rosea</i> var. <i>communis</i>	Y		
622.	40426 <i>Rytidosperma occidentale</i>			
623.	11647 <i>Samolus repens</i> var. <i>repens</i>			
624.	7603 <i>Scaevola canescens</i> (Grey Scaevola)			
625.	978 <i>Schoenus brevisetis</i>			
626.	982 <i>Schoenus clandestinus</i>			
627.	984 <i>Schoenus curvifolius</i>			
628.	986 <i>Schoenus efoliatus</i>			
629.	992 <i>Schoenus grandiflorus</i> (Large Flowered Bogrush)			
630.	1017 <i>Schoenus subbulbosus</i>			
631.	16251 <i>Schoenus subflavus</i> subsp. <i>long leaves</i> (K.L. Wilson 2865)			
632.	6033 <i>Scholtzia involucrata</i> (Spiked Scholtzia)			
633.	6 <i>Selaginella gracillima</i> (Tiny Clubmoss)			
634.	25884 <i>Senecio pinnatifolius</i> var. <i>latilobus</i>			
635.	2909 <i>Silene gallica</i> (French Catchfly)	Y		
636.	8225 <i>Siloxerus humifusus</i> (Procumbent Siloxerus)			
637.	<i>Siloxerus humifusus</i> /filifolius			
638.	7020 <i>Solanum linnaeanum</i> (Apple of Sodom)	Y		
639.	7022 <i>Solanum nigrum</i> (Black Berry Nightshade)	Y		
640.	8230 <i>Sonchus asper</i> (Rough Sowthistle)	Y		
641.	9367 <i>Sonchus hydrophilus</i> (Native Sowthistle)			
642.	8231 <i>Sonchus oleraceus</i> (Common Sowthistle)	Y		
643.	1312 <i>Sowerbaea laxiflora</i> (Purple Tassels)			
644.	4211 <i>Sphaerolobium vimineum</i> (Leafless Globe Pea)			
645.	2918 <i>Stellaria media</i> (Chickweed)	Y		
646.	2316 <i>Stirlingia latifolia</i> (Blueboy)			
647.	25831 <i>Stylidium araeophyllum</i> (Stilt Walker)			
648.	<i>Stylidium araeophyllum</i> /neurophyllum			
649.	7693 <i>Stylidium brunonianum</i> (Pink Fountain Triggerplant)			
650.	7696 <i>Stylidium calcaratum</i> (Book Triggerplant)			
651.	7699 <i>Stylidium carnosum</i> (Fleshy-leaved Triggerplant)			
652.	25829 <i>Stylidium neurophyllum</i> (Coastal Plain Triggerplant)			
653.	25800 <i>Stylidium paludicola</i>		P3	
654.	7774 <i>Stylidium piliferum</i> (Common Butterfly Triggerplant)			
655.	7785 <i>Stylidium repens</i> (Matted Triggerplant)			
656.	25806 <i>Stylidium scarosum</i>			
657.	7798 <i>Stylidium schoenoides</i> (Cow Kicks)			
658.	1260 <i>Stypandra glauca</i> (Blind Grass)			
659.	25902 <i>Symphotrichum squamatum</i> (Bushy Starwort)	Y		
660.	15532 <i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>			
661.	11143 <i>Thelymitra graminea</i>			
662.	<i>Thelymitra</i> sp.			
663.	1716 <i>Thelymitra tigrina</i> (Tiger Orchid)			
664.	<i>Thysanotus</i> ? <i>arbuscula</i>			Y
665.	1318 <i>Thysanotus arbuscula</i>			
666.	1319 <i>Thysanotus arenarius</i>			
667.	1338 <i>Thysanotus manglesianus</i> (Fringed Lily)			
668.	<i>Thysanotus manglesianus</i> /patersonii complex			

Name ID	Species Name	Naturalised	Conservation Code	¹ Endemic To Query Area
669.	1339 <i>Thysanotus multiflorus</i> (Many-flowered Fringe Lily)			
670.	1343 <i>Thysanotus patersonii</i>			
671.	<i>Thysanotus</i> sp.			
672.	1351 <i>Thysanotus sparteus</i>			
673.	1357 <i>Thysanotus thyrsoides</i>			
674.	1358 <i>Thysanotus triandrus</i>			
675.	6280 <i>Trachymene pilosa</i> (Native Parsnip)			
676.	1361 <i>Tricoryne elatior</i> (Yellow Autumn Lily)			
677.	1363 <i>Tricoryne tenella</i>			
678.	1038 <i>Tricostularia neesii</i>			
679.	17145 <i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Y		
680.	14738 <i>Trifolium resupinatum</i> var. <i>resupinatum</i>	Y		
681.	44444 <i>Tripterooccus</i> sp. <i>Brachylobus</i> (A.S. George 14234)		P4	
682.	4360 <i>Tropaeolum majus</i> (Garden Nasturtium)	Y		
683.	Unknown Annual Grasses			
684.	8254 <i>Urospermum picroides</i> (False Hawkbit)	Y		
685.	8255 <i>Ursinia anthemoides</i> (<i>Ursinia</i>)	Y		
686.	38388 <i>Ursinia anthemoides</i> subsp. <i>anthemoides</i>	Y		
687.	15432 <i>Verticordia densiflora</i> var. <i>densiflora</i>			
688.	14714 <i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>		P4	
689.	4320 <i>Vicia hirsuta</i> (Hairy Vetch)	Y		
690.	11474 <i>Vicia sativa</i> subsp. <i>nigra</i>	Y		
691.	4325 <i>Viminaria juncea</i> (Swishbush, Koweda)			
692.	722 <i>Vulpia bromoides</i> (Squirrel Tail Fescue)	Y		
693.	<i>Vulpia</i> sp.			
694.	7384 <i>Wahlenbergia capensis</i> (Cape Bluebell)	Y		
695.	7389 <i>Wahlenbergia preissii</i>			
696.	<i>Wahlenbergia</i> sp.			
697.	8282 <i>Waitzia suaveolens</i> (Fragrant Waitzia)			
698.	1251 <i>Xanthorrhoea brunonis</i>			
699.	1256 <i>Xanthorrhoea preissii</i> (Grass tree, Palga)			
700.	6289 <i>Xanthosia huegelii</i>			
701.	2331 <i>Xylomelum occidentale</i> (Woody Pear, Djandin)			
702.	1049 <i>Zantedeschia aethiopica</i> (Arum Lily)	Y		

Protozoa

703.	38968 <i>Arcyria insignis</i>			
704.	38979 <i>Badhamia utricularis</i>			
705.	38983 <i>Clastoderma debaryanum</i>			
706.	38990 <i>Comatricha nigra</i>			
707.	39019 <i>Didymium clavus</i>			Y

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 wholly 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.



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: 26/09/17 19:56:47

[Summary](#)

[Details](#)

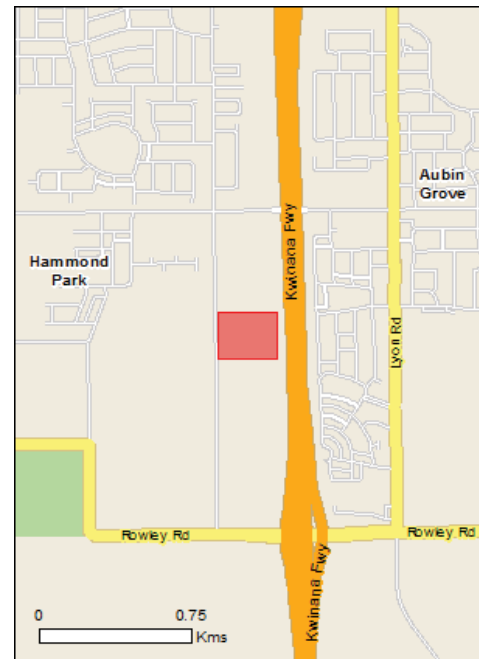
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

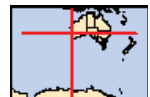
[Acknowledgements](#)



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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:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	19
Listed Migratory Species:	17

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:	26
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	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:	5
Regional Forest Agreements:	None
Invasive Species:	42
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Forrestdale and thomsons lakes	Within Ramsar site
Peel-yalgorup system	30 - 40km upstream

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
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community likely to occur within area

Listed Threatened Species	[Resource Information]
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Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso		
Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat known to occur within area
Calyptorhynchus baudinii		
Baudin's Cockatoo, Long-billed Black-Cockatoo [769]	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
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Dasyurus geoffroi		
Chuditch, Western Quoll [330]	Vulnerable	Species or species

Name	Status	Type of Presence
Pseudocheirus occidentalis		habitat known to occur within area
Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Andersonia gracilis		
Slender Andersonia [14470]	Endangered	Species or species habitat may occur within area
Caladenia huegelii		
King Spider-orchid, Grand Spider-orchid, Rusty Spider-orchid [7309]	Endangered	Species or species habitat known to occur within area
Diuris micrantha		
Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat known to occur within area
Diuris purdiei		
Purdie's Donkey-orchid [12950]	Endangered	Species or species habitat likely to occur within area
Drakaea elastica		
Glossy-leaved Hammer Orchid, Glossy-leaved Hammer Orchid, Warty Hammer Orchid [16753]	Endangered	Species or species habitat likely to occur within area
Drakaea micrantha		
Dwarf Hammer-orchid [56755]	Vulnerable	Species or species habitat likely to occur within area
Eleocharis keigheryi		
Keighery's Eleocharis [64893]	Vulnerable	Species or species habitat may occur within area
Lepidosperma rostratum		
Beaked Lepidosperma [14152]	Endangered	Species or species habitat likely to 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		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to 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 known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species

Name	Threatened	Type of Presence
Calidris ruficollis Red-necked Stint [860]		habitat known to occur within area Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to 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 likely to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known 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 known to 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]		Breeding known to occur within area

Name	Threatened	Type of Presence
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris subminuta Long-toed Stint [861]		Species or species habitat known to occur within area
Charadrius dubius Little Ringed Plover [896]		Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Black-winged Stilt [870]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to 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
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Species or species habitat known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Thinornis rubicollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Harry Waring Marsupial Reserve	WA
Thomsons Lake	WA
Unnamed WA48291	WA
Unnamed WA49561	WA
Wandi	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 Resources 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

Name	Status	Type of Presence
Streptopelia chinensis Spotted Turtle-Dove [780]		habitat likely to occur within area 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
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
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		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
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
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
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 linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		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
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		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

Name	Status	Type of Presence
Reptiles		
Hemidactylus frenatus		
Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands		[Resource Information]
Name	State	
Gibbs Road Swamp System	WA	
Spectacles Swamp	WA	
Thomsons Lake	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

-32.17229 115.853302,-32.172277 115.855963,-32.174011 115.855985,-32.174029 115.853318,-32.172327 115.853308,-32.172327 115.853308,-32.17229 115.853302

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](#)
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- [-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.

APPENDIX B - FLORA SPECIES INVENTORY

Family		Species
AIZOCEAE	*	<i>Carpobrotus edulis</i>
ANARCARDIACEAE	*	<i>Schinus terebinthifolius</i>
ANARTHRIACEAE		<i>Lyginia imberbis</i>
APIACEAE		<i>Xanthosia huegelii</i>
ARALIACEAE		<i>Trachymene pilosa</i>
ASPARAGACEAE		? <i>Dichopogon</i> sp.
		<i>Laxmannia squarrosa</i>
		<i>Lomandra caespitosa</i>
		<i>Lomandra hermaphrodita</i>
		<i>Lomandra nigricans</i>
		<i>Thysanotus arenarius</i>
		<i>Thysanotus dichotomous</i>
		<i>Thysanotus</i> sp.
		<i>Thysanotus thyrsoides</i>
ASTERACEAE	*	<i>Hypochaeris glabra</i>
	*	<i>Hypochaeris radicata</i>
	*	<i>Ursinia anthemoides</i>
CASUARINACEAE		<i>Allocasuarina fraseriana</i>
		<i>Allocasuarina humilis</i>
COLCHICACEAE		<i>Burchardia congesta</i>
CYPERACEAE		Cyperaceae sp.
		<i>Lepidosperma squamatum</i>
		<i>Mesomelaena pseudostygia</i>
		<i>Schoenus ?efoliatus</i>
		<i>Schoenus caespititius</i>
		<i>Schoenus curvifolius</i>
DASYPOGONACEAE		<i>Calectasia narragarra</i>
		<i>Dasyogon bromeliifolius</i>
DILLENACEAE		<i>Hibbertia hypericoides</i>
		<i>Hibbertia racemosa</i>
DROSERACEAE		<i>Drosera erythrorhiza</i>
		<i>Drosera</i> sp.
ERICAEAE		<i>Leucopogon</i> sp.
EUPHORBIACEAE	*	<i>Euphorbia terracina</i>
		Euphorbiaceae sp.
FABACEAE		<i>Acacia stenoptera</i>
		<i>Bossiaea eriocarpa</i>
		<i>Daviesia triflora</i>
		<i>Gastrolobium capitatum</i>
		<i>Gompholobium tomentosum</i>
		<i>Hovea trisperma</i>
		<i>Jacksonia furcellata</i>
		<i>Jacksonia sternbergiana</i>
		<i>Kennedia prostrata</i>
GERANIACEAE	*	<i>Pelargonium capitatum</i>

GOODENIACEAE		<i>Dampiera linearis</i>
HAEMODORACEAE		? <i>Haemodorum</i> sp.
		<i>Anigozanthos manglesii</i>
		<i>Conostylis setigera</i> subsp. <i>setigera</i>
		<i>Conostylis</i> sp.
		<i>Phlebocarya ciliata</i>
HEMEROCALLIDACEAE		<i>Caesia micrantha</i>
		<i>Dianella revoluta</i>
IRIDACEAE	*	<i>Gladiolus caryophyllaceus</i>
		<i>Patersonia occidentalis</i>
LAMIACEAE		<i>Hemiandra pungens</i>
MYRTACEAE		<i>Agonis flexuosa</i>
		<i>Calytrix</i> sp.
		<i>Eremaea asterocarpa</i> subsp. <i>asterocarpa</i>
		<i>Eucalyptus gomphocephala</i>
		<i>Eucalyptus marginata</i>
		<i>Eucalyptus</i> sp.
		<i>Hypocalymma robustum</i>
		<i>Kunzea glabrescens</i>
		<i>Melaleuca thymoides</i> ? <i>Scholtzia involucrata</i>
ORCHIDACEAE		<i>Caladenia</i> sp.
		<i>Microtis media</i> subsp. <i>media</i>
		<i>Pterostylis</i> sp.
		<i>Pyrorchis nigricans</i>
		<i>Thelymitra crinita</i>
POACEAE		<i>Amhipogon turbinatus</i>
	*	<i>Avena barbata</i>
	*	<i>Briza maxima</i>
	*	<i>Cenchrus setaceus</i>
	*	<i>Ehrharta calycina</i>
PROTEACEAE		<i>Banksia attenuata</i>
		<i>Banksia ilicifolia</i>
		<i>Banksia menziesii</i>
		<i>Persoonia saccata</i>
		<i>Petrohile linearis</i>
		<i>Stirlingia latifolia</i>
RESTIONACEAE		<i>Desmodcladus flexuosus</i>
		<i>Hypolaena exsulca</i>
RUTACEAE		<i>Boronia crenulata</i>
		<i>Philotheca spicata</i>
STYLIDIACEAE		<i>Stylidium brunonianum</i>
		<i>Stylidium piliferum</i>
		<i>Stylidium repens</i>
THYMELAECEAE		<i>Pimelea rosea</i>
XANTHORRHOEACEAE		<i>Xanthorrhoea preissii</i>

APPENDIX C - FLORA SPECIES INVENTORY (BY LOCATION)

Family		Species	Quadrat BAR01	Quadrat BAR02	Quadrat BAR03	Opportunistic
AIZOCEAE	*	<i>Carpobrotus edulis</i>				x
ANARCARDIACEAE	*	<i>Schinus terebinthifolius</i>				x
ANARTHRIACEAE		<i>Lyginia imberbis</i>		x		
APIACEAE		<i>Xanthosia huegelii</i>		x	x	
ARALIACEAE		<i>Trachymene pilosa</i>			x	
ASPARAGACEAE		? <i>Dichopogon</i> sp.	x		x	
		<i>Laxmannia squarrosa</i>				x
		<i>Lomandra caespitosa</i>	x		x	
		<i>Lomandra hermaphrodita</i>			x	
		<i>Lomandra nigricans</i>		x		
		<i>Thysanotus arenarius</i>		x		
		<i>Thysanotus dichotomous</i>				x
		<i>Thysanotus</i> sp.	x		x	
		<i>Thysanotus thyrsoides</i>			x	
ASTERACEAE	*	<i>Hypochaeris glabra</i>			x	
	*	<i>Hypochaeris radicata</i>			x	
	*	<i>Ursinia anthemoides</i>			x	
CASUARINACEAE		<i>Allocasuarina fraseriana</i>	x	x	x	
		<i>Allocasuarina humilis</i>				x
COLCHICACEAE		<i>Burchardia congesta</i>	x	x	x	
CYPERACEAE		<i>Cyperaceae</i> sp.	x			
		<i>Lepidosperma squamatum</i>	x	x	x	
		<i>Mesomelaena pseudostygia</i>	x			
		<i>Schoenus ?efoliatu</i> s	x		x	
		<i>Schoenus caespititius</i>		x		
		<i>Schoenus curvifolius</i>			x	
DASYPOGONACEAE		<i>Calectasia narragarra</i>				x
		<i>Dasyogon bromeliifolius</i>	x	x	x	

Family	Species	Quadrat BAR01	Quadrat BAR02	Quadrat BAR03	Opportunistic
DILLENIACEAE	<i>Hibbertia hypericoides</i>		x		
	<i>Hibbertia racemosa</i>	x		x	
DROSERACEAE	<i>Drosera erythrorhiza</i>	x	x	x	
	<i>Drosera sp.</i>	x	x		
ERICAEAE	<i>Leucopogon sp.</i>	x	x		
EUPHORBIACEAE	* <i>Euphorbia terracina</i>				x
	<i>Euphorbiaceae sp.</i>		x		
FABACEAE	<i>Acacia stenoptera</i>		x		
	<i>Bossiaea eriocarpa</i>	x	x	x	
	<i>Daviesia triflora</i>		x	x	x
	<i>Gastrolobium capitatum</i>			x	
	<i>Gompholobium tomentosum</i>	x	x	x	
	<i>Hovea trisperma</i>	x	x		
	<i>Jacksonia furcellata</i>				x
GERANIACEAE	* <i>Jacksonia sternbergiana</i>			x	
	* <i>Pelargonium capitatum</i>				x
	<i>Kennedia prostrata</i>	x			
GOODENIACEAE	<i>Dampiera linearis</i>	x	x		
HAEMODORACEAE	? <i>Haemodorum sp.</i>		x		
	<i>Anigozanthos manglesii</i>				x
	<i>Conostylis setigera subsp. setigera</i>	x	x	x	
	<i>Conostylis sp.</i>	x			
HEMEROCALLIDACEAE	<i>Phlebocarya ciliata</i>	x	x	x	
	<i>Caesia micrantha</i>	x	x	x	
	<i>Dianella revoluta</i>		x		
IRIDACEAE	* <i>Gladiolus caryophyllaceus</i>		x		x
	<i>Patersonia occidentalis</i>	x	x	x	

Family	Species	Quadrat BAR01	Quadrat BAR02	Quadrat BAR03	Opportunistic
LAMIACEAE	<i>Hemiandra pungens</i>			X	X
MYRTACEAE	<i>Agonis flexuosa</i>			X	
	<i>Calytrix sp.</i>			X	
	<i>Eremaea asterocarpa subsp. asterocarpa</i>	X			
MYRTACEAE continued	<i>Eucalyptus gomphocephala</i>				
	<i>Eucalyptus marginata</i>				X
	<i>Eucalyptus sp.</i>				X
	<i>Hypocalymma robustum</i>	X			
	<i>Kunzea glabrescens</i>	X	X		
	<i>Melaleuca thymoides</i>				X
	<i>?Scholtzia involucreta</i>				X
ORCHIDACEAE	<i>Caladenia sp.</i>	X	X	X	X
	<i>Microtis media subsp. media</i>	X	X		
	<i>Pterostylis sp.</i>		X		
	<i>Pyrorchis nigricans</i>				X
	<i>Thelymitra crinita</i>				X
POACEAE	<i>Amphipogon turbinatus</i>		X		
	* <i>Avena barbata</i>				X
	* <i>Briza maxima</i>	X	X		
	* <i>Cenchrus setaceus</i>				X
	* <i>Ehrharta calycina</i>	X	X	X	
PROTEACEAE	<i>Banksia attenuata</i>	X	X	X	
	<i>Banksia ilicifolia</i>	X	X	X	
	<i>Banksia menziesii</i>	X	X	X	
	<i>Persoonia saccata</i>				X
	<i>Petrophile linearis</i>		X	X	
	<i>Stirlingia latifolia</i>	X	X	X	

Family	Species	Quadrat BAR01	Quadrat BAR02	Quadrat BAR03	Opportunistic
RESTIONACEAE	<i>Desmocladus flexuosus</i>	x	x	x	
	<i>Hypolaena exsulca</i>	x	x	x	
RUTACEAE	<i>Boronia crenulata</i>	x			
	<i>Philotheca spicata</i>	x			
STYLIDIACEAE	<i>Stylidium brunonianum</i>				x
	<i>Stylidium piliferum</i>		x		

NB *denotes introduced species

APPENDIX D - QUADRAT DATA



Quadrat BAR01, Lot 28 Barfield Road Hammond Park



Plate 1: Quadrat BAR01, Northwest Corner



Plate 2: Quadrat BAR01, Southwest Corner

Site Number	BAR01	Date	19/10/2017	
Location	Barfield Road	Quadrat size	10x10m	
Recorder	CH	Soils	Dark grey loamy sand	
Photo numbers	196, 197, 198	Litter	5%	
GPS NW corner easting	391971 mE	Fire Age	>10 years	
GPS NW corner northing	6439851 mN			
Vegetation Condition	Very Good			
	Species	Height (metres)	% Cover	Comments
	<i>Banksia attenuata</i>	5	55	
	<i>Banksia ilicifolia</i>	5	5	
	<i>Banksia menziesii</i>	5	5	
	<i>Allocasuarina fraseriana</i>	3.5	2	
	<i>Kunzea glabrescens</i>	1.9	1	
	<i>Xanthorrhoea preissii</i>	1.8	15	
	<i>Stirlingia latifolia</i>	1.1	3	
*	<i>Ehrharta calycina</i>	0.9	0.1	
	<i>Boronia crenulata</i>	0.6	1	
	<i>Lepidosperma squamatum</i>	0.5	8	
	<i>Burchardia congesta</i>	0.5	2	
	<i>Dasyopogon bromeliifolius</i>	0.5	1	
	<i>Mesomelaena pseudostygia</i>	0.5	0.5	
	<i>Gompholobium tomentosum</i>	0.5	0.1	
	<i>Phlebocarya ciliata</i>	0.4	20	
	<i>Hypocalymma robustum</i>	0.4	4	
	<i>Conostylis sp.</i>	0.4	1	
	<i>Patersonia occidentalis</i>	0.4	1	
	<i>Caesia micrantha</i>	0.4	0.2	
	<i>Schoenus ?efoliatus</i>	0.4	0.2	
	<i>Bossiaea eriocarpa</i>	0.3	4	
	<i>?Dichopogon sp.</i>	0.3	3	
*	<i>Briza maxima</i>	0.3	1	
	<i>Hypolaena exsulca</i>	0.3	0.2	
	<i>Philothea spicata</i>	0.3	0.1	
	<i>Leucopogon sp.</i>	0.3	0.1	sterile
	<i>Thysanotus sp.</i>	0.3	0.05	sterile
	<i>Microtis media subsp. media</i>	0.25	0.1	
	<i>Desmocladius flexuosus</i>	0.2	20	
	<i>Hibbertia racemosa</i>	0.2	0.5	
	<i>Caladenia sp.</i>	0.2	0.1	sterile
	<i>Lomandra caespitosa</i>	0.2	0.05	
	<i>Hovea trisperma</i>	0.2	0.01	
	<i>Dampiera linearis</i>	0.2	0.01	



	<i>Conostylis setigera subsp. setigera</i>	0.15	0.5	
	<i>Kennedia prostrata</i>	Climber	0.1	
	<i>Drosera sp.</i>	Climber	0.01	sterile, climbing
	<i>Drosera erythrorhiza</i>	0.01	0.1	
	<i>Banksia attenuata</i>	5	55	
	<i>Banksia ilicifolia</i>	5	5	
	<i>Banksia menziesii</i>	5	5	
	<i>Allocasuarina fraseriana</i>	3.5	2	



Quadrat BAR02, Lot 28 Barfield Road Hammond Park



Plate 1: Quadrat BAR02, Northwest Corner



Plate 2: Quadrat BAR02, Southwest Corner

Site Number	BAR02	Date	19/10/2017	
Location	Barfield Road	Quadrat size	10x10m	
Recorder	CH	Soils	Dark brown loam, grey sand	
Photo numbers	199, 200	Litter	3%	
GPS NW corner easting	391914mE	Bare Ground	<2%	
GPS NW corner northing	6439878mN	Fire Age	>10 years	
Vegetation Condition	Very Good			
	Species	Height (metres)	% Cover	Comments
	<i>Banksia attenuata</i>	5	35	
	<i>Banksia ilicifolia</i>	4.5	25	
	<i>Banksia menziesii</i>	4.5	15	
	<i>Kunzea glabrescens</i>	3.5	15	
	<i>Allocasuarina fraseriana</i>	3	1	
	<i>Xanthorrhoea preissii</i>	2.8	8	
	<i>Stirlingia latifolia</i>	1.6	20	
*	<i>Ehrharta calycina</i>	0.9	0.1	
	<i>Thysanotus arenarius</i>	0.6	0.1	
	<i>Lomandra nigricans</i>	0.5	0.1	
	<i>Lepidosperma squamatum</i>	0.5	5	
	<i>Daviesia triflora</i>	0.5	0.2	
	<i>Lyginia imberbis</i>	0.4	1.5	
	<i>Burchardia congesta</i>	0.4	2	
	<i>Schoenus caespititius</i>	0.4	2	
	<i>Hibbertia hypericoides</i>	0.4	10	
	<i>Gompholobium tomentosum</i>	0.4	0.2	
	<i>Conostylis setigera subsp. setigera</i>	0.4	0.7	
	<i>Phlebocarya ciliata</i>	0.4	0.8	
	<i>Caesia micrantha</i>	0.4	0.3	
	<i>Dianella revoluta</i>	0.4	0.4	
	<i>Patersonia occidentalis</i>	0.4	0.1	
	<i>Pterostylis sp.</i>	0.4	0.05	sterile
	<i>Amphipogon turbinatus</i>	0.4	0.2	
	<i>Dasyopogon bromeliifolius</i>	0.3	0.5	
	<i>Drosera sp.</i>	0.3	0.05	sterile, climbing
	<i>Euphorbiaceae sp.</i>	0.3	2	
	<i>Acacia stenoptera</i>	0.3	0.2	
	<i>Bossiaea eriocarpa</i>	0.3	1	
*	<i>Gladiolus caryophyllaceus</i>	0.3	0.05	
	<i>Eremaea asterocarpa subsp. asterocarpa</i>	0.3	0.8	
	<i>Microtis media subsp. media</i>	0.3	0.5	
*	<i>Briza maxima</i>	0.3	0.5	



<i>Petrohile linearis</i>	0.3	0.5	
<i>Hypolaena exsulca</i>	0.3	0.05	
<i>Leucopogon sp.</i>	0.25	0.1	sterile
<i>Stylidium piliferum</i>	0.25	0.05	
<i>Dampiera linearis</i>	0.2	0.01	
? <i>Haemodorum sp.</i>	0.2	0.2	leaf only
<i>Desmocladius flexuosus</i>	0.2	45	
<i>Xanthosia huegelii</i>	0.15	0.02	
<i>Hovea trisperma</i>	0.15	0.05	
<i>Caladenia sp.</i>	0.15	0.1	sterile



Quadrat BAR03, Lot 28 Barfield Road Hammond Park



Plate 1: Quadrat BAR03, Northwest Corner



Plate 2: Quadrat BAR03, Southeast Corner

Site Number	BAR03	Date	19/10/2017	
Location	Barfield Road	Quadrat size	10x10m	
Recorder	CH	Soils	Brown loamy sand at surface, grey/white sand below	
Photo numbers	201, 202	Litter	10%	
GPS NW corner easting	391986mE	Fire Age	>10 years	
GPS NW corner northing	6439721 mN			
Vegetation Condition	Very Good			
	Species	Height (metres)	% Cover	Comments
	<i>Allocasuarina fraseriana</i>	7	8	
	<i>Banksia attenuata</i>	5	35	
	<i>Banksia ilicifolia</i>	5	20	
	<i>Xanthorrhoea preissii</i>	2.8	16	
	<i>Banksia menziesii</i>	2.8	3	
	<i>Stirlingia latifolia</i>	1.2	8	
	<i>Jacksonia sternbergiana</i>	1	0.1	0.2% dead
*	<i>Ehrharta calycina</i>	1	0.1	
	<i>Lepidosperma squamatum</i>	0.7	1	
	<i>Agonis flexuosa</i>	0.7	0.1	likely from former dwelling
	<i>Gompholobium tomentosum</i>	0.5	1.5	
	<i>Caesia micrantha</i>	0.5	0.1	
	<i>Phlebocarya ciliata</i>	0.45	45	
	<i>Schoenus ?efoliatus</i>	0.4	2	
	<i>Burchardia congesta</i>	0.4	1	
	<i>Patersonia occidentalis</i>	0.4	0.8	
	<i>Hypolaena exsulca</i>	0.4	0.2	
*	<i>Hypochoeris radicata</i>	0.4	0.1	
	<i>Dasypogon bromeliifolius</i>	0.35	5	
	<i>Conostylis sp.</i>	0.35	2	
	<i>Thysanotus thyrsoideus</i>	0.35	0.1	
	<i>Hibbertia racemosa</i>	0.3	0.1	
	<i>Daviesia triflora</i>	0.3	0.1	
	<i>Schoenus curvifolius</i>	0.3	0.02	
	<i>Calytrix sp.</i>	0.2	0.8	sterile
	<i>?Dichopogon sp.</i>	0.2	0.3	
	<i>Bossiaea eriocarpa</i>	0.2	0.1	
	<i>Petrohile linearis</i>	0.2	0.1	
	<i>Lomandra caespitosa</i>	0.2	0.05	
	<i>Gastrolobium capitatum</i>	0.2	0.05	
	<i>Desmocladius flexuosus</i>	0.15	0.1	
	<i>Xanthosia huegelii</i>	0.15	0.05	
	<i>Caladenia sp.</i>	0.15	0.05	old flower



	<i>Lomandra hermaphrodita</i>	0.15	0.02	
	<i>Trachymene pilosa</i>	0.1	0.05	
	<i>Drosera erythrorhiza</i>	0.05	0.2	
	<i>Stylidium repens</i>	0.05	0.1	
*	<i>Hypochaeris glabra</i>	0.05	0.05	
	<i>Hemiandra pungens</i>	creeper	4	
	<i>Thysanotus sp.</i>	climber	0.1	sterile
*	<i>Ursinia anthemoides</i>	0.05	0.05	

APPENDIX E - FAUNA SPECIES INVENTORY

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
Birds						
<i>Acanthiza apicalis</i>	Broad-tailed Thornbill		X	X		
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill		X	X		
<i>Acanthiza inornata</i>	Western Thornbill		X	X		
<i>Acanthorhynchus superciliosus</i>	Western Spinebill			X		
<i>Accipiter cirrocephalus</i>	Collared Sparrowhawk		X	X		
<i>Accipiter fasciatus</i>	Brown Goshawk		X	X		
<i>Acrocephalus australis</i>	Australian Reed Warbler			X		
<i>Actitis hypoleucos</i>	Common Sandpiper				S5	Mi, Ma
<i>Anas castanea</i>	Chestnut Teal			X		
<i>Anas gracilis</i>	Grey Teal			X		
<i>Anas platyrhynchos*</i>	Mallard			X		I
<i>Anas rhynchotis</i>	Australasian Shoveler		X	X		
<i>Anas superciliosa</i>	Pacific Black Duck			X		
<i>Anhinga novaehollandiae</i>	Australasian Darter			X		
<i>Anthochaera carunculata</i>	Red Wattlebird			X		
<i>Anthochaera lunulata</i>	Western Little Wattlebird		X	X		
<i>Apus pacificus</i>	Fork-tailed Swift				S5	Mi, Ma
<i>Aquila audax</i>	Wedge-tailed Eagle		X	X		
<i>Ardea alba</i>	Great Egret				S5	Mi, Ma
<i>Ardea ibis</i>	Cattle Egret				S5	Mi, Ma
<i>Ardea modesta</i>	Eastern Great Egret			X	S5	Mi, Ma
<i>Ardea novaehollandiae</i>	White-faced Heron			X		
<i>Ardea pacifica</i>	White-necked Heron			X		
<i>Artamus cinereus</i>	Black-faced Woodswallow		X	X		
<i>Artamus cyanopterus</i>	Dusky Woodswallow		X	X		
<i>Aythya australis</i>	Hardhead		X	X		
<i>Barnardius zonarius</i>	Australian Ringneck			X		
<i>Biziura lobata</i>	Musk Duck		X	X		
<i>Botaurus poiciloptilus</i>	Australasian Bittern				S2	E
<i>Cacatua sanguinea</i>	Little Corella			X		
<i>Cacatua tenuirostris*</i>	Eastern Long-billed Corella			X		
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo			X		

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Cacomantis pallidus</i>	Pallid Cuckoo			X		
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper			X	S5	Mi, Ma
<i>Calidris canutus</i>	Red Knot				S5	E, Mi, Ma
<i>Calidris ferruginea</i>	Curlew Sandpiper			X	S3	CE, Mi, Ma
<i>Calidris melanotos</i>	Pectoral Sandpiper			X	S5	Mi, Ma
<i>Calidris ruficollis</i>	Red-necked Stint			X	S5	Mi, Ma
<i>Calidris subminuta</i>	Long-toed Stint			X	S5	Mi, Ma
<i>Calyptorhynchus banksii</i>	Red-tailed Black Cockatoo			X		
<i>Calyptorhynchus banksii naso</i>	Forest Red-tailed Black Cockatoo			X	S3	V
<i>Calyptorhynchus baudinii</i>	Baudin's Black Cockatoo			X	S2	V
<i>Calyptorhynchus latirostris</i>	Carnaby's Cockatoo			X	S2	E
<i>Calyptorhynchus sp.</i>				X	S2	
<i>Charadrius dubius</i>	Little Ringed Plover				S5	Mi, Ma
<i>Charadrius ruficapillus</i>	Red-capped Plover			X		Ma
<i>Chenonetta jubata</i>	Australian Wood Duck			X		
<i>Chlidonias leucopterus</i>	White-winged Black Tern			X	S5	
<i>Chroicocephalus novaehollandiae</i>	Silver Gull			X		
<i>Circus approximans</i>	Swamp Harrier			X		
<i>Cladorhynchus leucocephalus</i>	Banded Stilt			X		
<i>Colluricincla harmonica</i>	Grey Shrike-thrush		X	X		
<i>Columba livia*</i>	Domestic Pigeon			X		I
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike			X		
<i>Corvus coronoides</i>	Australian Raven			X		
<i>Coturnix pectoralis</i>	Stubble Quail			X		
<i>Coturnix ypsilophora</i>	Brown Quail			X		
<i>Cracticus nigrogularis</i>	Pied Butcherbird			X		
<i>Cracticus tibicen</i>	Australian Magpie			X		
<i>Cracticus tibicen dorsalis</i>	White-backed Magpie			X		
<i>Cracticus torquatus</i>	Grey Butcherbird			X		
<i>Cygnus atratus</i>	Black Swan			X		
<i>Dacelo novaeguineae*</i>	Laughing Kookaburra			X		
<i>Daphoenositta chrysoptera</i>	Varied Sittella		X	X		

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Egretta garzetta</i>	Little Egret			X		
<i>Egretta novaehollandiae</i>	White-faced Heron			X		
<i>Elanus axillaris</i>	Black-shouldered Kite			X		
<i>Elseyornis melanops</i>	Black-fronted Dotterel			X		
<i>Eolophus rosiecapillus</i>	Galah			X		
<i>Epthianura albifrons</i>	White-fronted Chat			X		
<i>Erythrogonys cinctus</i>	Red-kneed Dotterel			X		
<i>Falco berigora</i>	Brown Falcon		X	X		
<i>Falco cenchroides</i>	Australian Kestrel			X		
<i>Falco longipennis</i>	Australian Hobby			X		
<i>Falco peregrinus</i>	Peregrine Falcon			X	S7	
<i>Fulica atra</i>	Eurasian Coot			X		
<i>Fulica atra australis</i>	Eurasian Coot			X		
<i>Gallinula tenebrosa</i>	Dusky Moorhen		X	X		
<i>Gallinula tenebrosa tenebrosa</i>	Dusky Moorhen		X	X		
<i>Gallirallus philippensis</i>	Buff-banded Rail			X		
<i>Gelochelidon nilotica</i>	Gull-billed Tern			X	S5	
<i>Gerygone fusca</i>	Western Gerygone			X		
<i>Glyciphila melanops</i>	Tawny-crowned Honeyeater			X		
<i>Grallina cyanoleuca</i>	Magpie-lark			X		
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle			X		Ma
<i>Haliastur sphenurus</i>	Whistling Kite		X	X		
<i>Hieraaetus morphnoides</i>	Little Eagle			X		
<i>Himantopus himantopus</i>	Black-winged Stilt			X		Ma
<i>Hirundo neoxena</i>	Welcome Swallow			X		
<i>Ixobrychus dubius</i>	Australian Little Bittern			X	P4	
<i>Larus novaehollandiae</i>	Silver Gull			X		
<i>Leipoa ocellata</i>	Malleefowl				S3	V
<i>Lichenostomus virescens</i>	Singing Honeyeater	X				
<i>Lichmera indistincta</i>	Brown Honeyeater	X		X		
<i>Limosa limosa</i>	Black-tailed Godwit			X	S5	Mi, Ma
<i>Lonchura castaneothorax</i>	Chestnut-breasted Mannikin			X		

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Lophoictinia isura</i>	Square-tailed Kite			X		
<i>Malacorhynchus membranaceus</i>	Pink-eared Duck		X	X		
<i>Malurus lamberti</i>	Variegated Fairy Wren			X		
<i>Malurus splendens</i>	Splendid Fairy Wren		X	X		
<i>Megalurus gramineus</i>	Little Grassbird			X		
<i>Melithreptus brevirostris</i>	Brown-headed Honeyeater			X		
<i>Merops ornatus</i>	Rainbow Bee-eater			X	S5	Ma
<i>Microcarbo melanoleucos</i>	Little Pied Cormorant			X		
<i>Microeca fascians</i>	Jacky Winter			X		
<i>Motacilla cinerea</i>	Grey Wagtail				S5	Mi
<i>Neophema elegans</i>	Elegant Parrot			X		
<i>Numenius madagascariensis</i>	Eastern Curlew				S3	CE, Mi, Ma
<i>Nycticorax caledonicus</i>	Rufous Night Heron		X	X		
<i>Ocyphaps lophotes</i>	Crested Pigeon			X		
<i>Oxyura australis</i>	Blue-billed Duck		X	X	P4	
<i>Pachycephala rufiventris</i>	Rufous Whistler		X	X		
<i>Pandion haliaetus</i>	Osprey				S5	Mi, Ma
<i>Pardalotus punctatus</i>	Spotted Pardalote		X	X		
<i>Pardalotus striatus</i>	Striated Pardalote		X	X		
<i>Passer montanus*</i>	Eurasian Tree Sparrow			X		I
<i>Pelecanus conspicillatus</i>	Australian Pelican		X	X		
<i>Petrochelidon nigricans</i>	Tree Martin			X		
<i>Petroica boodang</i>	Scarlet Robin			X		
<i>Petroica goodenovii</i>	Red-capped Robin			X		
<i>Phaethon rubricauda</i>	Red-tailed Tropicbird			X	P4	
<i>Phalacrocorax carbo</i>	Great Cormorant			X		
<i>Phalacrocorax melanoleucos</i>	Little Pied Cormorant			X		
<i>Phalacrocorax sulcirostris</i>	Little Black Cormorant			X		
<i>Phalacrocorax varius</i>	Pied Cormorant			X		
<i>Phaps chalcoptera</i>	Common Bronzewing		X	X		
<i>Philomachus pugnax</i>	Ruff				S5	Mi, Ma
<i>Phylidonyris niger</i>	White-cheeked Honeyeater		X	X		
<i>Phylidonyris novaehollandiae</i>	New Holland Honeyeater	X	X	X		

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Platalea flavipes</i>	Yellow-billed Spoonbill			X		
<i>Platalea regia</i>	Royal Spoonbill			X		
<i>Platyercus icterotis</i>	Western Rosella		X	X		
<i>Plegadis falcinellus</i>	Glossy Ibis			X	S5	
<i>Podargus strigoides</i>	Tawny Frogmouth			X		
<i>Podiceps cristatus</i>	Great Crested Grebe			X		
<i>Poliiocephalus poliocephalus</i>	Hoary-headed Grebe			X		
<i>Polytelis anthopeplus</i>	Regent Parrot			X		
<i>Porphyrio porphyrio</i>	Purple Swamphen			X		
<i>Porphyrio porphyrio bellus</i>	Purple Swamphen			X		
<i>Porzana fluminea</i>	Australian Spotted Crake			X		
<i>Porzana pusilla</i>	Baillon's Crake			X		
<i>Porzana tabuensis</i>	Spotless Crake			X		
<i>Purpureicephalus spurius</i>	Red-capped Parrot			X		
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet			X		Ma
<i>Rhipidura albiscapa</i>	Grey Fantail			X		
<i>Rhipidura leucophrys</i>	Willie Wagtail	X		X		
<i>Rostratula australis</i>	Australian Painted Snipe				S2	E, Mi, Ma
<i>Sericornis frontalis</i>	White-browed Scrubwren		X	X		
<i>Smicrornis brevirostris</i>	Weebill		X	X		
<i>Stictonetta naevosa</i>	Freckled Duck			X		
<i>Strepera versicolour</i>	Grey Currawong		X	X		
<i>Streptopelia chinensis*</i>	Spotted Turtle Dove			X		I
<i>Streptopelia senegalensis*</i>	Laughing Turtle-Dove			X		I
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe			X		
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe			X		
<i>Tadorna tadornoides</i>	Australian Shelduck			X		
<i>Thinornis rubricollis</i>	Hooded Plover			X	P4	Ma
<i>Threskiornis spinicollis</i>	Straw-necked Ibis			X		
<i>Todiramphus sanctus</i>	Sacred Kingfisher			X		
<i>Tribonyx ventralis</i>	Black-tailed Nativehen			X		
<i>Trichoglossus haematodus*</i>	Rainbow Lorikeet			X		I

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Tringa glareola</i>	Wood Sandpiper			X	S5	Mi, Ma
<i>Tringa nebularia</i>	Common Greenshank			X	S5	Mi, Ma
<i>Tringa stagnatilis</i>	Marsh Sandpiper				S5	Mi, Ma
<i>Turnix varius</i>	Painted Button Quail		X	X		
<i>Vanellus tricolor</i>	Banded Lapwing			X		
<i>Zosterops lateralis</i>	Grey-breasted White-eye			X		165
Reptiles						
<i>Acritoscincus trilineatus</i>	Western Three-lined Skink			X		
<i>Aprasia repens</i>	Sand-plain Worm-lizard			X		
<i>Brachyurophis semifasciatus</i>	Southern Shovel-nosed Snake			X		
<i>Chelodina colliei</i>	South-western Snake-necked Turtle			X		
<i>Christinus marmoratus</i>	Marbled Gecko			X		
<i>Cryptoblepharus buehananii</i>	Fence Skink			X		
<i>Cryptoblepharus plagioccephalus</i>				X		
<i>Ctenophorus adelaidensis</i>	Southern Heath Dragon			X		
<i>Ctenotus australis</i>				X		
<i>Ctenotus fallens</i>	West Coast Laterite Ctenotus			X		
<i>Delma fraseri</i>	Fraser's Legless Lizard			X		
<i>Demansia psammophis reticulata</i>	Yellow-faced Whipsnake			X		
<i>Egernia napoleonis</i>				X		
<i>Gehyra variegata</i>	Tree Dtella			X		
<i>Hemiergis quadrilineata</i>	Two-toed Earless Skink			X		
<i>Lerista elegans</i>	Elegant Slider			X		
<i>Lerista lineata</i>	Perth Slider			X	P3	
<i>Lialis burtonis</i>	Burton's Snake-lizard			X		
<i>Menetia greyii</i>				X		
<i>Morethia lineoocellata</i>				X		
<i>Morethia obscura</i>				X		
<i>Neelaps bimaculatus</i>	Black-naped Snake			X		
<i>Neelaps calonotos</i>	Black-striped Snake			X	P3	
<i>Notechis scutatis</i>	Tiger Snake			X		

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Parasuta gouldii</i>	Gould's Hooded Snake			X		
<i>Pletholax gracilis</i>	Keeled Legless Lizard			X		
<i>Pletholax gracilis gracilis</i>	Keeled Legless Lizard			X		
<i>Pogona minor</i>	Western Bearded Dragon			X		
<i>Pogona minor minor</i>	Dwarf Bearded Dragon			X		
<i>Pseudonaja affinis</i>	Dugite			X		
<i>Pseudonaja affinis affinis</i>	Dugite			X		
<i>Pygopus lepidopodus</i>	Common Scaly Foot			X		
<i>Simoselaps bertholdi</i>	Jan's Banded Snake			X		
<i>Tiliqua occipitalis</i>	Western Bluetongue			X		
<i>Tiliqua rugosa</i>	Bobtail			X		
<i>Tiliqua rugosa aspera</i>	Bobtail			X		
<i>Tiliqua rugosa rugosa</i>	Bobtail			X		
<i>Varanus gouldii</i>	Bungarra or Sand Monitor			X		203
Mammals						
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			X		
<i>Dasyurus geoffroii</i>	Chuditch			X	S3	V
<i>Falsistrellus mackenziei</i>	Western False Pipistrelle			X	P4	
<i>Felis catus*</i>	Cat			X		I
<i>Hydromys chrysogaster</i>	Water-rat			X	P4	
<i>Isoodon obesulus</i>	Southern Brown Bandicoot			X	P4	
<i>Isoodon obesulus fusciventer</i>	Quenda			X	P4	
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	X				
<i>Macropus eugenii derbianus</i>	Tammar Wallaby			X	P4	
<i>Macropus irma</i>	Western Brush Wallaby			X	P4	
<i>Mus musculus*</i>	House Mouse			X		I
<i>Myrmecobius fasciatus</i>	Numbat			X	S2	V
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat			X		
<i>Oryctolagus cuniculus*</i>	European Rabbit			X		I
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum				S1	V
<i>Rattus fuscipes</i>	Western Bush Rat			X		
<i>Rattus rattus*</i>	Black Rat			X		I
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna			X		

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Tarsipes rostratus</i>	Honey Possum			X		
<i>Trichosurus vulpecula</i>	Common Brushtail Possum			X		
<i>Trichosurus vulpecula vulpecula</i>	Common Brushtail Possum			X		224
Amphibians						
<i>Crinia glauerti</i>	Clicking Frog			X		
<i>Crinia insignifera</i>	Squelching Froglet			X		
<i>Heleioporus eyrei</i>	Moaning Frog			X		
<i>Limnodynastes dorsalis</i>	Western Banjo Frog			X		
<i>Litoria adelaidensis</i>	Slender Tree Frog			X		
<i>Litoria moorei</i>	Motorbike Frog			X		
<i>Myobatrachus gouldii</i>	Turtle Frog			X		231
Invertebrates						
<i>Arachnura higginsi</i>	Scorpion-tailed Spider			X		
<i>Artoria flavimana</i>	Wolf Spider			X		
<i>Austracantha minax</i>	Jewel Spider			X		
<i>Cherax cainii</i>	Marron			X		
<i>Cherax destructor</i>	Marron			X		
<i>Cherax preissii</i>	Marron			X		
<i>Cherax quinquecarinatus</i>	Marron			X		
<i>Cherax sp.</i>	Marron			X		
<i>Cormocephalus novaehollandiae</i>	Centipede			X		
<i>Crustulina bicrucata</i>	Spider			X		
<i>Cyrtophora parnasia</i>	Spider			X		
<i>Eriophora biapicata</i>	Orb-weaving Spider			X		
<i>Heurodes turrinus</i>	Spider			X		
<i>Idiommata blackwalli</i>	Spider			X		
<i>Isopeda leishmanni</i>	Spider			X		
<i>Kangarosa properipes</i>	Spider			X		
<i>Lycosa ariadnae</i>	Wolf Spider			X		
<i>Nanometa gentilis</i>	Spider			X		
<i>Nephila edulis</i>	Orb Spider			X		
<i>Raveniella peckorum</i>	Spider			X		
<i>Synemon gratiosa</i>	Graceful Sunmoth			X		

Scientific Name	Common Name	Recorded on site	Locally significant (DEP, 2000)	Naturemap	WCA (WA)	EPBC Act
<i>Urodacus novaehollandiae</i>	Scorpion			X		
<i>Venator immansueta</i>	Wolf Spider			X		254

* = introduced (overseas or from the eastern Australian states)

State:

Schedule 1 (S1) - Critically endangered species

Schedule 2 (S2) - Endangered species

Schedule 3 (S3) - Vulnerable species

Schedule 4 (S4) - Presumed extinct species

Schedule 5 (S5) - Migratory birds protected under an international agreement

Schedule 6 (S6) - Conservation dependent fauna

Schedule 7 (S7) - Other specially protected fauna

Priority 1 (P1) (under the DPaW) - 'Poorly-known species - known from few locations and with only small or unprotected occurrences'

Priority 2 (P2) (under the DPaW) - 'Poorly-known species - known from few locations'

Priority 3 (P3) (under the DPaW) - 'Poorly-known species - known from several locations'

Priority 4 (P4) (under the DPaW) - 'Rare, Near Threatened and other species in need of monitoring'

Federal:

CE = Critically Endangered (under the EPBC Act 1999)

E = Endangered (under the EPBC Act 1999)

V = Vulnerable (under the EPBC Act 1999)

I = Introduced (under the EPBC Act 1999)

Mi = Migratory (under the EPBC Act 1999)

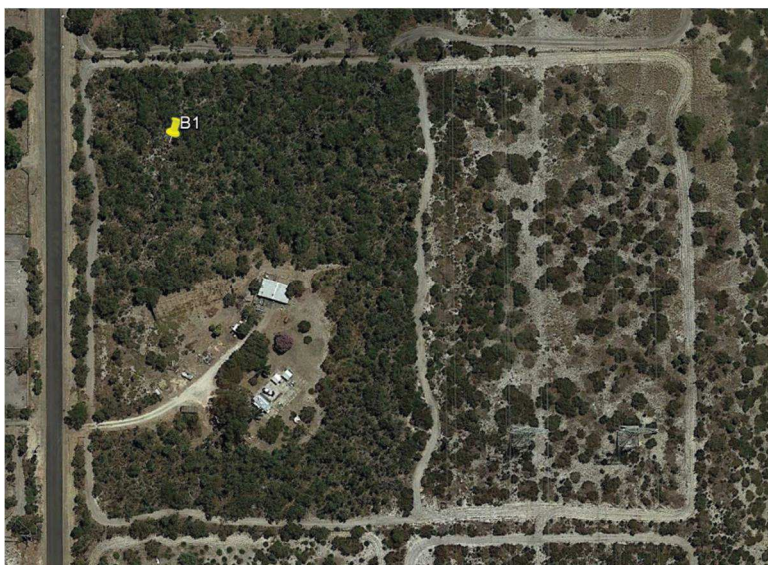
Ma = Marine (under the EPBC Act 1999)

APPENDIX F - FORAGING HABITAT QUADRAT DATA



Foraging Habitat Quadrat Data

Photo: From SW point
 Quadrat Number: B1
 Location (NW Point): -32.172597°; 115.853712°



Banksia sp. present: *Banksia attenuata* (8 trees, heights 6 – 8 m)
 Banksia canopy cover: 15%
 Other BC foraging sp.: *Xanthorrhoea preissii*
 Canopy species: *Banksia attenuata*
 Dominant shrubs: *Acacia saligna*, *Adenanthos cygnorum*, *Xanthorrhoea preissii*, *Allocasuarina fraseriana*, *Kunzea glabrescens*
 Foraging evidence: Nil

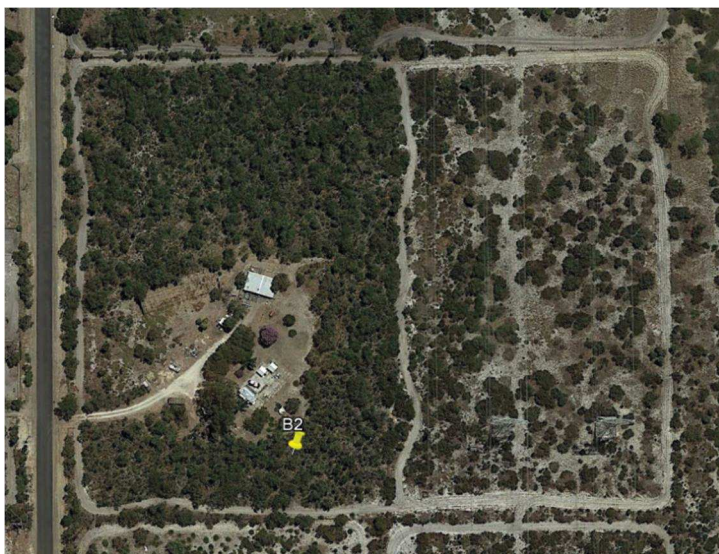


Foraging Habitat Quadrat Data

Photo: From SW point

Quadrat Number: B2

Location (NW Point): -32.173776°; 115.854309°



Banksia sp. present: *Banksia attenuata* and *B. ilicifolia* (10 trees, heights 6 – 8 m)

Banksia canopy cover: 20%

Other BC foraging sp.: *Xanthorrhoea preissii*

Canopy species: *Banksia attenuata*, *B. ilicifolia*

Dominant shrubs: *Acacia saligna*, *Xanthorrhoea preissii*, *Allocasuarina fraseriana*

Foraging evidence: Nil

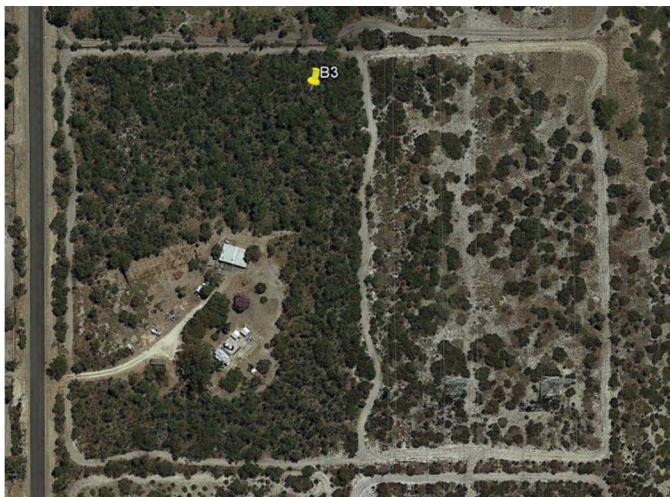


Foraging Habitat Quadrat Data

Photo: From SW point

Quadrat Number: B3

Location (NW Point): -32.172464°; 115.854538°



Banksia sp. present: *Banksia attenuata* (8 trees, heights 6 – 8 m)

Banksia canopy cover: 10% (also jarrah canopy cover: 10%)

Other BC foraging sp.: *Xanthorrhoea preissii*, *Eucalyptus marginata*

Canopy species: *Banksia attenuata*, *E. marginata*

Dominant shrubs: *Xanthorrhoea preissii*, *Allocasuarina fraseriana*

Foraging evidence: Nil