Clearing Permit Application - Supporting Information

King Rocks Wind Farm

March 2023

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King Rocks Wind Farm

1 ENDORSEMENTS

SIGN OFF	SIGNATURE	NAME AND TITLE	OPERATING UNIT
Author:	Emma Jones Digitally signed by Emma Jones Date: 2023.03.02 09:38:40 +08'00'	Emma Jones	People, Strategy and Social Value
Endorsed by:		Chris Binstead	Future Energy
Approver:	Melanie Kenny Digitally signed by Melanie Kenny Date: 2023.03.07 15:58:16 +08'00'	Melanie Kenny	People, Strategy and Social Value
Approval Details			
Final approval date:	2 March 2023		
DM number	29479348		

2 ABBREVIATIONS

DWER – Department of Water and Environmental Regulation

EPBC Act – Environment Protection and Biodiversity Conservation Act 1999 (Cth)

ESA – Environmentally sensitive areas

kV – kilovolts

MW - megawatts

SWIS – South-West Interconnected System

TEC – threatened ecological community

WA – Western Australia

3 INTRODUCTION

As part of the State Government's announcement to invest in new renewable energy infrastructure in the South-West Interconnected System (SWIS), Synergy is proposing to construct the King Rocks Wind Farm, located 35 kilometres northeast of Hyden in the Shire of Kondinin.

Up to 30 turbines will be installed across the site connecting to the existing 132 kV Western Power transmission line which runs through the site from Kondinin to Bounty substations. The wind farm has the potential to generate up to 150 MW which is equivalent to powering approximately 100,000 homes.

The site was selected due to its proximity to Western Power's electricity transmission line, strong overnight wind and access to predominantly cleared, freehold agricultural land which is well suited to a wind farm development.

The project is expected to take approximately two years from the time the construction partner is appointed to operations commencing.

4 SUBJECT SITE AND SURROUNDINGS

The King Rocks Wind Farm will be located on two freehold lots, plus adjacent road reserves within the Shire of Kondinin. Please refer to Table 1 below and Appendix A.

Table 1 – Subject site land details

Lot	Plan / Diagram	Volume / Folio	Relationship to landowner
2640	210252	1899 / 851	Letter from landowner
2485	209641	1717 / 195	Letter from landowner
Adjacent road reserves			Letter from the Shire of Kondinin

The land is zoned Rural and is predominantly cleared farmland used for cropping and grazing. The subject site borders the Rabbit Proof Fence and the Great Western Woodlands.

5 OTHER APPROVALS

The project was referred to the Environmental Protection Authority (EPA) with a level of assessment set at 'Not Assessed - No Public Advice Given' on 17 August 2022.

Development Approval was obtained from the Shire of Kondinin and the Regional Joint Development Assessment on 15 November 2022.

The water source for the project has not yet been identified and will be determined during detailed design. The construction contractor will obtain a groundwater licence from DWER if required.

Synergy has entered into the Noongar Standard Heritage Agreement with the South West Aboriginal Land and Sea Council (SWALSC) on behalf of the Ballardong People. While there are no known registered (or lodged) Aboriginal heritage sites within, or in proximity to, the subject site, the intention is to undertake a pre-construction heritage survey with the Traditional Owners to ensure any Aboriginal Heritage Sites can be identified and avoided.

6 CLEARING DESCRIPTION

The project has avoided and minimised clearing by locating all major infrastructure (i.e. turbines, substation and buildings) in already cleared areas. Furthermore, all laydown areas used during construction will be located in already cleared areas.

Notwithstanding this, up to four hectares of clearing of remnant vegetation will be required within the subject site for access roads to transport turbine blades up to 90 metres long within the site (both during construction and for maintenance during operations), associated drainage, fencing and gates, underground electrical cabling and overhead conductors and towers or poles for connection to the Western Power transmission network.

All areas of potential conservation significance will be avoided (see Appendices B and C).

Potential clearing for turbine blade transport from port to the subject site is not included in this clearing permit application. This will be determined by the construction contractor, once appointed.

7 VEGETATION ASSESSMENT

A flora, vegetation and fauna survey was undertaken by 360 Environmental in November 2021 (see Appendix C). Most remnant vegetation was in 'Good' condition, with a small area assessed as being 'Very Good'.

Significant areas of remnant vegetation were excluded from the development envelope to limit environmental impact. Additionally, areas of potential conservation significance within the development envelope will be avoided, including:

- Areas of vegetation in 'Very Good' (or better) condition;
- Concentrated area of paddock trees that may become suitable for black cockatoo breeding in the future;
- Patches of vegetation with hollows that may be suitable for threatened species such as the Red-tailed Phascogale; and
- Locations at which *Baeckea* sp. crossroads (P1) was previously found in 2012 (ngh environmental, 2012), despite this species not being recorded in the 2021 survey.

An assessment against each of the 10 clearing principles is below. Please refer to the flora, vegetation and fauna assessment (Appendix C) for more detailed information. In relation planning instruments, the King Rocks Wind Farm has obtained Development Approval from the Shire of Kondinin and the Regional Joint Development Assessment Panel (15 November 2022) and was determined to comply with all relevant planning requirements.

Table 2: Assessment of clearing against the 10 clearing principles

Clearing Principle	Assessment	Variance
(a)	*Native vegetation should not be cleared if it comprises a high level of biological diversity.* The vegetation to be cleared is in 'Good' condition due to significant disturbance from prior and existing land uses.	Not at variance

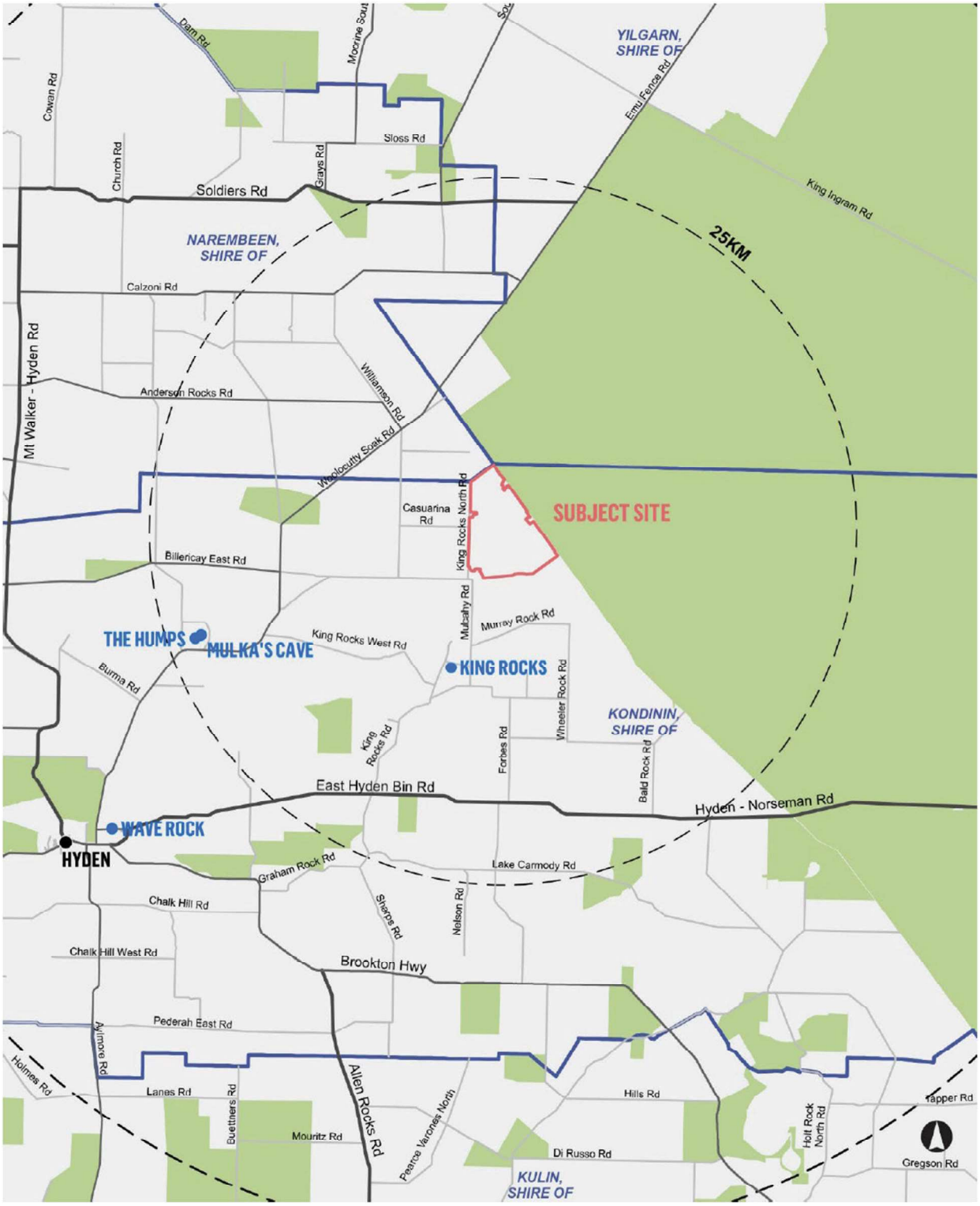
	No conservation significant flora or vegetation communities were recorded during the 2021 survey (360 Environmental, 2022). The survey concluded that while the Federally-listed Eucalypt Woodlands of the WA Wheatbelt TEC may occur in the area, no patches of vegetation within the development envelope met the criteria to warrant protection under the EPBC Act. The locations at which *Baeckea* sp. crossroads was previously found (ngh environmental, 2012) will be avoided, despite those sites being targeted in 2021 and the species likely no longer being present, and despite the Western Australian Herbarium confirming the presence of a morphologically similar species (which may have been misidentified in the ngh [2012] survey). Ten metre buffers will be placed around the GPS location where two individuals were previously found, and a 3 m buffer around a third location. A larger buffer is not possible for this individual, since it is adjacent to an existing access track.	
(b)	*Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.* One conservation significant fauna species was recorded during the 2021 survey, the Central Long-eared Bat (P3). While this species may use the Mallee woodland and paddock trees for roosting, the Great Western Woodlands to the east of the subject site would likely be preferable for roosting. The dams within the subject may be used for accessing water and foraging. No areas containing trees that may become suitable for black cockatoo breeding in future will be cleared, even though this species was not recorded during the surveys. No patches of vegetation that contain hollows that may be suitable for conservation significant species will be cleared. In general, the 2021 survey concluded that vegetation within the subject site was of limited value and not critical to maintain overall habitat connectivity.	Not at variance
(c)	*Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.* No declared rare flora were identified during the 2012 or 2021 surveys.	Not at variance
(d)	*Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.* No state-listed TECs were recorded within the subject site. The survey concluded that while the Federally-listed Eucalypt Woodlands of the WA Wheatbelt TEC may occur in the area, no patches of vegetation within the development envelope met the criteria to warrant protection under the EPBC Act.	Not at variance
(e)	*Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.* Two broad vegetation system associations have been recorded within the subject site: Skeleton Rock 2048 (Mixed heath with scattered tall shrubs *Acacia* spp., Proteaceae and Myrtaceae) and Skeleton Rock 519 (Eucalypt shrubland *Eucalyptus eremophila*, *Eucalyptus redunca*,	Not at variance

	Eucalyptus spp.). Both have significantly more than 30% remaining across WA (50-60%), Mallee Bioregion (50-60%) and Western Mallee Subregion (50%), Shire (54-69%). The proposed 4 hectares of clearing will result in a negligible decrease in the percentage remaining of approximately 0.01%.	
(f)	*Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.* There are no wetlands or natural watercourses within the subject site.	Not at variance
(g)	*Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.* The proposed clearing of up to four hectares is predominantly for access roads and associated drainage, fences and gates, underground cabling and overhead conductors and poles / towers. This type of clearing is not broad-scale and is unlikely to cause appreciable land degradation.	Not at variance
(h)	*Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.* There are no listed conservation areas adjacent or in close proximity to the subject site. Although not a listed conservation area, the Great Western Woodlands are located on the eastern border of the subject site. Due to the proposed clearing being for relatively small areas throughout the subject site and none of the vegetation being critical for habitat connectivity, the proposed clearing is unlikely to impact the environmental values of this area.	Not at variance
(i)	*Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.* There are no natural surface water sources within the subject site and groundwater is not of potable quality. It is unlikely that the proposed clearing will cause deterioration in the quality of surface and groundwater.	Not at variance
(j)	*Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.* No flooding is currently experienced on the subject site. Due to the relatively small amount of clearing, it is not expected to cause flooding.	Not at variance

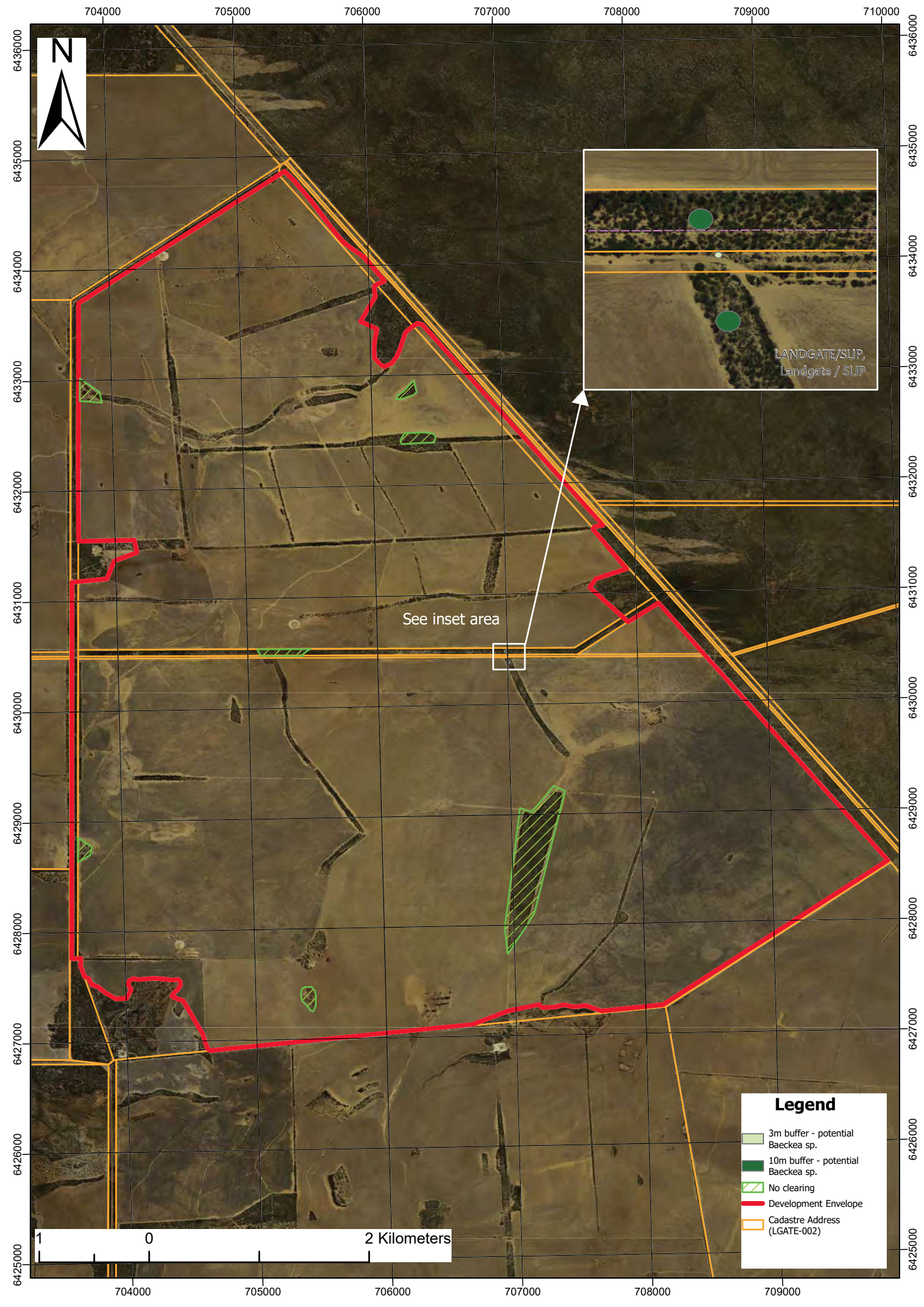
8 CONCLUSION

In summary, Synergy has avoided clearing of native vegetation associated with the King Rocks Wind Farm as far as possible and minimised any impacts on potential conservation significant flora and fauna. It is not believed that the clearing will have a significant impact on the environment and is not at variance to the clearing principles.

APPENDIX A: PROJECT LOCATION



APPENDIX B: MAP OF DEVELOPMENT ENVELOPE AND NO CLEARING AREAS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See inset area
LANDGATE/SLIP,
Landgate / SLIP
Legend
3m buffer - potential Baeckea sp.
10m buffer - potential Baeckea sp.
No clearing
Development Envelope
Cadastre Address (LGATE-002)
1
0
2 Kilometers

APPENDIX C: FLORA, VEGETATION AND FAUNA ASSESSMENT (360 ENVIRONMENTAL, 2022)

360 environmental | Part of SLR

King Rocks Wind Farm

Flora, Vegetation and Fauna Assessment

Prepared for

Synergy Renewable Energy Developments Pty Ltd

June 2022

people planet professional

Document Reference	Revision	Prepared by	Reviewed by	Admin Review	Submitted to Client	
					Copies	Date
4885AA_Rev0	Internal Draft	J. Webb P. Walker L. Crossley G. Buller	E. Webb S. Colwill M. Lohr S. Walker	-	-	22/12/2021
4885AA_Rev1	Client Draft	360 Environmental	SynergyRED	-	x1 electronic	07/01/2022
4885AA_Rev2	Client Final	360 Environmental	SynergyRED	RH	x1 electronic	17/04/2022
4885AA_Rev3	Client Final	360 Environmental	SynergyRED	LI	x1 electronic	23/06/2022

Disclaimer

Executive Summary

Synergy Renewable Energy Developments Pty Ltd (SynergyRED) commissioned 360 Environmental Pty Ltd (360 Environmental), part of SLR Consulting (SLR), to undertake a Biological Survey and Bird Strike Assessment for a proposed wind energy project at 94 and 442 King Rocks North Road. The 3,022 ha King Rocks Survey Area is located approximately 40 km northeast of Hyden in the Avon Wheatbelt bioregion and approximately 315 km east-south-east of Perth, Western Australia.

The purpose of the assessment was to identify key biological values within the Survey Area to support the Environmental Impact Assessment (EIA) process and approvals applications to develop the Project. This report presents results of the survey undertaken.

Flora and Vegetation

The flora desktop assessment identified 70 conservation significant species including six Threatened taxa occurring within 25 km of the Survey Area. A pre-survey likelihood of occurrence assessment was undertaken and determined two species as having a high likelihood of occurrence, 27 species as having a medium likelihood of occurrence, 46 species as having a low likelihood of occurrence.

The reconnaissance and targeted flora and vegetation survey was undertaken from 3 – 7 November 2021 which is within the recommended primary survey period according to the EPA Technical Guidelines (2016) and is within the flowering period for most of Priority listed flora that may potently occur within the Survey Area. The survey recorded the floristic composition and vegetation types from 25 relevés, 77 mapping notes and opportunistic observations. A total of 109 flora taxa were recorded from 60 genera across 26 families.

No Threatened flora species pursuant to the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 and/or gazetted as Threatened/Declared Rare Flora pursuant to the Biodiversity and Conservation Act 2016 were recorded during the survey.

No Priority taxa as listed by DBCA were recorded within the Survey Area.

Ten introduced species were recorded during the survey. None of these are Weeds of National Significance or Declared Pests.

Nine vegetation types were described and mapped across two broad landforms (plains and granite outcropping) within the Survey Area. Vegetation in the Survey Area was representative of existing broad scale vegetation, and soil and land system mapping for the area. The survey identified two species of Eucalypt that are listed as indicator species for the Eucalypt Woodlands of the Western Australian Wheatbelt (Wheatbelt Woodlands) Threatened Ecological Community (TEC).

As a consequence, each patch of vegetation containing these species were assessed against the diagnostic characteristic and condition thresholds listed in the conservation advice to determine if any of the patches should be considered for protection under the EPBC Act. The six patches that were assessed were determined to not represent the Wheatbelt Woodland TEC or warrant protection under the EPBC Act.

Remnant vegetation condition within the Survey Area ranged from Very Good to Degraded, with the majority considered to be in a good condition. Evidence of disturbance included grazing, rubbish, livestock, and weeds with majority of the Survey Area being cleared.

Fauna

The desktop assessment identified 18 conservation significant terrestrial vertebrate fauna species potentially occurring within the Survey Area, comprising twelve birds, five mammals and one reptile.

Fauna habitat mapping was based on a combination of field observations and fauna habitat assessment data. Five fauna habitats were identified and mapped within the Survey Area, of which the Mallee woodland represents the most value to conservation significant fauna and overall fauna assemblages. Eleven trees met the criteria for Carnaby's Cockatoo potential breeding trees in accordance with the EPBC Act referral guidelines, however none currently contain hollows and are therefore not currently suitable for black cockatoo breeding.

The basic terrestrial vertebrate fauna survey was undertaken between the 3 – 7 November 2021 which is considered suitable for birds, mammals, and reptiles but outside the primary survey periods for amphibians. The survey was supplemented by bird surveys, active searching, 14 camera trap sites and four autonomous recording unit (bat detector) sites. A total of 53 fauna taxa from 32 families were recorded, comprising 34 birds from 20 families, 13 mammals from seven families, and six reptiles from five families.

One conservation significant taxon was recorded by an autonomous recording unit (bat detector) during the field survey, the Central Long-eared Bat (*Nyctophilus major tor*), listed as Priority 3 by the Department of Biodiversity, Conservation and Attractions.

Survey effort targeting the conservation significant Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Malleefowl (*Leipoa ocellata*), Chuditch (*Dasyurus geoffroii fortis*) and Red-tailed Phascogale (*Phascogale calura*) did not identify any evidence that these conservation significant taxa occur within the Survey Area.

Four introduced mammals were recorded in the Survey Area, of which the Red Fox (*Vulpes vulpes*) was notably abundant; it was recorded at ten locations within the Survey Area by direct sighting, camera trap and observation of dens.

Observations of birds flying at sufficient heights to interact with the moving blades of wind turbines were infrequent during the field survey. Three raptors, which are considered to have a higher risk of colliding with wind turbines than other birds, were recorded during the field survey:

- Brown Falcon (*Falco berigora*)
- Australian Kestrel (*Falco cenchroides*)
- Spotted Harrier (*Circus approximans*).

Two bats recorded during the field survey typically forage above the canopy and are therefore considered to be most at risk of collision or barotrauma due to wind turbines:

- White-striped Free-tailed Bat (*Austronomus australis*)
- Western Free-tailed Bat (*Ozimops kitcheneri*).

Table of Abbreviations

Abbreviation	Description
ARU	Autonomous Recording Unit
BAM Act	Biosecurity and Agriculture Management Act 2007
BC Act	Biodiversity Conservation Act 2016
CD	Conservation Dependent Fauna
CR	Critically Endangered
DAWE	Department of Agriculture, Water, and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DoE	Department of Environment
DP	Declared Pest
DWER	Department of Water and Environmental Regulation
EN	Endangered
EP Act	Environmental Protection Act 1986
EPA	Environmental Protection Authority
EPBC Act	Environment Protection Biodiversity and Conservation Act 1999
ESA	Environmentally Sensitive Area
IBRA	Interim Biogeographic Regionalisation for Australia
IBSA	Index of Biodiversity Surveys for Assessments
ILZ	Intensive Land Use Zone
MA	Marine
MI	Migratory
MNES	Matters of National Environmental Significance
NVIS	National Vegetation Information System
OS	Other Specially Protected Fauna
P	Priority
PEC	Priority Ecological Community
PMST	Protected Matters Search Tool
T	Threatened
TEC	Threatened Ecological Community
TPFL	Threatened and Priority Flora Listed
VU	Vulnerable
WAH	Western Australian Herbarium
WAM	Western Australian Museum
WoNS	Weeds of National Significance

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1 Introduction

1.1 The Project

Synergy Renewable Energy Developments Pty Ltd (SynergyRED) commissioned 360 Environmental Pty Ltd (360 Environmental) part of SLR Consulting (SLR) to undertake a flora, vegetation, and terrestrial vertebrate fauna assessment to support the environmental and planning approvals for the proposed King Rocks Wind Farm (The Project).

The 3,022 ha King Rocks Wind Farm Survey Area (the Survey Area) is located approximately 40 km northeast of Hyden in the Avon Wheatbelt bioregion of Western Australia.

The Survey Area encompasses two rural properties currently used for agriculture with small areas of fragmented remnant and regenerated vegetation (Figure 1):

- 442 King Rocks North Road, Hyden (Lot 2640 north property)
- 94 King Rocks North Road, Hyden (Lot 2485 south property).

1.2 Objectives and Scope

The purpose of the biological survey was to delineate key flora, vegetation and terrestrial vertebrate fauna values within the Survey Area and identify potential environmental sensitivities that may impact The Project.

The scope of works includes:

- Undertake a desktop assessment including relevant database searches and a literature review to compile and summarise existing records of flora, vegetation, and terrestrial vertebrate fauna (including conservation significant species and communities) within the vicinity of the Survey Area
- Undertake a reconnaissance flora and vegetation survey in accordance with EPA Technical Guidance (Environmental Protection Authority, 2016) using relevés to identify and describe the vegetation and flora occurring within the Survey Area
- Undertake targeted searching for flora of conservation significance within the Survey Area
- Undertake a basic terrestrial vertebrate fauna survey in accordance with EPA Technical Guidance (Environmental Protection Authority, 2020) in conjunction with supplementary fauna detection methods such as camera traps and autonomous recording units (ARUs)
- Assess the potential for bird and bat strikes within the Survey Area, particularly for conservation significant bird or bat taxa

- Identify and assess conservation significant terrestrial vertebrate fauna or suitable conservation significant terrestrial vertebrate fauna habitat potentially occurring within the Survey Area, including:
  - Carnaby's Cockatoo (Calyptorhynchus latirostris)
  - Potential Red-tailed Phascogale (Phascogale calura)
  - Potential Chuditch (Dasyurus geoffroii)
  - Malleefowl (Leipoa ocellata).
- Produce a technical report based on the findings of the above
- Supply a geospatial data package prepared in accordance with IBSA requirements.

This report presents the outcomes of the King Rocks Wind Farm flora, vegetation, and terrestrial vertebrate fauna assessment undertaken to support the above objectives.

2 Background

2.1 Protection of Flora, Vegetation and Fauna

Western Australian flora and fauna is protected formally and informally by legislative and non-legislative measures:

Legislative measures:

- Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)
- WA Biodiversity Conservation Act 2016 (BC Act)
- WA Environmental Protection Act 1986 (EP Act)
- WA Biosecurity and Agriculture Management Act 2007 (BAM Act).

Non-legislative measures:

- WA Department of Biodiversity Conservation and Attractions (DBCA) Priority lists for fauna, flora, and ecological communities
- Weeds of National Significance (WoNS)
- Recognition of locally significant populations by DBCA.

These protection mechanisms are supported by guidance documents published by the Environmental Protection Authority (EPA) and Department of Agriculture, Water, and the Environment (DAWE):

- *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority, 2016)
- *Technical Guidance – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (Environmental Protection Authority, 2020)
- *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan* (Department of Parks and Wildlife, 2013)
- Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999 (Department of the Environment, 2013)
- *Survey Guidelines for Australia's Threatened Mammals* (Department of Sustainability, Environment, Water, Population and Communities, 1999)
- *Survey Guidelines for Australia's Threatened Reptiles* (Department of Sustainability, Environment, Water, Population and Communities, 2011)

- *Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the EPBC Act* (Department of the Environment, Water, Heritage and the Arts, 2010a)
- *Survey Guidelines for Australia's Threatened Birds Under the Environment Protection And Biodiversity Conservation Act 1999* (Department of the Environment, Water, Heritage and the Arts, 2010b)
- *EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species* (Department of Sustainability, Environment, Water, Population and Communities, 2012).

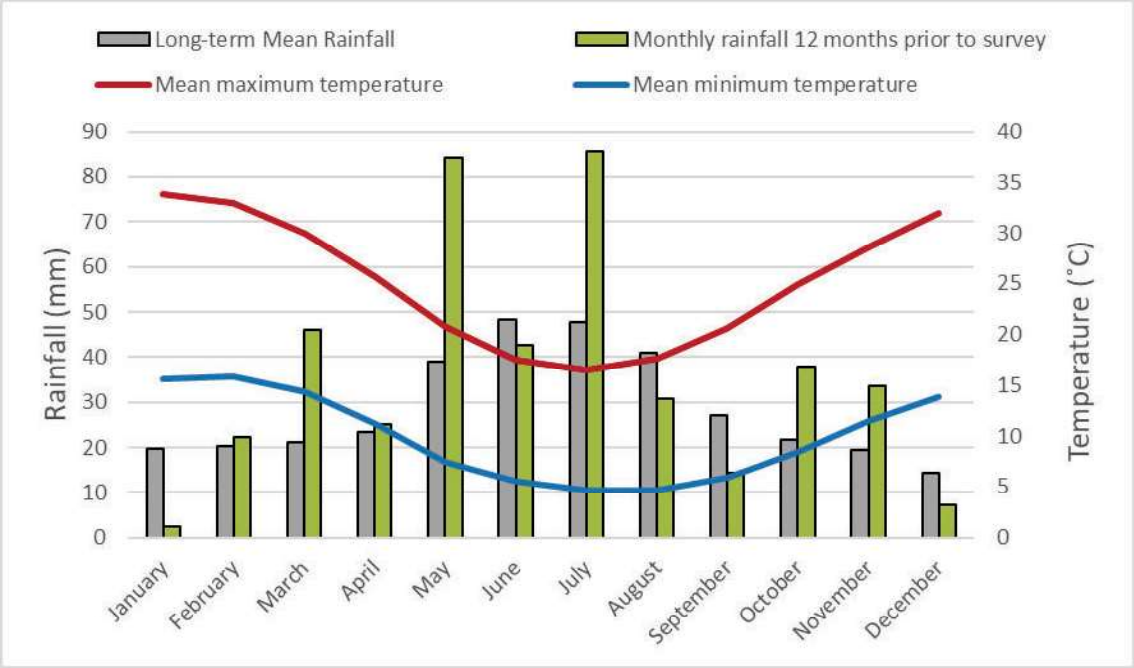
2.2 Existing Environment

2.2.1 Climate

The closest long-term Bureau of Meteorology weather station with a complete dataset is Hyden Weather Station (Station 010568), located approximately 4 km east of Hyden and 33 km southwest of the Survey Area.

The long-term mean minimum temperature for Hyden Weather Station ranges from 4.7˚C (July and August) to 15.9˚C (February) (1928 to 2021) and the long-term mean maximum temperature ranges from 16.5˚C (July) to 33.8˚C (January) (Graph 1) (Bureau of Meteorology, 2021).

The Hyden Weather Station recorded 431.8 mm of rainfall in the 12 months prior to the survey (November 2020 to October 2021), which is 89.2 mm above the long-term average of 342.6 mm (Bureau of Meteorology, 2021). In the three months prior to the survey (August 2021 to October 2021), 82.9 mm of rainfall was recorded, which is 6.7 mm below the long-term average of 89.6 mm for the same time period (Bureau of Meteorology, 2021).



Graph 1: Long term and 2021 monthly climate data for Hyden (Station 010568) (Bureau of Meteorology, 2021).

2.2.2 Interim Biogeographic Regionalisation of Australia

The Interim Biogeographic Regionalisation of Australia (IBRA) divides Australia into 89 bioregions based on major biological, geographical and geological attributes. These bioregions are subdivided into 419 subregions as part of a refinement of the IBRA framework (Department of the Environment and Energy, 2016). The Survey Area occurs within the Mallee bioregion and the Western Mallee (MAL02) subregion (Figure 2).

The Western Mallee (MAL02) subregion forms part of the south-eastern region of the Yilgarn Craton. The Western Mallee region is characterised by gently undulating plains, with partially occluded drainage. The vegetation is typified by Mallee over myrtaceous-proteaceous heaths on duplex (sand over clay) soils. Melaleuca shrublands characterise alluvia, and Halosarcia low shrublands occur on saline alluvium. A mosaic of mixed eucalypt woodlands and mallee occur on calcareous earth plains and sandplains overlying Eocene limestone strata in the east. Landscape is fragmented with particular surface-types almost completely cleared as wheatfields (Beecham & Danks, 2001).

2.2.3 Soil Landscapes and Land Systems

Soil landscapes and land system mapping of Western Australia describes broad soil and landscape characteristics from regional to local scales, ranging from 1:20,000 to 1:250,000 (Department of Primary Industries and Regional Development, 2018). The Survey Area occurs within one land system (Table 1, Figure 3).

Table 1: Land Systems within the Survey Area

Land System		Description (DPIRD 2018)
Name	Code	
Woolcutty System	258Wo	Gently undulating plain. Deeply weathered granite. Duplex sandy and loamy gravels with yellow sandy earths prodominate plus sandy and loamy duplexes often red.

2.2.4 Hydrography

Hydrographic features in the vicinity of the Survey Area include a seasonally dry linear salt flat and small lake system 2 km west of the Survey Area(Figure 3). These interconnected lakes form part of the Lake Gounter Nature Reserve approximately 23 km southwest of the Survey Area) (Department of Water and Environmental Regulation, 2018).

2.2.5 Broad Vegetation Types

Mapping of pre-European vegetation in Western Australia was completed on a broad scale (1:1,000,000) by Beard (Beard, 1976). These vegetation types were later refined by Shepherd *et al.* (2002) resulting in 819 vegetation types. Two broad vegetation system associations are mapped over the Survey Area (Figure 4). Representation of the system associations at a local, regional, and state level is shown in Table 2:

- **Skeleton Rock 2048:** Mixed heath with scattered tall shrubs *Acacia* spp., Proteaceae and Myrtaceae
- **Skeleton Rock 519:** Eucalypt shrubland *Eucalyptus eremophila*, *Eucalyptus redunca*, *Eucalyptus* spp.

Table 2: Broad Vegetation Types within the Survey Area and their Representation at the State, Regional and Local Levels (Government of Western Australia, 2019)

System and Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)*
Representation across Western Australia				
Skeleton Rock 2048	82,634.67	65,590.71	79.37	1.63
Skeleton Rock 519	156,242.20	129,453.91	82.85	12.52
Representation across the Mallee Bioregion				
Skeleton Rock 2048	80,458.22	63,457.34	78.87	1.52
Skeleton Rock 519	88,202.61	68,809.13	78.01	0.86

System and Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)*
Representation across the Western Mallee Subregion				
Skeleton Rock 2048	80,458.22	63,457.34	78.87	1.52
Skeleton Rock 519	88,202.61	68,809.13	78.01	0.86
Representation across the Shire of Kondinin				
Skeleton Rock 2048	53,805.01	37,624.51	69.93	2.57
Skeleton Rock 519	60,567.84	41,848.64	69.09	1.41

*as a portion of the current extent

2.2.6 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Department of Water and Environmental Regulation (DWER) to prevent the degradation of important environmental values such as Threatened flora, Threatened Ecological Communities (TECs) or significant wetlands. The Survey Area does not occur within a mapped ESA (Figure 5).

Four ESA are recorded within 50 km of the Survey Area, The ESAs to the south are associated with the Lake Liddlelow Nature Reserve and Dragon Rocks Reserve and has no impact on the Survey Area. Two ESAs are recorded within the Great Western Woodlands Conservation Area (Enviromap Data WA), approximately 55 km southeast (29,600 ha), and northeast (87,750 ha). As ESAs are not public knowledge, the type of ESA cannot be determined, however it is most likely related to Priority listed flora or fauna species and their buffer.

2.2.7 Conservation Areas

The Survey Area is not located within any listed conservation areas (Department of Biodiversity Conservation and Attractions, 2021a).

2.2.8 Land Use

The Survey Area is located within the Wheatbelt and Intensive Land-use Zone (ILZ) (DPIRD, 2022). The ILZ has been extensively cleared for agriculture (predominantly broadacre cropping and sheep farming) with only 31% native vegetation remaining. Of the 31%, 10% of the subregion has been reserved for conservation.

Additional land uses near Hyden includes tourism (Wave Rock) and harvesting cineole oil from local *Eucalyptus* and *Melaleuca* species (Department of Conservation and Land Management, 2002). The Survey Area is located within active agricultural land which has been mostly cleared, with only narrow linear remnant vegetation remaining.

Table 1: Land Systems within the Survey Area

Land System		Description (DPIRD 2018)
Name	Code	
Woolcutty System	258Wo	Gently undulating plain. Deeply weathered granite. Duplex sandy and loamy gravels with yellow sandy earths prodominate plus sandy and loamy duplexes often red.

2.2.4 Hydrography

Hydrographic features in the vicinity of the Survey Area include a seasonally dry linear salt flat and small lake system 2 km west of the Survey Area(Figure 3). These interconnected lakes form part of the Lake Gounter Nature Reserve approximately 23 km southwest of the Survey Area) (Department of Water and Environmental Regulation, 2018).

2.2.5 Broad Vegetation Types

Mapping of pre-European vegetation in Western Australia was completed on a broad scale (1:1,000,000) by Beard (Beard, 1976). These vegetation types were later refined by Shepherd *et al.* (2002) resulting in 819 vegetation types. Two broad vegetation system associations are mapped over the Survey Area (Figure 4). Representation of the system associations at a local, regional, and state level is shown in Table 2:

- **Skeleton Rock 2048:** Mixed heath with scattered tall shrubs *Acacia* spp., Proteaceae and Myrtaceae
- **Skeleton Rock 519:** Eucalypt shrubland Eucalyptus eremophila, Eucalyptus redunca, Eucalyptus spp.

Table 2: Broad Vegetation Types within the Survey Area and their Representation at the State, Regional and Local Levels (Government of Western Australia, 2019)

System and Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)*
Representation across Western Australia				
Skeleton Rock 2048	322,219.98	161,305.89	50.06	15.78
Skeleton Rock 519	2,333,413.96	1,440,062.48	61.71	16.95
Representation across the Mallee Bioregion				
Skeleton Rock 2048	313,728.20	155,290.79	49.50	16.15
Skeleton Rock 519	2,100,313.59	1,248,661.16	59.45	18.09

System and Vegetation Association	Extent			
	Pre-European (ha)	Current (ha)	Remaining (%)	Managed in DBCA Lands (%)*
Representation across the Western Mallee Subregion				
Skeleton Rock 2048	313,692.53	155,255.12	49.49	16.15
Skeleton Rock 519	1,563,571.27	783,034.13	50.08	25.07
Representation across the Shire of Kondinin				
Skeleton Rock 2048	95,028.33	65,686.40	69.12	2.09
Skeleton Rock 519	247,349.24	134,392.13	54.33	3.74

*as a portion of the current extent

2.2.6 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared by the Department of Water and Environmental Regulation (DWER) to prevent the degradation of important environmental values such as Threatened flora, Threatened Ecological Communities (TECs) or significant wetlands. The Survey Area does not occur within a mapped ESA (Figure 5).

Four ESA are recorded within 50 km of the Survey Area, The ESAs to the south are associated with the Lake Liddlelow Nature Reserve and Dragon Rocks Reserve and has no impact on the Survey Area. Two ESAs are recorded within the Great Western Woodlands Conservation Area (Enviromap Data WA), approximately 55 km southeast (29,600 ha), and northeast (87,750 ha). As ESAs are not public knowledge, the type of ESA cannot be determined, however it is most likely related to Priority listed flora or fauna species and their buffer.

2.2.7 Conservation Areas

The Survey Area is not located within any listed conservation areas (Department of Biodiversity Conservation and Attractions, 2021a).

2.2.8 Land Use

The Survey Area is located within the Wheatbelt and Intensive Land-use Zone (ILZ) (DPIRD, 2022). The ILZ has been extensively cleared for agriculture (predominantly broadacre cropping and sheep farming) with only 31% native vegetation remaining. Of the 31%, 10% of the subregion has been reserved for conservation.

Additional land uses near Hyden includes tourism (Wave Rock) and harvesting cineole oil from local *Eucalyptus* and *Melaleuca* species (Department of Conservation and Land Management, 2002). The Survey Area is located within active agricultural land which has been mostly cleared, with only narrow linear remnant vegetation remaining.

3 Methods

The biological surveys documented by this report were undertaken in accordance with relevant EPA and DAWE guidelines (see section 2.1).

3.1 Desktop Assessment

3.1.1 Literature Review

Background information on the Survey Area and surrounds was compiled prior to the field survey (see Section 2). Historical vegetation mapping (Beard, 1976; Shepherd et al., 2002), land systems mapping (Department of Primary Industries and Regional Development, 2018), and the IBRA classification system (Beecham & Danks, 2001) were consulted to provide broad contextual knowledge of the vegetation units and habitat likely to be encountered within the Survey Area.

The literature review also considered a selection of biological reports detailing assessments undertaken in the region, that were either publicly available or provided by Synergy RED:

- *Biodiversity Assessment: King Rocks Wind Farm Feasibility Project* (NGH Environmental, 2012a), overlapping the Survey Area
- *Desktop Biodiversity Assessment: King Rocks Wind Farm Feasibility Project* (NGH Environmental, 2012b) overlapping the Survey Area
- *Waterway assessment of the Camm River: Lockhart River confluence to Hyden* (Department of Water, 2009), overlapping the Survey Area
- *Fauna Habitat Assessment: Proposed Borrow Pit King Rocks Road West (SLK 7.10) Kondinin* (Ecoedge, 2019b), 10 km SW of Survey Area
- *Fauna Habitat Assessment: Proposed Car Park Upgrade Wave Rock – Hyden* (Ecoedge, 2019c), 34 km SW of Survey Area
- *Hyden Flora, Vegetation and Fauna Surveys CBH Group* (Ecoscape (Australia) Pty Ltd, 2020), 38 km SW of Survey Area
- *Earl Grey Lithium Project: Level 2 vertebrate fauna survey with Chuditch and Malleefowl surveys, 2016 – 2017* (Western Wildlife, 2017), 55 km East of Survey Area
- *Fauna Assessment: Proposed Borrow Pit West Hyden-Norseman Road (SLK 2.85), Kondinin* (Ecoedge, 2019a), 55 km SE of Survey Area
- *Black Cockatoo Habitat Assessment: Newdegate Grain Receival Site* (Eco Logical Australia, 2019), 94 km SW of Survey Area
- *Flora, vegetation, and fauna assessment: Newdegate Grain Receival Site Expansion* (Eco Logical Australia, 2018), 94 km SW of Survey Area
- *Covalent Lithium Earl Grey Lithium Mine Regional Flora Survey* (Strategen JBS&G, 2019) 64 km East of Survey Area.

3.1.2 Database Searches

Database searches were undertaken to identify potential flora and fauna and identify potential conservation significant flora, fauna, and ecological communities within or surrounding the Survey Areas (Table 3). In addition, an EPBC Protected Matters Search (PMST) was undertaken to identify the potential for Matters of National Environmental Significance (MNES) to occur within or surrounding the Survey Area (Department of Agriculture Water and the Environment, 2020).

Table 3: Database Searches of the Survey Area

Database Name	Date Received	Search Target	Search Area
Threatened and Priority Ecological Communities database search (Department of Biodiversity Conservation and Attractions, 2021c)	7 October 2021	TECs and PECs	20 km buffer around the Survey Area
Threatened and Priority Flora (TPFL) database search (Department of Biodiversity Conservation and Attractions, 2021e)	7 October 2021	Threatened and Priority Flora	20 km buffer around the Survey Area
Western Australian Herbarium flora database search (Department of Biodiversity Conservation and Attractions, 2021f)	7 October 2021		20 km buffer around the Survey Area
DBCA Threatened and Priority Fauna database search (Department of Biodiversity Conservation and Attractions, 2021d)	18 October 2021	Threatened and Priority Fauna	50 km buffer (fauna) and 65 km buffer (WTBC breeding) around the Survey Area
NatureMap (Department of Biodiversity Conservation and Attractions, 2021b)	27 October 2021	Threatened and Priority flora and fauna, and inventory of potential flora and fauna	20 km buffer around the Survey Area
Protected Matters Search Tool (Department of Agriculture Water and the Environment, 2021a)	26 October 2021	Commonwealth listed Threatened flora and fauna and TECs	20 km buffer around the Survey Area

3.1.3 Likelihood of Occurrence

Conservation significant flora and fauna species identified from the desktop assessment were assessed to determine the likelihood of their occurrence within the Survey Area, both prior to and post field survey. The assessment was completed based on the likelihood of occurrence criteria presented in Table 4.

Only species either recorded within the Survey Area or considered as having a high or medium likelihood of occurrence will be discussed in detail. Species classified as having a medium-low likelihood of occurrence based on the above criteria will not be discussed unless a justification for this classification is required.

For fauna, taxa listed as Marine only under the EPBC Act were not included as conservation significant taxa because the Marine only listed taxa identified by the desktop assessment were common and widespread, taxa listed as Marine only do not constitute matters of national environmental significance (MNES) under the EPBC Act, and the Survey Area does not contain any marine habitat.

Table 4: Likelihood of Occurrence Criteria

Rank	Criteria
Previously Recorded	The species has been previously recorded in the Survey Area
High (Likely to occur)	• There are existing records of the species within 25 km of the Survey Area, and for fauna, these existing records occurred within the last 10 years • The species is strongly linked to a specific habitat, which is present in the Survey Area; or • The species has more general habitat preferences, and suitable habitat is present.
Medium (May occur)	• There are existing records of the species from the locality (within 50 km), however: ○ The species is strongly linked to a specific habitat, of which only a small amount is present in the Survey Area; or ○ The species has more general habitat preferences, but only some suitable habitat is present. • There is suitable habitat in the Survey Area, but the species is recorded infrequently in the locality.
Low (Unlikely to occur)	• The species is linked to a specific habitat, which is absent from the Survey Area; or • Suitable habitat is present, however there are no existing records of the species from the locality despite reasonable previous search effort in suitable habitat; or • There is some suitable habitat in the Survey Area, however the species is very infrequently recorded in the locality.

3.2 Field Surveys

3.2.1 Survey Timing

The field survey was undertaken from the 3 – 7 November 2021. The survey effort is demonstrated in Figure 6.

3.2.2 Field Personnel

Field personnel and their roles for each of the trips is detailed in Table 5.

The surveys were led by Senior Botanist Dr Jason Webb and Botanist/Ecologist Grant Buller. The field team has 10 years of combined experience conducting surveys of similar scope throughout Western Australia.

The fauna survey was undertaken by Senior Zoologist Evan Webb. Evan has over 5 years' experience conducting surveys of similar scope throughout Western Australia.

Table 5: Field Personnel

Personnel	Collection Licence	Role
Jason Webb	FB62000168; TFL 075B 1920	Flora and Vegetation technical lead
Grant Buller	FB62000321	Flora and Vegetation Survey
Evan Webb	FB62000150	Fauna technical lead

3.3 Flora and Vegetation

3.3.1 Establishment of Flora Sites

Indicative flora sites were identified prior to the survey using aerial photography to estimate broad vegetation patterns within the Survey Area. The location and number of flora sites completed were adjusted on site to achieve sites most representative of the vegetation present.

Flora sites consisted of relevés comprised of unbounded sites. A comprehensive record of the flora present at the time of sampling was recorded for both quadrat and relevé sites.

Flora site locations were recorded using a handheld GPS, the start and finish point of linear relevés, and the central point of circular relevés. At each flora site, the following was recorded:

- Site code
- Date and personnel
- Landform and soil description
- Relevant site descriptors including, slope, aspect, litter cover, bare ground cover and fire history
- Inventory of vascular flora including the approximate average height and percent foliar cover for each taxon recorded

- Vegetation description in accordance with the National Vegetation Information System (NVIS), Level 5 'association', whereby the dominant growth form, height, cover, and species (three species) for the three traditional strata (upper, mid, and ground) are described are described
- Vegetation condition in accordance with the Southwest and Interzone Botanical Provinces/Eremaean and Northern Botanical Provinces vegetation condition scale (Environmental Protection Authority, 2016), and evidence of disturbance (for example clearing, rubbish, feral animals, weed incursion and evidence of feral animals and dieback) where present
- Photograph of the vegetation occurring within the site.

A total of 25 relevés were established within the Survey Area. An additional 77 mapping notes were completed to aid vegetation mapping delineation.

3.3.2 Opportunistic Flora

Additional flora taxa observed opportunistically around flora sites or while traversing on foot within the Survey Area were also recorded. Where populations of conservation significant flora taxa, Declared Pests (DPs) or WoNS were encountered, a GPS location and a count of the individuals present was recorded.

3.3.3 Targeted Searching

Prior to the survey conservation significant flora with the likelihood or potential to occur within the Survey Area was compiled (see section 3.1.3). Field personnel familiarised themselves with photographs, reference samples and descriptions of these taxa before conducting the survey.

The entire Survey Area was not systematically searched. Rather, targeted searching focussed on habitat suitable for Conservation Significant Flora. Furthermore, potential habitat within the proposed footprint was prioritised for targeted searching rather than areas outside the proposed footprint.

Personnel also actively searched for conservation significant flora species in and around flora sites, while traversing on foot within the Survey Area and in known locations or preferred habitat encountered in the Survey Area.

Where Threatened or Priority flora were encountered in the field a GPS location was taken and a count of individuals was recorded, followed by a search in the local vicinity to determine if any other individuals were present nearby and delineate population boundaries where relevant. Specimens of any potential conservation significant flora that could not be identified in the field were collected for identification and lodgement at the Western Australian Herbarium (WAH).

3.3.4 Taxonomy and Nomenclature

Where field identification of plant taxa was not possible, specimens were collected for identification using resources of the WAH. Identification of flora collections was completed by experienced Taxonomist Frank Obbens.

The finalised species list was cross reference against current flora databases and relevant taxonomic literature (Western Australian Herbarium, 2021) to determine name currency, conservation status and known distribution of each taxon. Introduced species were compared against the current BAM Act Declared Plants list the WoNS list to determine their control status (Department of Agriculture Water and the Environment, 2021b; Department of Primary Industries and Regional Development, 2021).

Any conservation significant flora taxa, including potential Threatened and Priority species, range extensions and potential new taxa were submitted to the WAH for verification and lodgement.

3.3.4.1 Species Accumulation Curve

Species accumulation curves were plotted using EstimateS Statistical software (Colwell, 2005) to determine the adequacy of the survey. The treatments comprised S_{obs} (Mao Tau), to reflect the number of species observed (based on a given total of species recorded), and richness (Chao 2) to predict the total number of flora taxa that could potentially be recorded. Species accumulation curves for this survey were calculated using data collected from the flora sites within the Survey Area. All flora taxa, both annual and perennial, within each flora site were used in generating the species accumulation curve, except for unknown flora taxa that could only be tentatively identified.

3.3.5 Vegetation Unit and Condition Mapping

Broad vegetation and condition mapping was conducted in the field, with boundaries delineated over aerial photography, at a scale of 1:5,000. Broad vegetation units were refined based on taxonomic identification of flora collections, statistical analysis of data collected from the quadrats and relevés, and mapping notes taken during the field survey. Vegetation condition mapping was refined based on site data and mapping notes. Finalised polygons were digitised and produced as electronic mapping data using GIS software.

3.4 Fauna

3.4.1 Daily Weather Conditions

Weather conditions during the field survey are presented in Table 6. Daily temperature and rainfall data is from the Hyden Weather Station (Station 010568) (Bureau of Meteorology, 2021).

Table 6: Field Survey Weather Conditions

Date	Temperature (°C)		Rainfall (mm)
	Min	Max	
3/11/2021	6.6	23.0	0
4/11/2021	10.0	33.5	0
5/11/2021	14.2	24.8	0
6/11/2021	8.0	23.4	0
7/11/2021	8.5	27.2	0

3.4.2 Fauna Habitat

Fauna habitat assessments were undertaken throughout the Survey Area to identify fauna habitat values. Habitat assessment locations are displayed in Figure 6. The following information, which has been adapted from the habitat attributes listed in the Technical Guidance (Environmental Protection Authority, 2020), was collected at each habitat assessment site using Fulcrum, a mobile data collection app:

- Site photo
- Landform
- Soil type and colour
- Rock types, surface stone cover and size classes
- Key habitat and microhabitat features including leaf litter, logs, burrows, rocky outcrops, rock crevices, hollows, water sources
- Habitat quality, fire history and evidence of disturbance
- General description of vegetation structure.

Habitat features with potential value to conservation significant fauna taxa were also recorded if observed, including:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) potential or actual breeding trees in accordance with the EPBC Act referral guidelines (Department of Sustainability Environment Water Population and Communities, 2012) (i.e. trees with a diameter at breast height (DBH) of greater than 500 mm and/or contain potentially suitable breeding hollows)
- Potential Red-tailed Phascogale (*Phascogale calura*) hollows
- Potential Chuditch (*Dasyurus geoffroii*) dens or hollow logs.

Fauna habitat mapping boundaries were delineated over aerial imagery at a scale of approximately 1:5,000 based on field observations and fauna habitat assessment data. Polygons were digitised and produced as electronic mapping data using GIS software.

3.4.3 Camera Traps

Fourteen motion sensitive camera traps, baited with a non-reward lure of sardine oil, were used to target the Chuditch and Red-tailed Phascogale. Camera trap locations were selected based on the presence of potentially suitable habitat for the targeted taxa. Table 7 shows the total survey effort for camera traps, and locations are displayed in Figure 6.

Table 7: Camera trap survey effort

Fauna Habitat	Nearest trap site	Total camera trap nights
Mallee woodland	Cam01	4
Mallee woodland	Cam02	4
Mallee woodland	Cam03	4
Mallee woodland	Cam04	4
Mallee woodland	Cam05	4
Mallee woodland	Cam06	4
Mallee woodland	Cam07	3
Mallee woodland	Cam08	3
Mallee woodland	Cam09	3
Mallee woodland	Cam10	3
Mallee woodland	Cam11	3
Mallee woodland	Cam12	3
Mallee woodland	Cam13	3
Mallee woodland	Cam14	3
Total		**48**

3.4.4 Autonomous Recording Units

A Song Meter SM4BAT ultrasonic autonomous recording unit (ARU) was used to target bats. The unit was moved daily during the field survey, recording for one full night at each location. ARU locations were selected based on habitat features likely to be used bats, such as water sources or clearings and tracks adjacent vegetation.

Table 8 outlines the total trapping effort for ARUs and locations are displayed in Figure 6.

Table 8: ARU survey effort

Fauna habitat	Nearest trap site	Ultrasonic ARU trap nights
Mallee woodland, Paddock	Bat01	1
Paddock, Dam	Bat02	1
Paddock, Dam	Bat03	1
Mallee woodland, Dam	Bat04	1
Total	**4 locations**	**4**

3.4.5 Opportunistic Observations

Opportunistic observations of fauna were recorded throughout the Survey Area. Observations of primary evidence (direct sightings, calls) and secondary evidence (tracks, scats, diggings etc.) were recorded.

3.4.6 Active Searches

Active searches were undertaken throughout the Survey Area in microhabitats likely to contain fauna. They primarily involved raking leaf litter, peeling bark, and splitting dead wood.

3.4.7 Targeted Searches

Areas of potential habitat for conservation significant fauna were traversed and targeted searches for evidence of conservation significant fauna were undertaken. Targeted searches focused on:

- Carnaby's Cockatoo foraging, breeding, and roosting evidence, including feeding debris, hollows, and scat
- Red-tailed Phascogale scats, tracks, and hollows
- Chuditch scats, tracks, and dens
- Malleefowl (*Leipoa ocellata*) tracks and mounds.

3.4.8 Bird Surveys

Unbounded bird surveys were undertaken for 20 minutes at each habitat assessment, camera trap and ARU location. Birds were also opportunistically observed throughout the field survey. When birds were observed to fly at an estimated height of 15 m or more above the ground, a description of the flight path, including estimated height and direction of flight, was recorded. Flight paths below 15 m were below the potential rotor sweep height of a wind turbine. A Nikon Forestry Pro II laser rangefinder/hypsometer was used to measure the canopy height of nearby vegetation, to which bird flight paths could be compared.

3.4.9 Identification and Taxonomy

Terrestrial vertebrate fauna taxa were identified in the field. Data captured by ARUs was analysed by bat specialist Robert Bullen from Bat Call WA.

Where there was doubt on a species name (through subsequent name changes or taxonomic reviews), an effort was made to determine the current scientific name for each taxon. Taxonomy and nomenclature in this report follows the WA Museum checklist 2021 (Western Australian Museum, 2021) where relevant.

4 Results

4.1 Limitations

Limitations and constraints of the flora, vegetation and fauna survey are detailed below in Table 9.

Table 9: Limitations and Constraints Associated with the Survey

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
Survey Scope	Minor constraint	Targeted searching for flora of conservation significance was undertaken in accordance to EPA Technical Guidance (Environmental Protection Authority, 2016), however, systematic searches were not feasible. Rather, targeted searching focused on habitat suitable for conservation listed flora within the proposed development footprint. A basic terrestrial vertebrate fauna survey was undertaken in accordance with EPA Technical Guidance (Environmental Protection Authority, 2020) and was considered appropriate to support approvals applications. The final design of the wind farm is not yet available, therefore modelling of flight paths to predict collision risk and bird strikes was outside the scope of this assessment.
Availability of Data	Not a constraint	All data required to complete the scope of works including regional and local contextual information was available.
Site Access	Not a constraint	The Survey Area was able to be accessed by vehicle and on foot.
Survey Intensity and Resources	Not a constraint	27 flora sites (relevés) were sampled across the Survey Area. An additional 77 mapping notes were undertaken to aid vegetation mapping and delineation. Sufficient time was allocated to the flora and vegetation survey, given the size and complexity of the Survey Area, and the expected level of survey intensity. The survey effort was considered adequate to assess the flora and vegetation values of the Survey Area and provide information required to support approvals applications. The basic terrestrial vertebrate fauna survey was supplemented by bird surveys, active searching, 14 camera trap sites and four ARU sites. Camera trap sites were active for three to four nights. ARU sites were active for one night.
Experience	Not a constraint	The flora and vegetation survey was undertaken by Senior Botanist Dr. Jason Webb and Botanist Grant Buller. Together the team has over 10 years' experience conducting surveys of similar scope throughout Western Australia, including the Pilbara and Geraldton Sandplains region. Principal Botanist Narelle Whittington provided support who has over 15 years relevant experience Identification of flora collections was completed by experienced taxonomist Frank Obbens at the WAH. Any specimens with novel characteristics were submitted to the WAH for formal identification.

Variable	Degree of Limitation	Potential Constraints on Survey Outcomes
		The basic terrestrial vertebrate fauna survey was undertaken by Senior Zoologist Evan Webb. Evan has 5 years' experience conducting surveys of similar scope throughout Western Australia and the bioregion. ARU data analysis was undertaken by specialist Robert Bullen of Bat Call WA.
Timing, weather, season	Not a constraint	The recommended primary flora and vegetation survey period for the region as per the EPA Technical Guidance, is September to November. Survey was conducted 3 - 7 November 2021. Rainfall was sufficient prior to the commencement of the field survey and air temperatures were slightly below average. The timing of the basic terrestrial vertebrate fauna survey was considered suitable for birds, mammals, and reptiles but outside the primary survey periods for amphibians, however given the scope of the survey this is not considered a limitation. Weather conditions were not a constraint on the outcomes of the survey.
Life Forms Sampled	Not a constraint	The Survey Area was traversed by vehicle and on foot and representative sites of all remnant vegetation was sampled. A total of 109 vascular flora taxa were recorded from the Survey Area, comprising 90.8% native flora taxa and 9.2% introduced flora taxa. Of the 109 flora taxa recorded, 14 taxa (12.8%), could not be identified to species level because they were sterile at the time of the survey. This was not considered a constraint as it represented a very small portion of the flora sampled. None of the unknown flora taxa collected were analogous to Threatened or Priority flora taxa identified by the database searches as likely to occur within the Survey Area, nor were they representative of flora of other significance. The basic vertebrate fauna survey used a wide range of detection techniques to detect fauna taxa within the Survey Area. All vertebrate fauna species were readily identified in the field.
Mapping Reliability	Not a constraint	Vegetation types were described and mapped based on relevé data and additional mapping notes taken during the field survey. Fauna habitat mapping was based largely on vegetation mapping and there were no constraints on mapping reliability.
Disturbances (fire, flood etc.)	Not a constraint	No disturbances occurred during any of the surveys. Areas of disturbance associated with clearing, cropping, overgrazing, weeds, and the presence of introduced fauna were recorded but were not a constraint on the results of the survey.
Completeness	Not a constraint	The survey was considered complete for a reconnaissance flora and vegetation survey and basic terrestrial vertebrate fauna survey. All vegetation types and fauna habitats were surveyed and delineated within the Survey Area and a minimum of three relevés were surveyed for each vegetation type.

4.2 Flora and Vegetation

4.2.1 Desktop Assessment

The key findings of the flora and vegetation reports reviewed are summarised in Appendix A.

4.2.1.1 Flora

Database searches identified 46 conservation significant flora species occurring within 25 km of the Survey Area, and one additional species was identified within 50 km by the literature review (Figure 7, Appendix B), comprising:

- Six Threatened taxa: *Acacia lanuginophylla, Banksia sphaerocarpa var. dolichostyla, Eucalyptus steedmanii, Tribonanthes purpurea, Grevillea scapigera* and *Philotheca Roycea pycnophylloides*
- Nine Priority one taxa
- Eight Priority two taxa
- Twenty-four Priority three taxa
- Three Priority four taxa.

The Threatened flora that was identified from the desktop assessment has been described in detail below:

- *Acacia lanuginophylla* (T) is a dense to open, domed, erect or spreading shrub 0.5-1.2 m high with densely white-woolly branchlets, and yellow-green new shoots (CSIRO, 2021). This taxon is known from near Lake Biddy, and Lake Lockhart, growing in slightly saline sand over clay along drainage channels in low open scrub (CSIRO, 2021).
- *Banksia sphaerocarpa* var. *dolichostyla* (T) is widespread across the region from Mt Holland (50 km to the East) and Southern Cross (150 km to the north) (Strategen JBS&G, 2019). It is a medium height shrub between 0.3 m to 2 m that flowers July to September. *Banksia sphaerocarpa* var. *dolichostyla* (T) can be distinguished from similar species in the field by blueish-green foliage, narrow linear toothless leaves with golden styles up to 65 mm long (others have 49-55mm long floral whorl.
- *Eucalyptus steedmanii* (T) is a medium height tree, growing 2 to 8 m high (with a maximum height of 12 m. This taxon is smooth bark *Eucalyptus* species growing in gravely loamy sands over ironstone.
- *Grevillea scapigera* (T) is a prostrate shrub with shoots originating from below ground (suckering). The preferred habitat for this taxon is sandy or gravely lateritic soils.
- *Roycea pycnophylloides* (T, EN) is a small perennial herb forming low mats up to 1 m wide. This taxon is typically found in saline flats with sandy soils, or clay.
- *Tribonanthes purpurea* (T) is a small herb growing 3-4 cm high. This taxon is restricted to granite rocks with seasonally wet soils in moss swards and herbfields (WAH, 2021).

4.2.1.2 Vegetation

One Commonwealth listed Threatened Ecological Community (TEC) was identified by the database searches as occurring within 1.5 km of the Survey Area.

- Eucalypt woodlands of the Western Australian Wheatbelt (Wheatbelt Woodlands).

This TEC is critically endangered and is regarded as a high priority for conservation value and retention. In total 8,932 instances of the community were identified by the database searches as occurring within 20 km of the Survey Area.

Eucalypt woodlands of the Western Australian Wheatbelt (Wheatbelt Woodlands) is listed as a Priority 3 by the State. The Wheatbelt Woodlands community is composed of eucalypt woodlands that formerly were the most common type of vegetation across the wheatbelt landscape of south-western Western Australia (WA). The woodlands are dominated by a complex mosaic of several eucalypt species with a tree or mallet form over an understorey that is highly variable in structure and composition (Department of the Environment and Energy, 2016)

4.2.1.3 Pre-Survey Likelihood of Occurrence

The pre-survey likelihood of occurrence assessment identified that of the 70 conservation significant flora species identified by the desktop assessment:

- One had previously been recorded within the Survey Area (*Baeckea* sp. Crossroads (B.L. Rye and M.E. Trudgen 241186) (P1))
- One was considered to have a high likelihood of occurrence (*Banksia sphaerocarpa* var. *dolichostyla* (T))
- Twenty-seven were considered to have a medium likelihood of occurrence
- Forty-one were considered to have a low likelihood of occurrence.

The likelihood of occurrence assessment is provided in Appendix C.

4.2.2 Field Survey

4.2.2.1 Flora Composition

The survey recorded a total of 109 taxa from 60 genera across 26 families (Appendix D). The dominant families were Myrtaceae (34 taxa), Proteaceae (14 taxa) and Poaceae (eight taxa). The dominant genera were *Melaleuca* (12 taxa) and *Eucalyptus* (nine taxa).

4.2.2.2 Flora of Conservation Significance

No Threatened flora taxa pursuant to the EPBC Act 1999 and/or gazetted as Threatened pursuant to the BC Act 2016 were recorded during the survey.

No Priority taxa as listed by DBCA were recorded within the Survey Area.

4.2.2.3 Introduced Flora

A total of 10 introduced flora taxa were recorded within relevés, representing 9.2% of the total taxa recorded (Table 10 and Figure 10). None are listed as WoNS (Department of Agriculture Water and the Environment, 2021b) or Declared Pests under the BAM Act (Department of Primary Industries and Regional Development, 2021).

Table 10: Introduced Flora Taxa within the Survey Area

Species	Common Name
**Aira cupaniana*	Silvery Hairgrass
**Bromus sp.*	-
**Eucalyptus ?camaldulensis*	River Gum
**Lolium rigidum*	Wimmera Ryegrass
**Poa annua*	Winter Grass
**Solanum nigrum*	Black Berry Nightshade
**Sonchus asper*	Rough Sowthistle
**Taraxacum khatoonae*	Dandelion
**Ursinia anthemoides*	Ursinia
**Vulpia bromoides*	Squirrel Tail Fescue

4.2.2.4 Unconfirmed Flora

Fourteen specimens (12.8% of the taxa recorded) could not be identified to species level because the taxa were sterile at the time of the survey (Appendix D). All of the specimens were able to be identified to genus level, and seven of these were assigned a tentative species.

None of the unconfirmed flora taxa were analogous to Priority flora taxa identified by the database searches.

4.2.2.5 Vegetation Types

Nine vegetation types were described and mapped across two broad landforms within the Survey Area (Table 12 and Figure 9) equating to 164.01 ha. The majority of the Survey Area consisted of Myrtaceae dominated plains, with some small patches of granite outcrops.

Detailed data sheets for each flora site are provided in Appendix E.

4.2.2.6 Vegetation Condition

Vegetation condition within the Survey Area predominantly ranged from Very Good to Good where approximately 2859 ha of the Survey Area is cleared (Figure 10, Table 11).

Evidence of disturbance included historical clearing for agriculture and associated access tracks, cattle grazing, trampling and scats, weeds, and frequent burning.

Table 11: Vegetation Condition within the Survey Area

Vegetation Condition	Extent within the Survey Area (ha)*
Good	162.18
Very Good	1.83

*Rounded to the nearest decimal place.

Table 12: Vegetation Types Occurring within the Survey Area

Vegetation Unit and Description*	Local Landform	Total Area, Proportion of the Survey Area	Sites	Photograph
PL1: *Eucalyptus alipes* low open mallee woodland over *Melaleuca calyptroides* and *Allocasuarina campestri*	Gently undulating plains with loam and soft sandy soils	2.61 ha 0.09%	KRR18	
PL2: *Callitris preissii* and *Eucalyptus alipes* mid woodland over *Hakea multilineata*, *Grevillea excelsior* and *Santalum acuminatum* tall shrubland over *Melaleuca ?scalena* mid sparse shrubland	Gently undulating plains with loam and soft sandy soils	0.96 ha 0.03%	KRR21	

Vegetation Unit and Description*	Local Landform	Total Area, Proportion of the Survey Area	Sites	Photograph
PL3: *Eucalyptus alipes, Eucalyptus salubris* and (*Eucalyptus burracoppinensis*) low open mallee woodland over *Allocasuarina campestris, Eremophila papillata* (*Acacia beauverdiana*) and *Phebalium filifolium* mid open shrubland over *Micromyrtus obovata, Acacia intricata* and *Jacksonia nematoclada* low sparse shrubland	Gently undulating plains with loam and soft sandy soils	1.23 ha	KRR05 KRR24	
PL4: *Eucalyptus alipes* (*Allocasuarina acutivalvis* subsp. *acutivalvis*, *Eucalyptus burracoppinensis*) low open mallee woodland over *Acacia beauverdiana*, (*Hakea multilineata*) and *Santalum spicatum* tall sparse shrubland over *Acacia intricata*, *Eremophila papillata* and *Callitris roei* low open shrubland	Gently undulating plains with loam and soft sandy soils	2.29 ha 0.08%	KRR04, KRR25	

Vegetation Unit and Description*	Local Landform	Total Area, Proportion of the Survey Area	Sites	Photograph
PL5: *Allocasuarina campestris, Acacia beauverdiana* and *Melaleuca hamata* (*Santalum spicatum, Callitris roei*) tall open shrubland over **Vulpia bromoides* low sparse tussock grassland over *Waitzia acuminata* and *Ptilotus polystachyus* low sparse forbland	Gently undulating plains with loam and soft sandy soils	56.28 ha 1.86%	KRR06, KRR07, KRR08, KRR10, KRR11, KRR13, KRR15, KRR17, KRR19, KRR23	
PL6: *Eucalyptus burracoppinensis*, *Eucalyptus leptopoda* subsp. *leptopoda*, and *Callitris preissii* (*Allocasuarina acutivalvis* subsp. *acutivalvis*) low woodland over *Hakea meisneriana, Hakea erecta* and *Grevillea excelsior* tall open shrubland over *Austrostipa eremophila*, **Vulpia bromoides* and **Poa annua* low open tussock grassland	Gently undulating plains with loam and soft sandy soils	81.77 ha 2.71%	KRR01, KRR02, KRR09	

Vegetation Unit and Description*	Local Landform	Total Area, Proportion of the Survey Area	Sites	Photograph
PL7: *Eucalyptus rigidula* low open mallee woodland over *Melaleuca pauperiflora* subsp. *fastigiata*, *Allocasuarina campestris* and *Acacia yorkrakinensis* subsp. *acrita* (*Santalum acuminatum*) tall shrubland tall open shrubland over	Gently undulating plains with loam and soft sandy soils	10.16 ha 0.34%	KRR03 KRR20 KRR22	
PL8: *Eucalyptus incrassata* and *Callitris preissii* low open woodland over *Melaleuca eleuterostachya* mid sparse shrubland over *Comesperma spinosum* low open shrubland	Gently undulating plains with loam and soft sandy soils	6.98 ha 0.23%	KRR12, KRR14	

Vegetation Unit and Description*	Local Landform	Total Area, Proportion of the Survey Area	Sites	Photograph
GR1: *Melaleuca calyptroides* and *Melaleuca hamata* tall open shrubland over *Thryptomene kochii, Allocasuarina campestris* and *Hakea multilineata* mid shrubland over *Waitzia acuminata* low sparse forbland	Granite Outcrop	1.73 ha 0.06%	KRR16	

*Brackets indicate species that may or may not be present, but were observed as dominant/sub-dominant at some of the sites that make up the vegetation type

4.2.2.7 Vegetation of Conservation Significance

Four vegetation types are analogue to the TEC *Eucalypt Woodlands of the Western Australian Wheatbelt* (Wheatbelt Woodlands), which listed as Threatened (Critically Endangered) at the Commonwealth level, and Priority 3 at the State (WA) level. Any mapped vegetation considered potentially analogous to the TEC was further assessed against the diagnostic characteristics provided in the Draft Conservation Advice (Department of the Environment and Energy, 2015).

The term 'Eucalypt woodlands' distinguishes the ecological community as having an open tree canopy dominated by eucalypt species with a single trunk and are different from woodlands dominated by mallee eucalypts or non-eucalypt tree species, and communities that contain sparse, scattered emergent trees that do not form a distinct canopy. The WA Wheatbelt Woodlands ecological community is a woodland in which the trees typically are spaced, and the canopy is relatively open. There are 78 key indicator eucalypt species that can be dominant or co-dominant within a given patch of the ecological community. *Eucalyptus salubris* and *E. alipes* are the two indicator species that were recorded in the Survey Area.

The vegetation that contained *Eucalyptus salubris* and *E. alipes* was divided into six 'patches' based on their separation from other occurrences (Figure 9; Table 13).

Table 13: Wheatbelt Woodlands TEC patch details

Patch	Relevé	Patch type	Patch size (ha) within Survey Area	Condition
1	KRR21	Woodland	0.96	Good
2	KRR18	Woodland	2.48	Good
3	KRR5	Woodland	0.47	Good
4	KRR4	Low open forest	1.58	Good
5	KRR24	Woodland	0.76	Very Good
6	KRR25	Woodland	0.71	Good

The six patches were assessed against the key diagnostic characteristics and the contra indicators (Table 14) (Department of the Environment, 2015). Four of the six patches did not fit the criterias and/or possessed one or more of the contra indicators, therefore, did not require to be assessed against the condition thresholds (Table 15):

- Patch 1 is not considered the TEC based on the low percentage cover of the indicator species *Eucalyptus alipes* (5%) and the dominant canopy cover being a non-eucalypt species.
- Patch 3 is not considered to be the TEC based on the low percentage cover of the indicator species *Eucalyptus salubris* (2%) as well as the dominant canopy species being *Eucalyptus burracoppinensis*, which, is not an indicator species of the TEC.

- Patch 4 is not considered to be the TEC based on the low percentage cover of the indicator species *Eucalyptus alipes* (1%) as well as the dominant canopy species of the vegetation type being *Eucalyptus burracoppinensis* (15%).
- Patch 5 is not considered the TEC based on the low percentage cover of the indicator species *Eucalyptus alipes* (5%) and *Eucalyptus salubris* (2%), which together, do not fall between the 10 - 40% canopy cover requirement for the TEC.
- Patches 2 and 6, having met the diagnostic criteria and not having any contra indicators, were assessed further using the condition thresholds to establish if they meet the requirements for protection under the EPBC Act (Table 15). Neither Patch 2 (2.48 ha) or 6 (0.71 ha) meet any of the condition threshold categories due to each patch being < 5 ha and not containing mature trees of >30 cm Diameter at Breast Height (DBH) (Department of the Environment, 2015).

Table 14: Wheatbelt Woodlands TEC assessment contra indicators and criteria

Criteria number	Summary of criteria
Contra Indicator 1	A dominant presence of eucalypts with a mallee growth form. (However, mallee species can occur as an understorey or minor canopy component of the ecological community).
Contra Indicator 2	A dominant presence of non-eucalypt species in the tree canopy, for instance *Acacia acuminata* (jam) or *Allocasuarina huegeliana* (rock sheoak) (these non-eucalypts species can be present as an understorey or minor canopy component of the ecological community).
Contra Indicator 3	Shrublands or herblands in which the tree canopy layer is very sparse to absent, either naturally or maintained so through long-term disturbance
Contra Indicator 4	Woodlands that have the same key eucalypt species but occur in adjacent bioregions, notably the Coolgardie, Esperance Sandplains, Yalgoo and Geraldton Sandplains bioregions
Contra Indicator 5	Woodlands dominated by eucalypts that are restricted to granite outcrops and rocky rises, for instance *Eucalyptus caesia*
Criteria 1	Be located within the Avon Wheatbelt (subregions AVW01 or AVW02), the Western Mallee subregion (MAL02) or Jarrah Forest – outlying patches in the eastern parts of the JAH01 Northern Jarrah forests and JAH02 Jarrah forests adjacent to the Avon Wheatbelt.
Criteria 2	For those in the Jarrah Forest IBRA region they must be off the Darling Scarp and receive less than 600 mm mean annual rainfall, associated with the Yilgarn Craton geology, and are generally heavily cleared.
Criteria 3	The structure of the Ecological community is a woodland in which crown cover of the tree canopy in a mature woodland is 10% – 40%.
Criteria 4	Key Species of the tree canopy is Eucalyptus of which at least one is a key indicator species listed in the conservation advice.

Criteria number	Summary of criteria
Condition threshold (used for non-roadside patches only)	Condition thresholds **(area relates to non-roadside patches)** The vegetation type meets on of the following condition thresholds: Category A: An intact area of woodland likely to be in Very Good/Excellent/Pristine condition, Mature trees may be present or absent **AND** 2ha hectares or more Category B: An intact area of woodland likely to be in good condition (retaining important habitat features), mature trees are present with at least 5 trees per 0.5 **AND** is 2ha hectares or more Category C: An intact area of woodland likely to be in good condition, mature trees either absent or less than 5 trees per 0.5 AND is 5ha hectares or more are present Category D: An intact area of woodland likely to be in Degraded to Good condition, mature trees are present with at least 5 trees per 0.5 ha **AND** is 5 hectares or more
Condition threshold (used for roadside patches only)	**Roadside patch** meeting the condition criteria as above **AND** 5 m minimum patch width

Table 15: Wheatbelt Woodlands TEC Patch Assessment

Patch	Contra indicator					Criteria				Condition thresholds		Analogous to the TEC
	1	2	3	4	5	1	2	3	4	Non-Roadside	Roadside	
1	No	Yes	Yes	Western Mallee (MAL02) subregion	No	Yes	N/A	No	No (*Callitris preissii* is dominant)	N/A	N/A	No
2	No	No	No	Western Mallee (MAL02) subregion	No	Yes	N/A	Yes	Yes (*Eucalyptus alipes*)	No Does not meet any	N/A	No
3	No	Yes	No	Western Mallee (MAL02) subregion	No	Yes	N/A	Yes	No (*Eucalyptus burracoppinensis* is dominant)	N/A	N/A	No
4	No	No	No	Western Mallee (MAL02) subregion	No	Yes	N/A	Yes	No (*Eucalyptus burracoppinensis* is dominant)	N/A	N/A	No
5	No	No	Yes	Western Mallee (MAL02) subregion	No	Yes	N/A	No	Yes (*Eucalyptus alipes* and *Eucalyptus salubris*)	N/A	N/A	No
6	No	No	No	Western Mallee (MAL02) subregion	No	Yes	N/A	No	Yes (*Eucalyptus alipes*)	No Does not meet any	N/A	No

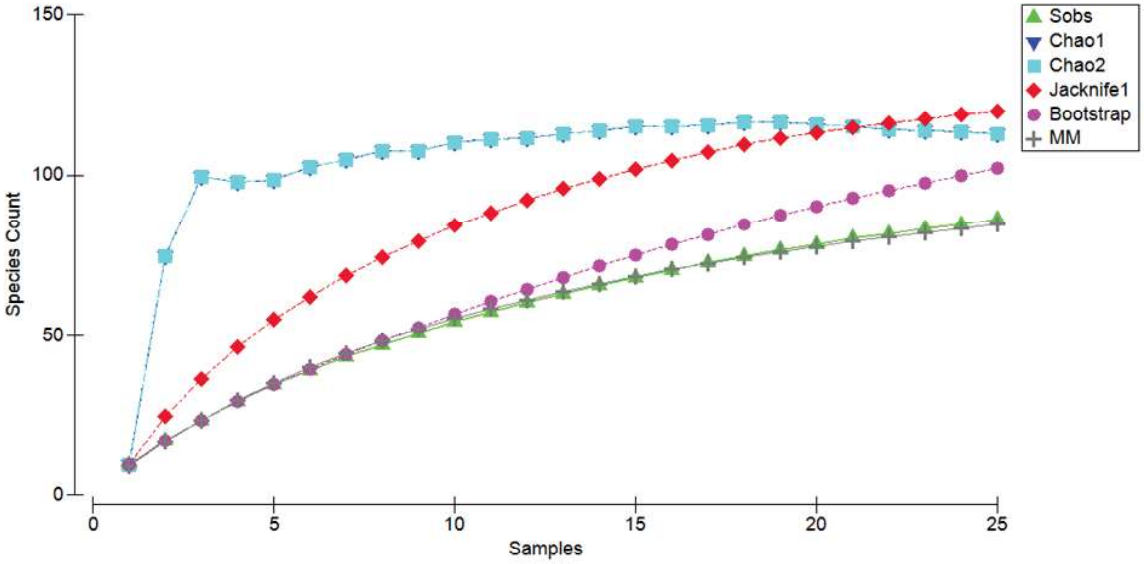
4.2.2.8 Groundwater Dependent Ecosystems

Vegetation in the Survey Area comprised of xerophytic species that have no interaction with groundwater.

4.2.2.9 Survey Adequacy

Twenty-five flora sites were sampled across the Survey Area.

The species accumulation curve for the Survey Area produced a smooth Sobs curve steadily increasing towards asymptote (Graph 2).



Graph 2: Flora Species Accumulation Curve

4.3 Fauna

4.3.1 Desktop Assessment

The desktop assessment identified 18 conservation significant terrestrial vertebrate fauna species potentially occurring within the Survey Area, comprising twelve birds, five mammals and one reptile. These are discussed further in Section 4.3.2.4.

Key findings of the literature review are summarized below in Table 16. Database search results are presented in Figure 11 and Appendix B.

Table 16: Fauna literature review summary

Report	Distance to Current Survey Area	Survey Timing	Survey Type	Recorded Conservation Significant Fauna	Fauna Habitats
Biodiversity Assessment: King Rocks Wind Farm Feasibility Project (NGH Environmental, 2012a)	Overlaps the Survey Area	15-14 November 2011	• Basic fauna Survey • Diurnal bird surveys • Nocturnal bird surveys (call playback) • Microbat surveys (Anabat) • Habitat assessment • Opportunistic sightings.	• Fork-tailed Swift (Apus pacificus) – MI, MA (uncertain) • Rainbow Bee-eater (Merops ornatus) – MA (formerly listed as MI but downgraded in 2016) • Western Rosella (Platycercus icterotis xanthogenys) – P4.	• Cleared crop land • Low mallee woodland.
Desktop Biodiversity Assessment: King Rocks Wind Farm Feasibility Project (NGH Environmental, 2012b)	Overlaps the Survey Area	November 2012	• Desktop Survey.	• N/A.	• N/A.
Waterway assessment of the Camm River: Lockhart River confluence to Hyden (Department of Water, 2009)	Overlaps the Survey Area	2009	• Opportunistic sightings.	• None.	• Heath and thicket on upland sandplains • Mallee on the slopes • Mallee with patches of woodland on upper valley soils • Woodland on lower valley soils • Mosaic of woodland, shrubland and samphire in saline areas.

Report	Distance to Current Survey Area	Survey Timing	Survey Type	Recorded Conservation Significant Fauna	Fauna Habitats
Fauna Habitat Assessment: Proposed Borrow Pit King Rocks Road West (SLK 7.10) Kondinin (Ecoedge, 2019b)	10 km SW of Survey Area	3 October 2018	• Basic fauna • Targeted Black Cockatoo • Habitat assessment.	• None.	• Mallee woodland to shrubland.
Fauna Habitat Assessment: Proposed Car Park Upgrade Wave Rock – Hyden (Ecoedge, 2019c)	34 km SW of Survey Area	2 October 2018	• Basic fauna • Black Cockatoo habitat assessment.	• None.	• Woodland of York Gum (Eucalyptus loxophleba) over a variable open shrubland.
Hyden Flora, Vegetation and Fauna Surveys CBH Group (Ecoscape (Australia) Pty Ltd, 2020)	38 km SW of survey Area	September - November 2019	• Basic fauna.	• None.	• Shrubland • Degraded chenopod shrubland.

Report	Distance to Current Survey Area	Survey Timing	Survey Type	Recorded Conservation Significant Fauna	Fauna Habitats
Earl Grey Lithium Project: Level 2 vertebrate fauna survey with targeted Chuditch and Malleefowl surveys, 2016 – 2017 (Western Wildlife, 2017)	55 km East of the Survey Area	10-15 Oct 2016 21 Nov - 4 Dec 2016 16 Jan - 25 Feb 2017 12-21 Sept 2017 2-14 Oct 2017 25-30 Nov 2017	• Basic fauna survey, Targeted Malleefowl and Chuditch surveys (Earl Grey Lithium Project Development Envelope) • Detailed single season fauna survey, Targeted Malleefowl and Chuditch surveys (Regional Survey Area) • Targeted Chuditch survey (Regional Survey Area) • Targeted Malleefowl survey (Earl Grey Lithium Project Development Envelope), Targeted Chuditch survey (Regional Survey Area) • Detailed single season fauna survey, Targeted Malleefowl survey (Earl Grey Lithium Project Development Envelope) • Targeted Chuditch survey (Regional Survey Area).	• Chuditch (Dasyurus geoffroii) – VU • Inland Western Rosella (Platycercus icterotis xanthogenys) – P4 • Malleefowl (Leipoa ocellata) – VU • Peregrine Falcon (Falco peregrinus) – OS • Western Brush Wallaby (Notamacropus irma) – P4.	• Mallee woodland – on sands, clay-loams and sandy clays • Salmon gum woodland • Shrubland – on flats and laterite rises.

Report	Distance to Current Survey Area	Survey Timing	Survey Type	Recorded Conservation Significant Fauna	Fauna Habitats
Fauna Assessment: Proposed Borrow Pit West Hyden-Norseman Road (SLK 2.85), Kondinin (Ecoedge, 2019a)	55 km SE of Survey Area	3 October 2018	• Basic fauna • Targeted black cockatoo • Habitat assessment.	• None.	• Mallee woodland to shrubland.
Black Cockatoo Habitat Assessment: Newdegate Grain Receival Site (Eco Logical Australia, 2019)	94 km SW of survey Area	March 2019	• Black cockatoo habitat assessment.	• None.	• Salmon gums, Red Morell and Kondinin Blackbutt • Foraging habitat • Breeding habitat.
Flora, vegetation, and fauna assessment: Newdegate Grain Receival Site Expansion (Eco Logical Australia, 2018)	94 km SW of survey Area	5-7 November 2018	• Fauna assessment.	• None.	• Eucalyptus open forest • Eucalyptus mallee over Melaleuca shrubland • Tecticornia heath.

4.3.2 Field Survey

4.3.2.1 Fauna Habitat

Five fauna habitats were identified and mapped within the Survey Area (Figure 12). Habitat condition was varied throughout the Survey Area; however, the majority was degraded due clearing, cropping, overgrazing, weeds, and the presence of introduced fauna.

A description, extent within the Survey Area, and a representative photo is provided for each fauna habitat in Table 17. Small discrepancies in fauna habitat extents (i.e., not adding up to the exact area extent of the Survey Area) are due to rounding. Fauna habitat mapping is presented in and site sheets for each habitat assessment are shown in Appendix F.

A total of 12 trees within the Survey Area met the criteria for Carnaby's Cockatoo potential breeding trees in accordance with the EPBC Act referral guidelines (Department of Sustainability Environment Water Population and Communities, 2012), comprising:

- Five River Red Gums (Eucalyptus camaldulensis)
- Three probable York Gums (*Eucalyptus* ?*loxophleba*)
- Three probable Gimlet (*Eucalyptus* ?*salubris*).

None of these trees currently contain hollows, therefore they are not currently suitable for black cockatoo breeding, however they may be suitable for breeding in future. Locations of these trees are shown in Figure 12, Table 17, and Appendix G.

Three hollows were observed within the Survey Area. These hollows were not suitable for the Carnaby's Cockatoo or Western Rosella as they were too small, however may be of suitable size for a Red-tailed Phascogale (*Phascogale calura*). All three hollows were 2 m or less from the ground and no evidence of use was observed. Locations of these hollows are shown in Figure 12, Table 18, and Appendix G.

Table 17: Potential future black cockatoo breeding tree locations

Tree taxa	Location (WGS84)	
	Latitude	Longitude
Probable Gimlet (*Eucalyptus ?salubris*)	-32.260245	119.162115
Probable Gimlet (*Eucalyptus ?salubris*)	-32.260225	119.162362
Probable Gimlet (*Eucalyptus ?salubris*)	-32.260150	119.162124
York Gum (*Eucalyptus ?loxophleba*)	-32.260000	119.162535
River Red Gum (*Eucalyptus camaldulensis*)	-32.259871	119.162690
River Red Gum (*Eucalyptus camaldulensis*)	-32.259787	119.162712
River Red Gum (*Eucalyptus camaldulensis*)	-32.259752	119.163002
York Gum (*Eucalyptus ?loxophleba*)	-32.259420	119.162800
York Gum (*Eucalyptus ?loxophleba*)	-32.259348	119.162950
River Red Gum (*Eucalyptus camaldulensis*)	-32.259259	119.163037
River Red Gum (*Eucalyptus camaldulensis*)	-32.259138	119.162896

Table 18: Potential Red-tailed Phascogale hollow locations

Description	Location (WGS84)	
	Latitude	Longitude
Small hollow, unoccupied, no evidence of use, approximately 2 m above ground, 0.2 m diameter, 0.2 m deep.	-32.225606	119.190486
Small hollow, unoccupied, no evidence of use, approximately 1.5 m above ground, very shallow, approximately 0.1 m deep.	-32.225562	119.190629
Small hollow, unoccupied, no evidence of use, only 1 m above ground.	-32.222039	119.188817

Table 19: Fauna Habitat Type Descriptions with the Survey Area

Fauna Habitat	Area, Proportion of the Survey Area	Habitat Description	Representative Photo
Mallee woodland	160 ha, 5.30%	Gently undulating plains with soft sandy loam soils and areas of scattered laterite gravel. Vegetation consists of open *Eucalyptus* mallee woodlands over *Allocasuarina, Banksia, Melaleuca* and *Grevillea* isolated to open shrubland over scattered grasses and sedges. Peeling bark, leaf litter, and woody debris provide shelter for small reptiles and mammals. Small hollows and peeling bark are important shelter sites for microbats. Shrublands and hollows provide shelter and foraging habitat for birds. Condition varied within this habitat type; areas that were fenced and inaccessible to sheep, such as the strip of vegetation between the north and south properties, retained some understorey vegetation, however most of this habitat type was impacted by overgrazing.	
Granite outcrop	1.73 ha, 0.06%	Granite outcropping with vegetation consisting of *Melaleuca*, *Allocasuarina,* and *Hakea* and mid shrubland over sedges. Rock crevices and leaf litter provide shelter for small reptiles and mammals. Shrublands provide shelter and foraging habitat for birds. This habitat was heavily degraded by sheep overgrazing and trampling, which is likely to deter most small ground dwelling fauna, particularly reptiles, that would otherwise occupy this habitat type.	

Fauna Habitat	Area, Proportion of the Survey Area	Habitat Description	Representative Photo
Paddock	2,805 ha, 92.82%	Areas that have been cleared of native vegetation and are currently used to grow crops such as wheat, oats, or lupin. Crops are likely to be used as a food source by granivores and insectivores, particularly birds. Crops will attract the introduced House Mouse (*Mus musculus*), which will be used as a food source by native predators such as particularly raptors and snakes. This habitat type provides limited value to the broader fauna assemblage within the Survey Area.	
Dam	2.37 ha, 0.08%	A water source for a variety of fauna taxa. Limited in value compared to naturally occurring water sources due to lack of fringing vegetation and microhabitat availability.	

Fauna Habitat	Area, Proportion of the Survey Area	Habitat Description	Representative Photo
Paddock trees	1.34 ha, 0.04%	A stand of large, mature *Eucalyptus* trees, consisting of River Red Gums (*Eucalyptus camaldulensis*), probable York Gums (*Eucalyptus* ?*loxophleba*) and probable Gimlet (*Eucalyptus* ?*salubris*). This habitat type provides foraging and nesting opportunities for birds, however, is of limited value to other fauna taxa due to the lack of understorey vegetation.	
Cleared	51.2 ha, 1.69%	Areas that have been cleared and do not contain vegetation. These areas generally do not provide substantial habitat value to fauna taxa.	

4.3.2.2 Fauna Records

The terrestrial vertebrate fauna survey recorded a total of 53 fauna taxa from 32 families. An inventory of fauna recorded during the field survey is provided in Appendix H.

Birds

A total of 34 avian taxa from 20 families were recorded throughout the Survey Area. The most recorded taxon was the Galah (*Eolophus roseicapilla*) followed by the Australian Pipit (*Anthus australis*) and the White-browed Babbler (*Pomatostomus superciliosus*). The most diverse avifauna families were Meliphagidae (four taxa) and Artamidae (four taxa).

A total of 53 birds were observed flying at an estimated height of 15 m or more above the ground on twelve occasions during the field survey[1] (Table 20). Of these observations, the Brown Falcon (*Falco berigora*) was the most frequently recorded flying above 15 m, followed by the Spotted Harrier (*Circus approximans*) and Australian Raven (*Corvus coronoides*). Most of the birds recorded during the field survey were small bush birds that typically fly below the canopy (<10 m).

Table 20: Bird flight paths recorded during the field survey

Easting	Northing	Date	Taxon	Abundance	Estimated height (m)	Flight pattern
707216	6430412	04/11/2021	Brown Falcon (*Falco berigora*)	2	30 - 150+	Flew southwards, attacked a pair of spotted harriers, aerial battle continued in large circles gradually heading northwest
707215	6430410	04/11/2021	Spotted Harrier (*Circus approximans*)	2	50 - 150+	Attacked by Brown Falcons (see above), aerial battle continued in large circles gradually heading northwest
704419	6430473	04/11/2021	Brown Falcon	1	0 - 100+	Flushed be vehicle, gained altitude in a circular pattern almost directly overhead
703720	6430441	04/11/2021	Banded Lapwing (*Vanellus tricolor*)	5	30	Flew southwards then landed in wheatfield
708075	6429132	04/11/2021	Australian Kestrel (Nankeen Kestrel) (*Falco cenchroides*)	1	30	Circling above wheatfield

[1] Total number of bird flights may have been repeated as individuals could not be distinguished

Easting	Northing	Date	Taxon	Abundance	Estimated height (m)	Flight pattern
706063	6431601	05/11/2021	Australian Raven (*Corvus coronoides*)	4	1 - 30	Undulating flight heading northward
705669	6432996	05/11/2021	Brown Falcon	1	100 - 200	Circling, gradually heading east
706060	6430939	05/11/2021	Spotted Harrier	1	0 - 30	Took off from wheatfield, flew south
705496	6431594	06/11/2021	Galah (*Cacatua roseicapilla*)	30+	10 - 20	Wheeling flock
705067	6432291	06/11/2021	Brown Falcon	2	150	Circling directly above
707162	6429453	06/11/2021	Australian Raven	2	50	Flying virtually straight line southward
703688	6430492	07/11/2021	Black-faced Woodswallow (*Artamus cinereus*)	2	100+	Taking off from powerline in almost vertical flight, slightly erratic movement while hawking insects

Non-volant Mammals

One non-volant (non-flying) native mammal was recorded within the Survey Area, the Western Grey Kangaroo (*Macropus fuliginosus melanops*). Four introduced mammals were recorded in the Survey Area, of which the Red Fox (*Vulpes vulpes*) was notably abundant; it was recorded at ten locations within the Survey Area by direct sighting, camera trap and observation of dens. Sheep (*Ovis aries*), Cat (*Felis catus*), and Rabbit (*Oryctolagus cuniculus*) were also recorded.

Volant Mammals (Bats)

A total of eight volant mammals (bats) from two families were recorded by ARU during the field survey, of which two typically forage above the canopy (Lumsden, 2004; Peter Menkhorst & Knight, 2010; Wentzel, Craig, Barber, Hardy, & Fleming, 2018):

- White-striped Free-tailed Bat (*Austronomus australis*)
- Western Free-tailed Bat (*Ozimops kitcheneri*).

A further four bats typically forage at or below the canopy (Lumsden, 2004; Van Dyck and Strahan, 2008; Menkhorst and Knight, 2010; Wentzel *et al.* 2018):

- Gould's Wattled Bat (*Chalinolobus gouldii*)
- Chocolate Wattled Bat (*Chalinolobus morio*)
- Inland Forest Bat (Vespadelus baverstocki)
- Southern Forest Bat (*Vespadelus regulus*).

The remaining two bats, the Lesser Long-eared Bat (*Nyctophilus geoffroyi*) and Priority 3 listed Central Long-eared Bat (*Nyctophilus major tor*) typically forage low in shrubs (Peter Menkhorst & Knight, 2010).

Reptiles

A total of six reptilian species from five families were recorded throughout the Survey Area. The most recorded species was the Bobtail (*Tiliqua rugosa*) followed by the Variegated Gehyra (*Gehyra variegata*). The most diverse reptilian family was Scincidae (two taxa).

Amphibians

No amphibians were recorded during the field survey.

4.3.2.3 Conservation Significant Fauna

One conservation significant taxon was recorded during the fauna survey, the Central Long-eared Bat (*Nyctophilus major tor*), listed as Priority 3 by DBCA. The Central Long-eared Bat was recorded at the Bat02 ARU site (Figure 12).

One conservation significant taxon, the Western Rosella (*Platycercus icterotis xanthogenys*), listed as Priority 4 by DBCA, has been recorded within the Survey Area prior to the current survey, and one conservation significant taxon, the Pacific Swift (*Apus pacificus*), listed as Migratory and Marine under the EPBC Act, was potentially recorded within the Survey Area, however the identification was uncertain (NGH Environmental, 2012a).

The post survey results identified no additional conservation significant taxa as having a high likelihood of occurrence within the Survey Area, however five conservation significant taxa were identified as having a medium likelihood of occurrence within the Survey Area:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*), listed as Endangered under the BC Act and EPBC Act
- Peregrine Falcon (*Falco peregrinus*), listed as Other Specially Protected Fauna by DBCA
- Malleefowl (*Leipoa ocellata*), listed as Vulnerable under the BC Act and EPBC Act
- Chuditch (*Dasyurus geoffroii fortis*), listed as Vulnerable under the BC Act and EPBC Act
- Red-tailed Phascogale (*Phascogale calura*), listed as Conservation Dependent by DBCA and Vulnerable under the EPBC Act.

A further ten conservation significant taxa were assessed as having a low likelihood of occurrence within the Survey Area. Further detail regarding recorded and potential conservation significant fauna is provided below in Table 21.

Survey effort targeting the Carnaby's Cockatoo, Malleefowl, Chuditch, Red-tailed Phascogale, and Peregrine Falcon did not identify any evidence that these conservation significant taxa occur within the Survey Area.

Table 21: Conservation significant fauna likelihood of occurrence

Family	Scientific Name	Common Name	Conservation Status		Likelihood of Occurrence	Justification
			State	Federal		
Birds						
Apodidae	*Apus pacificus*	Pacific Swift (Fork-tailed Swift)	IA	MI, MA	Potentially Recorded	Potentially recorded within the Survey Area in 2012 (NGH Environmental, 2012a). Recorded 58 km east-southeast of the Survey Area in 1996. (Department of Biodiversity Conservation and Attractions, 2021b). Suitable habitat present within the Survey Area (any low to very high airspace over varied habitat) (Pizzey & Knight, 2013).
Cacatuidae	*Calyptorhynchus latirostris*	Carnaby's Cockatoo	EN	EN	Medium	Recorded 34 km southeast of the Survey Area in 2012 and 16 km south of the Survey Area in 2007 (Department of Biodiversity Conservation and Attractions, 2021d). Suitable habitat present within the Survey Area (forests, woodlands, heathlands, farms) (Morcombe, 2003).
Charadriidae	*Thinornis cucullatus*	Hooded Plover (Hooded Dotterel)	P4	MA	Low	Recorded 28 km southeast of the Survey Area in 2000. (Department of Biodiversity Conservation and Attractions, 2021d). No suitable habitat present within the Survey Area (beaches, margins of inland sat lakes) (P Menkhorst et al., 2017).
Falconidae	*Falco hypoleucos*	Grey Falcon	VU	VU	Low	No nearby records identified from the database searches or literature. Only returned by PMST which searches by modelled distribution, not actual records. No suitable habitat present within the Survey Area (open plains with treed watercourses) (Pizzey & Knight, 2013).

Family	Scientific Name	Common Name	Conservation Status		Likelihood of Occurrence	Justification
			State	Federal		
Falconidae	*Falco peregrinus*	Peregrine Falcon	OS	-	Medium	Recorded 41 km east of the Survey Area in 2016 and 19 km west-southwest of the Survey Area in 2012 (Department of Biodiversity Conservation and Attractions, 2021d). No suitable habitat present within the Survey Area (cliff faces preferred for nesting, commonly uses stick nests built by other birds) (Pizzey & Knight, 2013).
Megapodiidae	*Leipoa ocellata*	Malleefowl	VU	VU	Medium	Recorded 15 km northwest of the Survey Area in 2019 and 5 km west of the Survey Area in 2008 (Department of Biodiversity Conservation and Attractions, 2021d). Limited suitable habitat present within the Survey Area (unburned mallee and woodlands with abundant litter and low scrub) (Morcombe, 2003).
Motacillidae	*Motacilla cinerea*	Grey Wagtail	IA	MI, MA	Low	No nearby records identified from the database searches or literature. Only returned by PMST which searches by modelled distribution, not actual records. No suitable habitat present within the Survey Area (fresh sandy or rocky streams) and general occurrence is between Broome-Darwin (Pizzey & Knight, 2013).
Psittaculidae	*Platycercus icterotis xanthogenys*	Western Rosella	P4	-	Recorded	Recorded within the Survey Area in 2012 (NGH Environmental, 2012a). Recorded 45 km east of the Survey Area in 2017 and 42 km east of the Survey Area in 2016 (Department of Biodiversity Conservation and Attractions, 2021d). Suitable habitat present within the Survey Area (salmon gum and wandoo woodlands, farmlands) (Pizzey & Knight, 2013).

Family	Scientific Name	Common Name	Conservation Status		Likelihood of Occurrence	Justification
			State	Federal		
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	IA	MI, MA	Low	Recorded 31 km southwest of the Survey Area in 2001. (Department of Biodiversity Conservation and Attractions, 2021d). No suitable habitat present within the Survey Area (wetlands, river pools, mangroves) (Pizzey & Knight, 2013).
Scolopacidae	*Calidris acuminata*	Sharp-tailed Sandpiper	IA	MI, MA	Low	Recorded 37 km southeast of the Survey Area in 1978. (Department of Biodiversity Conservation and Attractions, 2021d). No suitable habitat present within the Survey Area (wetlands, swamps, lakes, floodwaters) (Pizzey & Knight, 2013).
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	CR, IA	CR, MI, MA	Low	No nearby records identified from the database searches or literature. Only returned by PMST which searches by modelled distribution, not actual records. No suitable habitat present within the Survey Area (floodwaters, flooded saltbush surrounds of inland lakes) (Pizzey & Knight, 2013).
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper	IA	MI, MA	Low	No nearby records identified from the database searches or literature. Only returned by PMST which searches by modelled distribution, not actual records. No suitable habitat present within the Survey Area (permanent and temporary wetlands with fringing vegetation) (Pizzey & Knight, 2013).
Mammals						
Dasyuridae	*Dasyurus geoffroii fortis*	Western Quoll, Chuditch	VU	VU	Medium	Recorded 47 km northeast of the Survey Area in 2017 and 28 km southeast of the Survey Area in 2009 (Department of Biodiversity Conservation and Attractions, 2021d). Limited suitable habitat present within the Survey Area (sclerophyll forests, drier woodlands, heath and mallee shrublands) (van Dyck & Strahan, 2008).

Family	Scientific Name	Common Name	Conservation Status		Likelihood of Occurrence	Justification
			State	Federal		
Dasyuridae	*Phascogale calura*	Red-tailed Phascogale	CD	VU	Medium	Recorded 16 km south of the Survey Area in 2016 and 5 km south of the Survey Area in 2008 (Department of Biodiversity Conservation and Attractions, 2021d). Limited suitable habitat present within the Survey Area (wandoo and rock sheoak vegetation communities) (van Dyck & Strahan, 2008).
Macropodidae	*Notamacropus irma*	Western Brush Wallaby	P4	-	Low	Recorded 45 km northeast of the Survey Area in 2017 and 40 km northeast of the Survey Area in 2016 (Department of Biodiversity Conservation and Attractions, 2021d). Limited suitable habitat present within the Survey Area (open forests/woodlands, open seasonally wet flats) (van Dyck & Strahan, 2008).
Muridae	*Pseudomys occidentalis*	Western Mouse	P4	-	Low	Recorded 42 km south of the Survey Area in 1995 (Department of Biodiversity Conservation and Attractions, 2021d). Limited suitable habitat present within the Survey Area (long unburnt vegetation, open woodlands, low and tall shrublands, mallee and heath) (Peter Menkhorst & Knight, 2010).
Vespertilionidae	*Nyctophilus major tor*	Central Long-eared Bat	P3	-	Recorded	Recorded in the Survey Area during the current survey. Suitable habitat is present within the Survey Area (woodlands and mallee, near granite outcrops and old dams, roosts in tree crevices and beneath exfoliating bark) (Woinarski, Burbidge, & Harrison, 2014).

Family	Scientific Name	Common Name	Conservation Status		Likelihood of Occurrence	Justification
			State	Federal		
Reptiles						
Elapidae	*Paroplocephalus atriceps*	Lake Cronin Snake	P3	-	Low	Recorded 44 km east-southeast of the Survey Area in 2017, and 24 km southeast of the Survey Area in 2009. (Department of Biodiversity Conservation and Attractions, 2021d). Limited suitable habitat present within the Survey Area (semiarid woodlands and outcrops) (Wilson & Swan, 2017).

5 Discussion

5.1 Flora and Vegetation

5.1.1 Flora Composition

The suite of flora taxa recorded during the survey is consistent with the ecology of the area (Beard 1976) is representative of current flora databases and results from previous surveys conducted within the current Survey Area.

The floristic diversity is consistent with the ecology for the region, and for the timing of the survey. Despite a significant rainfall event that occurred six weeks prior to the survey, where 38 mm was recorded for October (18 mm above the long-term average). The higher-than-average rainfall, and lower than average temperature maxima is likely to have resulted in a higher species diversity for that time of year.

5.1.2 Survey Adequacy

The flora and vegetation survey effort was in accordance with the scope of works, and appropriate for a reconnaissance flora and vegetation survey in the Wheat Belt. The inventory of vascular flora, records of conservation significant flora and weed species was compiled using site data and opportunistic observations made while traversing between sites and during systematic targeted searching within the proposed footprint areas. The entire Survey Area was not systematically searched, and therefore additional flora taxa, and records of conservation significant flora and weed species may be recorded with additional survey effort.

5.1.3 Flora of Conservation Significance

No Threatened flora taxa pursuant to the EPBC Act 1999 and/or gazetted as Threatened pursuant to the BC Act 2016 were recorded during the survey.

No Priority taxa as listed by DBCA were recorded within the Survey Area.

Following the survey, *Banksia sphaerocarpa* var. *dolichostyla* (T) and *Baeckea* sp. Crossroads (B.L. Rye and M.E. Trudgen 241186) (P1) were considered to have a low likelihood of occurrence within the Survey Area.

Baeckea sp. Crossroads (B.L. Rye and M.E. Trudgen 241186) (P1) was recorded within the Survey Area in 2012. Targeted searches by 360 Environmental in 2021 in the area when this taxon was recorded did not find any instances of *Baeckea* sp. Crossroads (B.L. Rye and M.E. Trudgen 241186) (P1). The 2021 survey did however record a morphologically similar species which was confirmed by the Western Australian Herbarium to be *Baeckea grandibracteata* s. lat.

Fourteen taxa collected during the field survey were sterile and could not be confidently identified beyond genus level. None of these were analogous to Priority flora taxa identified by the database searches.

5.1.4 Introduced Flora

Ten weed species were recorded in the Survey Area, none are listed as WoNS or Declared Pests. Weed diversity and population abundance are consistent with the region and land use (broadacre cropping and sheep farming).

5.1.5 Vegetation Associations

Mapping reliability was very high and all areas of remnant vegetation remaining within the Survey Area were traversed. There is very high confidence level in areas where flora sites and mapping notes were completed within intact vegetation. Two broad landforms, plains and granite outcropping, were recorded within the Survey Area. Vegetation within the Survey Area was representative of existing broad scale vegetation and soil and land system mapping for the area.

Most of the Survey Area comprised of gently undulating sandy plains. The plains are characterised by five main vegetation types across the Survey Area.

The dominant vegetation type across the survey area was Plains 1 (PL1). PL1 is represented with 14 flora sites (67% of the flora sites) and is typified by Tall open woodlands of *Eucalyptus burracoppinensis*, *E. incrassate,* and *Callitris preissii,* over *Allocasuarina spinosissima*, *A. campestris,* and scattered *Melaleuca* spp.

One additional vegetation type based on landforms (GR1) was present, Flora site KRR26 was located within large granite outcrop. The floristic community within the area was dominated by mid *Hakea multilineata* and *Melaleuca hamata*, *Melaleuca calyptroides* with low *Thryptomene kochii*. This was the only representation of this landform across the Survey Area.

5.1.6 Vegetation of Conservation Significance

Occurrences of the Wheatbelt Woodland TEC were confirmed to occur intermittently across the Avon Wheatbelt and Mallee bioregions in proximity to the Survey Area following database searches. The survey identified two species (*Eucalyptus salubris* and *E. alipes*) that are listed as indicator species for the TEC. As a consequence, each patch of vegetation containing these species were assessed against the diagnostic characteristic and condition thresholds listed in the conservation advice to determine if any of the patches should be considered for protection under the EPBC Act. The six patches that were assessed were determined to not represent the Wheatbelt Woodland TEC or warrant protection under the EPBC Act. This is a result of several attributes of the six patches, including:

- Other Eucalypt species being dominant in the canopy that are not indicator species of the TEC
- Dominant non-eucalypt species present in the canopy
- The low percentage of the indicator species in the canopy (<10%)
- The condition of the patch versus its overall size.

Potential Access Crossing Points

SynergyRED have advised that the strip of vegetation that separates the north and south properties within the Survey Area may require some minor clearing vegetation for an access track (Figure 13). Based on the floristic communities and vegetation condition, three locations have been suggested due to them having a lower conservation value than other areas of remnant vegetation along the middle strip. Figure 13 shows the suggested areas for access track clearing. Table 20 indicates the rationale behind the proposed crossing points. Specific track placement and clearing should take into consideration the individual tree/native vegetation impacted, and condition of the area, with a goal of minimal impact.

Table 22: Suggested locations for access track clearing based on floristic diversity, vegetation condition and potential ecological value

Area	Ecological value	Reason
Western End	Medium	Dominated by dense mid height *Eucalyptus* and *Allocasuarina* trees that are considered as widespread in the Survey Area. This area also provides good habitat for fauna
Centre	Medium	Vegetation in very good condition, with *Eucalyptus rigidula* over *Melaleuca pauperiflora* subsp. *fastigiata, Allocasuarina campestris*. This vegetation community also provides a good habitat for fauna
Eastern End	Medium	Dominated by *Eucalyptus incrassata* and *Callitris preissii* in good condition

5.2 Fauna

5.2.1 Fauna Habitat

The Mallee woodland provides the most valuable habitat for the fauna assemblage within the Survey Area, particularly within the strip of vegetation between the north and south properties as Sheep have been excluded from grazing, leaving the understory vegetation relatively intact. Most other areas of Mallee woodland within the Survey Area have been subject to overgrazing. The Mallee woodland occurs in thin linear strips and relatively small extent within the Survey Area which limits dispersal opportunities and escape routes, therefore small to medium sized fauna taxa may be vulnerable to predation, particularly given the widespread presence of feral predators such as the Red Fox and Cat within the Survey Area. The Mallee woodland habitat is continuous and extensive outside the Survey Area, particularly the large continuous patch of similar habitat directly adjacent the eastern boundary of the Survey Area, therefore habitat within the Survey Area is not critical to maintain overall habitat connectivity.

The granite outcrop within the Survey Area is a small, unique habitat feature and would normally provide important refuge and shelter opportunities for a variety of small fauna taxa, particularly reptiles. However, the granite outcrop within the Survey Area has been heavily overgrazed and trampled by Sheep, therefore microhabitat opportunities are no longer abundant and most small fauna taxa that would otherwise rely on this habitat type are unlikely to persist within the Survey Area. The small patch within the Survey Area also lacks connectivity to any similar habitat.

The remaining habitats within the Survey Area are all novel habitats, consisting of the dams, paddock trees, and paddocks. Some fauna taxa will use these habitats; the dams provide a water source for a variety of fauna taxa, the paddock trees provide foraging and nesting opportunities for birds, and the paddocks provide feeding opportunities for granivores, insectivores and predators such as raptors. However, these habitats are of lower value than patches of native habitat.

5.2.2 Conservation Significant Fauna

5.2.2.1 Birds

Pacific Swift (*Apus pacificus*) – Migratory, Marine

The Pacific Swift (also called Fork-tailed Swift) is a non-breeding visitor to all states and territories of Australia and is found throughout WA with a preference for coastal areas (Higgins, 1999). The Pacific Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. The Pacific Swift occupies a large airspace range over varied habitats, ranging from rainforests to semi-deserts (Morcombe, 2003).

The Pacific Swift was potentially recorded above the Survey Area in 2012, although the identification was uncertain (NGH Environmental, 2012a). The taxon has the potential to occur in the airspace above the Survey Area but will not be reliant on the habitats within the Survey Area.

Carnaby's Cockatoo (*Calyptorhynchus latirostris*) – Endangered

The Carnaby's Cockatoo is endemic to southwest WA, and is distributed from the Murchison River to Esperance and inland to Coorow, Kellerberrin and Lake Cronin (Cale, 2003). The species was once common, but the population has declined significantly in the last half century, and is now locally extinct in some areas (Johnstone & Storr, 1998; Shah, 2006). In the last 45 years the species has suffered a 50% reduction in its abundance (Cale, 2003), which can be attributed to the clearing of essential breeding habitat in the Wheatbelt, the deterioration of nesting hollows, and clearing of food resources on the Swan Coastal Plain (Cale, 2003). In 2010 the total population of Carnaby's Cockatoo was estimated at 40,000 individuals (Department of Parks and Wildlife, 2013).

Carnaby's Cockatoo occupy areas of uncleared or remnant Eucalypt woodlands, consisting of Salmon gum (*Eucalyptus salmonophloia*) or Wandoo (*E. wandoo*). Areas of Hakea and Banksia shrubland or kwongan heath also support the species. Carnaby's Cockatoo nest in the hollows of live or dead smooth-barked Eucalypts (*E. salmonophloia* and *E. wandoo*) as well as Red Morrell (*E. longicornis*), York Gum (*E. loxophleba*), Marri (*Corymbia callophylla*) and Tuart (*E. gomphocephala*) (Johnstone & Storr, 1998).

The Survey Area occurs on the eastern boundary of the Carnaby's Cockatoo distribution and contains limited suitable habitat for the species. The Mallee woodland contains some known foraging plants, including *Allocasuarina, Banksia,* and *Grevillea*. Some paddock trees may be potentially suitable for breeding in future, but none contain hollows suitable for breeding at present. The species has not been regularly recorded near the Survey Area; the nearest recent records are 16 km south and 34 km southeast of the Survey Area, and the nearest confirmed breeding hollow is 48 km south-southeast the Survey Area (Department of Biodiversity Conservation and Attractions, 2021d). Therefore, while it is possible that Carnaby's Cockatoos may occasionally occur within the Survey Area, they are unlikely to use the Survey Area frequently or rely on habitats within the Survey Area.

Peregrine Falcon (*Falco peregrinus*) – Specially Protected

The Peregrine Falcon is an uncommon but wide-ranging bird across Australia (Barrett, Silcocks, Barry, Cunningham, & Poulter, 2003). It occurs mainly along rivers and ranges as well as wooded watercourses and lakes. It nests primarily on cliffs, granite outcrops and quarries, although is also known to occupy existing raptor and corvid stick nests (P Menkhorst et al., 2017). The diet of the Peregrine Falcon has been well studied and primarily includes flocking species such as parrots, pigeons and on the east coast, European Starlings (Olsen & Fuentes, 2008).

The Peregrine Falcon typically nests on cliff ledges or in refurbished nests built by other raptors or corvids (Pizzey & Knight, 2013). No suitable nests were observed within the Survey Area; however, the paddock trees constitute the habitat most likely to be used for nesting. All habitats within the Survey Area may be used for hunting.

Malleefowl (*Leipoa ocellata*) – Vulnerable

The Malleefowl is found in semi-arid to arid shrublands and low woodlands, especially those dominated by mallee and/or *Acacia*. The species nests in large mounds of dirt and leaf litter up to five metres wide and one metre tall (P Menkhorst et al., 2017). Sandy substrates and abundance of leaf litter are required for breeding (Department of the Environment and Energy, 2018). Densities of the birds are generally greatest in areas of higher rainfall and on more fertile soils where there is an abundance of food plants.

No mounds, tracks, or signs of Malleefowl were recorded within the Survey Area. The Survey Area was thoroughly traversed and, when present, these signs are usually obvious and detectable. It is possible that the Malleefowl may occasionally occur within the Survey Area, potentially as transient individuals, however it is unlikely that the taxon would regularly use and rely on habitats within the Survey Area, particularly given the abundance of feral predators such as the Red Fox and Cat.

Western Rosella (*Platycercus icterotis xanthogenys*) – Priority 4

The Western Rosella is a small rosella usually seen in pairs or small parties (Johnstone & Storr, 1998). Western Rosellas are found in the wheatbelt in areas of semiarid open *Eucalyptus* and *Allocasuarina* woodlands and scrubs, and timbered areas with a heath understorey, including cultivated land and orchards (Johnstone & Storr, 1998). Their diet consists mainly of seeds from a variety of grasses and other plants, as well as fruits, flowers, insects, and larvae. Western Rosellas nest in tree hollows, with favoured nesting trees including Marri, Wandoo, York Gum, Flooded Gum and Salmon Gum (Johnstone & Storr, 1998).

The Western Rosella was not recorded during the current survey, however was recorded within the Survey Area during a previous survey (NGH Environmental, 2012a). The species is likely to use the Mallee woodland, paddock trees, and paddock crops for foraging. No suitable breeding habitat was observed within the Survey Area.

5.2.2.2 Mammals

Western Quoll, Chuditch (*Dasyurus geoffroii fortis*) – Vulnerable

The Chuditch inhabits areas dominated by sclerophyll forest or drier woodland, heath and mallee shrubland (van Dyck & Strahan, 2008). The species is generally highly mobile and uses bush remnants as corridors (Woinarski et al., 2014). The Chuditch is a largely nocturnal animal, feeding on a carnivorous diet of mammals, birds, lizards, and frogs. Although they have been recorded foraging during the day at particular times such as during the breeding season or when cold and wet weather restricts their nocturnal movements (van Dyck & Strahan, 2008). Most diurnal nesting sites in sclerophyll forest consist of hollow logs or earth burrows, although bandicoot nests and hollow tree bases may be used (van Dyck & Strahan, 2008). The Chuditch was abundant prior to European settlement, and it is now largely restricted to the south-west of Western Australia, with small numbers in the Midwest, Wheatbelt and South Coast regions (Department of Biodiversity Conservation and Attractions, 2017).

The Chuditch was not recorded within the Survey Area. It is possible that the Chuditch may occasionally occur within the Survey Area, potentially as transient individuals, however it is unlikely that the taxon would regularly use and rely on habitats within the Survey Area, particularly given the abundance of feral predators such as the Red Fox and Cat.

Red-tailed Phascogale (*Phascogale calura*) – Conservation Dependent, Vulnerable

The Red-tailed Phascogale occurs in remnant Wandoo and Sheoak woodland associations in the southern wheatbelt of Western Australia. Most records are concentrated in an area approximately 150 km long in a north-south direction from Brookton to Katanning, and approximately 80 km wide from Williams to Dumbleyung (Short & Hide, 2012). Sparse records extend to the west to the margin of the Jarrah Forest and to the east to Hyden and Newdegate and to the south to Bremer Bay (Short & Hide, 2012).

Red-tailed Phascogales show a preference for long unburnt habitat with a continuous canopy and tree hollows. Wandoo trees provide excellent nesting sites in the form of hollow logs and limbs, which they line with grass and feathers. Nesting may also occur in Grass Trees (*Xanthorrhoea* spp.) or dead Sheoaks (Department of Environment and Conservation, 2012; Threatened Species Scientific Committee, 2016). Male Red-tailed Phascogales die soon after mating, living only 11.5 months in the wild (van Dyck & Strahan, 2008).

The Red-tailed Phascogale was not recorded within the Survey Area. While potential hollows were recorded in low abundance within the Survey Area, none showed any evidence of use by the taxon. It is possible that the Red-tailed Phascogale may occasionally occur within the Survey Area, potentially as transient individuals, however it is unlikely that the taxon would regularly use and rely on habitats within the Survey Area, particularly given the abundance of feral predators such as the Red Fox and Cat.

Central Long-eared Bat (*Nyctophilus major tor*) – Priority 3

The Central Long-eared Bat is found in arid and semi-arid regions and occupies a range of dry woodland and shrubland habitats (Peter Menkhorst & Knight, 2010). It is generally low-flying, and forages among shrubs for insect prey (Peter Menkhorst & Knight, 2010). The taxon is known to roost in tree hollows, under loose bark and in crevices, and can forage up to approximately 25 kilometres from its roost site (Peter Menkhorst & Knight, 2010; van Dyck & Strahan, 2008).

The Central Long-eared Bat was recorded by ARU near a dam at the southern end of the north property. The taxon may use Mallee woodland and paddock trees for roosting; however, these habitats occur in limited extents within the Survey Area and a large patch of preferable roosting habitat occurs adjacent the eastern boundary of the Survey Area. All habitats within the Survey Area may be used for foraging, therefore it is possible that the taxon roosts outside the Survey Area and uses the Survey Area to forage and access water.

5.2.3 Bird and Bat Collision Risk

While birds and bats can collide with stationary structures, the greatest risk posed by wind turbines is the moving rotors (Smales, 2006). Collision with moving rotors is the most frequent cause of injury and fatality in birds, however microbats appear to be more susceptible to barotrauma caused by sudden changes in air pressure (Baerwald & Barclay, 2009). Raptors are considered to have a higher risk of colliding with wind turbines than other birds due to the altitude and speed at which they fly, amount of time they spend flying, and tendency to look down searching for prey (Wood, 2017). Three raptors were observed flying at estimated heights of greater than 15 m during the field survey:

- Brown Falcon (*Falco berigora*)
- Australian Kestrel (*Falco cenchroides*)
- Spotted Harrier (*Circus approximans*).

The Australian Raven (*Corvus coronoides*) was also observed flying at estimated heights of greater than 15 m on multiple occasions during the field survey and therefore may be at risk of collision. One additional raptor has previously been recorded within the Survey Area, the Black Kite (*Milvus migrans*) (NGH Environmental, 2012a) and three additional raptors were identified as having been recorded within 20 km of the Survey Area and therefore may occur within the Survey Area, the Brown Goshawk (*Accipiter fasciatus*), Wedge-tailed Eagle (*Aquila audax*) and Little Eagle (*Hieraaetus morphnoides*) (Department of Biodiversity Conservation and Attractions, 2021b).

Observations of birds flying at sufficient heights to interact with the moving blades of wind turbines were infrequent during the field survey; birds were seen flying at estimated heights exceeding 15 m on only twelve occasions. This may be attributed to the vegetation within the Survey Area, most of which was substantially lower than 10 m tall. Most birds recorded during the field survey were small bush birds that typically fly below the canopy (<10 m).

Risks posed to bats recorded within the Survey Area were assessed based on known flight patterns and foraging behaviours. Two bats recorded during the field survey typically forage above the canopy (Lumsden, 2004; Peter Menkhorst & Knight, 2010; Wentzel et al., 2018) and are therefore considered to be most at risk of collision or barotrauma due to wind turbines:

- White-striped Free-tailed Bat (*Austronomus australis*)
- Western Free-tailed Bat (*Ozimops kitcheneri*).

A further four bats typically forage at or below the canopy (Lumsden, 2004; Peter Menkhorst & Knight, 2010; van Dyck & Strahan, 2008; Wentzel et al., 2018) and are therefore considered to have a moderate risk of collision or barotrauma due to wind turbines:

- Gould's Wattled Bat (*Chalinolobus gouldii*)
- Chocolate Wattled Bat (*Chalinolobus morio*)

- Inland Forest Bat (Vespadelus baverstocki)
- Southern Forest Bat (*Vespadelus regulus*).

The remaining two bats recorded within the Survey Area, the Lesser Long-eared Bat (*Nyctophilus geoffroyi*) and Priority 3 listed Central Long-eared Bat (*Nyctophilus major tor*) typically forage low in shrubs (Peter Menkhorst & Knight, 2010) and are therefore at low risk of collision or barotrauma due to wind turbines.

The Survey Area does not occur near any significant wetlands or major congregation or breeding areas for migratory birds (NGH Environmental, 2012a), therefore the project is likely to be low risk to migratory birds. Bird and bat movement within the Survey Area is likely to be concentrated near strips of vegetation or water sources, therefore any wind turbines located near Mallee woodland or dams pose a higher risk to birds and bats than they would if located elsewhere in the Survey Area.

6 Conclusion

Flora and Vegetation

- No Threatened or Priority Listed flora species pursuant to the EPBC Act 1999 and/or gazetted as Threatened/Declared Rare Flora pursuant to the BC Act 2016 were recorded.
- Ten introduced species were recorded during the survey. No weed species recorded are listed as WoNS or Declared Pests.
- Nine vegetation types were mapped within the Survey Area.
- The survey identified two species (*Eucalyptus salubris* and *E. alipes*) that are listed as indicator species for the Eucalypt Woodlands of the Western Australian Wheatbelt (Wheatbelt Woodlands) TEC. As a consequence, each patch of vegetation containing these species were assessed against the diagnostic characteristic and condition thresholds listed in the conservation advice to determine if any of the patches should be considered for protection under the EPBC Act. Six patches were assessed and determined that they did not represent the Wheatbelt Woodland TEC or warrant protection under the EPBC Act.

Vertebrate Fauna

- Five fauna habitats were identified and mapped within the Survey Area, of which the Mallee woodland represents the most value to conservation significant fauna and overall fauna assemblages.
- Eleven trees met the criteria for Carnaby's Cockatoo potential breeding trees in accordance with the EPBC Act referral guidelines, however none currently contain hollows and are therefore not currently suitable for black cockatoo breeding.
- One conservation significant taxon was recorded during the field survey, the Central Long-eared Bat (*Nyctophilus major tor*), listed as Priority 3 by DBCA.
- Survey effort targeting the Carnaby's Cockatoo (*Calyptorhynchus latirostris*), Malleefowl (*Leipoa ocellata*), Chuditch (*Dasyurus geoffroii fortis*) and Red-tailed Phascogale (*Phascogale calura*) did not identify any evidence that these conservation significant taxa occur within the Survey Area.
- Four introduced mammals were recorded in the Survey Area, of which the Red Fox (*Vulpes vulpes*) was notably abundant; it was recorded at ten locations within the Survey Area by direct sighting, camera trap and observation of dens.

- Observations of birds flying at sufficient heights to interact with the moving blades of wind turbines were infrequent during the field survey. Three raptors, which are considered to have a higher risk of colliding with wind turbines than other birds, were recorded during the field survey:
  - Brown Falcon (Falco berigora)
  - Australian Kestrel (Falco cenchroides)
  - Spotted Harrier (Circus approximans).
- Two bats recorded during the field survey typically forage above the canopy (Lumsden, 2004; Peter Menkhorst & Knight, 2010; Wentzel et al., 2018) and are therefore considered to be most at risk of collision or barotrauma due to wind turbines:
  - White-striped Free-tailed Bat (Austronomus australis)
  - Western Free-tailed Bat (Ozimops kitcheneri).

7 References

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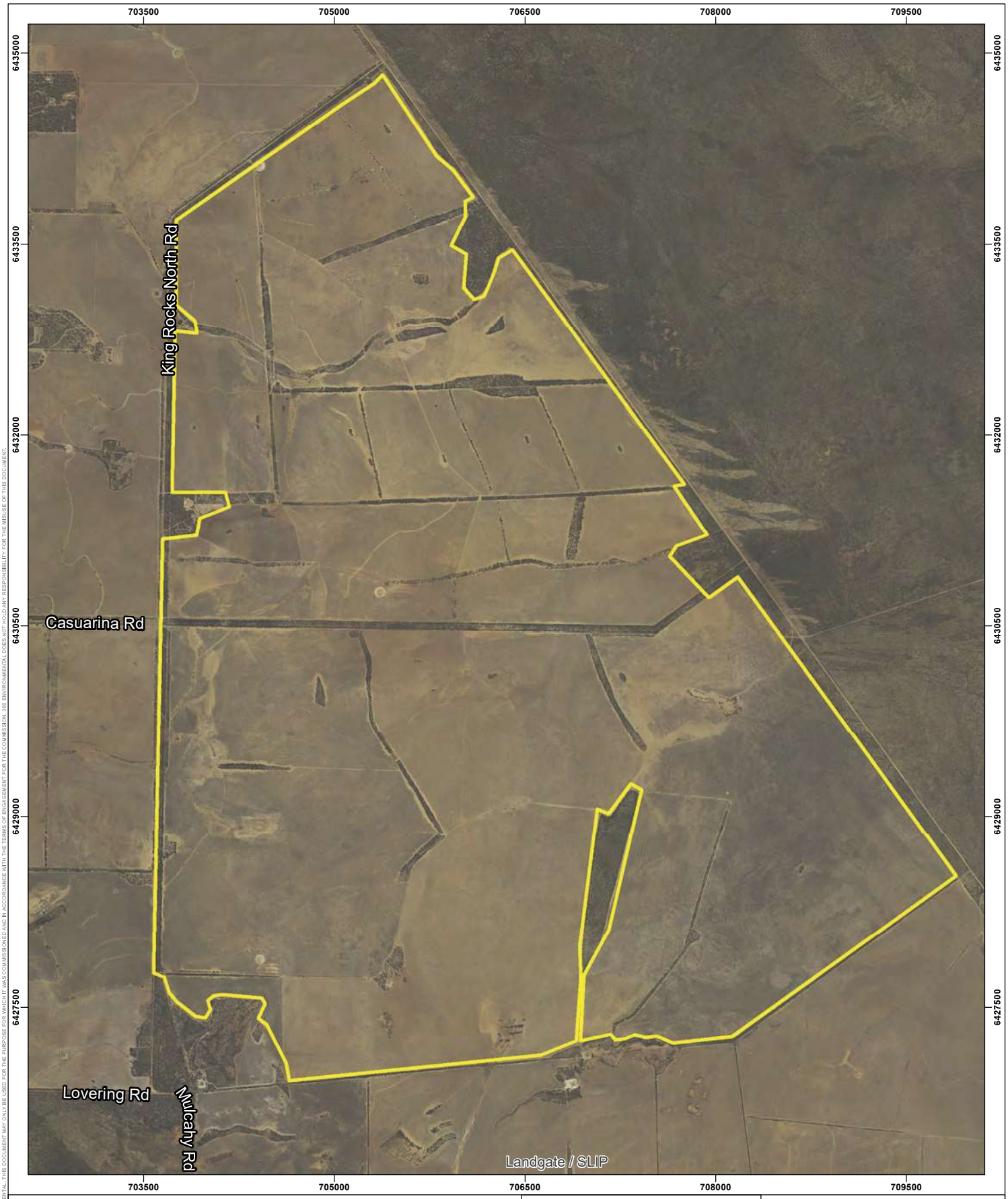

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Survey Area

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- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

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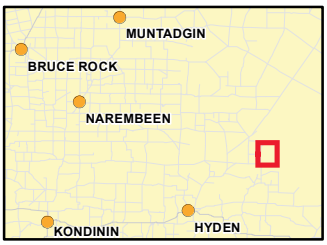

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Synergy RED

King Rocks Biological Survey

Figure 1
Survey Area

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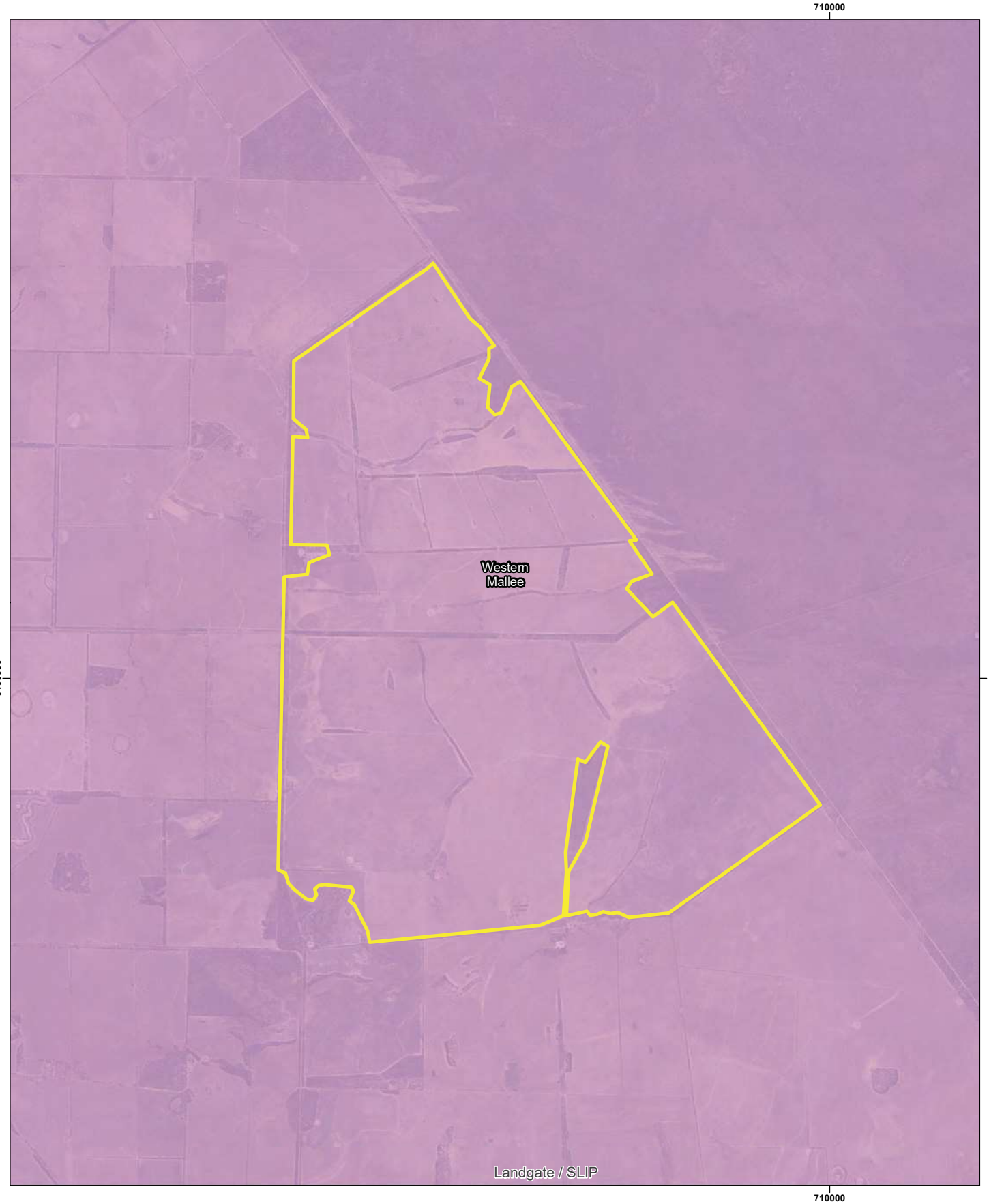

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Survey Area

IBRA Subregion Within 25km Buffer

Western Mallee

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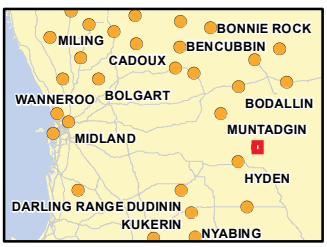

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Figure 2
IBRA Subregions

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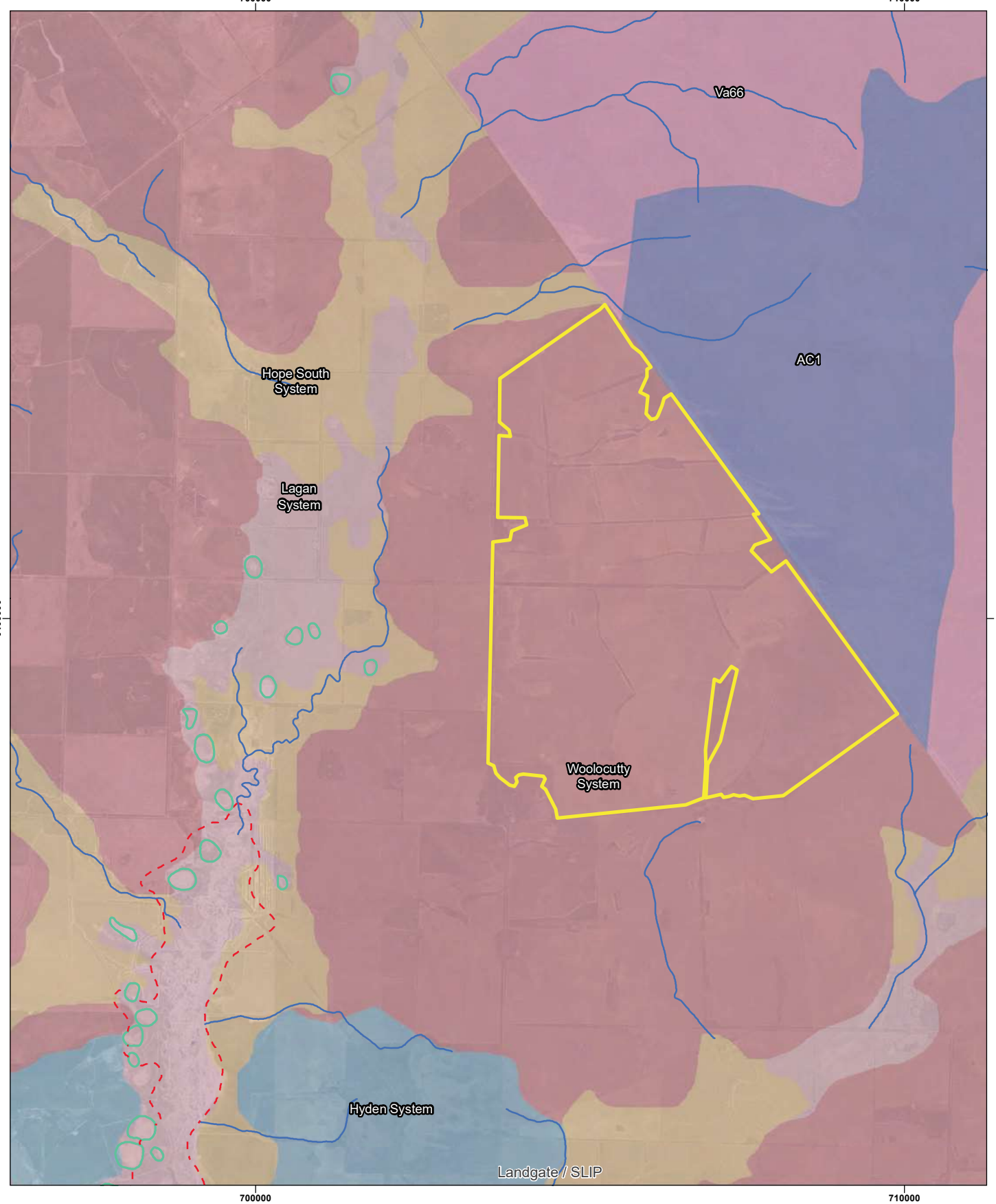

Legend

- Survey

Hydrography

- Watercourse - minor
- Lake
- Area Subject to Inundation

Soil System_25km

- AC1
- Hope South System
- Hyden System
- Lagan System
- Va66
- Woolocutty System

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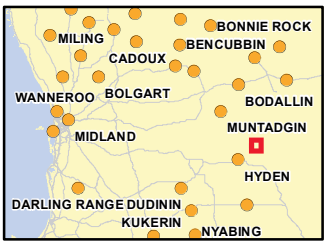

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Figure 3

Soil Land Systems and Hydrology

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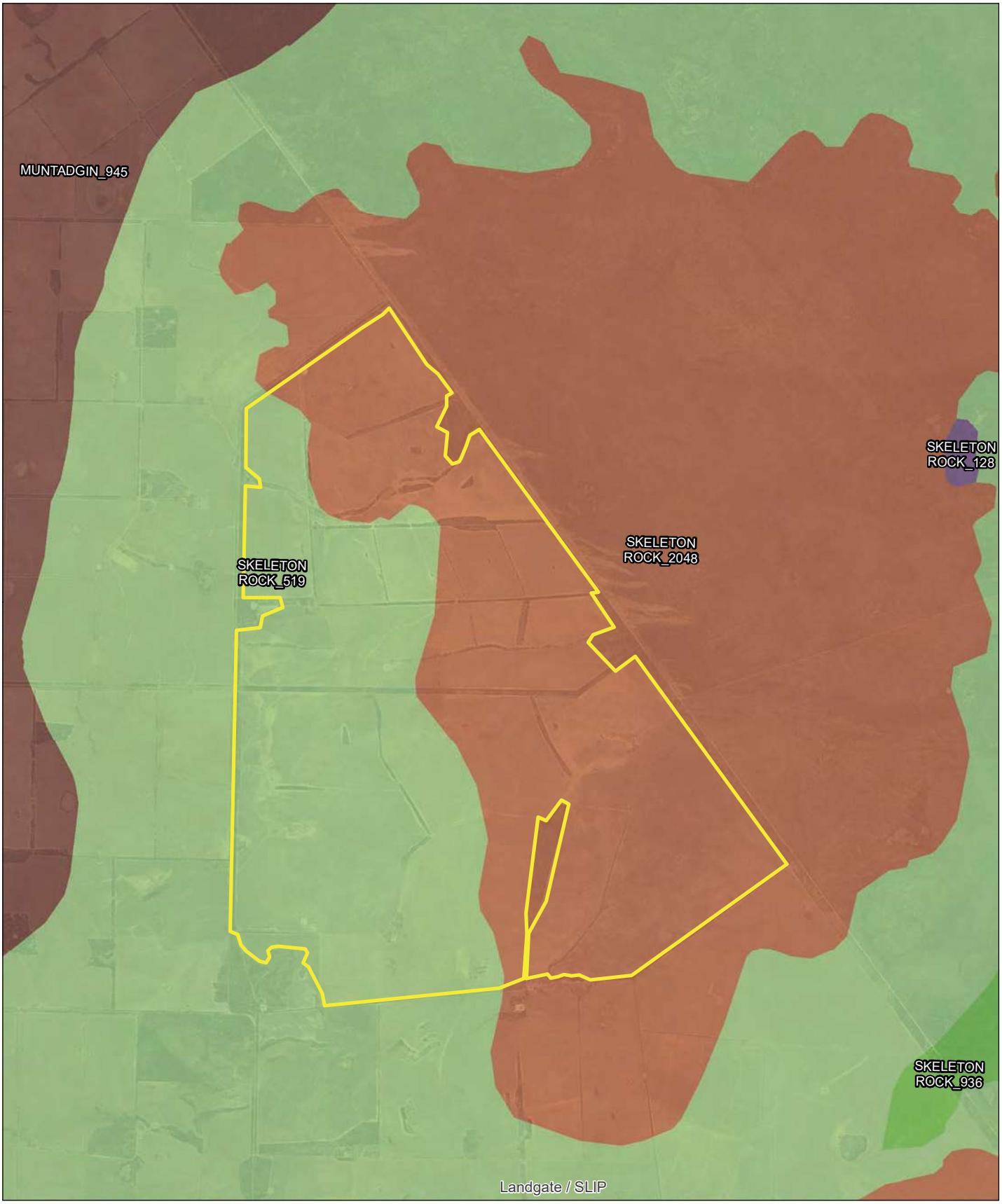

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- Survey Area

Broad Vegetation Types

- MUNTADGIN_945
- SKELETON ROCK_128
- SKELETON ROCK_2048
- SKELETON ROCK_519
- SKELETON ROCK_936

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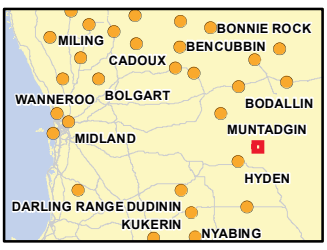

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King Rocks Biological Survey

Figure 4
Broad Vegetation Types

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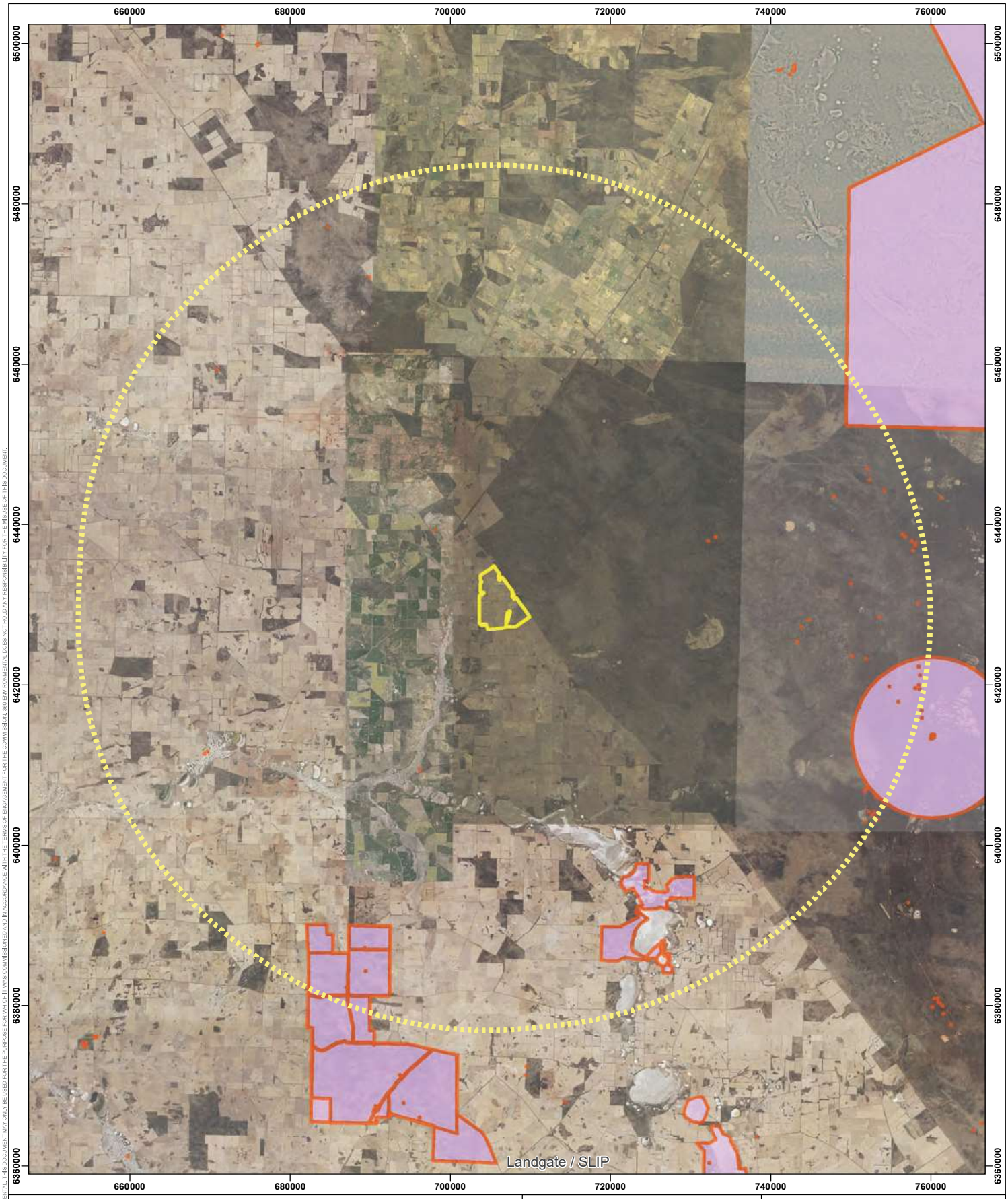

Legend

- Survey Area
- Environmentally Sensitive Areas
- 50km Buffer Zone

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Meters

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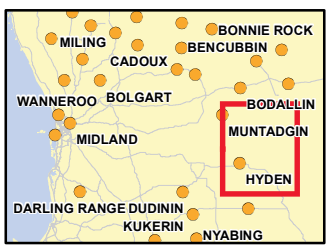
- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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King Rocks Biological Survey

Figure 5
Conservation and Environmentally Sensitive Areas

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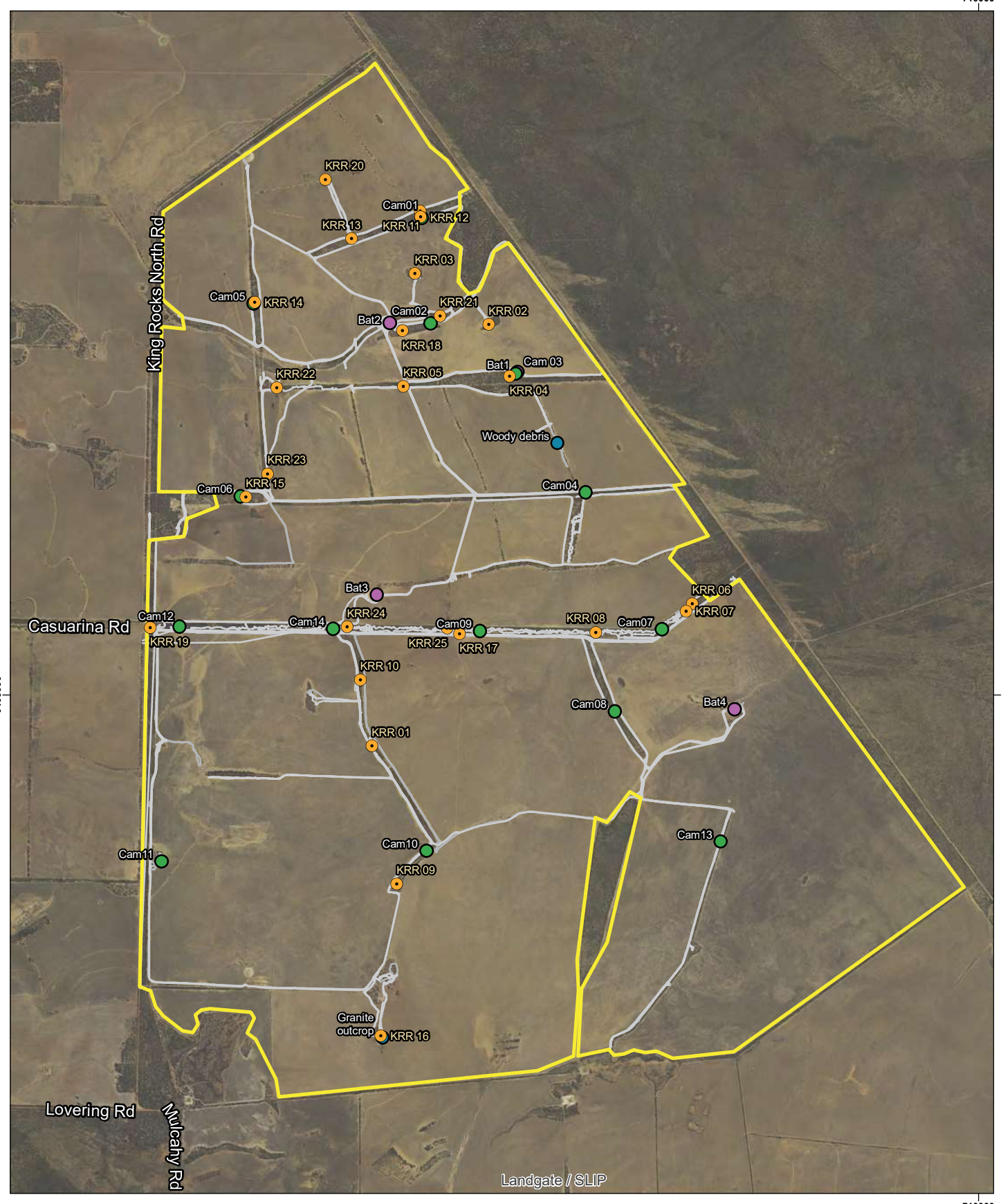

Legend

- Survey Area
- Flora Survey Tracks

Fauna Sample Sites

- ARU - ultrasonic calls
- Camera trap
- Habitat assessment

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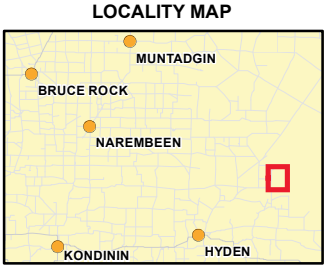

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King Rocks Biological Survey

Figure 6
Survey Efforts

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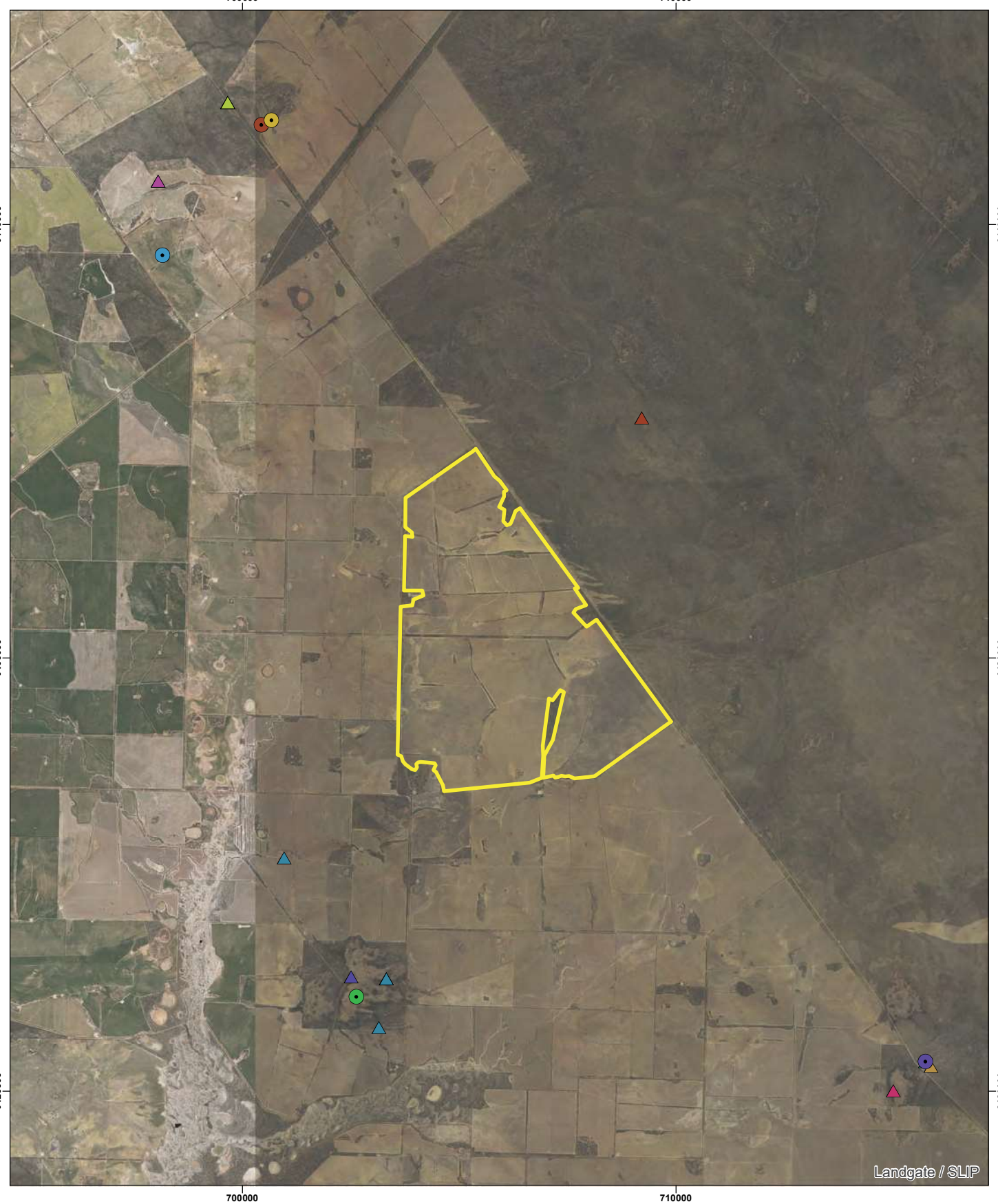

Legend

- Survey Area

WA Herbarium in 10KM Buffer

- Aotus lanea
- Banksia shanklandiorum
- Banksia sphaerocarpa var. dolichostyla
- Eremophila serpens
- Eucalyptus caesia subsp. caesia
- Eucalyptus mimica subsp. mimica
- Myriophyllum petraeum
- Rinzia torquata
- Stypandra jamesii
- Verticordia stenopetala

Threaten and Priority Flora Location in 10KM Buffer

- Aotus lanea
- Banksia shanklandiorum
- Banksia sphaerocarpa var. dolichostyla
- Prostanthera nanophylla
- Xanthoparmelia nashii

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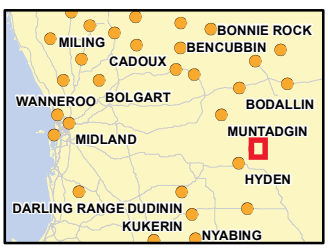

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King Rocks Biological Survey

Figure 7
DBCA Threatened and Priority Flora Locations

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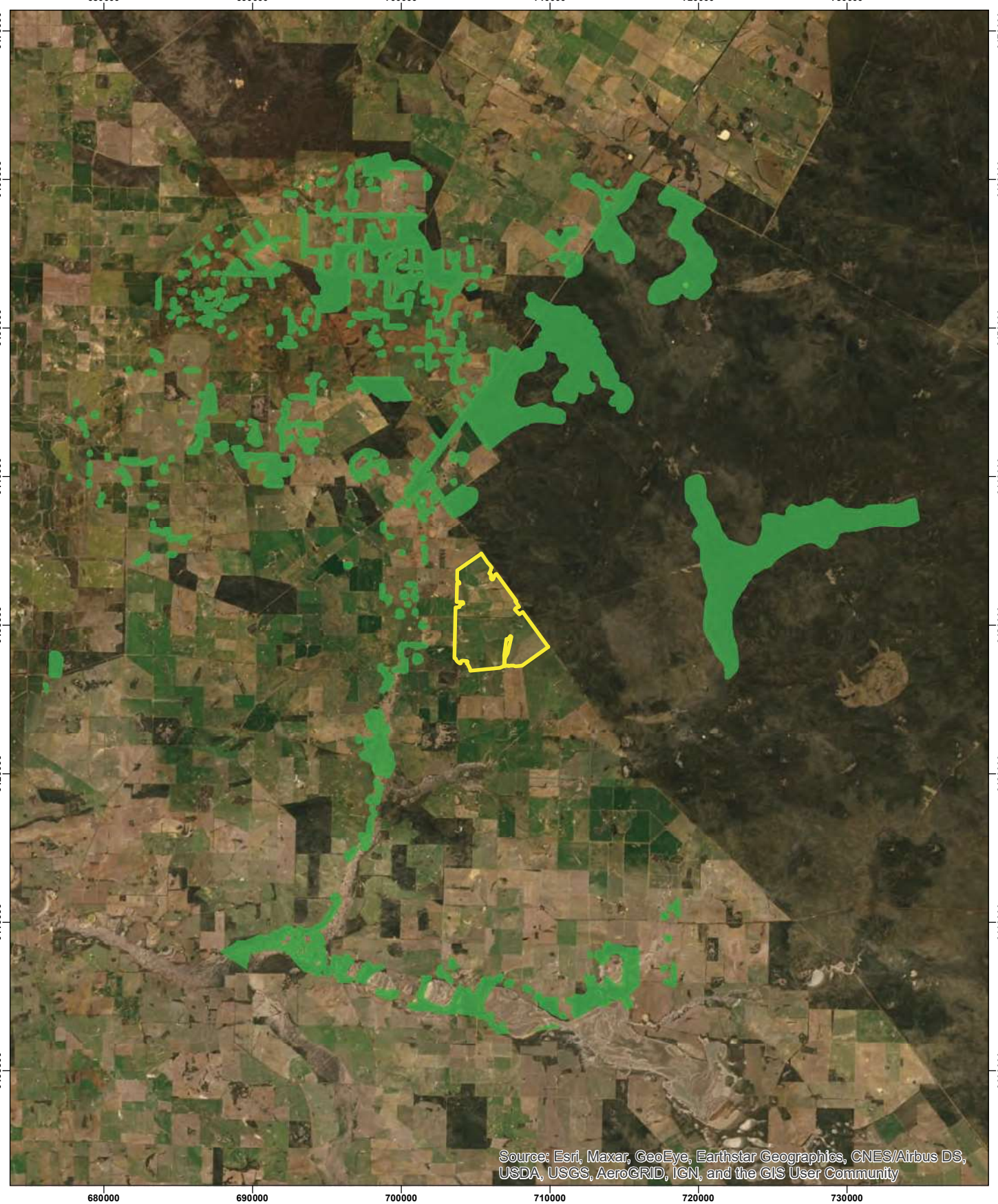

Legend

Survey Area

Threatened Ecological Communities

Eucalypt woodlands of the Western Australian Wheatbelt

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- OTHER DATA SOURCED LANDGATE 2021
- AERIAL PHOTOGRAPHY SOURCED LANDGATE 2021
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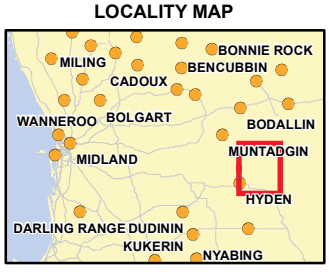
LOCALITY MAP



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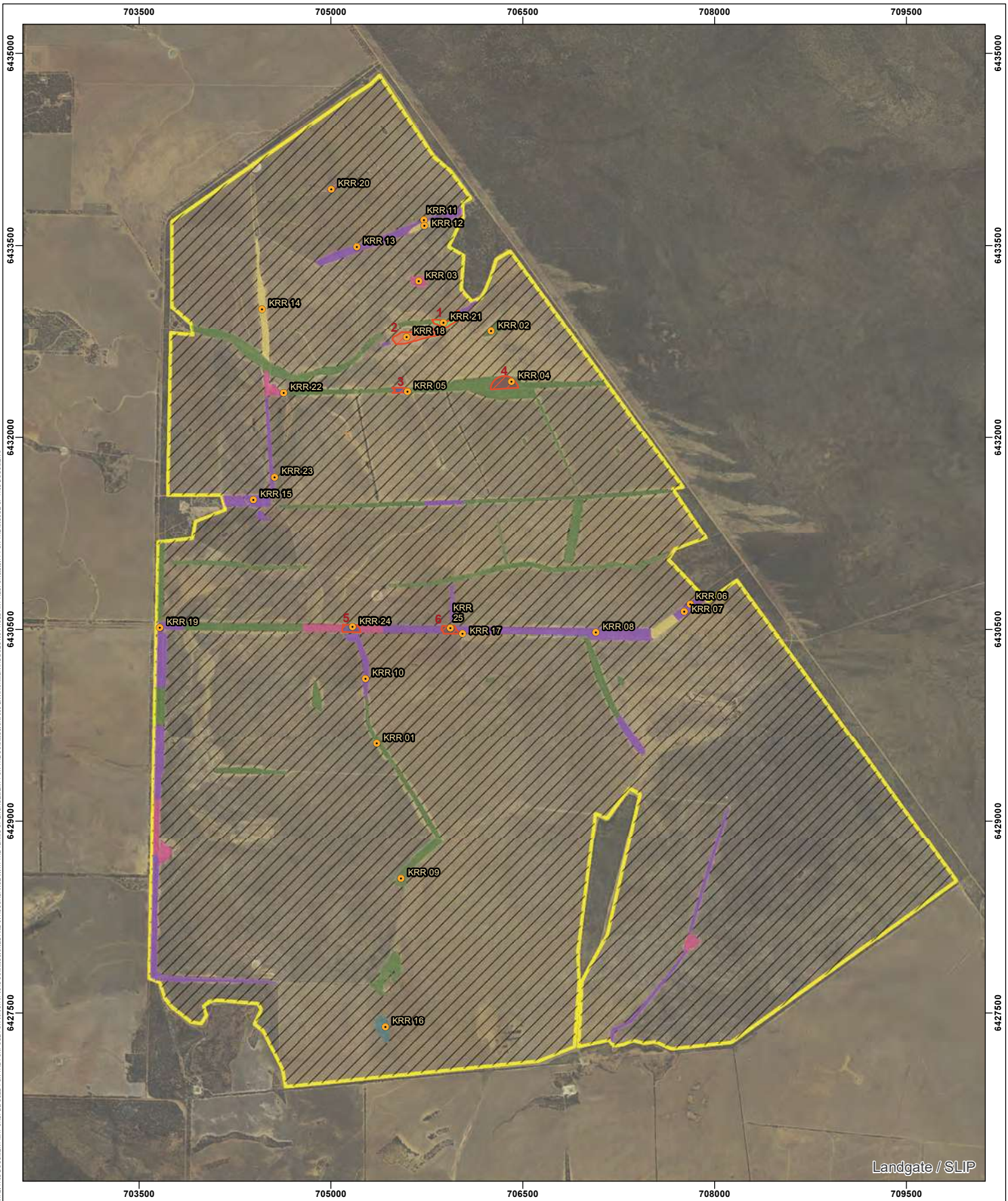
King Rocks Biological Survey

Figure 8
DBCA Threatened and Priority Ecological Communities

K:\Projects\1.0 EBS\4885 King Rocks Biological Survey\4885 F08 Threatened and Priority Ecological Communities Identified by DBCA Database Searches.mxd



Legend

Vegetation Types

- GR1
- PL1
- PL2
- PL3
- PL4
- PL5
- PL6
- PL7
- PL8
- Cleared

- Survey Area
- Releve
- Patch Number for TEC Analysis

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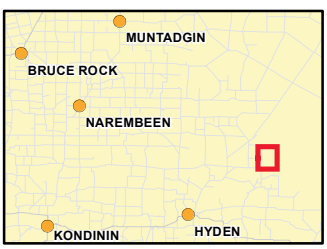
0 420 840 1,260 Meters
1:40,000 @ A4

N

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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4885	13/04/2022

HORIZONTAL DATUM AND PROJECTION
GDA 1994 MGA Zone 50

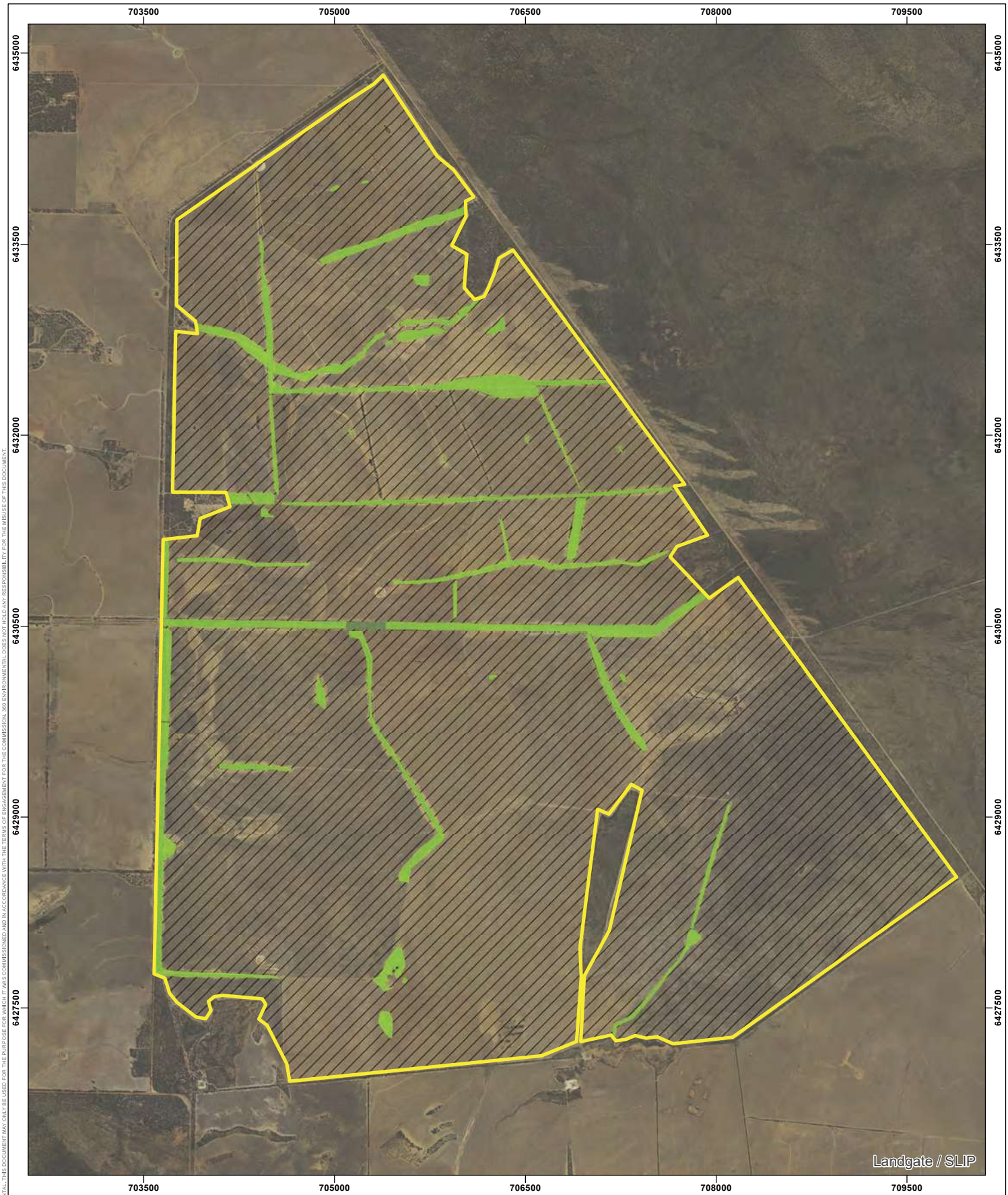
CREATED	CHECKED	APPROVED	REVISION
CL	NW	JW	0

Synergy RED

King Rocks Biological Survey

Figure 9
Vegetation Types

K:\Projects\1.0 EBS\4885 King Rocks Biological Survey\4885 F09 Vegetation Types within the Survey Area.mxd



Legend

- Survey Area

Vegetation Condition

- Very Good
- Good
- Cleared

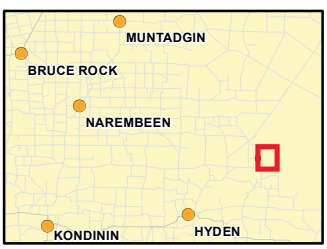
0 420 840 1,260 Meters

1:40,000 @ A4

N

- NOTE THAT POSITION ERRORS CAN BE >5M IN SOME AREAS

LOCALITY MAP



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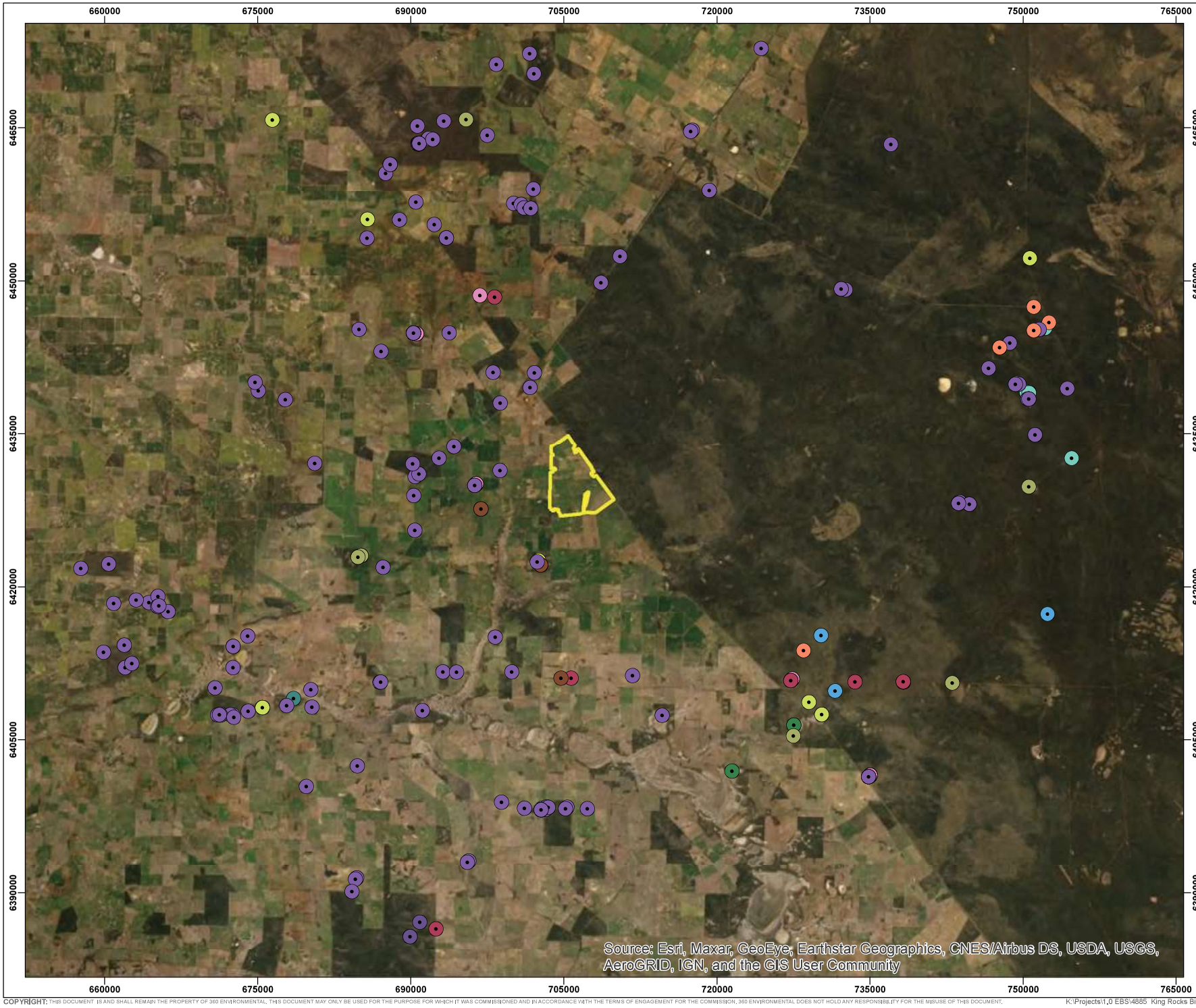
King Rocks Biological Survey

Figure 10
Vegetation Condition

K:\Projects\1.0 EBS\4885 King Rocks Biological Survey\4885 F10 Vegetation Condition and Introduced Flora within the Survey Area.mxd



Legend

Survey Area

Threaten and Priority Fauna Records

- Carnaby's cockatoo - EN
- Chuditch, western quoll - VU
- Common Sandpiper - MI
- Hooded plover, hooded dotterel - P4
- Lake Cronin snake - P3
- Malleefowl - VU
- Peregrine falcon - OS
- Red-tailed phascogale, kenngoor - CD
- Sharp-tailed sandpiper - MI
- Western brush wallaby - P4
- Western mouse - P4
- Western rosella (inland) - P4
- White-tailed black cockatoo - EN

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0 5,200 10,400 15,600 Meters

1:500,000 @ A4

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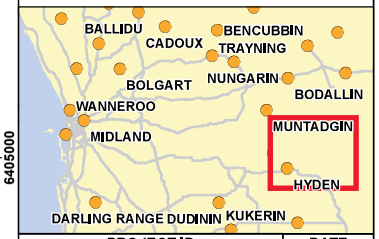
LOCALITY MAP



PROJECT ID	DATE
4885	15/02/2022

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GDA 1994 MGA Zone 50

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CL	JW	JW	0

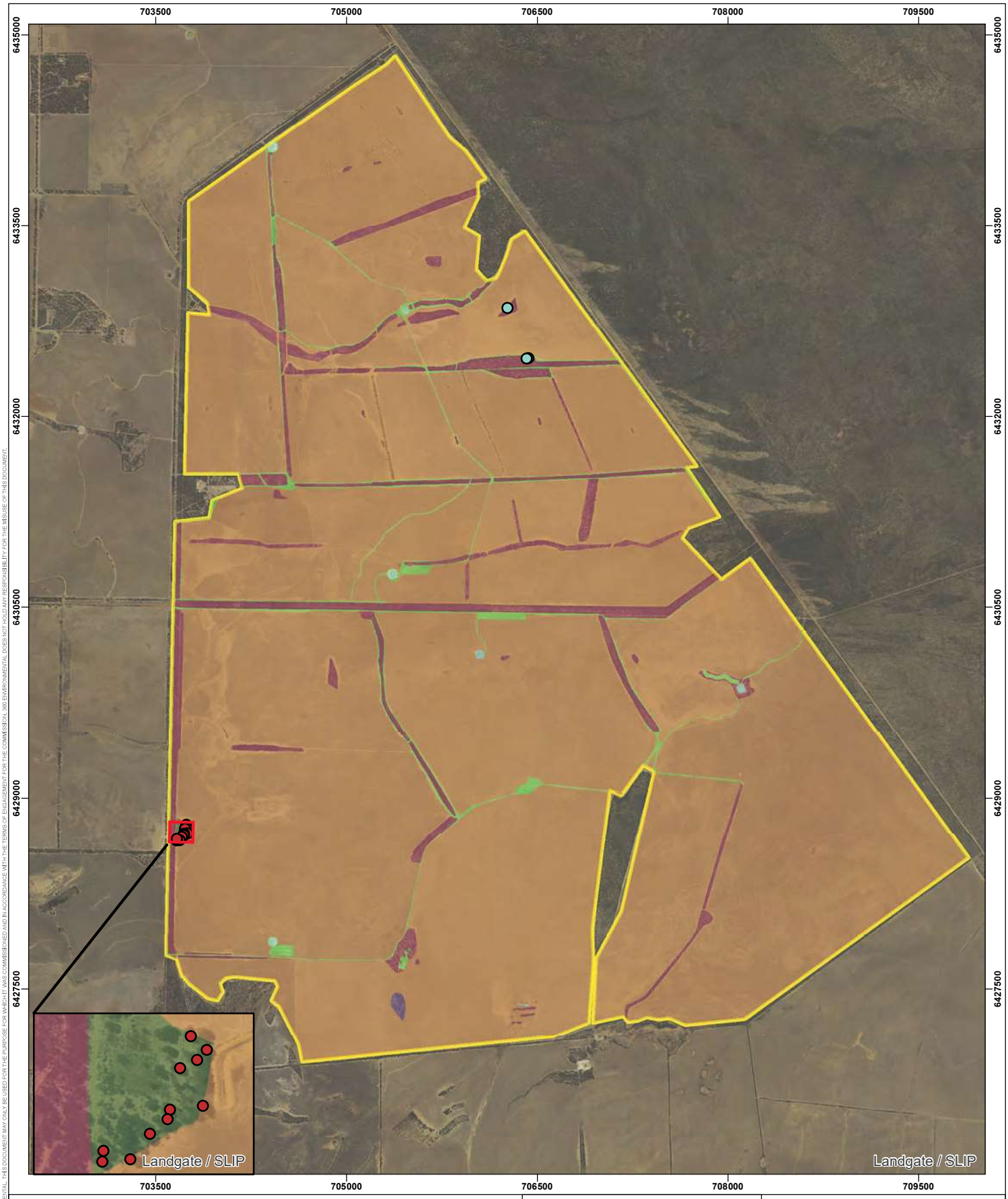
Synergy RED

King Rocks Biological Survey

Figure 11

DBCA Threatened and Priority Fauna Records

K:\Projects\1,0 EBS\4885 King Rocks Biological Survey\4885 F11 DBCA Threatened and Priority Fauna Records.mxd



Legend

- Survey Area

Fauna Habitat Features

- Potential Red-tailed Phascogale hollow (unoccupied)
- Potential future black cockatoo breeding tree (no hollows, DBH > 500 mm)

Fauna Habitat

- Dam
- Granite outcrop
- Mallee woodland
- Paddock
- Paddock trees
- Cleared

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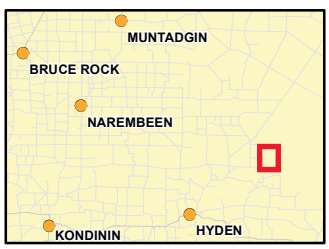
LOCALITY MAP



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CL	JW	JW	0

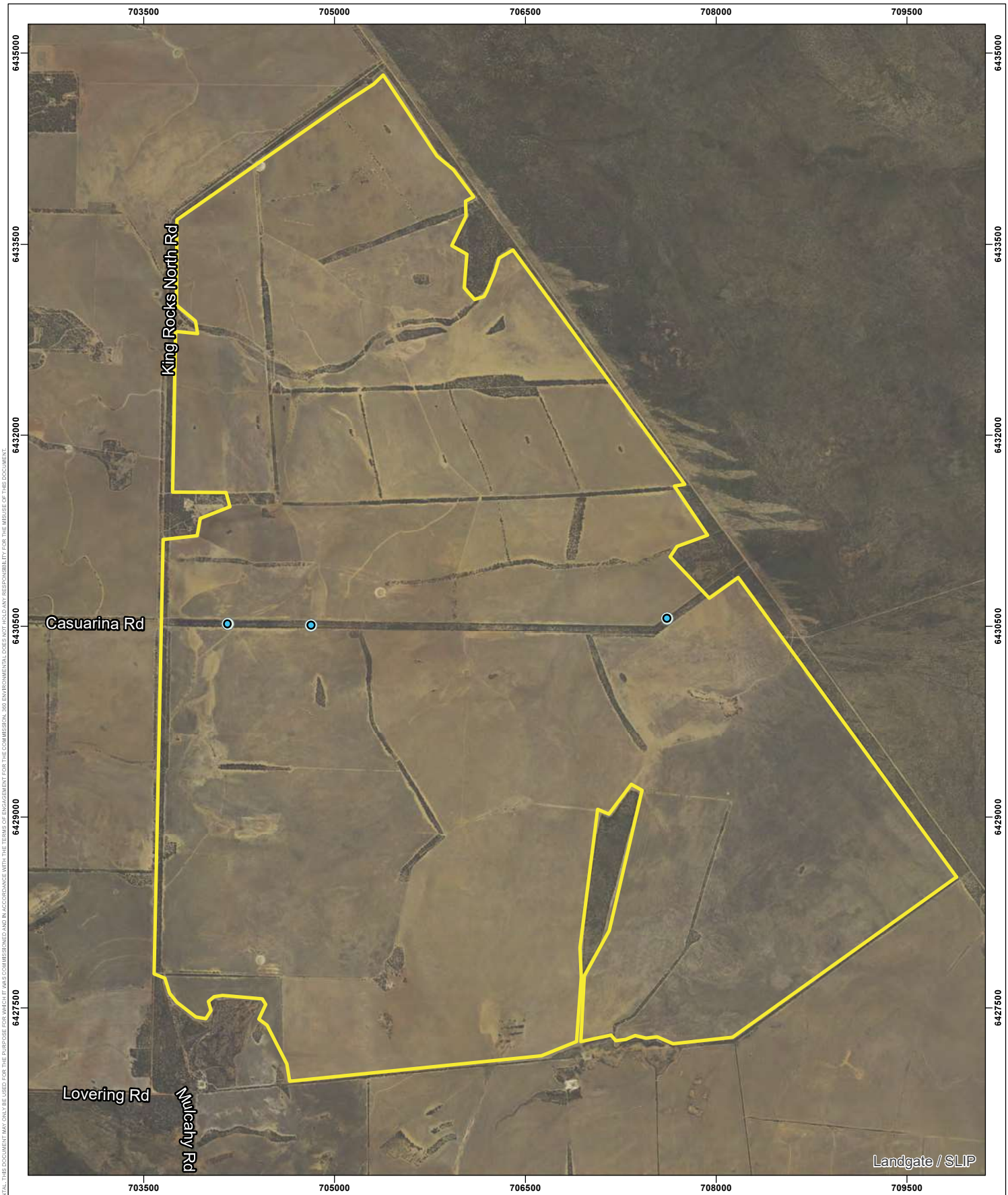
Synergy RED

King Rocks Biological Survey

Figure 12

Fauna Habitat and Conservation Significant Fauna Records

K:\Projects\1.0 EBS\4885 King Rocks Biological Survey\4885 F12 Fauna Habitat and Conservation Significant Fauna Records.mxd



Legend

- Survey Area
- Vegetation Crossing Points
- 50M Buffer Zone of Vegetation Crossing Points

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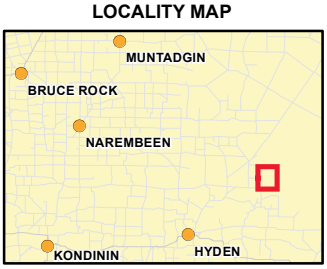
LOCALITY MAP



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CREATED	CHECKED	APPROVED	REVISION
CL	JW	JW	0

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King Rocks Biological Survey

Figure 13
General location of Vegetation Crossing Points

K:\Projects\1.0 EBS\4885 King Rocks Biological Survey\4885 F13 General location of Vegetation crossing points.mxd

Appendices

Appendix A
Flora Literature Review

Report	Distance to current Survey Area	Survey timing	Survey effort	Recorded conservation significant flora	Vegetation types
Desktop Biodiversity Assessment: King Rocks Wind Farm Feasibility Project (NGH Environmental 2012a)	Overlaps the Survey Area	November 2012	Desktop Survey: ALA for Kondindin LGA Nature Map (20km buffer)	• None • No TEC found in 40 km Survey Area	• None
Biodiversity Assessment: Preliminary Report – Kings Rock Wind Farm Feasibility Project (NGH Environmental 2012b)	Overlaps the Survey Area			• *Banksia sphaerocarpa* var. *dolichostyla* (T) • *Baeckea* sp. Crossroads (P1)	• *Eucalyptus incrassata, E. olivina, E. rigidula* low open woodland over *Acacia beauverdiana,* • *Melaleuca cordata, M. uncinata, Hibbertia gracilipes* and *Thryptomene kochii* on yellow- • brown sandy loam. Shrubland • Mixed shrubland with emergent *Acacia beauverdiana and Allocasuarina spinosissima* over • *Alyxia buxifolia, Hakea francisiana, H. meisneriana, Melaleuca* spp., • *Pimelea suaveolens* subsp. *flava* and *Thryptomene kochii* over scattered herbs on yellow- brown sandy loam

Report	Distance to current Survey Area	Survey timing	Survey effort	Recorded conservation significant flora	Vegetation types
Reconnaissance and Targeted Flora and Vegetation Survey at King Rocks Road West (Ecoedge, 2019b)	10 km SW of Survey Area	11 September 2018	Targeted survey	• One plant suspected to be the Priority 1 taxon *Baeckea sp. Crossroads* (B.L. Rye & M.E. Trudgen 241186) was found near the northern boundary of the Survey Area.	Mallee woodland • *Eucalyptus incrassata, E. olivina, E. rigidula* low open woodland over *Acacia beauverdiana,* • *Melaleuca cordata, M. uncinata, Hibbertia gracilipes and Thryptomene kochii* on yellow-brown sandy loam. Shrubland • Mixed shrubland with emergent *Acacia beauverdiana* and *Allocasuarina spinosissima* over • *Alyxia buxifolia, Hakea francisiana, H. meisneriana, Melaleuca* spp., *Pimelea suaveolens* subsp. *flava* and *Thryptomene kochii* over scattered herbs on yellow- • brown sandy loam.
Covalent Lithium Earl Grey Lithium Mine Regional Flora Survey (Strategen JBS&G, 2019)	64 km East	August 2019	Targets Survey for *Banksia sphaerocarpa* var. *dolichostyla and Microcorys sp. Mt Holland*	• *Banksia sphaerocarpa* var. *dolichostyla* • *Microcorys sp. Mt Holland*	None listed in report

Report	Distance to current Survey Area	Survey timing	Survey effort	Recorded conservation significant flora	Vegetation types
Threatened and priority flora assessment Earl grey lithium project Pre-clearance surveys (Mattiske 2019)	105 km north-east of the Survey Area	March – November 2019	Targeted survey	• *Acacia* sp. Forrestania (P1) • *Acacia* sp. Mt Holland (P1) • *Acacia undosa* (P3) • *Baeckea* sp. Forrestania (P1) • *Banksia sphaerocarpa* var. *dolichostyla* (T) • *Brachyloma stenolobum* (P1) • *Calamphoreus inflatus* (P4) • *Chamelaucium* sp. Parker Range (B.H. Smith 1255) (P1) • *Chorizema circinale* (P3) • *Daviesia sarissa* subsp. *redacta* (P2) • *Eremophila biserrata* (P4) • *Eremophila verticillata* (T) • *Eutaxia lasiocalyx* (P2) • *Eutaxia* sp. North Ironcap (P. Armstrong PA 06/898) (P1) • *Grevillea lissopleura* (P1) • *Grevillea marriottii* (P1) • *Gyrostemon ditrigynus* (P4) • *Hakea pendens* (P3) • *Hibbertia tuberculata* K.R.Thiele, sp. nov. (P1) • *Hibbertia* sp. novel • *Labichea rossii* (P1) • *Microcorys* sp. Mt Holland (P1) • *Microcorys* sp. Mt Holland broad-leaf (G. Barrett s.n. PERTH 04104927) (P1) • *Olearia laciniifolia* (P2) • *Orianthera exilis* (P2) • *Rinzia medifila* (P1) • *Stylidium sejunctum* (P3) • *Teucrium* sp. dwarf (R Davis 8813) (P3) • *Verticordia stenopetala* (P3)	None listed in report

Flora, vegetation and fauna assessment: Newdegate Grain Receival Site Expansion (Ecological Australia, 2018)	90 kms south-south-west of the Survey Area	5-7 November, 2018	• Detailed survey (8x 10 x 10m understorey quadrats, 20 x 20m overstorey) • Targeted searches (*Thysanotus lavanduliflorus*)	• *Thysanotus lavanduliflorus* (P1)	• Eucalypt Woodlands of the Western Australian Wheatbelt (Federal TEC, DBCA P3) • Red Morrel Woodlands of the Wheatbelt (DBCA PEC P1) • *Eucalyptus kondininensis*, *E.* longicornis open forest over *Atriplex paludosa* subsp. baudinii scattered low shrubs. • *Eucalyptus loxophleba* subsp. *gratiae* low open mallee forest over *Melaleuca acuminata* subsp. *acuminata* scattered tall shrubs to tall open shrubland (open to closed scrub in parts) over *Dodonaea ptarmicaefolia, Acacia hemiteles shrubland over Austrostipa elegantissima* very open grassland • *Eucalyptus kondininensis* open forest over *Atriplex vesicaria* low open shrubland over *Threlkeldia diffusa* very open low herbland • *Eucalyptus salmonophloia* open to closed forest over *Dodonaea stenozyga s*cattered shrubs to open shrubland over *Olearia muelleri, Acacia erinacea* low open shrubland • *Tecticornia undulata*, *Atriplex vesicaria, Tecticornia syncarpa* low open heath over *Disphyma crassifolium* subsp. *clavellatum* very open herbland • *Eucalyptus longicornis* open forest over *Melaleuca lanceolata* open scrub over *Atriplex paludosa* subsp. *baudinii* scattered low shrubs

Report	Distance to current Survey Area	Survey timing	Survey effort	Recorded conservation significant flora	Vegetation types
Hyden Flora, Vegetation and Fauna Surveys, CBH Group (Ecoscape, 2020)	32 kms south-west of the Survey Area	September 2019	• Single phase, detailed (quadrats and relevés) flora and vegetation survey • Extensive targeted searches	• None	• *Melaleuca hamata, Allocasuarina acutivalvis* and *Allocasuarina campestris* tall open shrubland over *Borya constricta, Amphipogon caricinus* and *Lepidobolus preissianus* low forbland/tussock grassland/sedgeland • *Eucalyptus loxophleba* subsp. *gratiae* low mallee woodland over *Melaleuca hamata*, *Santalum acuminatum* and *Alyxia buxifolia* tall open shrubland over *Rytidosperma setaceum, Borya constricta* and *Neurachne alopecuroidea* low open tussock grassland/forbland • *Maireana brevifolia* and *Acacia multispicata* mid sparse chenopod shrubland/shrubland over **Avena barbata, *Arctotheca calendula* and *Hordeum leporinum* low grassland/forbland

Appendix B
Flora and Fauna Database Searches

DBCA Threatened and Priority Fauna

CLASS	SCI_NAME	COM_NAME	WA_status	EPBCstatus	YEAR	SOURCE	CERTAINTY	OBS_METHOD	OBS_TYPE	COUNT	LOCALITY	SITE
BIRD	Actitis hypoleucos	Common Sandpiper	MI	MI	2001	BIRDATLAS2				0	Wave Rock	Wave Rock
BIRD	Calidris acuminata	Sharp-tailed sandpiper	MI	MI	1978	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	2012	BIRDATA				0	Forrestonia	Forrestonia
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	2012	BIRDATA				0	Forestania Area	Forestania Area
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	2011	BIRDATA				0	Forrestania Plots--GandW Discovery Trail	Forrestania Plots--GandW Discovery Trail
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	2006	BIRDATLAS2				0	Forrestiana Plot	Forrestiana Plot
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	1998	TFAUNA	Moderately certain	Opportunistic sighting	Day sighting	13	Dragon Rocks Nature Reserve	Eastern boundary, south of Mouritz Rd.
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	2007	TFAUNA	Certain	Opportunistic sighting	Day sighting	0	Hyden	Lake O'Connor Road, East Hyden Road
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	1969	TFAUNA	Certain	Historical (written)	Day sighting	12	WEST HOLLETON	S of Gibb Rock
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	1979	TFAUNA	Certain	Community survey	Sighting	0	FORRESTANIA	Lake Cronin
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	1981	TFAUNA	Certain	Community survey	Sighting	0	FORRESTANIA	Emu Rock
BIRD	Calyptorhynchus latirostris	Carnaby's cockatoo	EN	EN	1983	TFAUNA	Certain	Community survey	Day sighting	2	FORRESTANIA	25 km W Forrestania Cross Roads
BIRD	Calyptorhynchus sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	EN	1981	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Calyptorhynchus sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	EN	1978	BIRDATLAS1				0	WEST HOLLETON	WEST HOLLETON
BIRD	Calyptorhynchus sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	EN	1977	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Calyptorhynchus sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	EN	1978	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Calyptorhynchus sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	EN	1979	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Calyptorhynchus sp. 'white-tailed black cockatoo'	White-tailed black cockatoo	EN	EN	1980	BIRDATLAS1				0	HYDEN	HYDEN
BIRD	Calyptorhynchus sp. 'white-tailed black cockatoo'	white-tailed black cockatoo	EN		1969	TFAUNA	Certain	Historical (written)	Day sighting	12	Hyden	PP Loc.No.2672 just S of Gibb Rock, Hyden
BIRD	Falco peregrinus	Peregrine falcon	OS		2012	BIRDATA				0	Bates Cave Hyden	Bates Cave Hyden
BIRD	Falco peregrinus	Peregrine falcon	OS		2012	BIRDATA				0	Mulka's Cave	Mulka's Cave
BIRD	Falco peregrinus	Peregrine falcon	OS		1981	BIRDATLAS1				0	HYDEN	HYDEN
BIRD	Falco peregrinus	Peregrine falcon	OS		1981	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Falco peregrinus	Peregrine falcon	OS		2002	BIRDATLAS2				0	Emu Rocks	Emu Rocks
BIRD	Falco peregrinus	Peregrine falcon	OS		2004	BIRDATLAS2				0	Holleton track	Holleton track
BIRD	Falco peregrinus	Peregrine falcon	OS		2012	BIRDATLAS2				0	Bates Cave Hyden	Bates Cave Hyden
BIRD	Falco peregrinus	Peregrine falcon	OS		2012	BIRDATLAS2				0	Mulka's Cave	Mulka's Cave
BIRD	Falco peregrinus	Peregrine falcon	OS		1998	BIRDATLAS2				0	Salmon Gums	Salmon Gums
BIRD	Falco peregrinus	Peregrine falcon	OS		2016	FAUNASURVEY_WLS	Certain		Bird survey	1	Mt Holland	Van Uden Site 12
BIRD	Falco peregrinus	Peregrine falcon	OS		2016	FAUNASURVEY_WLS	Certain		Opportunistic observation	1	Mt Holland	Van Uden Site 12
BIRD	Falco peregrinus	Peregrine falcon	OS		2016	WL_REG17		Survey		0		Falco peregrinus|||30/11/2016.1
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2007	BIRDATA				0	Holleton Road	Holleton Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2007	BIRDATA				0	Old Holleton Townsite	Old Holleton Townsite
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2007	BIRDATA				0	Holleton Block Dam	Holleton Block Dam
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2014	BIRDATA				0	Emu Fence Rd Sth	Emu Fence Rd Sth
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2015	BIRDATA				0	Holleton	Holleton
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2013	BIRDATA				0	Anderson rks est Narembeen	Anderson rks est Narembeen
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2014	BIRDATA				0	Holleton	Holleton
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2017	BIRDATA				0	Holleton KBA	Holleton KBA
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1977	BIRDATLAS1				0	HYDEN	HYDEN
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1977	BIRDATLAS1				0	HYDEN	HYDEN
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1977	BIRDATLAS1				0	HYDEN	HYDEN
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1978	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1978	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1979	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1978	BIRDATLAS1				0	FORRESTANIA	FORRESTANIA
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2000	BIRDATLAS2				0	Holland Track	Holland Track
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2000	BIRDATLAS2				0	Hyden - Marvel Loch Road	Hyden - Marvel Loch Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2001	BIRDATLAS2				0	Buettners Road	Buettners Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2001	BIRDATLAS2				0	Lake King - Hyden Road	Lake King - Hyden Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2002	BIRDATLAS2				0	Neendojer Rocks Nature Reserve	Neendojer Rocks Nature Reserve
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2002	BIRDATLAS2				0	Hyden - Lake King Road	Hyden - Lake King Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2004	BIRDATLAS2				0	Sloss NR	Sloss NR
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2004	BIRDATLAS2				0	Old Holleton Townsite	Old Holleton Townsite
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2004	BIRDATLAS2				0	Holleton	Holleton
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2004	BIRDATLAS2				0	track	track
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2011	BIRDATLAS2				0	Welsh Nature Reserve	Welsh Nature Reserve
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1999	BIRDATLAS2				0	Lake King - Hyden Road	Lake King - Hyden Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2009	BIRDATLAS2				0	Old Holleton Townsite	Old Holleton Townsite
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2009	BIRDATLAS2				0	Holleton Block	Holleton Block
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2010	BIRDATLAS2				0	Old Holleton Townsite	Old Holleton Townsite
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2010	BIRDATLAS2				0	Holleton Road	Holleton Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2010	BIRDATLAS2				0	Holleton Road	Holleton Road
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2010	BIRDATLAS2				0	Holleton Block Dam	Holleton Block Dam
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	FAUNASURVEY	Certain	Survey	Secondary sign	0	MOUNT HOLLAND	Forrestiana, FNO-717 - inactive mound

CLASS	SCI_NAME	COM_NAME	WA_status	EPBCstatus	YEAR	SOURCE	CERTAINTY	OBS_METHOD	OBS_TYPE	COUNT	LOCALITY	SITE
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	FAUNASURVEY_WLS	Certain		Opportunistic observation - bird sighted	1	Mt Holland	Van Uden
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	FAUNASURVEY_WLS	Certain		Tracks observed	1	Mt Holland	Van Uden
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	FAUNASURVEY_WLS	Certain		Tracks observed	1	Mt Holland	Van Uden
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	FAUNASURVEY_WLS	Certain		Tracks observed	1	Mt Holland	Van Uden Site 11
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	FAUNASURVEY_WLS	Certain		Opportunistic observation of active mound	1	Mt Holland	Van Uden MM-08 Active mound
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2017	FAUNASURVEY_WLS	Certain		Opportunisitc observation of inactive mound	1	Mt Holland	Regional area MM-15 inactive mound
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2017	FAUNASURVEY_WLS	Certain		Opportunistic sighting	1	Mt Holland	Regional, road to Van Uden
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2017	FAUNASURVEY_WLS	Certain		secondary signs	1	Forrestania	Bad Bat
BIRD	Leipoa ocellata	Malleefowl	VU	VU	1999	MB_B3BIRDS				0		Varley 51k north
BIRD	Leipoa ocellata	malleefowl	VU	VU	1995	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	West Holleton	On Soldiers Rd, 3 km E of old barrier fence
BIRD	Leipoa ocellata	malleefowl	VU	VU	1993	TFAUNA	Certain	Survey	Day sighting	1	Graham Rock	1.2km W of Graham Rock T/O on Hyden-Norseman Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1993	TFAUNA	Certain	Survey	Day sighting	1	Hyden	4km W of Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1966	TFAUNA	Certain	Historical (written)	Sighting	0	Hyden	PP Loc.No.2672 just S of Gibb Rock, Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1994	TFAUNA	Certain	Survey	Day sighting	2	Unnamed Nature Reserve	Unnamed Nature Reserve at intersection of Sedgewick Rd and Woolocutty Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1994	TFAUNA	Certain	Survey	Day sighting	2	Unnamed Nature Reserve	Unnamed Nature Reserve 400m NE of the intersection of Sedgewick Rd and Woolocutty Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1978	TFAUNA	Certain	Survey	Secondary sign	0	Roe Nature Reserve	Roe Nature Reserve
BIRD	Leipoa ocellata	malleefowl	VU	VU	2003	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Kalgarrin	On Roe Road adjacent to Roe Nature Reserve
BIRD	Leipoa ocellata	malleefowl	VU	VU	2003	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Scriveners Nature Reserve	Northern boundary of Scriveners Nature Reserve
BIRD	Leipoa ocellata	malleefowl	VU	VU	2003	TFAUNA	Certain	Opportunistic sighting	Secondary sign	0	Scriveners Nature Reserve	On western side of firebreak in Scriveners Nature Reserve
BIRD	Leipoa ocellata	malleefowl	VU	VU	2003	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Kalgarrin	Remnant corridor adjacent to Scriveners Nature Reserve. Immediately east of Scriveners NR
BIRD	Leipoa ocellata	malleefowl	VU	VU	2003	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Kalgarrin	Remnant vegetation on private property adjacent to Scriveners Nature Reserve - immediately west of Scriveners NR.
BIRD	Leipoa ocellata	malleefowl	VU	VU	2009	TFAUNA	Certain	Opportunistic sighting	Secondary sign	0	Skeleton Rock	Skeleton Rock; along eastern fire access track.
BIRD	Leipoa ocellata	malleefowl	VU	VU	1994	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	Hyden	Hyden-Lake King Road, roadside between Holt Rock and Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1997	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	3	WOOLOCUTTY	CR25469 Anderson Rock, Anderson Rocks Rd, 3km E of intersection w/ Hyden-Moutn Walker Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1993	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	1.2 km West of T/O to Graham Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1993	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	1.2 kms west of Nicholl Road turn off to Graham Rock on Hyden Norseman Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	2002	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	KARLGARIN	1.5 km west of hyden on kalgarin rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1974	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WEST HOLLETON	10 km North West of "Sedgmoor" (just South of Gibb Rock)
BIRD	Leipoa ocellata	malleefowl	VU	VU	1966	TFAUNA	Moderately certain	Historical (written)	Sighting	1	KARLGARIN	10 km North West of Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	4	HYDEN	10 to 12 km along Worland Rd from Narembeen/Hyden Rd cnr, 9 km nth of Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1965	TFAUNA	Moderately certain	Historical (written)	Sighting	4	HYDEN	10 to 12 km along Worland Rd from Narembeen/Hyden Rd cnr, 9 km nth of Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	2002	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	10	WOOLOCUTTY	100 acres of bush 2 km sth of Cokers Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	0	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	6	KARLGARIN	10-12 km along Worland Rd from Narembeen-Hyden Rd corner (9 km N of Hyden); Block location 2528
BIRD	Leipoa ocellata	malleefowl	VU	VU	2002	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WOOLOCUTTY	15 km north east of sedgewick rd crnr on woolocutty soak rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	0	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	16 km South West of "Sedgmoor" (just South of Gibb Rock)
BIRD	Leipoa ocellata	malleefowl	VU	VU	1980	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	17 miles East of Hyden, 15 miles West of Rabbit Proof Fence.
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	3	KARLGARIN	1KM NTH OF KARLGARIN LAKE RD +WORLAND RD JCTN. 6KM FROM LOC 335
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	4	KARLGARIN	20 KM FROM KARLGARIN ON ALL SIDES OF KARLGARIN LAKE RD NTH & WORLAND RD
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WOOLOCUTTY	30 kms north of Hyden on Emu Fence Rd 300 m east of Woolocutty Wheat Bin
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Dusk sighting	2	HYDEN	31 km sth of Hyden Rd/East Hyden rd intersection

CLASS	SCI_NAME	COM_NAME	WA_status	EPBCstatus	YEAR	SOURCE	CERTAINTY	OBS_METHOD	OBS_TYPE	COUNT	LOCALITY	SITE
BIRD	Leipoa ocellata	malleefowl	VU	VU	2005	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	32 km hyden side of Holt Rock bin turnoff
BIRD	Leipoa ocellata	malleefowl	VU	VU	2004	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	2	HYDEN	35 km NE of Hyden on the Woolocutty Soak Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	KARLGARIN	3KM W OF HYDEN, ON BITUMEN ROAD VERGE. 1/2 KM FROM HYDEN-KARL RD & WORLAND HILL RD
BIRD	Leipoa ocellata	malleefowl	VU	VU	1993	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	KARLGARIN	4 km from Hyden on Reserve on right side heading into Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1993	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	4 km West of Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	45 km N of varley in middle of Varley/Hyden Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2002	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	88-90 km from lake king
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	2	HYDEN	ALONG HYDEN NORSEMAN RD, HEADING OUT OF TOWN(EAST) NR MALLEE FOWL CROSSING SIGN.
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	LAKE GOUNTER NATURE RESERVE	Armadale/Ravensthorpe Road west of Hyden near cemetary. Loc 41564-3105. Part of Lake Gounter Reserve.
BIRD	Leipoa ocellata	malleefowl	VU	VU	1995	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WEST HOLLETON	AT T JUNCTION IN BUSH.NAREMBEEN MT WALKER EAST RD + GRAYS RD MT WALKER
BIRD	Leipoa ocellata	malleefowl	VU	VU	1993	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Between Hyden and East Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	4	KARLGARIN	Between Karlgarin LAKE RD AND ROE RD, 20KM NTH OF KARLGARIN TOWNSHIP.
BIRD	Leipoa ocellata	malleefowl	VU	VU	2001	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	PINGARING	Buettners Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	4	KARLGARIN	Corner of Worland Rd and Kalgarin Lake Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1998	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	DRAGON ROCKS NATURE RESERVE	Dragon Rocks NR Reserve no. 36128; on edge of reserve firebreak
BIRD	Leipoa ocellata	malleefowl	VU	VU	1967	TFAUNA	Moderately certain	Historical (written)	Secondary sign	0	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1968	TFAUNA	Moderately certain	Historical (written)	Secondary sign	0	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1969	TFAUNA	Moderately certain	Historical (written)	Secondary sign	0	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1970	TFAUNA	Moderately certain	Opportunistic sighting	Secondary sign	0	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1970	TFAUNA	Moderately certain	Opportunistic sighting	Secondary sign	0	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1980	TFAUNA	Moderately certain	Opportunistic sighting	Secondary sign	0	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1981	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1979	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	FORRESTANIA	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1972	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1985	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WOOLOCUTTY	Gibb Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1978	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	FORRESTANIA	Gibb Rock 40 m E of Narembeen
BIRD	Leipoa ocellata	malleefowl	VU	VU	2004	TFAUNA	Moderately certain	Opportunistic sighting	Secondary sign	0	FORRESTANIA	Holland Track
BIRD	Leipoa ocellata	malleefowl	VU	VU	2001	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	FORRESTANIA	Holland Track
BIRD	Leipoa ocellata	malleefowl	VU	VU	2003	TFAUNA	Moderately certain	Opportunistic sighting	Secondary sign	0	FORRESTANIA	Holland Track Hyden to Coolgardie
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HOLLETON	Holleton townsite abandoned.
BIRD	Leipoa ocellata	malleefowl	VU	VU	1966	TFAUNA	Moderately certain	Historical (written)	Sighting	1	HYDEN	Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	2001	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	SOUTH YILGARN	Hyden - Marvel Loch Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	1976	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	2	HYDEN	Hyden (to the west)
BIRD	Leipoa ocellata	malleefowl	VU	VU	1978	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	FORRESTANIA	Hyden Rd east toward Lake Johnson Graham Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1977	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	LITTLE ITALY	Hyden town 25 km NW of grid centre
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	2	KARLGARIN	Hyden/Kalgarin Main rd, 3-4km W of Hyden, from cemetary towards town
BIRD	Leipoa ocellata	malleefowl	VU	VU	2002	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Hyden-Varley Rd Loc 2209, 33 km from Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	1999	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	3	SKELETON ROCK	King Ingram Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1977	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	King Rocks
BIRD	Leipoa ocellata	malleefowl	VU	VU	1977	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	King Rocks
BIRD	Leipoa ocellata	malleefowl	VU	VU	1978	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	FORRESTANIA	Lake Cronin
BIRD	Leipoa ocellata	malleefowl	VU	VU	2001	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Lake King - Hyden Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	2001	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Lake King - Hyden Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	1977	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Lake Liddelow
BIRD	Leipoa ocellata	malleefowl	VU	VU	1995	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Main rd (from Bremer Bay?) to Hyden, 2 km SW of town
BIRD	Leipoa ocellata	malleefowl	VU	VU	1994	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	4	HYDEN	Nature Reserve 36003
BIRD	Leipoa ocellata	malleefowl	VU	VU	1998	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	3	HYDEN	NE end of Reserve (No 342) on Woolocutty Soak Rd approx 10 km SW of Woolocutty grain bin
BIRD	Leipoa ocellata	malleefowl	VU	VU	1966	TFAUNA	Moderately certain	Historical (written)	Sighting	1	HYDEN	Near Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	2002	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	NEENDOJER ROCK NATURE RESERVE	Neendojer Rock NR near Moorine Rock 1 km off Meranda North Road on fire track
BIRD	Leipoa ocellata	malleefowl	VU	VU	1998	TFAUNA	Moderately certain	Opportunistic sighting	Secondary sign	0	FORRESTANIA	North of Wattle Rock
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	2	KARLGARIN	NR ENTRANCE OF HYDEN CEMETERY, 200M WEST OF ENTR.
BIRD	Leipoa ocellata	malleefowl	VU	VU	1996	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	KARLGARIN	ON ROADSIDE
BIRD	Leipoa ocellata	malleefowl	VU	VU	1994	TFAUNA	Moderately certain	Opportunistic sighting	Dawn sighting	1	HOLLETON	Over large area up to 25

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BIRD	Leipoa ocellata	malleefowl	VU	VU	0	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WEST HOLLETON	Sedgmoor
BIRD	Leipoa ocellata	malleefowl	VU	VU	1995	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	2	WEST HOLLETON	Sloss Rd and Holleton Rd, OLD HOLLETON MINE AREA
BIRD	Leipoa ocellata	malleefowl	VU	VU	1999	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	3	WEST HOLLETON	Sloss rd welsh res. Approx. 70-80 km e of narembeen
BIRD	Leipoa ocellata	malleefowl	VU	VU	1999	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	3	WEST HOLLETON	Soldier's Rd, East Narembeen Rd, near Gray Rd t-section
BIRD	Leipoa ocellata	malleefowl	VU	VU	2000	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	TWINE NATURE RESERVE	Twine N.R (SE)
BIRD	Leipoa ocellata	malleefowl	VU	VU	1999	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	Varley(51k N of it)
BIRD	Leipoa ocellata	malleefowl	VU	VU	2003	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	KARLGARIN	west of hyden on the Karlgarin Hyden Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	1990	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	HYDEN	
BIRD	Leipoa ocellata	malleefowl	VU	VU	1990	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WOOLOCUTTY	
BIRD	Leipoa ocellata	malleefowl	VU	VU	1990	TFAUNA	Moderately certain	Opportunistic sighting	Sighting	1	WOOLOCUTTY	
BIRD	Leipoa ocellata	malleefowl	VU	VU	2018	TFAUNA	Moderately certain	Opportunistic sighting	Day sighting	1	Hyden	Hyden, 25km NE of town
BIRD	Leipoa ocellata	malleefowl	VU	VU	2006	TFAUNA	Moderately certain	Opportunistic sighting	Day sighting	2	HOLLETON	Welsh NR, at intersection of Southern Cross and Sloss Rd, Holleton
BIRD	Leipoa ocellata	malleefowl	VU	VU	2005	TFAUNA	Moderately certain	Opportunistic sighting	Day sighting	1	PINGARING	On Kulin-Holt Rock Rd at the E end of Dragon Rocks Reserve, Pingaring
BIRD	Leipoa ocellata	malleefowl	VU	VU	2006	TFAUNA	Moderately certain	Opportunistic sighting	Day sighting	1	HYDEN	On N boundary of Lake Gounter Reserve, E of Worland Hill Rd in paddock
BIRD	Leipoa ocellata	malleefowl	VU	VU	2006	TFAUNA	Moderately certain	Opportunistic sighting	Day sighting	2	HYDEN	near Hyden, N of Wilson Rd on the King Rocks Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2018	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Mount Holland	Forestania Rd, Mount Holland
BIRD	Leipoa ocellata	malleefowl	VU	VU	2018	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Mount Holland	Forestania Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	2018	TFAUNA	Certain	Opportunistic sighting	Day sighting	0	Mount Holland	Forestania Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2007	TFAUNA	Certain	Opportunistic sighting		1	Yilgarn	Cramphorne Rd, 200m from Emu Fence Rd, South Yilgarn
BIRD	Leipoa ocellata	malleefowl	VU	VU	2007	TFAUNA	Certain	Opportunistic sighting		5	Narambeen	Holleton - 3km north of Soldiers Rd along southern Cross Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2007	TFAUNA	Certain	Opportunistic sighting		2	Yilgarn	Welsh Nature reserve - Southern cross to Hyden Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2006	TFAUNA	Certain	Opportunistic sighting		2	Hyden	10km East of Hyden, Hyden-Norseman Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	2006	TFAUNA	Certain	Opportunistic sighting		1	Hyden	Lake Gounter Nature Reserve, Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	2012	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Hyden	near intersection of Karlgarin Lake Rd and Worland Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2008	TFAUNA	Certain	Opportunistic sighting		1	Yilgarn	6km NE of Calzoni Rd, on Emu Fence Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2008	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Hyden	Sedgewick Rd, NE of Hyden
BIRD	Leipoa ocellata	malleefowl	VU	VU	2010	TFAUNA	Certain	Opportunistic sighting		0	Hyden	Hyden rifle range - Chalk Hill West Rd
BIRD	Leipoa ocellata	malleefowl	VU	VU	2013	TFAUNA	Certain	Opportunistic sighting	Sighting	2	Hyden	Emu Fence Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	2013	TFAUNA	Certain	Opportunistic sighting	Sighting	4	Hyden	Em fence Road
BIRD	Leipoa ocellata	malleefowl	VU	VU	2019	TFAUNA	Moderately certain	Opportunistic sighting	Dusk sighting	1	Dragon Rocks Nature Reserve	Western road verge of Newdegate Road N approx. 1.5km from the southern boundary of NR
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2017	WL_REG17		Survey		0		Leipoa ocellata|||12/06/2017.1
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	WL_REG17		Survey		0		Leipoa ocellata|||25/11/2016
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	WL_REG17		Survey		0		Leipoa ocellata|||26/11/2016
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	WL_REG17		Survey		0		Leipoa ocellata|||27/11/2016.2
BIRD	Leipoa ocellata	Malleefowl	VU	VU	2016	WL_REG17		Survey		0		Leipoa ocellata|||29/11/2016.1
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2016	FAUNASURVEY_WLS	Certain		Bird survey	1	Mt Holland	Van Uden Site 10
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2016	FAUNASURVEY_WLS	Certain		Bird survey	10	Mt Holland	Van Uden Site 10
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2016	FAUNASURVEY_WLS	Certain		Bird survey	8	Mt Holland	Van Uden Site 10
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2016	FAUNASURVEY_WLS	Certain		Bird survey	5	Mt Holland	Van Uden Site 10
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2016	FAUNASURVEY_WLS	Certain		Opportunistic observation	1	Mt Holland	Road to Van Uden
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2016	FAUNASURVEY_WLS	Certain		Opportunistic observation	1	Mt Holland	Van Uden
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2016	FAUNASURVEY_WLS	Certain		Opportunistic observation	1	Mt Holland	Van Uden
BIRD	Platycercus icterotis xanthogenys	Western rosella (inland)	P4		2017	FAUNASURVEY_WLS	Certain		Opportunistic sighting	1	Mt Holland	Regional Survey Area (south)
BIRD	Thinornis rubricollis	Hooded plover, hooded dotterel	P4		1977	BIRDATLAS1				0		
BIRD	Thinornis rubricollis	Hooded plover, hooded dotterel	P4		2000	BIRDATLAS2				0	Emu Rock	Emu Rock
BIRD	Thinornis rubricollis	Hooded plover, hooded dotterel	P4		2000	BIRDATLAS2				0	Enu Rock	Enu Rock
BIRD	Thinornis rubricollis	Hooded plover, hooded dotterel	P4		2000	BIRDATLAS2				0	Lake Carmody	Lake Carmody
INVERTEBRATE	Aganippe castellum	Tree-stem trapdoor spider	P4		2017	FAUNASURVEY_WLS	Certain		sighting	1	Forrestania	Bad Bat

CLASS	SCI_NAME	COM_NAME	WA_status	EPBCstatus	YEAR	SOURCE	CERTAINTY	OBS_METHOD	OBS_TYPE	COUNT	LOCALITY	SITE
INVERTEBRATE	Aganippe castellum	tree-stem trapdoor spider	P4		2009	TFAUNA	Certain	Opportunistic sighting	Day sighting	6	Skeleton Rock	Skeleton Rocks access road east, between Dunbar Rd and King Ingrahm Rd.
INVERTEBRATE	Aganippe castellum	tree-stem trapdoor spider	P4		2009	TFAUNA	Certain	Opportunistic sighting	Day sighting	2	Skeleton Rock	Skeleton Rocks east access track, between Dunbar Rd and King Ingrahm Rd.
INVERTEBRATE	Aganippe castellum	Tree-stem trapdoor spider	P4		2017	WL_REG17		Survey		0		Aganippe castellum|||12/06/2017.1
INVERTEBRATE	Daphnia jollyi	a water flea (inland south west)	P1		2010	FAUNASURVEY	Certain	Survey	Unknown	1	HYDEN	Wheatbelt, Allen_rocks
INVERTEBRATE	Daphnia jollyi	a water flea (inland south west)	P1		2010	FAUNASURVEY	Certain	Survey	Unknown	1	HYDEN	Wheatbelt, King_rocks
INVERTEBRATE	Daphnia jollyi	a water flea (inland south west)	P1		2010	FAUNASURVEY	Certain	Survey	Unknown	1	WOOLOCUTTY	Wheatbelt, Twine_Rock
INVERTEBRATE	Daphnia jollyi	a water flea (inland south west)	P1		2010	FAUNASURVEY	Certain	Survey	Unknown	1	MOUNT WALKER	Wheatbelt, Welcome_Hill
INVERTEBRATE	Daphnia jollyi	a water flea (inland south west)	P1		2010	FAUNASURVEY	Certain	Survey	Unknown	1	HYDEN	Wheatbelt, Wheeler_Rock
MAMMAL	Dasyurus geoffroii	Chuditch, western quoll	VU	VU	2017	FAUNASURVEY_WLS	Certain		Cage Trap	1	Mt Holland	Chuditch Transect North
MAMMAL	Dasyurus geoffroii	chuditch, western quoll	VU	VU	1985	TFAUNA	Certain	Opportunistic sighting	Dead	2	HYDEN	East of Hyden, near Kings Rock.
MAMMAL	Dasyurus geoffroii	chuditch, western quoll	VU	VU	2009	TFAUNA	Certain	Survey	Caught or trapped	1	Hyden/Forrestania	On the Hyden-Norseman track near State barrier fence
MAMMAL	Dasyurus geoffroii	chuditch, western quoll	VU	VU	2009	TFAUNA	Certain	Opportunistic sighting	Dead	1	Hyden	Hyden-Norseman track near the state barrier fence (vermin proof fence)
MAMMAL	Dasyurus geoffroii	chuditch, western quoll	VU	VU	2009	TFAUNA	Certain	Opportunistic sighting	Dead	1		on the Hyden - Norseman track near the State barrier fence
MAMMAL	Dasyurus geoffroii	chuditch, western quoll	VU	VU	2016	TFAUNA	Certain	Opportunistic sighting	Dead	1	West Holleton	Waterbidden Rd (Waterbidden Soak) off Cowan Rd & Wogarl East Rd
MAMMAL	Dasyurus geoffroii	Chuditch, western quoll	VU	VU	1976	WAM_MAMMALS	WAM Vouchered	Collection	Specimen	1	WEST HOLLETON	WEST HOLLETON
MAMMAL	Dasyurus geoffroii	Chuditch, western quoll	VU	VU	0	WAM_MAMMALS	WAM Vouchered	Collection	Specimen	1	HYDEN	HYDEN
MAMMAL	Dasyurus geoffroii	Chuditch, western quoll	VU	VU	0	WAM_MAMMALS	WAM Vouchered	Collection	Specimen	1		
MAMMAL	Dasyurus geoffroii	Chuditch, western quoll	VU	VU	2017	WL_REG17		Survey		0		Dasyurus geoffroii|||29/11/2017.1
MAMMAL	Notamacropus irma	Western brush wallaby	P4		2016	FAUNASURVEY_WLS	Certain		Opportunistic observation	1	Mt Holland	Road to Van Uden
MAMMAL	Notamacropus irma	Western brush wallaby	P4		2016	FAUNASURVEY_WLS	Certain		Opportunistic observation	1	Mt Holland	Road to Van Uden
MAMMAL	Notamacropus irma	Western brush wallaby	P4		2017	FAUNASURVEY_WLS	Certain		Camera trap record	1	Mt Holland	Cam W03-6
MAMMAL	Notamacropus irma	Western brush wallaby	P4		2017	FAUNASURVEY_WLS	Certain		Opportunistic sighting	1	Mt Holland	Regional Survey Area (southern Chuditch transect)
MAMMAL	Notamacropus irma	western brush wallaby	P4		1995	TFAUNA	Certain	Opportunistic sighting	Dead	1	Kondinin	
MAMMAL	Notamacropus irma	Western brush wallaby	P4		2016	WL_REG17		Survey		0		Macropus irma|||01/12/2016
MAMMAL	Notamacropus irma	Western brush wallaby	P4		2016	WL_REG17		Survey		0		Macropus irma|||27/11/2016
MAMMAL	Phascogale calura	red-tailed phascogale, kenngoor	CD	VU	2008	TFAUNA	Moderately certain	Opportunistic sighting	Night sighting	1	HYDEN	January. 40km NE of Hyden (Douthe road). King Rock- granite outcrop with dense sheoak + Euc.
MAMMAL	Phascogale calura	red-tailed phascogale, kenngoor	CD	VU	2008	TFAUNA	Certain	Opportunistic sighting	Dead	1	HYDEN	Community Sighting - January. 40km NE of Hyden (Douthe road). King Rock- granite outcrop with dense sheoak + Euc.
MAMMAL	Phascogale calura	red-tailed phascogale, kenngoor	CD	VU	2016	TFAUNA	Certain	Opportunistic sighting	Day sighting	1	Hyden	Pit on Hyden-Norseman Rd, approx 8km E of intersection w/ Sharps Rd
MAMMAL	Phascogale calura	Red-tailed phascogale, kenngoor	CD	VU	1972	WAM_MAMMALS	WAM Vouchered	Collection	Specimen	1	HYDEN	DRAGON ROCKS RESERVE
MAMMAL	Phascogale calura	Red-tailed phascogale, kenngoor	CD	VU	1972	WAM_MAMMALS	WAM Vouchered	Collection	Specimen	1		DRAGON ROCKS RESERVE
MAMMAL	Pseudomys occidentalis	western mouse	P4		1995	TFAUNA	Certain	Survey	Caught or trapped	1	Dragon Rocks Nature Reserve	Dragon Rocks Nature Reserve. Trap D3
MAMMAL	Pseudomys occidentalis	Western mouse	P4		1972	WAM_MAMMALS	WAM Vouchered	Collection	Specimen	1	LITTLE ITALY	DRAGON ROCKS RESERVE,APPROX
MAMMAL	Pseudomys occidentalis	Western mouse	P4		1972	WAM_MAMMALS	WAM Vouchered	Collection	Specimen	1		DRAGON ROCKS RESERVE,APPROX
REPTILE	Paroplocephalus atriceps	Lake Cronin snake	P3		2009	FAUNASURVEY	Certain	Survey	Unknown	1	FORRESTANIA	FORRESTANIA, Cosmic Boy
REPTILE	Paroplocephalus atriceps	Lake Cronin snake	P3		2013	FAUNASURVEY	Certain	Survey	Unknown	1	FORRESTANIA	FORRESTANIA Cosmic Boy,
REPTILE	Paroplocephalus atriceps	Lake Cronin snake	P3		2017	FAUNASURVEY_WLS	Certain	Survey	sighting	1	Forrestania	Forrestania, North Iron Cap
REPTILE	Paroplocephalus atriceps	Lake Cronin snake	P3		2017	WL_REG17		Survey		0		Paroplocephalus atriceps|||12/06/2017

DBCA White-tailed Black Cockatoo Breeding Data

WT_ID	HOL_TYPE	TREE_CAT	YRFIRSTBR	YRLASTBR	SCE_ID_FLD	SCE_ID_VAL
65	natural	confirmed	2001	2001	DBNO	9725
1588	natural	confirmed	2011	2012	hollow code	KULSINH002
1589	natural	confirmed	2011	2012	hollow code	KULSINH003
1590	natural	confirmed	2011	2012	hollow code	KULSINH004
1592	natural	confirmed	2012	2012	hollow code	KULSINH006
1594	natural	confirmed	2012	2012	hollow code	KULSINH008
1702	natural	confirmed	2009	2009	hollow code	LAKDRAH006
308	natural	confirmed	2008	2008	hollow code	LAKMcLH001
1892	natural	confirmed	2008	2008	hollow code	LAKMcLH002
309	natural	confirmed	2009	2009	NEST_NO	
308	natural	confirmed	2008	2009	NEST_NO	
1587	natural	potential	0	0	hollow code	KULSINH001
1591	natural	potential	0	0	hollow code	KULSINH005
1593	natural	potential	0	0	hollow code	KULSINH007
1595	natural	potential	0	0	hollow code	KULSINH009
1596	natural	potential	0	0	hollow code	KULSINH010
1597	natural	potential	0	0	hollow code	KULSINH011
1598	natural	potential	0	0	hollow code	KULSINH012
1599	natural	potential	0	0	hollow code	KULSINH013
1600	natural	potential	0	0	hollow code	KULSINH014
1601	natural	potential	0	0	hollow code	KULSINH015
1602	natural	potential	0	0	hollow code	KULSINH016
1603	natural	potential	0	0	hollow code	KULSINH017
1604	natural	potential	0	0	hollow code	KULSINH018
1605	natural	potential	0	0	hollow code	KULSINH019
1606	natural	potential	0	0	hollow code	KULSINH020
1607	natural	potential	0	0	hollow code	KULSINH021
1608	natural	potential	0	0	hollow code	KULSINH022
1609	natural	potential	0	0	hollow code	KULSINH023
1610	natural	potential	0	0	hollow code	KULSINH024
1611	natural	potential	0	0	hollow code	KULSINH025

WT_ID	HOL_TYPE	TREE_CAT	YRFIRSTBR	YRLASTBR	SCE_ID_FLD	SCE_ID_VAL
1612	natural	potential	0	0	hollow code	KULSINH026
1613	natural	potential	0	0	hollow code	KULSINH027
1614	natural	potential	0	0	hollow code	KULSINH028
1615	natural	potential	0	0	hollow code	KULSINH029
1616	natural	potential	0	0	hollow code	KULSINH030
1617	natural	potential	0	0	hollow code	KULSINH031
1618	natural	potential	0	0	hollow code	KULSINH032
1619	natural	potential	0	0	hollow code	KULSINH033
1620	natural	potential	0	0	hollow code	KULSINH034
1621	natural	potential	0	0	hollow code	KULSINH035
1622	natural	potential	0	0	hollow code	KULSINH036
1623	natural	potential	0	0	hollow code	KULSINH037
1624	natural	potential	0	0	hollow code	KULSINH038
1625	natural	potential	0	0	hollow code	KULSINH039
1626	natural	potential	0	0	hollow code	KULSINH040
1627	natural	potential	0	0	hollow code	KULSINH041
1628	natural	potential	0	0	hollow code	KULSINH042
1629	natural	potential	0	0	hollow code	KULSINH043
1630	natural	potential	0	0	hollow code	KULSINH044
1701	natural	potential	0	0	hollow code	LAKDRAH005
1703	natural	potential	0	0	hollow code	LAKDRAH008
1704	natural	potential	0	0	hollow code	LAKDRAH009
1893	natural	potential	0	0	hollow code	LAKMcLH003
1894	natural	potential	0	0	hollow code	LAKMcLH004
1946	natural	potential	0	0	hollow code	LAKSHAH009

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report

Created By Guest user on 27/10/2021

Current Names Only Yes
Core Datasets Only Yes
Method 'By Circle'
Centre 119° 10' 58" E,32° 14' 29" S
Buffer 20km
Group By Family

Family	Species	Records
Acanthizidae	8	37
Accipitridae	3	5
Aegothelidae	1	1
Agamidae	5	35
Amaranthaceae	4	5
Anatidae	4	6
Apiaceae	4	7
Apocynaceae	1	4
Araliaceae	1	1
Ardeidae	1	1
Artamidae	1	3
Asparagaceae	5	5
Asteraceae	12	16
Boidae	1	1
Boraginaceae	1	7
Burhinidae	1	1
Burramyidae	1	1
Cacatuidae	1	2
Campephagidae	1	2
Caryophyllaceae	1	1
Casuariidae	1	1
Casuarinaceae	5	8
Celastraceae	2	3
Centrolepidaceae	4	6
Charadriidae	1	1
Chenopodiaceae	6	7
Columbidae	2	7
Corvidae	1	5
Cracticidae	4	16
Crassulaceae	1	1
Cuculidae	1	1
Cupressaceae	2	3
Cyperaceae	8	8
Daphniidae	1	2
Dasyuridae	4	7
Dicaeidae	1	1
Dicruridae	3	12
Dilleniaceae	4	10
Diplodactylidae	3	3
Droseraceae	5	14
Elaeocarpaceae	1	3
Elapidae	1	3
Ericaceae	11	14
Euphorbiaceae	3	3
Fabaceae	47	60
Falconidae	2	4
Goodeniaceae	19	26
Graphidaceae	1	1
Haemodoraceae	2	3
Halcyonidae	1	1
Haloragaceae	3	3
Hemerocallidaceae	1	1
Hirundinidae	1	4
Hydatellaceae	1	1
Hypoxidaceae	1	1
Iridaceae	1	1
Juncaginaceae	2	2
Lamiaceae	10	17
Lecideaceae	1	1
Loganiaceae	3	25
Maluridae	1	3
Malvaceae	2	4
Megapodiidae	1	16
Meliphagidae	9	54
Meropidae	1	1
Myobatrachidae	1	1
Myrtaceae	102	187
Nemesiidae	1	3
Orchidaceae	18	22
Orobanchaceae	1	1
Otididae	1	2
Pachycephalidae	4	19
Pardalotidae	2	11
Parmeliaceae	5	9
Petroicidae	4	10
Pittosporaceae	2	4
Poaceae	13	13

Podargidae	1	1
Podicipedidae	1	1
Polygalaceae	3	4
Pomatostomidae	1	2
Portulacaceae	1	1
Proteaceae	58	90
Psittacidae	7	14
Psoraceae	1	1
Pygopodidae	1	1
Restionaceae	1	1
Rhamnaceae	7	9
Ruppiaceae	1	3
Rutaceae	11	18
Santalaceae	3	5
Sapindaceae	4	8
Scincidae	6	6
Scrophulariaceae	3	4
Solanaceae	2	4
Stylidiaceae	5	7
Thamnocephalidae	1	3
Thymelaeaceae	6	8
Triopsidae	1	1
Varanidae	1	2
Verrucariaceae	1	1
Violaceae	2	2
Xanthorrhoeaceae	1	1
Zygophyllaceae	3	3
TOTAL	**529**	**992**

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
Acanthizidae					
1.	24260	*Acanthiza apicalis (Broad-tailed Thornbill, Inland Thornbill)*			
2.	24261	*Acanthiza chrysorrhoa (Yellow-rumped Thornbill)*			
3.	24265	*Acanthiza uropygialis (Chestnut-rumped Thornbill)*			
4.	25530	*Gerygone fusca (Western Gerygone)*			
5.	24277	*Hylacola cauta (Shy Groundwren, Shy Heathwren)*			
6.	24278	*Pyrrholaemus brunneus (Redthroat)*			
7.	25534	*Sericornis frontalis (White-browed Scrubwren)*			
8.	30948	*Smicrornis brevirostris (Weebill)*			
Accipitridae					
9.	25536	*Accipiter fasciatus (Brown Goshawk)*			
10.	24285	*Aquila audax (Wedge-tailed Eagle)*			
11.	47965	*Hieraaetus morphnoides (Little Eagle)*			
Aegothelidae					
12.	25544	*Aegotheles cristatus (Australian Owlet-nightjar)*			
Agamidae					
13.	24871	*Ctenophorus cristatus (Bicycle Dragon)*			
14.	25460	*Ctenophorus maculatus (Spotted Military Dragon)*			
15.	24883	*Ctenophorus ornatus (Ornate Crevice-Dragon)*			
16.	24904	*Moloch horridus (Thorny Devil)*			
17.	25510	*Pogona minor (Dwarf Bearded Dragon)*			
Amaranthaceae					
18.	2721	*Ptilotus exaltatus (Tall Mulla Mulla)*			
19.	2733	*Ptilotus humilis*			
20.	2751	*Ptilotus polystachyus (Prince of Wales Feather)*			
21.	2760	*Ptilotus spathulatus*			
Anatidae					
22.	24312	*Anas gracilis (Grey Teal)*			
23.	24321	*Chenonetta jubata (Australian Wood Duck, Wood Duck)*			
24.	24322	*Cygnus atratus (Black Swan)*			
25.	24331	*Tadorna tadornoides (Australian Shelduck, Mountain Duck)*			
Apiaceae					
26.	6215	*Chlaenosciadium gardneri*			
27.	6255	*Platysace juncea*			
28.	6257	*Platysace maxwellii (Karno)*			
29.	14999	*Platysace trachymenioides*			
Apocynaceae					
30.	6565	*Alyxia buxifolia (Dysentery Bush)*			
Araliaceae					
31.	6229	*Hydrocotyle diantha*			
Ardeidae					
32.		*Egretta novaehollandiae*			
Artamidae					
33.	25566	*Artamus cinereus (Black-faced Woodswallow)*			
Asparagaceae					
34.	1215	*Chamaexeros fimbriata*			
35.	1306	*Laxmannia paleacea*			
36.	1226	*Lomandra effusa (Scented Matrush)*			
37.	1233	*Lomandra mucronata*			
38.	1343	*Thysanotus patersonii*			
Asteraceae					
39.	7817	*Actinobole uliginosum (Flannel Cudweed)*			
40.	7836	*Angianthus tomentosus (Camel-grass)*			
41.	7857	*Blennospora phlegmatocarpa*			
42.	7939	*Conyza bonariensis (Flaxleaf Fleabane)*	Y		
43.	14186	*Myriocephalus pygmaeus*			
44.	8140	*Olearia muelleri (Goldfields Daisy)*			
45.	13255	*Pterochaeta paniculata*			
46.	8226	*Siloxerus pygmaeus*			
47.	8253	*Triptilodiscus pygmaeus*			
48.	38388	*Ursinia anthemoides subsp. anthemoides*	Y		

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
49.	8266	*Vittadinia gracilis*			
50.	13331	*Waitzia acuminata var. acuminata*			
Boidae					
51.	25240	*Morelia spilota subsp. imbricata (Carpet Python)*			
Boraginaceae					
52.	6692	*Halgania lavandulacea (Blue Bush)*			
Burhinidae					
53.	24359	*Burhinus grallarius (Bush Stone-curlew)*			
Burramyidae					
54.	24086	*Cercartetus concinnus (Western Pygmy-possum, Mundarda)*			
Cacatuidae					
55.		*Eolophus roseicapillus*			
Campephagidae					
56.	25568	*Coracina novaehollandiae (Black-faced Cuckoo-shrike)*			
Caryophyllaceae					
57.	19825	*Petrorhagia dubia*	Y		
Casuariidae					
58.	24470	*Dromaius novaehollandiae (Emu)*			
Casuarinaceae					
59.	1721	*Allocasuarina campestris*			
60.	1722	*Allocasuarina corniculata*			
61.	1730	*Allocasuarina helmsii*			
62.	1734	*Allocasuarina microstachya*			
63.	12655	*Allocasuarina spinosissima*			
Celastraceae					
64.	4725	*Psammomoya choretroides*			
65.	4734	*Stackhousia muricata*			
Centrolepidaceae					
66.	1116	*Aphelia brizula*			
67.	1121	*Centrolepis aristata (Pointed Centrolepis)*			
68.	1129	*Centrolepis glabra (Smooth Centrolepis)*			
69.	1134	*Centrolepis polygyna (Wiry Centrolepis)*			
Charadriidae					
70.	24386	*Vanellus tricolor (Banded Lapwing)*			
Chenopodiaceae					
71.	11254	*Rhagodia preissii subsp. preissii*			
72.	48433	*Salicornia blackiana*			
73.	33236	*Tecticornia halocnemoides (Shrubby Samphire)*			
74.	31921	*Tecticornia leptoclada subsp. inclusa*			
75.	31675	*Tecticornia lylei*			
76.	31716	*Tecticornia syncarpa*			
Columbidae					
77.	24407	*Ocyphaps lophotes (Crested Pigeon)*			
78.	24409	*Phaps chalcoptera (Common Bronzewing)*			
Corvidae					
79.	25592	*Corvus coronoides (Australian Raven)*			
Cracticidae					
80.	24420	*Cracticus nigrogularis (Pied Butcherbird)*			
81.	25595	*Cracticus tibicen (Australian Magpie)*			
82.	25596	*Cracticus torquatus (Grey Butcherbird)*			
83.	25597	*Strepera versicolor (Grey Currawong)*			
Crassulaceae					
84.	11349	*Crassula decumbens var. decumbens*			
Cuculidae					
85.	42307	*Cacomantis pallidus (Pallid Cuckoo)*			
Cupressaceae					
86.	92	*Callitris canescens*			
87.	96	*Callitris preissii (Rottnest Island Pine, Maro)*			
Cyperaceae					
88.	899	*Gahnia ancistrophylla (Hooked-leaf Saw Sedge)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
89.	41647	*Lepidosperma sanguinolentum*			
90.		*Lepidosperma sp.*			
91.	16284	*Lepidosperma sp. P1 small head (M.D. Tindale 166A)*			
92.	954	*Mesomelaena preissii*			
93.	972	*Schoenus armeria*			
94.	17607	*Schoenus calcatus*			
95.	1002	*Schoenus nanus (Tiny Bog Rush)*			
Daphniidae					
96.	33942	*Daphnia jollyi (water flea (inland south west))*		P1	
Dasyuridae					
97.	24092	*Dasyurus geoffroii (Chuditch, Western Quoll)*		T	
98.	24098	*Phascogale calura (Red-tailed Phascogale, Kenngoor)*		S	
99.	24111	*Sminthopsis gilberti (Gilbert's Dunnart)*			
100.	24112	*Sminthopsis granulipes (White-tailed Dunnart)*			
Dicaeidae					
101.	25607	*Dicaeum hirundinaceum (Mistletoebird)*			
Dicruridae					
102.	24443	*Grallina cyanoleuca (Magpie-lark)*			
103.	48096	*Rhipidura albiscapa (Grey Fantail)*			
104.	25614	*Rhipidura leucophrys (Willie Wagtail)*			
Dilleniaceae					
105.	19692	*Hibbertia ancistrophylla*			
106.	5124	*Hibbertia exasperata*			
107.	20349	*Hibbertia psilocarpa*			
108.	5160	*Hibbertia pungens*			
Diplodactylidae					
109.	24918	*Crenadactylus ocellatus subsp. ocellatus (Clawless Gecko)*			
110.	24940	*Diplodactylus pulcher*			
111.	30935	*Lucasium maini*			
Droseraceae					
112.	3088	*Drosera andersoniana (Sturdy Sundew)*			
113.	13224	*Drosera browniana*			
114.	3098	*Drosera glanduligera (Pimpernel Sundew)*			
115.	29207	*Drosera rupicola*			
116.	49090	*Drosera sp. Branched styles (S.C. Coffey 193)*			
Elaeocarpaceae					
117.	4530	*Tetratheca efoliata*			
Elapidae					
118.	25266	*Simoselaps bertholdi (Jan's Banded Snake)*			
Ericaceae					
119.	6336	*Astroloma serratifolium (Kondrung)*			
120.	48442	*Brachyloma elusum*		P2	
121.	6341	*Brachyloma preissii (Globe Heath)*			
122.	6343	*Coleanthera myrtoides*			
123.	19515	*Leucopogon sp. Corrigin (K. Kershaw KK 2091)*			
124.	41768	*Leucopogon sp. Forrestania (G.F. Craig 2386)*			
125.	28311	*Leucopogon sp. Great Southern (R.S. Cowan A 586)*			
126.	34163	*Leucopogon sp. Newdegate (M. Hislop 3585)*			
127.	19205	*Leucopogon sp. Wheatbelt (S. Murray 257)*			
128.	19517	*Leucopogon sp. outer wheatbelt (M. Hislop 30)*			
129.	34736	*Lysinema pentapetalum*			
Euphorbiaceae					
130.	4591	*Bertya dimerostigma*			
131.	34297	*Beyeria sulcata var. gracilis*			
132.	13753	*Euphorbia dallachyana*			
Fabaceae					
133.	16159	*Acacia acanthoclada subsp. acanthoclada*			
134.	16107	*Acacia acoma*			
135.	3200	*Acacia acuminata (Jam, Mangard)*			
136.	3201	*Acacia acutata*			
137.	15467	*Acacia assimilis subsp. assimilis*			
138.	3236	*Acacia beauverdiana (Pukkati)*			
139.	3251	*Acacia camptoclada*			
140.	16116	*Acacia chamaeleon*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
141.	3256	*Acacia chrysella*			
142.	16169	*Acacia deficiens*			
143.	3315	*Acacia duriuscula*			
144.	3324	*Acacia erinacea*			
145.	3366	*Acacia hemiteles*			
146.	3389	*Acacia intricata*			
147.	16130	*Acacia laricina var. laricina*			
148.	3408	*Acacia lasiocalyx (Silver Wattle, Wilyurwur)*			
149.	3432	*Acacia mackeyana*			
150.	17915	*Acacia mutabilis*			
151.	14128	*Acacia obesa*		P3	
152.	30033	*Acacia saligna subsp. lindleyi*			
153.		*Acacia sp.*			
154.	3552	*Acacia spinosissima*			
155.	23525	*Acacia steedmanii subsp. steedmanii*			
156.	3589	*Acacia uncinella*			
157.	46473	*Acacia verriculum*			
158.	3596	*Acacia viscifolia*			
159.	31016	*Aotus lanea*		P1	
160.	30251	*Bossiaea atrata*		P3	
161.	8977	*Daviesia aphylla*			
162.	16576	*Daviesia argillacea*			
163.	3797	*Daviesia cardiophylla*			
164.	14288	*Daviesia uncinata*		P3	
165.	19292	*Eutaxia lasiophylla*			
166.	10981	*Gastrolobium parviflorum*			
167.	3930	*Gastrolobium trilobum (Bullock Poison)*			
168.	10777	*Gompholobium gompholobioides*			
169.	4005	*Jacksonia condensata*			
170.	4021	*Jacksonia nematoclada*			
171.	4024	*Jacksonia racemosa*			
172.	3670	*Labichea stellata*			
173.	4056	*Leptosema daviesioides*			
174.	4091	*Mirbelia floribunda (Purple Mirbelia)*			
175.	41991	*Mirbelia sp. Magentea (T.E.H. Aplin 5976)*			
176.	4104	*Mirbelia trichocalyx*			
177.	20785	*Pultenaea indira subsp. indira*			
178.	12276	*Senna artemisioides subsp. filifolia*			
179.	9008	*Urodon dasyphyllus (Mop Bushpea)*			
Falconidae					
180.	25621	*Falco berigora (Brown Falcon)*			
181.	25622	*Falco cenchroides (Australian Kestrel, Nankeen Kestrel)*			
Goodeniaceae					
182.	7412	*Anthotium rubriflorum (Red Anthotium)*			
183.	7413	*Brunonia australis (Native Cornflower)*			
184.	19069	*Brunonia sp. Goldfields (K.R. Newbey 6044)*			
185.	18632	*Dampiera angulata subsp. angulata*			
186.	7438	*Dampiera eriocephala (Woolly-headed Dampiera)*			
187.	7449	*Dampiera juncea (Rush-like Dampiera)*			
188.	7483	*Dampiera tomentosa (Felted Dampiera)*			
189.	7486	*Dampiera wellsiana (Wells' Dampiera)*			
190.	12522	*Goodenia glareicola*			
191.	12523	*Goodenia helmsii*			
192.	7517	*Goodenia incana (Hoary Goodenia)*			
193.	7534	*Goodenia pinifolia (Pine-leaved Goodenia)*			
194.	7546	*Goodenia scapigera (White Goodenia)*			
195.	19051	*Goodenia scapigera subsp. scapigera*			
196.	13167	*Goodenia watsonii subsp. glandulosa*			
197.	7568	*Lechenaultia biloba (Blue Leschenaultia)*			
198.	7575	*Lechenaultia formosa (Red Leschenaultia)*			
199.	7639	*Scaevola restiacea*			
200.	7658	*Velleia discophora (Cabbage Poison)*			
Graphidaceae					
201.	27725	*Diploschistes thunbergianus*			
Haemodoraceae					
202.	1444	*Conostylis petrophiloides*			
203.	1465	*Haemodorum discolor*			

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Halcyonidae					
204.	25549	*Todiramphus sanctus (Sacred Kingfisher)*			
Haloragaceae					
205.	6143	*Glischrocaryon aureum (Common Popflower)*			
206.	6144	*Glischrocaryon flavescens*			
207.	6197	*Myriophyllum petraeum (Granite Myriophyllum)*		P4	
Hemerocallidaceae					
208.	1260	*Stypandra glauca (Blind Grass)*			
Hirundinidae					
209.	48061	*Petrochelidon nigricans (Tree Martin)*			
Hydatellaceae					
210.	1139	*Trithuria bibracteata*			
Hypoxidaceae					
211.	43765	*Pauridia glabella var. glabella*			
Iridaceae					
212.	16735	*Patersonia drummondii subsp. drummondii*			
Juncaginaceae					
213.	33221	*Triglochin longicarpa*			
214.	150	*Triglochin stowardii*			
Lamiaceae					
215.	6747	*Cyanostegia angustifolia (Tinsel-flower)*			
216.	41025	*Dasymalla terminalis (Native Foxglove)*			
217.	6755	*Dicrastylis corymbosa*			
218.	6771	*Dicrastylis parvifolia*			
219.	6875	*Hemigenia westringioides (Open Hemigenia)*			
220.	6899	*Microcorys obovata*			
221.	6812	*Pityrodia lepidota*			
222.	12704	*Prostanthera nanophylla*		P3	
223.	34603	*Westringia cephalantha var. caterva*			
224.	9247	*Westringia rigida (Stiff Westringia)*			
Lecideaceae					
225.		*Lecidea sp.*			
Loganiaceae					
226.	46313	*Orianthera flaviflora*			
227.	46220	*Orianthera judithiana*			
228.	46253	*Orianthera tortuosa*			
Maluridae					
229.	24551	*Malurus pulcherrimus (Blue-breasted Fairy-wren)*			
Malvaceae					
230.	40903	*Androcalva aphrix*			
231.	5047	*Lasiopetalum rosmarinifolium*			
Megapodiidae					
232.	24557	*Leipoa ocellata (Malleefowl)*		T	
Meliphagidae					
233.	24559	*Acanthagenys rufogularis (Spiny-cheeked Honeyeater)*			
234.	24561	*Anthochaera carunculata (Red Wattlebird)*			
235.	47962	*Glyciphila melanops (Tawny-crowned Honeyeater)*			
236.	25659	*Lichenostomus leucotis (White-eared Honeyeater)*			
237.	25661	*Lichmera indistincta (Brown Honeyeater)*			
238.	24583	*Manorina flavigula (Yellow-throated Miner)*			
239.	25663	*Melithreptus brevirostris (Brown-headed Honeyeater)*			
240.	48071	*Phylidonyris niger (White-cheeked Honeyeater)*			
241.	42344	*Purnella albifrons (White-fronted Honeyeater)*			
Meropidae					
242.	24598	*Merops ornatus (Rainbow Bee-eater)*			
Myobatrachidae					
243.	25401	*Crinia pseudinsignifera (Bleating Froglet)*			
Myrtaceae					
244.	19467	*Aluta appressa*			
245.	20726	*Astus subroseus*			
246.	36038	*Baeckea sp. Koonadgin (B.L. Rye & M.E. Trudgen BLR 241137)*			
247.	5375	*Balaustion pulcherrimum (Native Pomegranate)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
248.	5378	*Beaufortia bracteosa*			
249.	5388	*Beaufortia micrantha (Little Bottlebrush, Small-leaved Beaufortia)*			
250.	5389	*Beaufortia orbifolia (Ravensthorpe Bottlebrush)*			
251.	46826	*Beaufortia puberula (Hairy-leaved Beaufortia)*			
252.	5408	*Calothamnus gilesii*			
253.	35716	*Calothamnus quadrifidus subsp. petraeus*			
254.	35816	*Calothamnus quadrifidus subsp. quadrifidus*			
255.	35736	*Calothamnus quadrifidus subsp. seminudus*			
256.	5432	*Calothamnus tuberosus*			
257.	13654	*Calytrix breviseta subsp. stipulosa*			
258.	5465	*Calytrix leschenaultii*			
259.	5476	*Calytrix sapphirina*			
260.	5491	*Chamelaucium ciliatum*			
261.	35676	*Chamelaucium sp. Merredin (G.J. Keighery & N. Gibson 6320)*			
262.	5499	*Chamelaucium virgatum*			
263.	42066	*Cyathostemon heterantherus*			
264.	5510	*Darwinia diosmoides*			
265.	14104	*Eremaea pauciflora var. pauciflora*			
266.	45244	*Ericomyrtus serpyllifolia*			
267.	19650	*Eucalyptus alipes*			
268.	5572	*Eucalyptus burracoppinensis (Burracoppin Mallee)*			
269.	11758	*Eucalyptus caesia subsp. caesia (Caesia)*		P4	
270.	19508	*Eucalyptus calycogona subsp. calycogona*			
271.	12904	*Eucalyptus capillosa*			
272.	5611	*Eucalyptus cylindriflora (White Mallee)*			
273.	5612	*Eucalyptus cylindrocarpa (Woodline Mallee)*			
274.	12869	*Eucalyptus densa subsp. densa*			
275.	18521	*Eucalyptus flocktoniae subsp. flocktoniae*			
276.	12888	*Eucalyptus histophylla*		P3	
277.	15743	*Eucalyptus incerata (Mount Day Mallee)*			
278.	5675	*Eucalyptus incrassata (Lerp Mallee)*			
279.	13059	*Eucalyptus leptopoda subsp. leptopoda*			
280.	13037	*Eucalyptus loxophleba subsp. lissophloia*			
281.	19637	*Eucalyptus mimica subsp. mimica*		P3	
282.	13513	*Eucalyptus myriadena subsp. myriadena*			
283.	13539	*Eucalyptus obesa*			
284.	13524	*Eucalyptus olivina*			
285.	5745	*Eucalyptus pileata (Capped Mallee)*			
286.	5747	*Eucalyptus platycorys (Boorabbin Mallee)*			
287.	5761	*Eucalyptus rigidula (Stiff-leaved Mallee)*			
288.	12693	*Eucalyptus salicola (Salt Gum)*			
289.	5766	*Eucalyptus salmonophloia (Salmon Gum, Wurak)*			
290.	5767	*Eucalyptus salubris (Gimlet)*			
291.	5772	*Eucalyptus sheathiana (Ribbon-barked Gum)*			
292.	14189	*Eucalyptus sporadica*			
293.	13026	*Eucalyptus tephroclada*			
294.	18293	*Eucalyptus urna*			
295.	5802	*Eucalyptus yilgarnensis (Yorrell)*			
296.	17027	*Euryomyrtus leptospermoides*			
297.	16722	*Euryomyrtus maidenii*			
298.	13132	*Hypocalymma uncinatum*			
299.	5840	*Kunzea pulchella (Granite Kunzea, Silky Kunzea)*			
300.	5847	*Leptospermum erubescens (Roadside Teatree)*			
301.	5848	*Leptospermum fastigiatum*			
302.	5849	*Leptospermum incanum*			
303.	5852	*Leptospermum nitens*			
304.	5857	*Leptospermum spinescens*			
305.	15063	*Melaleuca acuminata subsp. acuminata*			
306.	12384	*Melaleuca adenostyla*			
307.	5870	*Melaleuca adnata*			
308.	19380	*Melaleuca calyptroides*			
309.	17982	*Melaleuca carrii*			
310.	19289	*Melaleuca condylosa*			
311.	5896	*Melaleuca cordata*			
312.	12387	*Melaleuca ctenoides*			
313.	5908	*Melaleuca eleuterostachya*			
314.	5909	*Melaleuca elliptica (Granite Bottlebrush, Ngow)*			
315.	15749	*Melaleuca eurystoma*			
316.	19486	*Melaleuca hamata*			
317.	5918	*Melaleuca haplantha*			

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318.	5925	*Melaleuca lateriflora (Gorada)*			
319.	5927	*Melaleuca laxiflora*			
320.	14700	*Melaleuca macronychia subsp. macronychia*			
321.	15664	*Melaleuca pauperiflora subsp. pauperiflora*			
322.	5956	*Melaleuca pungens*			
323.	5966	*Melaleuca sheathiana (Boree, Buri)*			
324.	18395	*Melaleuca villosisepala*			
325.	5987	*Melaleuca viminea (Mohan)*			
326.	5999	*Micromyrtus obovata*			
327.	34840	*Oxymyrrhine plicata*		P3	
328.	48266	*Rinzia torquata (Necklace Rinzia)*		P3	
329.	46437	*Tetrapora preissiana*			
330.	42065	*Tetrapora tenuiramea*			
331.	19698	*Thryptomene australis subsp. australis*			
332.	6058	*Thryptomene kochii*			
333.	12388	*Verticordia acerosa var. preissii*			
334.	6073	*Verticordia chrysantha*			
335.	12422	*Verticordia eriocephala (Common Cauliflower)*			
336.	12427	*Verticordia gracilis*		P3	
337.	12432	*Verticordia inclusa*			
338.	12445	*Verticordia multiflora subsp. solox*		P2	
339.	6109	*Verticordia picta (Painted Featherflower)*			
340.	12451	*Verticordia plumosa var. incrassata*			
341.	6113	*Verticordia pritzelii (Pritzel's Featherflower)*			
342.	15267	*Verticordia roei subsp. roei*			
343.	15617	*Verticordia serrata var. serrata*			
344.	6121	*Verticordia stenopetala*		P3	
345.	12467	*Verticordia tumida subsp. therogana*			
Nemesiidae					
346.		*Aname mainae*			
Orchidaceae					
347.	15344	*Caladenia dimidia*			
348.	15355	*Caladenia hirta subsp. rosea*			
349.	18023	*Caladenia horistes*			
350.	1611	*Caladenia radialis (Drooping Spider Orchid)*			
351.	1614	*Caladenia roei (Ant Orchid)*			
352.		*Caladenia sp.*			
353.	18019	*Caladenia vulgata*			
354.	12944	*Diuris amplissima*			
355.	48255	*Diuris brachyscapa*			
356.	44161	*Diuris hazeliae*			
357.	10858	*Diuris picta*			
358.	17423	*Microtis graniticola*			
359.	16688	*Prasophyllum gracile*			
360.	1682	*Prasophyllum sargentii*			
361.	1689	*Pterostylis mutica (Midget Greenhood)*			
362.	1700	*Spiculaea ciliata (Elbow Orchid)*			
363.	1701	*Thelymitra antennifera (Vanilla Orchid)*			
364.	20732	*Thelymitra petrophila*			
Orobanchaceae					
365.	7089	*Parentucellia latifolia (Common Bartsia)*	Y		
Otididae					
366.	24610	*Ardeotis australis (Australian Bustard)*			
Pachycephalidae					
367.	25675	*Colluricincla harmonica (Grey Shrike-thrush)*			
368.	24618	*Oreoica gutturalis (Crested Bellbird)*			
369.	24619	*Pachycephala inornata (Gilbert's Whistler)*			
370.	25680	*Pachycephala rufiventris (Rufous Whistler)*			
Pardalotidae					
371.	25681	*Pardalotus punctatus (Spotted Pardalote)*			
372.	25682	*Pardalotus striatus (Striated Pardalote)*			
Parmeliaceae					
373.	18000	*Xanthoparmelia nashii*		P3	
374.	28172	*Xanthoparmelia reptans*			
375.	28327	*Xanthoparmelia semiviridis*			
376.	28177	*Xanthoparmelia subdistorta*			
377.	28189	*Xanthoparmelia willisii*			

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Petroicidae					
378.	24650	*Drymodes brunneopygia (Southern Scrub-robin)*			
379.	24651	*Eopsaltria australis subsp. griseogularis (Western Yellow Robin)*			
380.	25693	*Microeca fascinans (Jacky Winter)*			
381.	24659	*Petroica goodenovii (Red-capped Robin)*			
Pittosporaceae					
382.	3154	*Billardiera coriacea*			
383.	19421	*Marianthus bicolor (Painted Marianthus)*			
Poaceae					
384.	233	*Avena barbata (Bearded Oat)*	Y		
385.	249	*Bromus diandrus (Great Brome)*	Y		
386.	253	*Bromus rubens (Red Brome)*	Y		
387.	271	*Chloris truncata (Windmill Grass)*			
388.	349	*Ehrharta longiflora (Annual Veldt Grass)*	Y		
389.	449	*Hordeum leporinum (Barley Grass)*	Y		
390.	478	*Lolium rigidum (Wimmera Ryegrass)*	Y		
391.	492	*Neurachne alopecuroidea (Foxtail Mulga Grass)*			
392.	11151	*Rostraria pumila*	Y		
393.	40427	*Rytidosperma setaceum*			
394.	623	*Spartochloa scirpoidea*			
395.	699	*Triodia scariosa*			
396.	48319	*Tripogonella loliiformis*			
Podargidae					
397.	25703	*Podargus strigoides (Tawny Frogmouth)*			
Podicipedidae					
398.	25705	*Tachybaptus novaehollandiae (Australasian Grebe, Black-throated Grebe)*			
Polygalaceae					
399.	4561	*Comesperma scoparium (Broom Milkwort)*			
400.	4563	*Comesperma spinosum (Spiny Milkwort)*			
401.	4566	*Comesperma volubile (Love Creeper)*			
Pomatostomidae					
402.	24683	*Pomatostomus superciliosus (White-browed Babbler)*			
Portulacaceae					
403.	2884	*Portulaca oleracea (Purslane, Wakati)*			
Proteaceae					
404.	1770	*Adenanthos argyreus (Little Woollybush)*			
405.	32621	*Banksia cirsioides*			
406.	45193	*Banksia densa var. Wheatbelt (M. Pieroni s.n. PERTH 04083407)*			
407.	1815	*Banksia elderiana (Swordfish Banksia)*			
408.	11777	*Banksia laevigata subsp. fuscolutea*			
409.	32165	*Banksia pallida*			
410.	32158	*Banksia porrecta*		P4	
411.	32136	*Banksia purdieana*			
412.	32094	*Banksia rufa subsp. flavescens*		P3	
413.	32075	*Banksia shanklandiorum*		P4	
414.	1851	*Banksia sphaerocarpa (Round-fruit Banksia)*			
415.	11868	*Banksia sphaerocarpa var. caesia*			
416.	11582	*Banksia sphaerocarpa var. dolichostyla (Ironcap Banksia)*		T	
417.	1861	*Conospermum brownii (Blue-eyed Smokebush)*			
418.	1946	*Grevillea acacioides*			
419.	1949	*Grevillea acuaria*			
420.	15763	*Grevillea biformis subsp. biformis*			
421.	1971	*Grevillea cagiana (Red Toothbrushes)*			
422.	13453	*Grevillea didymobotrya subsp. didymobotrya*			
423.	1991	*Grevillea disjuncta*			
424.	2002	*Grevillea eryngioides (Curly Grevillea)*			
425.	8832	*Grevillea excelsior (Flame Grevillea)*			
426.	19435	*Grevillea hookeriana subsp. hookeriana*			
427.	2018	*Grevillea huegelii*			
428.	14415	*Grevillea insignis subsp. insignis*			
429.	2055	*Grevillea oncogyne*			
430.	13416	*Grevillea petrophiloides subsp. petrophiloides*			
431.	2077	*Grevillea pterosperma*			
432.	15766	*Grevillea shuttleworthiana subsp. obovata*			
433.	15973	*Grevillea xiphoidea*			
434.	2124	*Grevillea yorkrakinensis*			

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435.	11924	*Hakea cygna subsp. cygna (Swan Fruit Hakea)*			
436.	2157	*Hakea erecta*			
437.	2163	*Hakea francisiana (Emu Tree)*			
438.	2175	*Hakea lissocarpha (Honey Bush)*			
439.	2181	*Hakea meisneriana*			
440.	2184	*Hakea multilineata (Grass Leaf Hakea)*			
441.	12231	*Hakea newbeyana*			
442.	2195	*Hakea platysperma (Cricket Ball Hakea)*			
443.	2197	*Hakea prostrata (Harsh Hakea)*			
444.	19131	*Hakea scoparia subsp. scoparia*			
445.	2208	*Hakea strumosa*			
446.	2211	*Hakea subsulcata*			
447.	14440	*Isopogon gardneri*			
448.	37902	*Isopogon pruinosus subsp. pruinosus*			
449.	16812	*Isopogon scabriusculus subsp. pubifloris*			
450.	19995	*Isopogon sp. Newdegate (D.B. Foreman 771)*			
451.	2238	*Isopogon teretifolius (Nodding Coneflower)*			
452.	2259	*Persoonia coriacea (Leathery-leaf Persoonia)*			
453.	15630	*Persoonia inconspicua*			
454.	2270	*Persoonia quinquenervis*			
455.	2274	*Persoonia saundersiana*			
456.	14395	*Petrophile glauca*			
457.	14445	*Petrophile merrallii*			
458.	2308	*Petrophile seminuda*			
459.	12237	*Petrophile stricta*			
460.	16761	*Synaphea interioris*			
461.	15534	*Synaphea spinulosa subsp. major*			
Psittacidae					
462.		*Barnardius zonarius*			
463.	25715	*Cacatua roseicapilla (Galah)*			
464.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)*		T	
465.	24738	*Neophema elegans (Elegant Parrot)*			
466.	25720	*Platycercus icterotis (Western Rosella)*			
467.	25721	*Platycercus zonarius (Australian Ringneck, Ring-necked Parrot)*			
468.	25722	*Polytelis anthopeplus (Regent Parrot)*			
Psoraceae					
469.	27999	*Psora crystallifera*			
Pygopodidae					
470.	25008	*Pygopus lepidopodus (Common Scaly Foot)*			
Restionaceae					
471.	1073	*Lepidobolus chaetocephalus (Bristle-headed Chaff Rush)*			
Rhamnaceae					
472.	15545	*Cryptandra apetala var. anomala*			
473.	16187	*Cryptandra minutifolia subsp. minutifolia*			
474.	9076	*Cryptandra myriantha*			
475.	4809	*Cryptandra pungens*			
476.	16194	*Cryptandra recurva*			
477.	4840	*Trymalium daphnifolium*			
478.	15141	*Trymalium elachophyllum*			
Ruppiaceae					
479.	116	*Ruppia polycarpa*			
Rutaceae					
480.	11502	*Boronia capitata subsp. clavata*			
481.	11238	*Boronia coerulescens subsp. coerulescens*			
482.	11498	*Boronia coerulescens subsp. spicata*			
483.	16634	*Boronia crenulata subsp. obtusa*			
484.	15966	*Boronia inornata subsp. leptophylla*			
485.	17404	*Boronia ternata var. austrofoliosa*			
486.	11201	*Boronia ternata var. ternata*			
487.	4459	*Drummondita hassellii*			
488.	44594	*Microcybe ambigua*			
489.	4500	*Phebalium filifolium (Slender Phebalium)*			
490.	4504	*Phebalium tuberculosum*			
Santalaceae					
491.	10977	*Exocarpos aphyllus (Leafless Ballart)*			

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
492.	2352	*Leptomeria preissiana*			
493.	2356	*Santalum acuminatum (Quandong, Warnga)*			
Sapindaceae					
494.	4755	*Dodonaea bursariifolia*			
495.	4775	*Dodonaea pinifolia*			
496.	4780	*Dodonaea stenozyga*			
497.	11247	*Dodonaea viscosa subsp. angustissima*			
Scincidae					
498.	25074	*Ctenotus schomburgkii*			
499.	25131	*Lerista distinguenda*			
500.	25184	*Menetia greyii*			
501.	25192	*Morethia obscura*			
502.	25203	*Tiliqua occipitalis (Western Bluetongue)*			
503.	25519	*Tiliqua rugosa*			
Scrophulariaceae					
504.	7200	*Eremophila drummondii*			
505.	7268	*Eremophila serpens (Snake Eremophila)*		P4	
506.	7113	*Zaluzianskya divaricata (Spreading Night Phlox)*	Y		
Solanaceae					
507.	7013	*Solanum hoplopetalum (Thorny Solanum)*			
508.	7043	*Symonanthus aromaticus*			
Stylidiaceae					
509.	7713	*Stylidium dichotomum (Pins-and-needles)*			
510.	7719	*Stylidium ecorne (Foot Triggerplant)*			
511.	34968	*Stylidium involucratum*			
512.	7751	*Stylidium limbatum (Fringed-leaved Triggerplant)*			
513.	7765	*Stylidium neglectum (Neglected Stylidium)*			
Thamnocephalidae					
514.		*Branchinella longirostris*			
Thymelaeaceae					
515.	5229	*Pimelea aeruginosa*			
516.	5231	*Pimelea angustifolia (Narrow-leaved Pimelea)*			
517.	5232	*Pimelea argentea (Silvery Leaved Pimelea)*			
518.	11227	*Pimelea brevifolia subsp. modesta*			
519.	11644	*Pimelea brevistyla subsp. minor*			
520.	5268	*Pimelea sulphurea (Yellow Banjine)*			
Triopsidae					
521.	39407	*Triops australiensis (Shield Shrimp)*			
Varanidae					
522.	25218	*Varanus gouldii (Bungarra or Sand Monitor)*			
Verrucariaceae					
523.	27741	*Endocarpon simplicatum*			
Violaceae					
524.	5220	*Hybanthus epacroides (Spiny Hybanthus)*			
525.	12007	*Hybanthus floribundus subsp. floribundus*			
Xanthorrhoeaceae					
526.	1254	*Xanthorrhoea nana (Dwarf Grasstree)*			
Zygophyllaceae					
527.	48884	*Roepera aurantiaca*			
528.	48891	*Roepera fruticulosa*			
529.	48898	*Roepera ovata*			

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

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

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.

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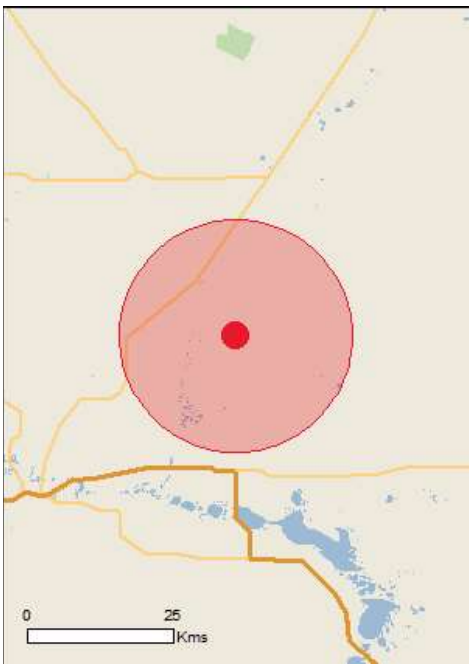

Coordinates
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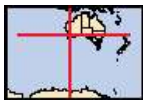

Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	13
Listed Migratory Species:	6

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	10
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	10
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Eucalypt Woodlands of the Western Australian Wheatbelt	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Breeding likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Phascogale calura Red-tailed Phascogale, Red-tailed Wambenger, Kenngoor [316]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Acacia lanuginophylla Woolly Wattle [55575]	Endangered	Species or species habitat may occur within area
Banksia sphaerocarpa var. dolichostyla Ironcaps Banksia, Ironcap Banksia [10518]	Vulnerable	Species or species habitat known to occur within area
Caladenia graniticola Pingaring Spider-orchid, Granite Spider-orchid [84996]	Endangered	Species or species habitat likely to occur within area
Eremophila verticillata Whorled Eremophila [7032]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Gastrolobium diabolophyllum Bodallin Poison [78384]	Critically Endangered	Species or species habitat likely to occur within area
Roycea pycnophylloides Saltmat [21161]	Endangered	Species or species habitat likely to occur within area
Verticordia staminosa var. cylindracea Granite Featherflower [55823]	Endangered	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
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 may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

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 may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely 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
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Unnamed WA34295	WA
Unnamed WA36003	WA

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		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
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Carrichtera annua Ward's Weed [9511]		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
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

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

-32.24305 119.18739

Acknowledgements

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

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

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

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

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Appendix C
Flora Likelihood of Occurrence Assessment

Appendix C1 : Assessment of the Likelihood of Occurrence of DRF and Priority Flora as per Desktop Assessment Database Searches surrounding the Survey Area

Distance to Nearest Record from the Survey Area is based on a distance analysis undertaken against 2020 DBCA database. High = Suitable habitat present and records less than 5 km from the Survey Area, Medium = Suitable habitat present and records between 5 km and 15 km from the Survey Area, and Low = No suitable habitat present and/or records greater than 15 km from the Survey Area, Unknown = Insufficient information available to classify . CR= Listed as Critically Endangered under the EPBC Act, EN = Listed as Endangered under the EBPC Act, VU = listed as Vulnerable under the EBPC Act. T = Threatened under the BC Act, P = Priority Listed, Ranked and Listed by the DBCA. Likelihoods are assessed both pre and post survey based on knowledge of the Survey Area, nearest known records, known flowering period of flora taxa and knowledge gained from the survey effort during ground truthing.

Species	Conservation Status		Source				Distance to Nearest Record (km)	Flowering Period	Prefered Habitat	Habitat occurs within the Survey Area	Pre-Survey Likelihood of Occurrence	Post-Survey Likelihood of Occurrence
	DBCA	EPBC	NatureMap	PMST	DBCA	Lit Review						
Banksia sphaerocarpa var. *dolichostyla A.S.George*	T		✓	✓	✓	✓	15	Mar to May	Lateritic gravel, grey sand	Yes	High	Low
Eucalyptus steedmanii	T		✓	✓	✓		33	Jan-Mar	White to brown sandy clay, pink to white clayey loam. Flats, near salt lakes.	No	Low	Low
Grevillea scapigera	T		✓	✓	✓		33.5	Feb or Oct to Nov	Sandy or gravelly lateritic soils.	Yes	Medium	Low
Philotheca falcata	T		✓	✓	✓		32.2	Oct	Flat/plain, red - orange clay loam over laterite. Moss surface crust, loose soil, few rocks.	No	Low	Low
Roycea pycnophylloides	T	EN	✓	✓	✓		20.2	Sep	Sandy soils, clay. Saline flats.[2]	No	Low	Low
Tribonanthes purpurea	T		✓	✓	✓		21.2	Aug	Seasonally wet soils in moss swards & herbfields among granite rocks.	No	Low	Low
Alyogyne sp. Hyden (G.S. Durell GD 127)	1		✓	✓	✓		31.1	Nov	Flat, red sand	Yes	Medium	Low
Aotus lanea	1		✓	✓	✓		9.7	Apr or Oct.	Grey clayey sand, yellow clay, deep siliceous sand. Edges of salt lakes, valleys.	Yes	Low	Low
Baeckea sp. Crossroads (B.L. Rye & M.E. Trudgen 241186)	1		✓	✓		✓	0	Nov	Yellowish-brown silty sand with some weathered granite (arkosic?) cobbles.	Yes	Recorded	Low
Baeckea sp. Forrestania (K.R. Newbey 1105)	1		✓	✓	✓		27.8	-	Sand. Plains.	Yes	Low	Low
Brachyloma nguba	1		✓	✓	✓		23.9	Apr to May.	White to brown sandy clay, shallow sandy loam. Open mallee woodland, mallee scrub, flat plains.	Yes	Medium	Low
Dicrastylis capitellata	1		✓	✓	✓		23	May	Loamy sand, sandy loam.	Yes	Medium	Low
Eremophila adenotricha	1		✓	✓	✓		15.3	-	Red/brown earth, clay	No	Low	Low
Eucalyptus retusa	1		✓	✓	✓		34.8	-	Flat apex of rocky headland.	No	Low	Low
Philotheca apiculata	1		✓	✓	✓		33.1	Aug to Nov	Stony clay loam. Rocky outcrops, hillsides.	No	Low	Low
Scaevola tortuosa	1		✓	✓	✓		25	Oct	Sandy clay. Margins of salt lakes.	No	Low	Low
Thryptomene salina	1		✓	✓	✓		13.6	-	Deep alluvial sand. On a flat along a saline creek.	No	Low	Low
Thryptomene sp. Hyden (B.J. Lepschi & L.A. Craven 4477)	1		✓	✓	✓		32	-	Disturbed, yellowish-brown sand on road verge	Yes	Medium	Low
Xanthoparmelia scabrosina	1		✓	✓	✓		32	-	alt lake edge with some granite outcropping. Brown-white clay soil.	No	Low	Low

Acacia tuberculata	2		✓	✓	✓		20.7	Sep.	Granite outcrops.	No	Low	Low
Brachyloma elusum	2		✓	✓	✓		16.4	April, Sept.	Upland. Dry yellow sand over granite at depth.	Yes	Medium	Low
Eutaxia hirsuta	2		✓	✓	✓		25.4	-	Plain. Dry, white/brown sandy clay	Yes	Medium	Low
Guichenotia asteriskos	2		✓	✓	✓		23.6	Sep to Oct	Sandy clay or loam with gravel.	Yes	Medium	Low
Leucopogon sp. Yellowdine (M. Hislop & F. Hort MH 3194)	2		✓	✓	✓		19.6	-	Flat sandplain with very few laterite fine gravel on deep yellow sandy soil.	Yes	Medium	Low
Stypandra jamesii	2		✓	✓	✓		25	Oct Nov	Shallow soils. Crevices & fissures in granite rocks, around edges of outcrops.	No	Low	Low
Synaphea canaliculata	2		✓	✓	✓		25	-	Gently undulating plain. White-grey sand over quartzite?/spongelite	Yes	Medium	Low
Thysanotus sp. Yellowdine	2		✓	✓	✓		14.2	-	Ridge-based rise with yellow sand.	No	Low	Low
Verticordia multiflora subsp. *solox*	2		✓	✓	✓		19.6	Oct to Dec or Jan	Yellow sand over gravel, sand over granite.	No	Medium	Low
Verticordia pulchella	2		✓	✓	✓		18.2	Oct to Nov	Sandy soils over granite. Massive granite areas.	No	Low	Low
Verticordia setacea	2		✓	✓	✓		18.5	-	Near ironstone breakaway. Gravel soils.	No	Low	Low
Acacia obesa	3		✓	✓	✓		13.5	Jul to Sep	Yellow sand, gravelly loam.	Yes	Low	Low
Acacia repanda	3		✓	✓	✓		23	Jun to Aug.	Loam, sandy or gravelly loam. Near granite outcrops.	Yes	Low	Low
Acacia undosa	3		✓	✓	✓		28.7	Jul to Sep	Sandy clay loam, clayey sand. Undulating plains, low-lying areas.	Yes	Medium	Low
Angianthus halophilus	3		✓	✓	✓		33.6	Oct to Nov	Saline soils. Gypsum-rich dunes in salt lakes.	No	Low	Low
Banksia rufa subsp. *chelomacarpa*	3		✓	✓	✓		12	Jul to Oct.	Sandy loam over gravel.	Yes	Low	Low
Banksia rufa subsp. *flavescens*	3		✓	✓	✓		12	Jul to Aug.	Sandy loam or sand with gravel.	Yes	Low	Low
Banksia xylothemelia	3		✓	✓	✓		17.5	Sep to Oct.	Sandy loam, usually over laterite. Sandplains.	Yes	Medium	Low
Bossiaea atrata	3		✓	✓	✓		13.3	May to Aug	White sand or sandy loam over laterite or clay, quartzite sand, clay.	Yes	Medium	Low
Bossiaea concinna	3		✓	✓	✓		14.7	Jun - Sep	White or red sand, gravel.[2]	Yes	Medium	Low
Cryptandra dielsii	3		✓	✓	✓		25.5	white, Jul to Sep.	Sand, often over laterite. Sandplains.	Yes	Medium	Low
Daviesia uncinata	3		✓	✓	✓		23	Dec - Jan	Gravelly lateritic sand, loamy sand. Undulating plains.[2]	Yes	Medium	Low
Eucalyptus mimica subsp. *mimica*	3		✓	✓	✓		3.5	-	White to brown sandy clay, pink to white clayey loam. Flats, near salt lakes.	No	Low	Low
Eucalyptus ornata	3		✓	✓	✓		21.1	-	Fl. white. Laterite. Ridges.	No	Low	Low

Eucalyptus subangusta subsp. *virescens*	3		✓	✓	✓		13.2	April	Yellow sand, white clay.	Yes	Medium	Low
Frankenia drummondii	3		✓	✓	✓		30.5	Oct - Nov	Sand, lake edges.[2]	No	Low	Low
Grevillea insignis subsp. *elliotii*	3		✓	✓	✓		16.2	Oct	Gravelly sand or loam over ironstone. Hilltops or rises.	No	Low	Low
Isoetes brevicula	3		✓	✓	✓		23.7	-	Submerged in rock pools on granitic outcrops.	No	Low	Low
Leucopogon sp. Ironcaps (N. Gibson & K. Brown 3070)	3		✓	✓	✓		24.9	Aug	Skeletal sand, yellow sandy loam, rocky loam, gravel, laterite, ironstone. Gentle lower slopes, flat uplands, hill tops.	No	Low	Low
Melaleuca ochroma	3		✓	✓	✓		31.4	-	Whitish sandy clay.	Yes	Medium	Low
Microseris walteri	3		✓	✓	✓		29.7	-	Kopi dunes on edge of salt lake.	No	Low	Low
Oxymyrrhine plicata	3		✓	✓	✓		20	-	Creamish coloured silty to clayey sand (sets hard).	No	Low	Low
Phebalium brachycalyx	3		✓	✓	✓		31.2	Aug to Sep. Sand	gravelly soils. Lateritic uplands, hills.	No	Low	Low
Phebalium drummondii	3		✓	✓	✓		12.6	Jul to Sep.	Gravelly sandy or clayey soils. Flats, roadsides.	Yes	Medium	Low
Prostanthera nanophylla	3		✓	✓	✓		13.9	Aug to Nov	Yellow sand over laterite, rocky loam. Sandplains.	Yes	Low	Low
Rinzia torquata	3		✓	✓	✓		13.6	-	Yellow sand over lateritic gravel.	Yes	Medium	Low
Thysanotus cymosus	3		✓	✓	✓		12.3	Sep - Oct	Clay, granitic or lateritic sand.[2]	Yes	Medium	Low
Verticordia gracilis	3		✓	✓	✓		18.5	Oct nov	Yellow sand, gravelly sand, sandy loam.	Yes	Medium	Low
Verticordia mitodes	3		✓	✓	✓		18.5	Oct to Dec or Jan	Yellow sand. Undulating plains.	No	Medium	Low
Verticordia stenopetala	3		✓	✓	✓		14	Oct to Dec or Jan.	Yellow sand, sometimes with gravel. Undulating plains.	Yes	Medium	Low
Xanthoparmelia nashii	3				✓		14.2	-	small stones in scree slope below breakaway, in full sun, on ridge in river catchment.	No	Low	Low
Banksia shanklandiorum	4		✓	✓	✓		14	Jun to Aug.	White/yellow sand with lateritic gravel.	Yes	Low	Low
Eremophila biserrata	4		✓	✓	✓		30.3	Sep to Nov or Mar.	Sandy or sandy clay soils. Alluvial flats, salt flats & lakes.	No	Low	Low
Eremophila racemosa	4		✓	✓	✓		12	Mar or Aug to Dec	Sandy or stony loam, clay loam. Undulating plains, roadsides.	Yes	Medium	Low
Eremophila serpens	4		✓	✓	✓		10.2	Sep - Dec or Mar - May	White, grey sand, alluvium, loam, winter-wet depressions, sub-saline flats, drainage lines, salt lakes.[2]	No	Low	Low
Eucalyptus caesia subsp. *caesia*	4		✓	✓	✓		4.5	May to Sep	Loam. Granite outcrops	No	Low	Low
Eucalyptus deflexa	4		✓	✓	✓		35	Mar or May to Oct	Clay loam, sandy loam, white or yellow sand, often with gravel. Flat areas & slight rises.	No	Low	Low
Gyrostemon ditrigynus	4		✓	✓	✓		33.6	-	Sand, sandy clay, loam. Plains, low ironstone ridges	No	Low	Low

Haegiela tatei	4		✓	✓	✓		29.6	Aug to Nov	Clay, sandy loam, gypsum. Saline habitats.	No	Low	Low
Microcorys sp. Forrestania (V. English 2004)	4		✓	✓	✓		13.6	Jan or Apr	Yellow sandy clay or red-brown clay. Open woodland or cleared areas.	Yes	Medium	Low
Myriophyllum petraeum	4		✓	✓	✓		11.2	-	Strictly confined to ephemeral rock pools on granite outcrops.	No	Low	Low

Appendix D
Flora inventory

Appendix D: Inventory of Vascular Flora

Family	Taxa
Amaranthaceae	*Ptilotus polystachyus*
	Ptilotus sp.
Asparagaceae	*Thysanotus rectantherus*
	Thysanotus manglesianus
Asteraceae	**Sonchus asper*
	**Taraxacum khatoonae*
	**Ursinia anthemoides*
	Olearia muelleri
	Waitzia acuminata
Boraginaceae	*Halgania lavandulacea*
Casuarinaceae	*Allocasuarina acutivalvis* subsp. *acutivalvis*
	Allocasuarina campestris
	Allocasuarina corniculata
	Allocasuarina sp.
	Allocasuarina spinosissima
Chenopodiaceae	*Enchylaena tomentosa*
	Maireana carnosa
	Maireana sp.
Cupressaceae	*Callitris preissii*
	Callitris roei
Cyperaceae	*Lepidosperma diurnum*
	Mesomelaena preissii
Dilleniaceae	*Hibbertia* sp.
	Hibbertia ?gracilipes
Ericaceae	*Leucopogon* sp. outer wheatbelt (M. Hislop 30)
	Lysinema pentapetalum
	Styphelia serratifolia
Fabaceae	*Acacia beauverdiana*
	Acacia erinacea
	Acacia intricata
	Acacia merrallii
	Acacia resinosa
	Acacia yorkrakinensis subsp. *acrita*
	Daviesia argillacea
	Daviesia pachyloma
	Jacksonia nematoclada
Haloragaceae	*Gonocarpus nodulosus*
Lamiaceae	*Westringia cephalantha* var. *cephalantha*
Lauraceae	*Cassytha nodiflora*
	Cassytha sp.
Myrtaceae	**Eucalyptus ?camaldulensis*
	Baeckea grandibracteata
	Baeckea muricata
	Calothamnus gilesii
	Calytrix leschenaultii
	Comesperma spinosum
	Cyathostemon heterantherus
	Ericomyrtus serpyllifolia
	Eucalyptus ?pileata

Appendix D: Inventory of Vascular Flora

Family	Taxa
Myrtaceae	*Eucalyptus alipes*
	Eucalyptus burracoppinensis
	Eucalyptus incrassata
	Eucalyptus leptopoda subsp. *leptopoda*
	Eucalyptus rigidula
	Eucalyptus salubris
	Eucalyptus sporadica
	Leptospermum erubescens
	Leptospermum roei
	Melaleuca ?scalena
	Melaleuca ?teuthidoides
	Melaleuca adnata
	Melaleuca calyptroides
	Melaleuca condylosa
	Melaleuca cordata
	Melaleuca eleuterostachya
	Melaleuca hamata
	Melaleuca hamulosa
	Melaleuca pauperiflora subsp. *fastigiata*
	Melaleuca platycalyx
	Melaleuca ?teuthidoides
	Micromyrtus obovata
	Micromyrtus erichsenii
	Thryptomene kochii
	Verticordia chrysantha
Pittosporaceae	*Cheiranthera filifolia*
Poaceae	**Aira cupaniana*
	**Bromus* sp.
	**Lolium rigidum*
	**Poa annua*
	**Vulpia bromoides*
	Austrostipa eremophila
	Austrostipa sp.
	Neurachne alopecuroidea
Portulacaceae	*Calandrinia eremaea*
Proteaceae	*Banksia laevigata* subsp. *fuscolutea*
	Grevillea acacioides
	Grevillea acuaria
	Grevillea didymobotrya subsp. *didymobotrya*
	Grevillea excelsior
	Grevillea pterosperma
	Hakea ?newbeyana
	Hakea erecta
	Hakea meisneriana
	Hakea multilineata
	Hakea scoparia subsp. *scoparia*
	Isopogon scabriusculus subsp. *pubifloris*
	Persoonia coriacea
	Persoonia saundersiana

Appendix D: Inventory of Vascular Flora

Family	Taxa
Rhamnaceae	*Cryptandra apetala* var. *anomala*
Rutaceae	*Phebalium filifolium*
	Phebalium tuberculosum
Santalaceae	*Exocarpos aphyllus*
	Leptomeria preissiana
	Santalum acuminatum
	Santalum spicatum
Sapindaceae	*Dodonaea stenozyga*
Scrophulariaceae	*Eremophila papillata*
Solanaceae	**Solanum nigrum*
Stylidiaceae	*Stylidium dielsianum*

Appendix E
Flora Site Sheets

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR1
Location MGA 50 -32.251 **mE** 119.180 **mN**

Described by: Grant Buller
Date: 4/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus leptopoda subsp. leptopoda, Eucalyptus burracoppinensis and Callitris preissii low woodland over Hakea meisneriana, Hakea erecta and Grevillea excelsior tall open shrubland over Austrostipa eremophila low open tussock grassland*
Condition: Good **Disturbance Type:** Grazing,Rubbish,Weeds
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	30	2	
Allocasuarina spinosissima	220	3	
Austrostipa eremophila	40	12	
Banksia laevigata subsp. fuscolutea	210	2	
Callitris preissii	350	4	
Cassytha sp.	300	2	
Eucalyptus burracoppinensis	300	5	
Eucalyptus leptopoda subsp. leptopoda	350	9	
Grevillea excelsior	250	2	
Grevillea pteridifolia	210	2	
Hakea erecta	230	3	
Hakea meisneriana	230	4	
Melaleuca ?hamata	250	2	
Melaleuca hamata	120	1	
Waitzia acuminata	15	1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR10
Location MGA 50 -32.247 **mE** 119.179 **mN**

Described by: Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: Laterite
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Allocasuarina campestris, Allocasuarina spinosissima and Melaleuca hamata tall shrubland over *Aira cupaniana low open grassland over *Solanum nigrum and Ptilotus polystachyus low sparse forbland*

Condition: Good
Fire Age: Unknown
Disturbance Type: Grazing,Rubbish,Vehicle tracks,Weeds

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	30	25	
**Solanum nigrum*	20	4	
Allocasuarina campestris	250	20	
Allocasuarina spinosissima	250	7	
Grevillea didymobotrya subsp. didymobotrya	300	5	
Melaleuca hamata	210	7	
Ptilotus polystachyus	10	1	
Santalum acuminatum	250	2	
Waitzia acuminata	10	0.1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR11
Location MGA 50 -32.215 **mE** 119.183 **mN**

Described by: Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Allocasuarina spinosissima, Acacia beauverdiana and Callitris roei tall closed shrubland*

Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia beauverdiana	250	6	
Allocasuarina spinosissima	250	70	
Callitris roei	250	5	
Thryptomene kochii	200	1	
Waitzia acuminata	10	0.1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR12
Location MGA 50 -32.215 **mE** 119.183 **mN**

Described by: Grant Buller
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand
Soil Colour: White

Vegetation: *Eucalyptus incrassata and Callitris preissii low open forest over Melaleuca eleuterostachya mid sparse shrubland over Comesperma spinosum low open shrubland*

Condition: Good **Disturbance Type:** Grazing
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Callitris preissii	300	2	
Comesperma spinosum	60	11	
Eucalyptus incrassata	600	55	
Melaleuca eleuterostachya	180	1	
Santalum spicatum	280	0.5	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR13
Location MGA 50 -32.216 **mE** 119.177 **mN**

Described by: Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Acacia beauverdiana, Melaleuca hamulosa and Allocasuarina spinosissima tall open shrubland over *Vulpia bromoides and Austrostipa sp. low open tussock grassland*

Condition: Good
Fire Age: Unknown
Disturbance Type: Fauna tracks/scats,Grazing,Vehicle tracks

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Vulpia bromoides*	15	10	
Acacia beauverdiana	250	10	
Allocasuarina spinosissima	250	4	
Austrostipa sp.	25	1	
Leptospermum ?roei	300	4	
Melaleuca hamata	200	4	
Melaleuca hamulosa	200	5	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR14
Location MGA 50 -32.221 **mE** 119.170 **mN**

Described by: Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus incrassata low open mallee forest over Melaleuca eleuterostachya mid sparse shrubland over *Aira cupaniana low sparse grassland*

Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	10	3	
**Lolium rigidum*	10	0.5	
Acacia merrallii	200	0.5	
Austrostipa eremophila	10	0.5	
Comesperma spinosum	60	2	
Enchylaena tomentosa	5	0.1	
Eucalyptus incrassata	600	60	
Exocarpos aphyllus	190	0.5	
Melaleuca ?scalena	210	0.5	
Melaleuca eleuterostachya	180	1	
Santalum spicatum	250	0.5	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR15
Location MGA 50 -32.234 **mE** 119.169 **mN**

Described by: Jason Webb
Date: 6/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Melaleuca hamata and Acacia beauverdiana tall open shrubland over Leptospermum erubescens and Lysinema pentapetalum low open shrubland over Lepidosperma diurnum low sedgeland*

Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	110	1	
**Sonchus asper*	70	1	
**Taraxacum khatoonae*	100	1	
**Vulpia bromoides*	10	2	
Acacia beauverdiana	200	1	
Austrostipa sp.	25	1	
Calytrix leschenaultii	15	0.1	
Lepidosperma diurnum	40	40	
Leptospermum erubescens	100	25	
Lysinema pentapetalum	10	1	
Melaleuca hamata	250	15	
Neurachne alopecuroidea	50	1	
Stylidium dielsianum	4	10	
Waitzia acuminata	25	25	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR16
Location MGA 50 -32.271 **mE** 119.181 **mN**

Described by: Jason Webb
Date: 6/11/2021
Type: Relevé

Landform: Crest
Slope: Gentle
Rock Type: Granite
Soil Type: Sand
Soil Colour: Orange

Vegetation: *Melaleuca calyptroides and Melaleuca hamata tall open shrubland over Thryptomene kochii, Allocasuarina campestris and Hakea multilineata mid shrubland over Waitzia acuminata low sparse forbland*
Condition: Good **Disturbance Type:** Grazing
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	10	0.1	
**Ursinia anthemoides*	5	0.1	
**Vulpia bromoides*	10	1	
Allocasuarina campestris	190	15	
Austrostipa sp.	10	1	
Hakea multilineata	130	2	
Melaleuca calyptroides	200	20	
Melaleuca hamata	250	1	
Mesomelaena preissii	40	5	
Neurachne alopecuroidea	10	0.5	
Thryptomene kochii	190	30	
Waitzia acuminata	15	10	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR17
Location MGA 50 -32.244 **mE** 119.187 **mN**

Described by: Jason Webb
Date: 4/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: Laterite
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Allocasuarina campestris, Acacia beauverdiana and Banksia laevigata subsp. fuscolutea mid shrubland over Melaleuca condylosa, Melaleuca hamata and Baeckea muricata low open shrubland over Austrostipa eremophila low sparse tussock grassland*
Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	15	10	
Acacia beauverdiana	180	25	
Allocasuarina campestris	200	30	
Austrostipa eremophila	25	10	
Baeckea muricata	45	1	
Banksia laevigata subsp. fuscolutea	170	5	
Calandrinia eremaea	10	1	
Cassytha sp.	40	1	
Grevillea didymobotrya subsp. didymobotrya	160	1	
Leucopogon sp. outer wheatbelt (M. Hislop 30)	35	1	
Melaleuca condylosa	45	15	
Melaleuca hamata	50	2	
Ptilotus polystachyus	25	0.1	
Stylidium dielsianum	10	5	
Thysanotus rectantherus	5	0.1	
Waitzia acuminata	15	10	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR18
Location MGA 50 -32.223 **mE** 119.182 **mN**

Described by: Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus alipes low open mallee woodland over Melaleuca calyptroides and Allocasuarina campestris tall shrubland*

Condition: Good
Fire Age: Unknown
Disturbance Type: Fauna tracks/scats,Grazing,Repeated Fires,Vehicle tracks

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Allocasuarina campestris	200	10	
Eucalyptus alipes	300	10	
Melaleuca calyptroides	190	25	
Waitzia acuminata	5	0.1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR19
Location MGA 50 -32.244 **mE** 119.162 **mN**

Described by: Grant Buller
Date: 6/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Soft Clay
Soil Colour: Beige

Vegetation: *Acacia beauverdiana, Allocasuarina spinosissima and Santalum spicatum tall open shrubland over Melaleuca condylosa, Hakea ?newbeyana and Thryptomene kochii mid shrubland over Lepidosperma diurnum mid sparse sedgeland*
Condition: Good **Disturbance Type:** Historical Clearing,Infrastructure,Rubbish,Vehicle tracks
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia beauverdiana	240	5	
Allocasuarina spinosissima	300	5	
Callitris preissii	300	1	
Hakea ?newbeyana	190	11	
Lepidosperma diurnum	60	1	
Melaleuca condylosa	150	15	
Melaleuca hamata	100	5	
Santalum spicatum	230	2	
Thryptomene kochii	100	9	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR2
Location MGA 50 -32.222 **mE** 119.189 **mN**

Described by: Grant Buller
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand
Soil Colour: Beige

Vegetation: *Allocasuarina acutivalvis subsp. acutivalvis, Eucalyptus burracoppinensis and Callitris preissii low woodland over Hakea multilineata tall open shrubland over *Vulpia bromoides and *Poa annua low tussock grassland*

Condition: Good **Disturbance Type:** Grazing,Weeds
Fire Age: >5 Years

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Vulpia bromoides*	10	30	
Allocasuarina acutivalvis subsp. acutivalvis	300	15	
Callitris preissii	350	2	
Eucalyptus burracoppinensis	350	11	
Hakea multilineata	350	20	
Melaleuca hamulosa	190	0.5	
**Poa annua*	5	1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR20
Location MGA 50 -32.212 **mE** 119.175 **mN**

Described by: Grant Buller
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand
Soil Colour: Brown

Vegetation: *Melaleuca pauperiflora subsp. fastigiata, Acacia yorkrakinensis subsp. acrita and Santalum acuminatum tall shrubland over Acacia beauverdiana mid sparse shrubland over *Vulpia bromoides and *Aira cupaniana low closed grassland*
Condition: Good **Disturbance Type:** Grazing
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	5	40	
**Vulpia bromoides*	5	75	
Acacia beauverdiana	190	4	
Acacia yorkrakinensis subsp. acrita	200	10	
Melaleuca hamulosa	200	4	
Melaleuca pauperiflora subsp. fastigiata	220	25	
Santalum acuminatum	200	10	
Waitzia acuminata	10	0.1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR21
Location MGA 50 -32.222 **mE** 119.185 **mN**

Described by: Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Callitris preissii and Eucalyptus alipes mid woodland over Hakea multilineata, Grevillea excelsior and Santalum acuminatum tall shrubland over Melaleuca ?scalena mid sparse shrubland*

Condition: Good
Fire Age: Unknown
Disturbance Type: Fauna tracks/scats,Grazing,Vehicle tracks

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Callitris preissii	1000	25	
Eucalyptus alipes	1000	5	
Grevillea excelsior	200	15	
Hakea multilineata	300	20	
Melaleuca ?scalena	190	10	
Santalum acuminatum	200	15	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR22
Location MGA 50 -32.227 **mE** 119.172 **mN**

Described by: Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus rigidula low isolated clumps of mallee trees over Santalum acuminatum tall sparse shrubland over Melaleuca hamata mid sparse shrubland*

Condition: Good **Disturbance Type:** Grazing
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Vulpia bromoides*	10	25	
Eucalyptus rigidula	500	5	
Melaleuca hamata	150	10	
Santalum acuminatum	300	2	
Waitzia acuminata	10	5	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR23
Location MGA 50 -32.233 **mE** 119.171 **mN**

Described by: Jason Webb
Date: 6/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Allocasuarina sp., Acacia resinosa and Persoonia coriacea mid open shrubland*

Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Vulpia bromoides*	1	0.1	
Acacia resinosa	150	1	
Allocasuarina sp.	200	28	
Persoonia coriacea	200	1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR24
Location MGA 50 -32.243 **mE** 119.178 **mN**

Described by: Jason Webb
Date: 6/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus alipes and Eucalyptus salubris low open mallee woodland over Allocasuarina campestris, Eremophila papillata and Phebalium filifolium mid open shrubland over Micromyrtus obovata, Acacia intricata and Jacksonia nematoclada low sparse shrubland*
Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia intricata	40	1	
Allocasuarina acutivalvis subsp. acutivalvis	250	2	
Allocasuarina campestris	200	5	
Eremophila papillata	150	5	
Eucalyptus alipes	500	5	
Eucalyptus salubris	500	2	
Grevillea acuaria	35	0.1	
Hibbertia sp.	55	0.5	
Jacksonia nematoclada	100	1	
Maireana carnosa	10	0.1	
Maireana sp.	50	0.5	
Melaleuca adnata	90	0.5	
Micromyrtus obovata	90	5	
Olearia muelleri	35	0.1	
Persoonia saundersiana	35	0.1	
Phebalium filifolium	120	1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR25
Location MGA 50 -32.243 **mE** 119.186 **mN**

Described by: Jason Webb
Date: 6/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: Laterite,Limestone
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus alipes low open mallee woodland over Acacia beauverdiana and Santalum spicatum tall sparse shrubland over Acacia intricata, Eremophila papillata and Callitris roei low open shrubland*

Condition: Very Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia beauverdiana	200	5	
Acacia erinacea	120	1	
Acacia intricata	45	5	
Austrostipa sp.	50	0.1	
Callitris roei	55	1	
Cassytha sp.	5	0.1	
Eremophila papillata	70	5	
Eucalyptus alipes	300	10	
Exocarpos aphyllus	60	0.1	
Melaleuca hamata	120	2	
Neurachne alopecuroidea	20	1	
Santalum spicatum	210	5	
Waitzia acuminata	5	0.1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR3
Location MGA 50 -32.221 **mE** 119.182 **mN**

Described by: Grant Buller, Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand
Soil Colour: Beige

Vegetation: *Eucalyptus rigidula low open mallee forest over Melaleuca pauperiflora subsp. fastigiata and Allocasuarina campestris tall open shrubland*

Condition: Good **Disturbance Type:** Poor
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia yorkrakinensis subsp. acrita	160	0.5	
Allocasuarina campestris	260	2	
Eucalyptus rigidula	500	31	
Melaleuca pauperiflora subsp. fastigiata	220	25	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR4
Location MGA 50 -32.226 **mE** 119.190 **mN**

Described by: Grant Buller, Jason Webb
Date: 5/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand
Soil Colour: Beige

Vegetation: *Allocasuarina acutivalvis subsp. acutivalvis, Eucalyptus burracoppinensis and Eucalyptus alipes low open woodland over Acacia beauverdiana, Hakea multilineata and Hakea erecta tall sparse shrubland*

Condition: Good **Disturbance Type:** Fauna tracks/scats,Grazing
Fire Age: Burnt

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Acacia beauverdiana	300	2	
Allocasuarina acutivalvis subsp. acutivalvis	300	25	
Eucalyptus alipes	300	1	
Eucalyptus burracoppinensis	500	15	
Hakea erecta	200	1	
Hakea multilineata	350	1	
Santalum spicatum	260	1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR5
Location MGA 50 -32.227 **mE** 119.182 **mN**

Described by: Jason Webb
Date: 6/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus burracoppinensis and Eucalyptus salubris low woodland over Allocasuarina campestris and Acacia beauverdiana tall open shrubland over *Vulpia bromoides, *Aira cupaniana and *Lolium rigidum low open grassland*
Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Aira cupaniana*	10	5	
**Bromus sp.*	10	0.5	
**Lolium rigidum*	10	1	
**Vulpia bromoides*	5	10	
Acacia beauverdiana	250	2	
Allocasuarina campestris	500	10	
Eucalyptus burracoppinensis	1000	15	
Eucalyptus salubris	500	2	
Olearia muelleri	20	10	
Persoonia saundersiana	200	0.5	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR6
Location MGA 50 -32.241 **mE** 119.206 **mN**

Described by: Jason Webb
Date: 4/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Allocasuarina corniculata and Acacia beauverdiana tall open shrubland over *Vulpia bromoides and Austrostipa sp. low tussock grassland over Waitzia acuminata and Ptilotus sp. low closed forbland*

Condition: Good **Disturbance Type:** None
Fire Age: > 1 year

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Vulpia bromoides*	10	60	
Acacia beauverdiana	250	2	
Allocasuarina campestris	18	0.1	
Allocasuarina corniculata	250	20	
Austrostipa sp.	75	1	
Baeckea muricata	75	0.1	
Banksia laevigata subsp. fuscolutea	150	2	
Calandrinia eremaea	10	1	
Cyathostemon heterantherus	45	1	
Leucopogon sp. outer wheatbelt (M. Hislop 30)	120	1	
Melaleuca hamata	110	1	
Phebalium filifolium	25	0.1	
Ptilotus sp.	20	1	
Thryptomene kochii	110	5	
Waitzia acuminata	10	80	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR7
Location MGA 50 -32.242 **mE** 119.205 **mN**

Described by: Jason Webb
Date: 4/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Allocasuarina campestris, Acacia beauverdiana and Melaleuca hamata tall open shrubland over *Vulpia bromoides low sparse tussock grassland over Waitzia acuminata and Ptilotus polystachyus low sparse forbland*
Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Vulpia bromoides*	15	5	
Acacia beauverdiana	300	1	
Allocasuarina campestris	200	10	
Baeckea grandibracteata	45	1	
Banksia laevigata subsp. fuscolutea	150	1	
Calothamnus gilesii	250	1	
Cyathostemon heterantherus	10	1	
Jacksonia nematoclada	15	0.1	
Melaleuca hamata	200	1	
Ptilotus polystachyus	15	1	
Thryptomene kochii	50	1	
Thysanotus rectantherus	15	0.1	
Verticordia chrysantha	35	1	
Waitzia acuminata	10	2	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR8
Location MGA 50 -32.243 **mE** 119.198 **mN**

Described by: Jason Webb
Date: 4/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: N/A
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Allocasuarina campestris and Santalum acuminatum tall open shrubland over Banksia laevigata subsp. fuscolutea, Grevillea excelsior and Phebalium filifolium mid sparse shrubland over Lepidosperma diurnum mid sparse sedgeland*
Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
**Vulpia bromoides*	10	0.1	
Allocasuarina campestris	250	15	
Baeckea muricata	50	1	
Banksia laevigata subsp. fuscolutea	130	5	
Grevillea acacioides	80	1	
Grevillea excelsior	140	2	
Lepidosperma diurnum	60	10	
Phebalium filifolium	120	2	
Santalum acuminatum	300	5	
Waitzia acuminata	10	1	

FLORA SITE SHEET

Project Name 4885 King Rocks
Site: KRR9
Location MGA 50 -32.261 **mE** 119.182 **mN**

Described by: Jason Webb
Date: 4/11/2021
Type: Relevé

Landform: Plain
Slope: Flat
Rock Type: Laterite
Soil Type: Loam,Sand,Soft Clay
Soil Colour: Light Brown

Vegetation: *Eucalyptus burracoppinensis low open mallee woodland over Allocasuarina campestris tall sparse shrubland over Comesperma spinosum and Melaleuca ?cordata low open shrubland*

Condition: Good **Disturbance Type:** None
Fire Age: Unknown

SPECIES LIST

Taxon	Height (cm)	Cover (%)	Notes
Allocasuarina campestris	250	3	
Banksia laevigata subsp. fuscolutea	190	5	
Comesperma spinosum	20	10	
Eucalyptus burracoppinensis	220	4	
Hakea erecta	160	2	
Lepidosperma diurnum	35	5	
Melaleuca ?cordata	25	4	

Appendix F
Fauna Habitat Assessments

Bat01

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting**	706476	**Northing**	6432467
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Grey, Yellow		**Surface stone size classes present**		
Condition					
Quality	Highly degraded		**Habitat Features**		
Fire History	Unknown		**Water Source**	Absent	
Disturbance	Clearing, Overgrazing, Vehicle tracks, Weeds		**Microhabitats**	Woody debris	
Introduced fauna	Sheep				
Vegetation					
Upper stratum	Absent				
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Open tussock grassland (20-50%)			

Photo ID	3722

Bat02

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting**	705497	**Northing**	6432841
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	Laterite, Limestone	
Soil type	Sand		**Surface stone cover**	0 - 5%	
Soil colour	Grey		**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm)	
Condition					
Quality	Disturbed		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Present	
Disturbance	Erosion, Infrastructure, Overgrazing, Vehicle tracks, Weeds		**Microhabitats**	Leaf litter, Peeling bark, Woody debris	
Introduced fauna	Sheep				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)	*Eucalyptus*		
Mid stratum	Tall (>2 m)	Open shrubland and/or heathland (20-50%)	*Melaleuca*		
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)			

Photo ID	3717

Bat03

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-06		**Personnel**	EW	
Zone	50	**Easting** 705402		**Northing**	6430760
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	Laterite, Limestone	
Soil type	Sandy clay		**Surface stone cover**	5 - 25%	
Soil colour	Grey		**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm), Rocks (20 - 60 cm), Big Rocks (60 cm - 2 m)	
Condition					
Quality	Highly degraded		**Habitat Features**		
Fire History	Unknown		**Water Source**	Present	
Disturbance	Clearing, Erosion, Infrastructure, Overgrazing, Vehicle tracks, Weeds		**Microhabitats**		
Introduced fauna	Sheep				
Vegetation					
Upper stratum	Absent				
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)			

Photo ID	3726

Bat04

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-06		**Personnel**	EW	
Zone	50	**Easting** 708135		**Northing**	6429885
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	Laterite	
Soil type	Sandy clay		**Surface stone cover**	0 - 5%	
Soil colour	Grey, White		**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm)	
Condition					
Quality	Disturbed		**Habitat Features**		
Fire History	Unknown		**Water Source**	Present	
Disturbance	Clearing, Erosion, Infrastructure, Overgrazing, Vehicle tracks		**Microhabitats**	Peeling bark, Woody debris	
Introduced fauna	Sheep				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)		*Eucalyptus*	
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)			

Photo ID	3729

Cam01

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting** 705742		**Northing**	6433651
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Grey, Yellow		**Surface stone size classes present**		
Condition					
Quality	Good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing		**Microhabitats**	Leaf litter, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Mallee woodland (20-50%)		*Eucalyptus*	
Mid stratum	Low (0.5-1 m)	Open shrubland and/or heathland (20-50%)			
Ground stratum	Absent				

Photo ID	3718

Cam02

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting** 705808		**Northing**	6432835
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Grey		**Surface stone size classes present**		
Condition					
Quality	Good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing		**Microhabitats**	Leaf litter, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Mallee woodland (20-50%)		*Eucalyptus, Callitris*	
Mid stratum	Tall (>2 m)	Sparse shrubland and/or heathland (0.25-20%)		*Myrtaceae*	
Ground stratum	Low (>0.5 m)	Sparse rushland and/or sedgeland (0.25-20%)		*Lepidosperma sp. (heavily grazed)*	

Photo ID	3721

Cam03

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting** 706455		**Northing**	6432445
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Grey		**Surface stone size classes present**		
Condition					
Quality	Good		**Habitat Features**		
Fire History	Burnt (1-5 years)		**Water Source**	Absent	
Disturbance	Overgrazing		**Microhabitats**	Burrows, Hollows - trees, Leaf litter, Logs > 10 cm, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Open mallee woodland (0.25-20%)	*Eucalyptus, Grevillea, Allocasuarina*		
Mid stratum	Absent				
Ground stratum	Absent				

Photo ID	3746

Cam04

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting** 706995		**Northing**	6431545
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Yellow		**Surface stone size classes present**		
Condition					
Quality	Good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing, Weeds		**Microhabitats**	Burrows, Leaf litter, Peeling bark, Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Open mallee forest (50-80%)	*Eucalyptus, Hakea*		
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Sparse hummock grassland (0.25-20%)			

Photo ID	3725

Cam05

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting** 704458		**Northing**	6432990
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Grey		**Surface stone size classes present**		
Condition					
Quality	Disturbed		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing, Weeds		**Microhabitats**	Peeling bark, Woody debris	
Introduced fauna	Sheep				
Vegetation					
Upper stratum	Low (<10 m)	Woodland (20-50%)	*Allocasuarina, Acacia, Callitris*		
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)			

Photo ID	3720

Cam06

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-06		**Personnel**	EW	
Zone	50	**Easting** 704369		**Northing**	6431521
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	Granite	
Soil type	Sandy loam		**Surface stone cover**	0 - 5%	
Soil colour	Brown, Grey		**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm)	
Condition					
Quality	Disturbed		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Clearing, Infrastructure, Litter, Vehicle tracks, Weeds		**Microhabitats**	Leaf litter, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Open forest (50-80%)	*Acacia, Allocasuarina*		
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)	*Melaleuca*		
Ground stratum	Mid (0.5-1 m)	Open rushland and/or sedgeland (20-50%)			

Photo ID	3728

Cam07

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-04		**Personnel**	EW	
Zone	50	**Easting** 707577		**Northing**	6430500
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sand		**Surface stone cover**		
Soil colour	Yellow		**Surface stone size classes present**		
Condition					
Quality	Very good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing, Weeds		**Microhabitats**	Burrows, Leaf litter, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Open mallee forest (50-80%)		*Allocasuarina, Eucalyptus*	
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)			
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)			

Photo ID	3593

Cam08

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-04		**Personnel**	EW	
Zone	50	**Easting** 707221		**Northing**	6429870
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sand		**Surface stone cover**		
Soil colour	Yellow		**Surface stone size classes present**		
Condition					
Quality	Very good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance			**Microhabitats**	Leaf litter, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Mallee woodland (20-50%)		*Eucalyptus, Allocasuarina, Callitris*	
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)		*Mixed Myrtacae shrubs*	
Ground stratum	Low (>0.5 m)	Sparse forbland (0.25-20%)			

Photo ID	3680

Cam09

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-04		**Personnel**	EW	
Zone	50	**Easting**	706185	**Northing**	6430489
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sand		**Surface stone cover**		
Soil colour	White, Yellow		**Surface stone size classes present**		
Condition					
Quality	Good		**Habitat Features**		
Fire History	Recently burnt (<1 year)		**Water Source**	Absent	
Disturbance			**Microhabitats**	Leaf litter, Peeling bark, Termite mounds, Woody debris	
Introduced fauna					
Vegetation					
Upper stratum	Low (<10 m)	Mallee woodland (20-50%)	*Eucalyptus, Allocasuarina, Grevillea*		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Melaleuca, Allocasuarina*		
Ground stratum	Low (>0.5 m)	Isolated tussock grasses (<0.25%)			

Photo ID	3681

Cam10

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-04		**Personnel**	EW	
Zone	50	**Easting**	705777	**Northing**	6428803
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sand		**Surface stone cover**		
Soil colour	Grey, Yellow		**Surface stone size classes present**		
Condition					
Quality	Good		**Habitat Features**		
Fire History	Burnt (1-5 years)		**Water Source**	Absent	
Disturbance	Overgrazing		**Microhabitats**	Leaf litter, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Woodland (20-50%)	*Allocasuarina, Eucalyptus, Banksia*		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)			
Ground stratum	Low (>0.5 m)	Isolated tussock grasses (<0.25%)			

Photo ID	3682

Cam11

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-04		**Personnel**	EW	
Zone	50	**Easting** 703728		**Northing**	6428716
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sand		**Surface stone cover**		
Soil colour	Grey, White		**Surface stone size classes present**		
Condition					
Quality	Disturbed		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Clearing, Overgrazing, Vehicle tracks, Weeds		**Microhabitats**	Leaf litter, Logs > 10 cm, Peeling bark, Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Mid (10-30 m)	Woodland (20-50%)		*Planted Eucalyptus*	
Mid stratum	Low (0.5-1 m)	Isolated shrubs and/or heath shrubs (<0.25%)		*Ptilotus*	
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)			

Photo ID	3691

Cam12

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-04		**Personnel**	EW	
Zone	50	**Easting** 703889		**Northing**	6430519
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sand		**Surface stone cover**		
Soil colour	Yellow		**Surface stone size classes present**		
Condition					
Quality	Very good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance			**Microhabitats**	Leaf litter, Logs > 10 cm, Peeling bark, Termite mounds, Woody debris	
Introduced fauna	Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Open forest (50-80%)		*Eucalyptus, Allocasuarina*	
Mid stratum	Mid (1-2 m)	Sparse shrubland and/or heathland (0.25-20%)			
Ground stratum	Absent				

Photo ID	3692

Cam13

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-06		**Personnel**	EW	
Zone	50	**Easting** 708033		**Northing**	6428877
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Yellow		**Surface stone size classes present**		
Condition					
Quality	Good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing		**Microhabitats**	Leaf litter, Peeling bark, Woody debris	
Introduced fauna	Sheep				
Vegetation					
Upper stratum	Low (<10 m)	Woodland (20-50%)	*Eucalyptus, Allocasuarina*		
Mid stratum	Low (0.5-1 m)	Sparse shrubland and/or heathland (0.25-20%)			
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)			

Photo ID	3730

Cam14

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-06		**Personnel**	EW	
Zone	50	**Easting** 705064		**Northing**	6430504
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Yellow		**Surface stone size classes present**		
Condition					
Quality	Very good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing		**Microhabitats**	Burrows, Leaf litter, Peeling bark, Woody debris	
Introduced fauna	Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Woodland (20-50%)	*Acacia, Allocasuarina*		
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)	*Myrtaceae*		
Ground stratum	Absent				

Photo ID	3744

Granite Outcrop

Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-06		**Personnel**	EW	
Zone	50	**Easting** 705441		**Northing**	6427377
Landform and soil			**Rock**		
Landform	Outcrop/breakaway		**Rock type/s**	Granite	
Soil type	Sandy loam		**Surface stone cover**	25 - 50%	
Soil colour	Brown		**Surface stone size classes present**	Pebbles (<0.6 cm), Small Stones (0.6 - 2 cm), Stones (2 - 6 cm), Small Rocks (6 - 20 cm)	
Condition					
Quality	Good		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Overgrazing		**Microhabitats**	Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Low (<10 m)	Open woodland (0.25-20%)		*Myrtaceae sp.*	
Mid stratum	Mid (1-2 m)	Open shrubland and/or heathland (20-50%)		*Myrtaceae sp.*	
Ground stratum	Low (>0.5 m)	Sparse forbland (0.25-20%)			

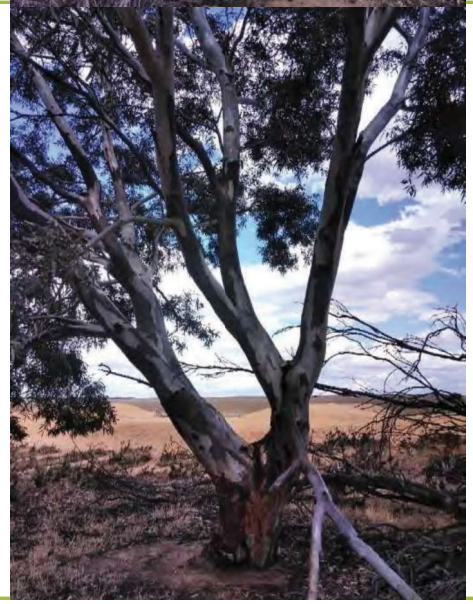
Photo ID	3745

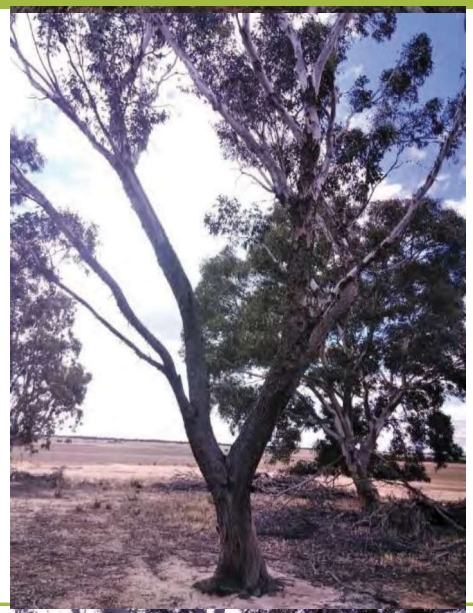
Woody Debris

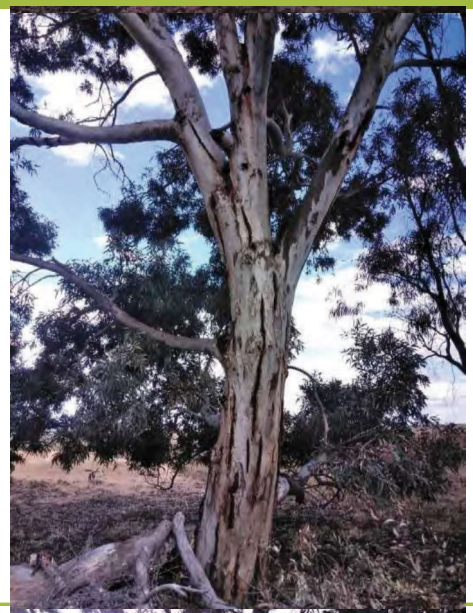
Project:	4885 King Rocks Wind Farm Project				
Date	2021-11-05		**Personnel**	EW	
Zone	50	**Easting** 706780		**Northing**	6431920
Landform and soil			**Rock**		
Landform	Plain		**Rock type/s**	None	
Soil type	Sandy loam		**Surface stone cover**		
Soil colour	Grey, Yellow		**Surface stone size classes present**		
Condition					
Quality	Highly degraded		**Habitat Features**		
Fire History	Little or no fire evidence (>5 years)		**Water Source**	Absent	
Disturbance	Clearing, Overgrazing		**Microhabitats**	Leaf litter, Peeling bark, Woody debris	
Introduced fauna	Sheep, Rabbit				
Vegetation					
Upper stratum	Absent				
Mid stratum	Absent				
Ground stratum	Low (>0.5 m)	Sparse tussock grassland (0.25-20%)			

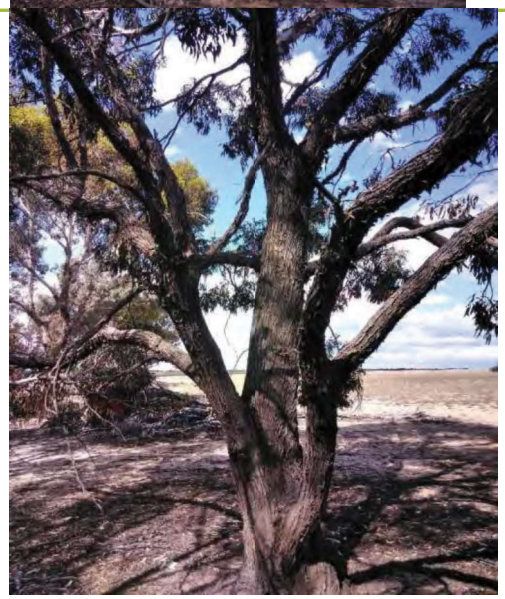
Photo ID	3724

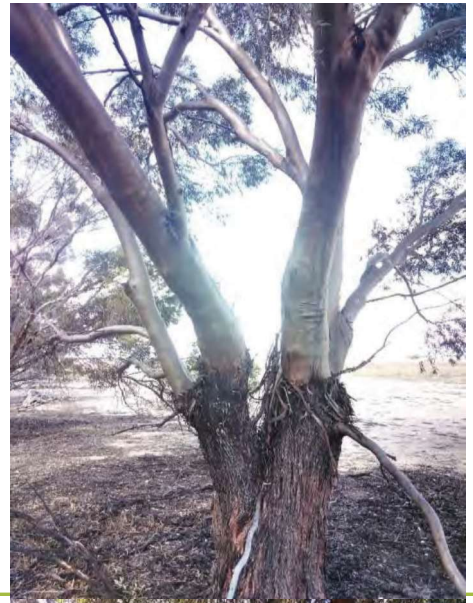
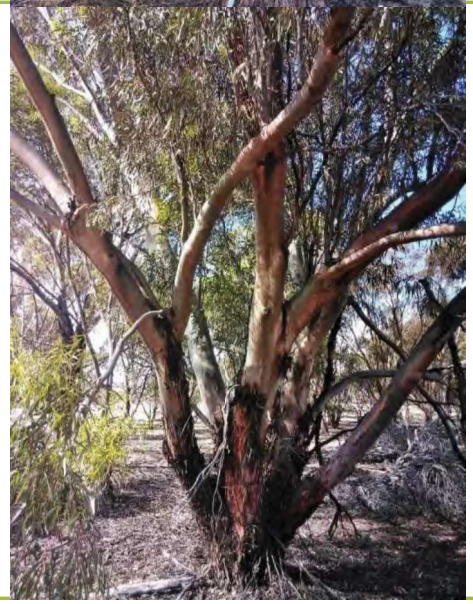
Appendix G
Fauna Habitat Trees and Hollows

Easting	Northing	Tree taxa	DBH (mm)	Height (m)	Hollows	Date	Photo
703665	6428666	River Red Gum (*Eucalyptus camaldulensis*)	550.0	12.0	No	04/11/2021	
703689	6428668	River Red Gum (*Eucalyptus camaldulensis*)	600.0	10.0	No	04/11/2021	

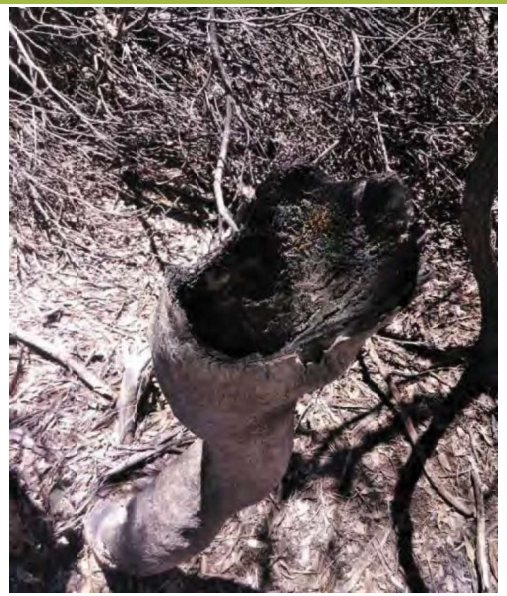
Easting	Northing	Tree taxa	DBH (mm)	Height (m)	Hollows	Date	Photo
703666	6428676	York Gum (*Eucalyptus ?loxophleba*)	550.0	15.0	No	04/11/2021	
703705	6428692	York Gum (*Eucalyptus ?loxophleba*)	650.0	14.0	No	04/11/2021	

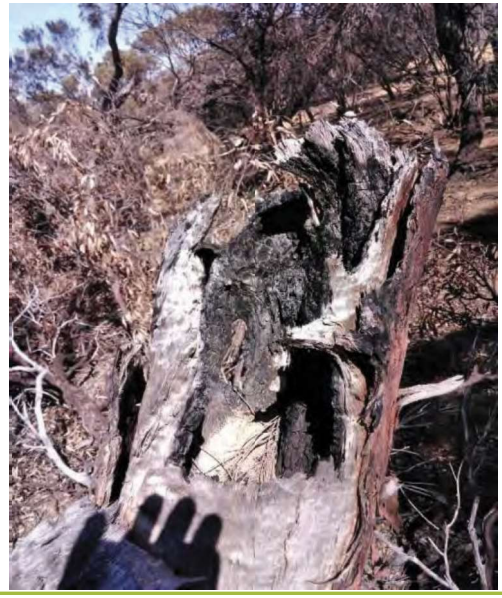
Easting	Northing	Tree taxa	DBH (mm)	Height (m)	Hollows	Date	Photo
703720	6428706	River Red Gum (*Eucalyptus camaldulensis*)	750.0	16.0	No	04/11/2021	
703723	6428715	River Red Gum (*Eucalyptus camaldulensis*)	600.0	12.0	No	04/11/2021	

Easting	Northing	Tree taxa	DBH (mm)	Height (m)	Hollows	Date	Photo
703750	6428719	River Red Gum (*Eucalyptus camaldulensis*)	700.0	16.0	No	04/11/2021	
703732	6428756	York Gum (*Eucalyptus ?loxophleba*)	550.0	12.0	No	04/11/2021	

Easting	Northing	Tree taxa	DBH (mm)	Height (m)	Hollows	Date	Photo
703746	6428764	Gimlet (*Eucalyptus ?salubris*)	650.0	14.0	No	04/11/2021	
703754	6428773	Gimlet (*Eucalyptus ?salubris*)	600.0	15.0	No	04/11/2021	

Easting	Northing	Tree taxa	DBH (mm)	Height (m)	Hollows	Date	Photo
703741	6428787	Gimlet (*Eucalyptus ?salubris*)	500.0	15.0	No	04/11/2021	

Easting	Northing	Date	Hollow description	Photo
706267	6432851	05/11/2021	Approximately 1 m tall and 10 cm diameter, unoccupied, no evidence of use	
706417	6432452	07/11/2021	Approximately 2 m tall, 20 cm diameter and 20 cm deep	

Easting	Northing	Date	Hollow description	Photo
706430	6432457	07/11/2021	Approximately 1.5 m tall, very shallow (approximately 10 cm deep)	

Appendix H
Fauna Inventory

Conservation Status: State - Listed under Biodiversity Conservation Act 2016 or Department of Biodiversity, Conservation and Attractions Conservation, Federal - Listed under Environmental Protection and Biodiversity Conservation Act 1999. MA - Marine, P - Listed as Priority by DBCA.

* - Introduced species, x - Recorded presence/absence, not abundance

Family	Scientific Name	Common Name	Conservation Status		Method								
			State	Federal	Camera Trap	ARU	Hand Capture	Sighting	Call	Tracks	Scat	Remains	Burrow
Aves													
Acanthizidae	*Acanthiza chrysorrhoa*	Yellow-rumped Thornbill						9	2				
Accipitridae	*Circus assimilis*	Spotted Harrier						3					
Anatidae	*Chenonetta jubata*	Australian Wood Duck						20					
Artamidae	*Artamus cinereus*	Black-faced Woodswallow						5	5				
	Cracticus nigrogularis	Pied Butcherbird						1					
	Cracticus torquatus	Grey Butcherbird							1				
	Gymnorhina tibicen	Australian Magpie						11	1				
Cacatuidae	*Eolophus roseicapilla*	Galah						60					
Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike		MA				4					
	Lalage tricolor	White-winged Triller							1				
Charadriidae	*Vanellus tricolor*	Banded Lapwing						5					
Columbidae	*Ocyphaps lophotes*	Crested Pigeon			1			11					
	Phaps chalcoptera	Common Bronzewing			4								
Corvidae	*Corvus coronoides*	Australian Raven			4			11					
Falconidae	*Falco berigora*	Brown Falcon						10					
	Falco cenchroides	Australian Kestrel		MA				1					
Locustellidae	*Cincloramphus cruralis*	Brown Songlark						2	1				
Meliphagidae	*Anthochaera carunculata*	Red Wattlebird						5	2				
	Gavicalis virescens	Singing Honeyeater						2	3				
	Lichmera indistincta	Brown Honeyeater							1				
	Manorina flavigula	Yellow-throated Miner						3					
Meropidae	*Merops ornatus*	Rainbow Bee-eater		MA					2				
Monarchidae	*Grallina cyanoleuca*	Magpie-lark		MA	2			4					
Motacillidae	*Anthus australis*	Australian Pipit						56					
Pachycephalidae	*Colluricincla harmonica*	Grey Shrikethrush						1	4				

Family	Scientific Name	Common Name	Conservation Status		Method								
			State	Federal	Camera Trap	ARU	Hand Capture	Sighting	Call	Tracks	Scat	Remains	Burrow
	Pachycephala fuliginosa occidentalis	Western Golden Whistler							2				
	Pachycephala rufiventris	Rufous Whistler						1	5				
Petroicidae	*Eopsaltria griseogularis*	Western Yellow Robin						1					
	Melanodryas cucullata	Hooded Robin						2					
	Petroica goodenovii	Red-capped Robin						2					
Pomatostomidae	*Pomatostomus superciliosus*	White-browed Babbler			1			27	4				
Psittaculidae	*Barnardius zonarius*	Australian Ringneck						22					
	Polytelis anthopeplus	Regent Parrot						16					
Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail			6			4	1				
Mammalia													
Bovidae	**Ovis aries*	Sheep			10								
Canidae	**Vulpes vulpes*	Red Fox			5			1		1	1		4
Felidae	**Felis catus*	Cat			1								
Leporidae	**Oryctolagus cuniculus*	Rabbit			6			2			1		4
Macropodidae	*Macropus fuliginosus melanops*	Western Grey Kangaroo						2					
Molossidae	*Austronomus australis*	White-striped Free-tailed Bat				x							
	Ozimops kitcheneri	Western Free-tailed Bat				x							
Vespertilionidae	*Chalinolobus gouldii*	Gould's Wattled Bat				x							
	Chalinolobus morio	Chocolate Wattled Bat				x							
	Nyctophilus geoffroyi	Lesser Long-eared Bat				x							
	Nyctophilus major tor	Central Long-eared Bat	P3			x							
	Vespadelus baverstocki	Inland Forest Bat				x							
	Vespadelus regulus	Southern Forest Bat				x							
Reptilia													
Agamidae	*Ctenophorus maculatus*	Spotted Military Dragon						1					
Elapidae	*Pseudonaja affinis*	Dugite						1					
Gekkonidae	*Gehyra variegata*	Variegated Gehyra					1	1					
Scincidae	*Cryptoblepharus buchananii*	Buchanan's Snake-eyed Skink					1						
	Tiliqua rugosa	Bobtail			9			2					
Varanidae	*Varanus gouldii*	Bungarra, Sand Goanna			1								

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