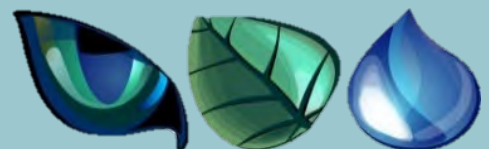


**Big Bell,
Cuddingwarra and
Day Dawn Project**

**Westgold Resources
Limited**

Desktop Study

Prepared for
Westgold Resources Ltd by
Animal Plant Mineral Pty Ltd.



February 2026

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EXECUTIVE SUMMARY

Animal Plant Mineral Pty Ltd (**APM**) was commissioned by Westgold Resources Limited to undertake a Desktop Study for the Big Bell, Day Dawn and Cuddingwarra mining areas, located within the Shire of Cue in the Mid-West Region of Western Australia (**WA**). From Cue, the largest nearby population centre, Big Bell is located approximately 25 km west northwest, Cuddingwarra 7.5 km west northwest and Day Dawn 4 km south west. The desktop study covers the 3 mining areas and an access road east and southeast of the Big Bell mining area. The extent of the four study areas is: Big Bell 794 hectares (**ha**), Big Bell access road 159 ha, Day Dawn 1,596 ha and Cuddingwarra 2,669 ha. The total extent of the Study Area is 5,218 ha.

Previous surveys were reviewed and combined to assess extent of coverage and identify limitations in the interpretation of survey data. Database searches were conducted to identify Threatened (**T**) and Priority (**P**) Flora, Fauna and Communities that may occur within or near the Study Areas.

All of the Study Areas have been previously surveyed, with survey coverage ranging from 50% to 94% however the most spatially extensive field survey has several constraints that reduce applicability under current regulatory requirements. More recent surveys of greater reliability are available for flora and vegetation covering smaller sections, however combining surveys resulted in an overly complex and disjointed vegetation mapping product due to inconsistency in naming conventions. Forty-two vegetation types are currently described for the locality. Disturbed areas were updated from aerial imagery and constitute 28-71% of the Study Areas.

No T flora have been recorded within the Study Areas. Three P3 and two P4 flora have been previously recorded within the Study Areas. One P1 species is assessed as likely to occur and 10 taxa are possibly occurring, subject to verification of the presence of suitable habitat, including two species listed as T. Many weeds have been recorded in the local area including within the Study Areas, reflective of the long history of mining and pastoralism. No Declared weeds are known to occur within the Study Area, however several aggressive weeds of low occurrence within the Murchison are present such as *Cenchrus ciliaris* (Buffel grass) and *C. setiger* (Birdwood grass). These weeds have been associated with habitat condition decline and increased fire risk in regions where they are abundant.

No Threatened Ecological Communities are known to occur or expected to occur. Three Priority Ecological Communities (**PEC**) intersect the Study Areas. The conservation value of P1 PEC's Taincrow Calcrete and Lake Austin Calcrete are based on the subterranean fauna assemblages they host. The Austin Land System P3 PEC is significant due to the limited distribution and endemism within the Murchison bioregion, and listing description is based on the landform and vegetation characteristics the Land System supports. The Austin Land System PEC intersects the Cuddingwarra and Day Dawn Study Areas. Vegetation described for these areas is consistent with the five Land Units as described for the Austin Land System (Curry et al 1994) and therefore are expected to represent the PEC.

Other potentially significant vegetation includes that overlying the Taincrow Calcrete PEC due to the potential to support Groundwater Dependent Ecosystems (**GDE**); vegetation of watercourses, and Pre-European Vegetation Associations 2081 and 313 that have low extent and are endemic to the East Murchison sub-region respectively. The occurrence of Austin Land System and Vegetation Associations 2081 and 313 within the Study Areas constitutes 8.6%, 0.9% and 4.1% of remaining extent and loss of occurrence within the Study Area would not change the eligibility under described conservation categories.

Previous fauna survey coverage is constrained by the extent, level and age of survey, but provides a basic overview of the broad habitats present, which include:

- Drainage Line
- Open Acacia woodland
- Open stony plain
- Samphire plains
- Lake, and
- Quartz outcrop.

Quartz outcrop was identified as having high conservation significance by Outback Ecology (2012) due to restricted and sometimes isolated distribution and the potential value as fauna habitat including for T fauna and Short Range Endemic (**SRE**) species. Quartz Outcrop habitats have been identified as exclusion zones within the Native Vegetation Clearing Permit (NVCP) issued for the project.

Several described fauna habitats and areas unsurveyed for fauna habitat may host conservation significant value:

- Lake Austin is likely to support an array of conservation significant migratory (**Mi**) wading birds, including species listed as T, however presence within the small proportion of the Study Area that intersects Lake Austin would be transitory and extremely rare. Lake Austin and the portion within the Study Area, do not support an important population or habitat important to Mi and T wading birds.
- Fauna habitats that fringe Lake Austin and that are dominated by herb rich chenopod shrublands may be suitable roosting and/or foraging habitat for Night Parrot. Contemporary records for Night Parrot within the East Murchison occur where both spinifex and samphire vegetation are present, whereas the Study Area and surrounds are not known to host spinifex. The Study Area is within the High Priority survey area for the species (DBCA 2024) and therefore subject to habitat assessment and potentially targeted survey requirements.
- Southern Whiteface was listed as a T species in 2023 and suitable habitat may occur within the Study Area.
- Suitable habitat for the West Coast mulga slider is present within open mulga areas on loamy soils.
- Terrestrial vegetation supporting the Taincrow and Lake Austin groundwater assemblages, which are considered P1 ecological communities in WA. Alteration of the vegetation may reduce the quality of fauna habitats and impact on faunal assemblages due to a reduction in food resources availability and shelter (Outback Ecology, 2012b), however DMIRS (2023) determined this as unlikely.

Activities proposed for the northern half of Cuddingwarra Study Area would benefit from:

- Reconnaissance vegetation survey across the entire Study Area to extend, modernise and simplify previous vegetation mapping. Targeted survey to quantify P flora within and outside of proposed development areas. Survey timing is 6-8 weeks following rainfall, generally Autumn or Spring.
- Reconnaissance fauna habitat survey to verify the suitability for key species, followed by Targeted survey in areas where suitable habitat is confirmed to be present. Targeted survey requires permitting with a 9-13 week lead time.

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UNITS OF MEASURE

Unit	Measure
%	Percentage
°C	Degrees Celsius
ha	Hectare
km	Kilometre
m	Metre
mm	Millimetre

List of Abbreviations

Abbreviation	Meaning
APM	Animal Plant Mineral Pty Ltd
BAM Act	<i>Biosecurity and Agriculture Management Act 2007</i>
BC Act	<i>Biodiversity Conservation Act 2016</i>
BoM	Bureau of Meteorology
CR	Critically Endangered
DBCA	Department of Biological Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEE	Department of Energy and the Environment
DMIRS	Department of Mines, Industry Regulation and Safety
DWER	Department of Water and Environment Regulation
DPIRD	Department of Primary Industries and Regional Development
EN	Endangered
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESA	Environmentally Sensitive Areas
IBRA	Interim Biogeographic Regionalisation for Australia
IBSA	Index of Biodiversity Surveys for Assessment
MI	Migratory
MNES	Matters of National Environmental Significance
OS	Other Specifically Protected
PEC	Priority Ecological Community
P	Priority
PMST	Protected Matters Search Tool
TEC	Threatened Ecological Community
T	Threatened
VU	Vulnerable
WA	Western Australia
WONS	Weeds of National Significance

1 INTRODUCTION

1.1 PROJECT AND LOCATION

APM was commissioned by Westgold Resources Limited to undertake a Desktop Study for the Big Bell, Day Dawn and Cuddingwarra Mining Areas, located within the Shire of Cue in the Mid-West Region of WA. From Cue, the largest nearby population centre, Big Bell is located approximately 25 km west northwest, Cuddingwarra 7.5 km west northwest and Day Dawn 4 km south west. The desktop study covers the 3 mining areas and an access road east and southeast of the Big Bell mining area. The extent of the four study areas is: Big Bell 794 ha, Big Bell access road 159 ha, Day Dawn 1,596 ha and Cuddingwarra 2,669 ha. The total extent of the Study Area is 5,218 ha and is shown in Figure 1-1.

1.2 SCOPE OF WORK

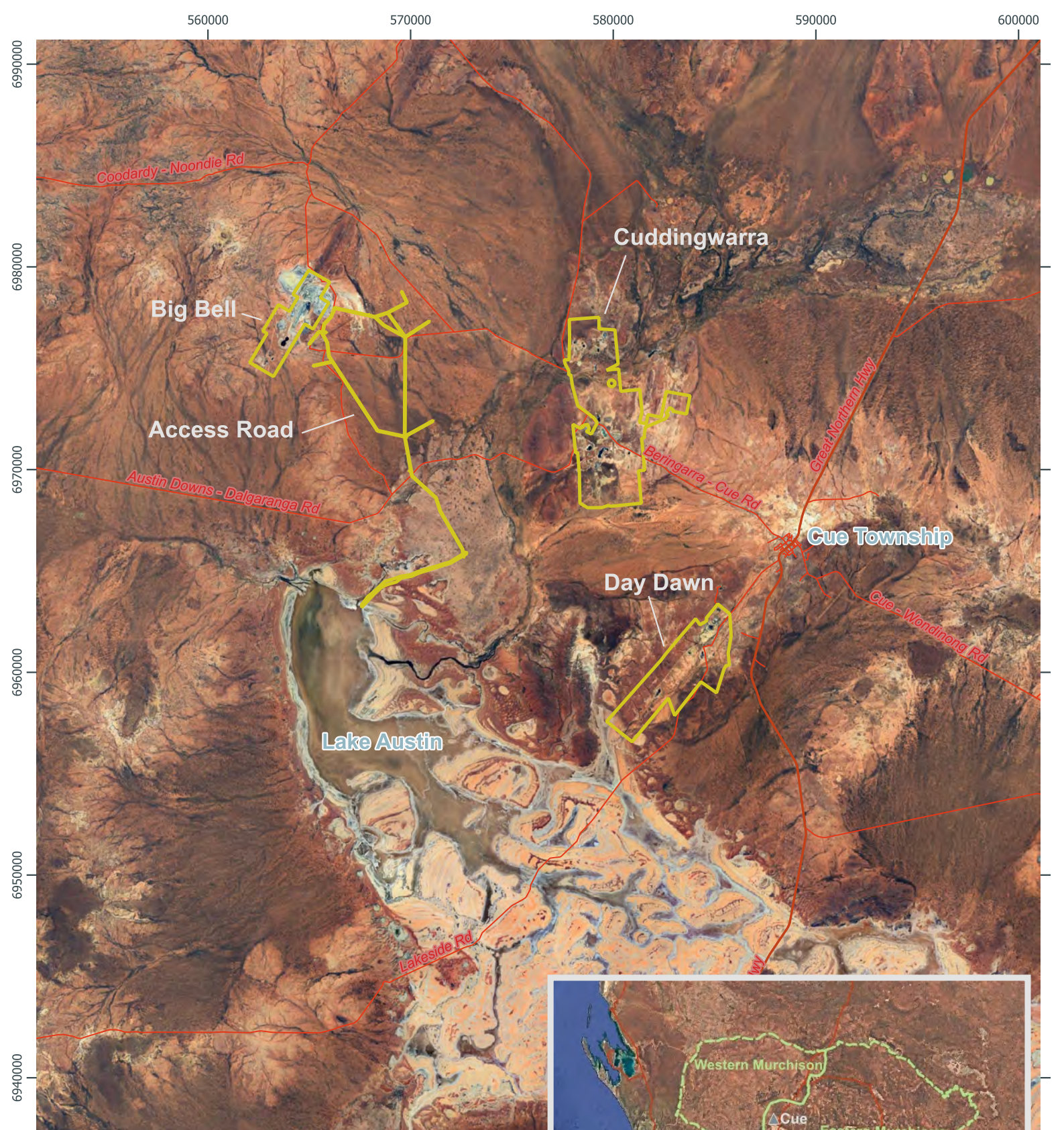
A Desktop Study is required to identify the environmental values that are known to occur or have the potential to occur within the Study Areas.

The Desktop Study was conducted in accordance with the following guidance:

- Environmental Protection Authority's (**EPA**) *Technical Guidance - Terrestrial Fauna Surveys for Environmental Impact Assessment* (2020) at a Desktop Study level of assessment
- EPA *Technical Guidance - Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment* (2016) at a Desktop Study level of assessment
- Department of Biodiversity, Conservation and Attractions (**DBCA**) Guidelines for determining the likely presence and habitat usage of Night Parrot (*Pezoporus occidentalis*) in Western Australia, published March 2024.

The aims of the desktop study were to:

- Evaluate previous surveys to develop an understanding of survey extent and reliability
- Create a list of known and expected species
- Establish vegetation associations previously determined for the site
- Identify T and P species and ecological communities previously recorded in the Study Areas, and other values from the area that, while not listed, are also significant
- Identify introduced species previously determined as present on site, in particular any Declared weeds or introduced fauna known to present risk to T fauna
- Identify potentially suitable habitat for conservation significant species and communities known from the region, using publicly available regional datasets such as land system, surface water and GDE mapping products, and
- Inform the selection of field survey methodology, timing and focal areas.



Author: EH Date: 13/02/2026

Project Location

Prepared for:



1-1

Scale: @ A4
1: 250,000

Coordinate System: GDA 2020 MGA Zone 50
Projection: Transverse Mercator



2 BACKGROUND AND SUPPORTING INFORMATION

2.1 RELEVANT LEGISLATION AND GUIDANCE

2.1.1 Commonwealth Government EPBC Act

The Commonwealth EPBC Act is administered by the Department of Climate Change, Energy, the Environment and Water (**DCCEEW**). It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, defined in the EPBC Act as Matters of National Environmental Significance (**MNES**).

If a project has the potential to significantly impact on MNES it is to be referred to the DCCEEW for determination on whether the matter is a 'controlled action' and therefore requiring assessment.

The EPBC Act provides for the identification and listing of species under several categories listed in Appendix A. The EPBC Act also provides for the development of conservation advice and recovery plans, development of a register of critical habitat, recognition of key threatening processes and the development of threat abatement plans.

2.1.2 Western Australia BC Act

The *Biodiversity Conservation Act 2016* (**BC Act**) provides a statutory basis for the listing of T species, specially protected species, extinct species, TECs, collapsed ecological communities, critical habitat and key threatening processes in WA. The BC Act provides for the listing of T flora and fauna species and ecological communities under specified conservation categories listed in Appendix A. Species and communities listed under the BC Act are protected and require authorisation by the Minister to take or disturb.

Species may also be listed as being of special conservation interest if they have a naturally low population, restricted natural range, are subject to or recovering from a significant population decline or reduction of range or are of special interest to science. Species of special conservation interest, migratory species and species subject to international agreements are known as Specially Protected Species in the BC Act.

2.1.3 Western Australia Priority species and communities

Flora and fauna species and communities are listed by the DBCA as P when they are considered to have a greater level of significance than other native species and communities. This generally occurs where populations are geographically restricted or threatened by local processes, or where there is insufficient information to formally assign them to T species and communities categories. Whilst P species and communities are not specifically listed in the BC Act, all flora and fauna are protected in WA following the provisions in Part 10 of the BC Act. This protection applies even when a species is not listed as T or specially protected. The categories covering P species and communities are listed in Appendix A.

2.1.4 BAM Act

Plants may be 'Declared' by the Agriculture Protection Board under the *Biosecurity and Agriculture Management Act 2007* (WA) (**BAM Act**). Declared Plants are gazetted under three categories (C1-C3) which define the action required. Details of the definitions of these categories are provided in Appendix

A. A declaration may apply to the whole State, to districts, individual properties or even to single paddocks. If a plant is 'Declared', landholders are obliged to control that plant on their properties.

2.1.5 Weeds of National Significance

The DCCEEW, along with the State and Territory governments, has endorsed 32 Weeds of National Significance (**WONS**). Four major criteria were used in determining WONS:

- The invasiveness of a weed species;
- A weed's impact;
- The potential for spread of a weed; and
- Socio-economic and environmental values.

Each WONS has a national strategy and a national coordinator, responsible for implementing the strategy. WONS are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts (DAWE 2020).

2.2 LAND USE

The Study Area lies within the Austin Downs (N050063) and Coodardy (N049528) Pastoral Leases. The underlying current land use is cattle grazing and active mining operations.

The Murchison region has a long history of gold and mineral exploration activities. There are several mines and prospects including gold, iron and other minerals which continue to be an important land use for the area, alongside pastoralism. All four Study Areas have existing disturbance from mining and pastoral activities.

2.3 CLIMATE

The Murchison region experiences an arid climate, with summer and winter rain and annual rainfall in the range of 200 mm (Beard 1990, Pringle et al. 1994). Rainfall over the Study area is unreliable, with zero rainfall potentially recordable in any month (Pringle et al. 1994). While summer rainfall is a feature of the region, most years have a dry spell lasting four to six months, typically commencing around October (Pringle et al. 1994).

Weather data collected from the Cue Meteorological Station (4-25 km east of the Study Areas), indicates mean average rainfall of approximately 234 mm and an average of 32 rain days per annum (Bureau of Meteorology [BoM] 2026a) (Figure 3). Peak temperatures are recorded from December to March. Mean daily maximum temperatures range from 18 °C in July to 38 °C in January. The mean daily minimum temperature between June and August ranges from 7 to 8 °C.

The nearest BoM weather station with a long historical record for rainfall is at Cue (BoM Site Number: 7017), 4-25 km east of the Study Areas. Cue has recorded rainfall from 1894, and temperature from 1948 (74 years). Monthly mean rainfall ranges from 29.1 mm in February to 6.6 mm in October, with a mean annual rainfall of 232.3 mm (BoM 2026a). All months have recorded 0 mm of rainfall at least once over the recording period, and the lowest annual rainfall on record is 73.0 mm. Occasional high rainfalls occur in the region, associated with unpredictable tropical low pressure systems, and the highest annual rainfall on record is 558 mm. Despite the unpredictability of rainfall, the median annual rainfall is 216.9

mm, close to the mean and therefore rainfall generally occurs in most years, but with unpredictable timing.

The nearest BoM weather station with a long historical record for temperature (since 1944) is at Meekatharra airport (BoM Site Number: 7045), approximately 117 km northeast of the Study Areas. Monthly mean maximum temperature ranges from 38.4°C in January to 19.3°C in July. Overnight temperatures in January and July are on average 24.5°C and 7.4°C respectively.

The average climate data recorded at Cue (Rainfall) and Meekatharra (temperature) is shown in Figure 2-1.

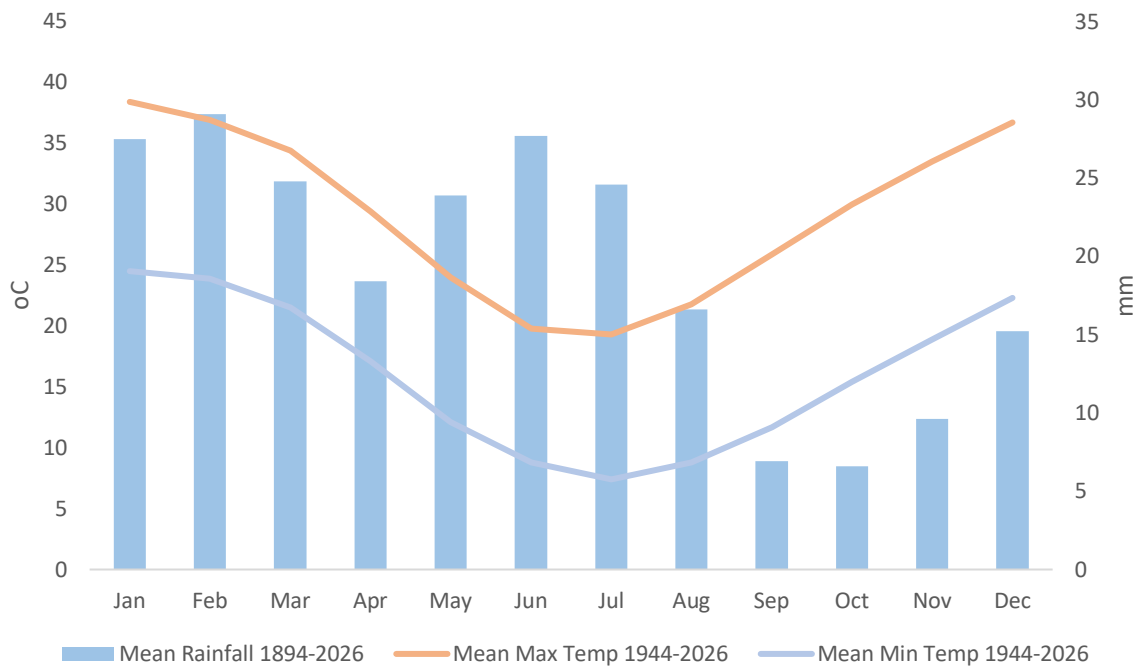


Figure 2-1. Temperature and rainfall averages (BoM 2026a)

2.4 BIOGEOGRAPHIC REGIONALISATION

The Interim Biogeographic Regionalisation for Australia (**IBRA**, version 7) classifies the Australian continent into regions (bioregions) of similar geology, landform, vegetation, fauna, and climate characteristics (Thackway and Cresswell 1995). The mapping completed by Beard (1975) provides the basis for the IBRA bioregions. IBRA mapping (Version 7), places the Project within the Murchison Bioregion.

The Murchison Bioregion covers an area of 278,360 km² with mining and grazing as the two main land uses (Cowan 2001). The Murchison bioregion encompasses the transitional zone between the Eucalypt dominated environs of south-west Australia and the Mulga/Spinifex dominated areas of central Australia (Morton et al. 1995). The bioregion contains several large ephemeral wetlands, providing refuge for waterbirds. The vegetation in the bioregion is closely associated with geology, soils and climate.

Within the Murchison Bioregion, areas of outcropping rock with skeletal soils support Mulga low woodlands. Hummock grassland grows predominately on calcareous soils and samphire (*Tecticornia* sp.) low shrubland mostly on the saline alluvium areas. In the east of the bioregion, the red sand plains support Mallee-Mulga parkland over hummock grassland (Thackway and Cresswell 1995).

The Murchison bioregion includes two sub-regions: the Murchison 1 (MUR1 – East Murchison) subregion, and the Murchison 2 subregion (MUR2 – Western Murchison). The Study area lies within the Eastern Murchison subregion, approximately 12 km east of the border with the Western Murchison subregion (Figure 1-1). The Eastern Murchison subregion consists of extensive areas of elevated red/red-brown desert sandplains with minimal dune development, breakaway complexes and internal drainage and salt lake systems associated with the occluded Palaeodrainage system (Cowan et al. 2001).

Tecticornia shrublands are common in the Murchison subregions. While the Eastern Murchison subregion drains internally, the Western Murchison subregion contains the headwaters of the Murchison and Wooramel Rivers, which drain the subregion westwards to the ocean.

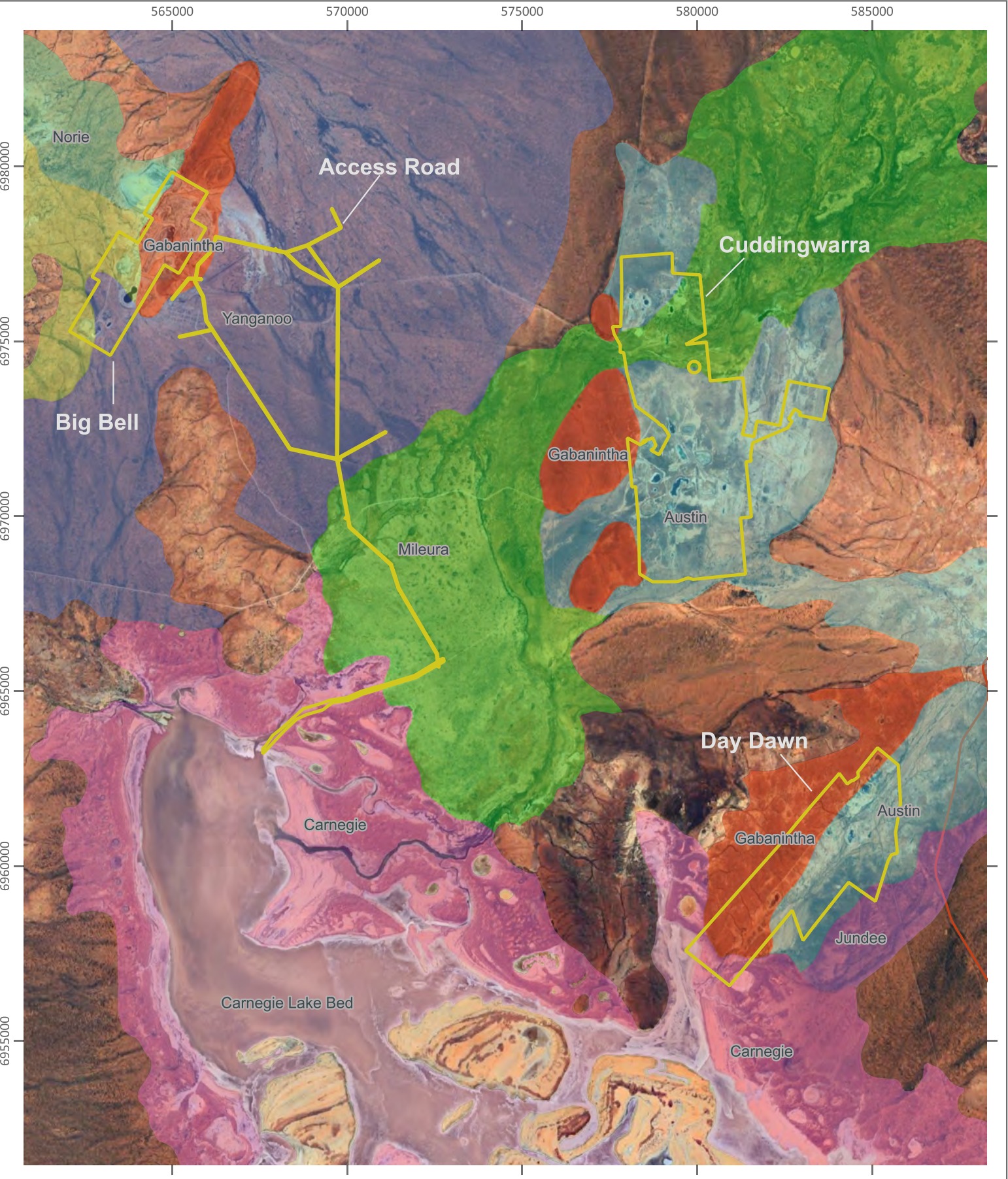
2.5 LAND SYSTEMS

Land Systems of the Murchison are described by Curry et al (1994). Mapping of Land Systems is available from Department of Primary Industry and Regional Development (**DPIRD**, 2025). The Study Area falls within several soil landscape systems as listed in Table 2-1 and illustrated in Figure 2-2.

Table 2-1. Land Systems

Land System	Geology	Description	Study Area
Austin	Quaternary colluvium and alluvium with isolated Precambrian greenstone intrusives and Archaean granitic outcrops	Saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga and snakewood. Occurs mainly adjacent to lakes Austin and Annean, below greenstone hill systems.	Cuddingwarra Day Dawn
Carnegie Lake Bed Sub-System	Quaternary lacustrine sand and clay deposits; also aeolian deposits on margins.	Bare lake beds inundated for short periods after rain.	Access Road
Carnegie		Salt lakes with fringing saline alluvial plains, kopi dunes and sandy banks, supporting halophytic shrublands and acacia tall shrublands.	Access Road Day Dawn
Challenge	Massive Archaean granite with veneers of Quaternary colluvium and minor alluvial deposits and Tertiary laterite	Gently undulating gritty and sandy surfaced plains, occasional granite hills, tors and low breakaways, supporting acacia shrublands and occasional halophytic shrublands.	Big Bell

Gabanintha	Metamorphosed Archaean volcanic and sedimentary rocks; mainly jaspilite /banded ironstone, basaltic intrusives and felsic volcanics; with thin Quaternary colluvium veneers; also minor residual material from former Tertiary laterite cappings	Greenstone ridges, hills and footslopes supporting sparse acacia and other mainly non-halophytic shrublands.	Big Bell Access Road Cuddingawarra Day Dawn
Jundee	Cemented Quaternary alluvium derived mainly from greenstone	Hardpan plains with variable gravelly mantles and minor sandy banks supporting weakly groved mulga shrublands.	Day Dawn
Mileura	Tertiary calcrete with opaline silica and fine gravel at depth; partly overlain by Quaternary alluvium	Saline and non-saline calcreted river plains with flood plains and calcrete platforms supporting variable tall shrublands, mixed halophytic shrublands and shrubby grasslands.	Access Road Cuddingawarra Day Dawn
Norie	Massive Archaean biotitic and porphyritic granite and banded gneiss, minor Tertiary laterite and shallow Quaternary alluvium and colluvium.	Granite hills with exfoliating domes and extensive tor fields, supporting acacia shrublands.	Big Bell
Yanganoo	Quaternary cemented alluvium derived mainly from gneiss, granite and feldspathic schist; minor aeolian sand on margins.	Breakaways, kaolinised footslopes and extensive gently sloping plains on granite supporting mulga shrublands and minor halophytic shrublands.	Big Bell Access Road



Author: EH Date: 13/02/2026

Land Systems

Prepared for:
WESTGOLD 2-2
 Scale: @ A4 0 2 4 km
 1: 150,000
 Coordinate System: GDA 2020 MGA Zone 50
 Projection: Transverse Mercator

Legend

- CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
- | | |
|--|---|
| <ul style="list-style-type: none"> Austin Carnegie Carnegie Lake Bed Challenge Gabanintha Jundee | <ul style="list-style-type: none"> Mileura Norie Yanganoo |
|--|---|



2.6 REGIONAL VEGETATION

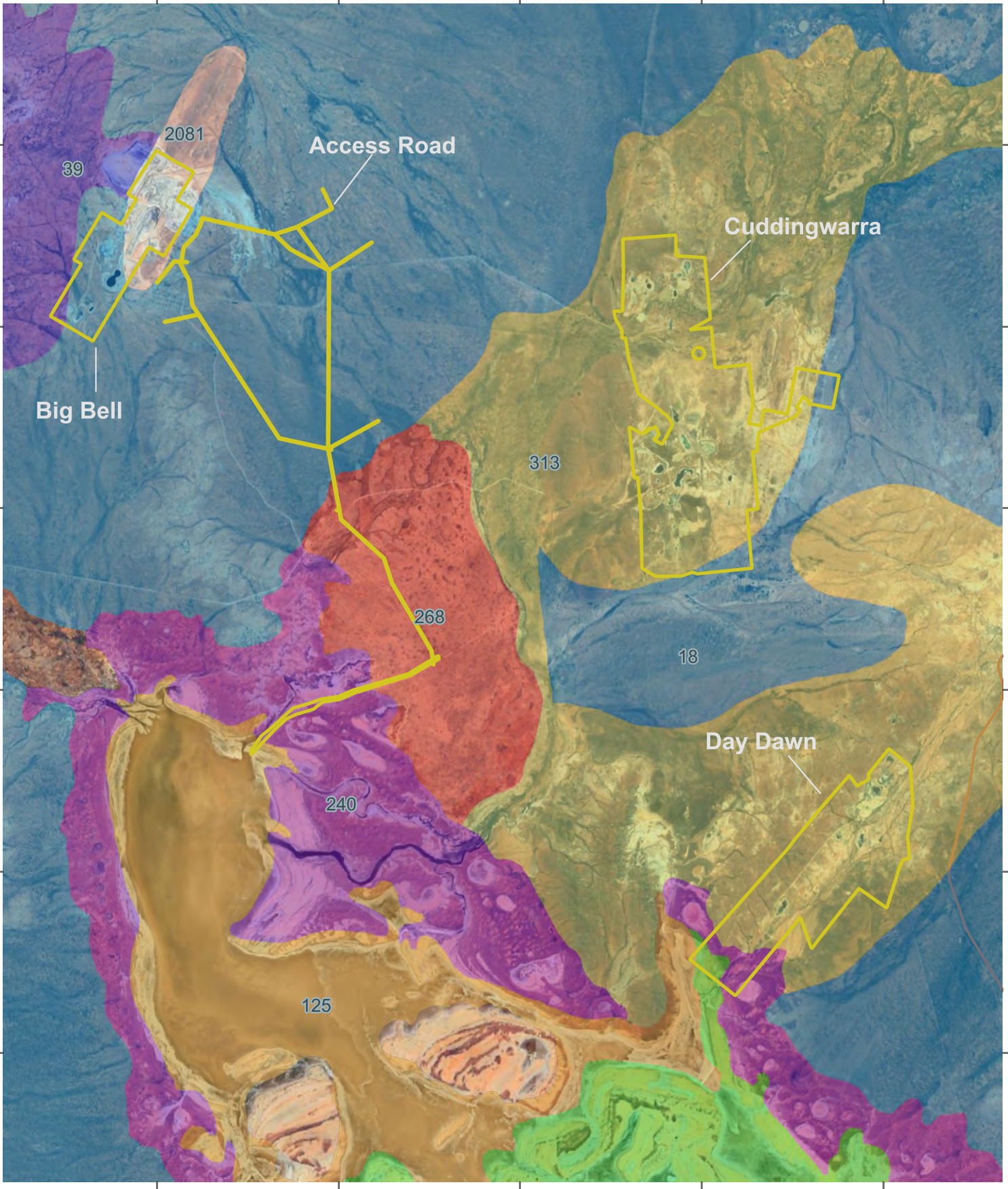
The Study Areas are located within the Eremaean Botanical Province and contain eight pre-European Beard vegetation associations of the Wiluna/Upper Murchison Systems as shown in Figure 2-3 (DPIRD 2019). The remaining extent of these vegetation associations within the East Murchison sub-region is outlined in the most recent DBCA Statewide Vegetation Statistics table dated 2018 and summarised in Table 2-2 below.

Table 2-2. Pre-European Beard Vegetation Associations extent in the East Murchison sub-region

Unit	Vegetation Description	Pre-European Extent (ha)	Current Extent (ha)	Pre-European Extent Remaining (%)	Current Extent within DBCA Managed Lands (%)
18	Low woodland, open low woodland or sparse woodland of Mulga <i>Acacia aneura</i> and associated species.	12,493,715	10,234,838	81.9	0.4
39	Scrub, open scrub or sparse scrub of Wattle, teatree and other species <i>Acacia</i> spp. <i>Melaleuca</i> spp.	711,329	701,934	98.7	0.0
125	Unvegetated (Salt lake, lagoon, clay pan)	701,137	699,920	99.8	0.6
240	Saltbush and bluebush with scrub or open scrub of Mulga, other wattle <i>Atriplex</i> spp, <i>Maireana</i> spp. with <i>Acacia aneura</i> and other <i>Acacia</i> spp.	67,378	67,378	100.0	0.0
268	Saltbush and bluebush with scrub or open scrub of Mulga, other wattle <i>Atriplex</i> spp, <i>Maireana</i> spp. with <i>Acacia aneura</i> and other <i>Acacia</i> spp.	6,524	6,524	100.0	0.0
313	Saltbush and bluebush with scrub or open scrub of Mulga, other wattle <i>Atriplex</i> spp, <i>Maireana</i> spp. with <i>Acacia aneura</i> and other <i>Acacia</i> spp.	68,844	65,261	94.8	0.0
1127	Succulent steppe bluebush and saltbush / samphire	69,078	69,078	100.0	0.0
2081	Scrub, open scrub or sparse scrub of Wattle, teatree and other species <i>Acacia</i> spp. <i>Melaleuca</i> spp.	2,621	2,117	80.8	0.0

565000 570000 575000 580000 585000

6980000
6975000
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6965000
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6955000



Author: EH Date: 13/02/2026

Pre-European Vegetation

Prepared for: **WESTGOLD** 2-3

Scale: @ A4 1: 150,000

Coordinate System: GDA 2020 MGA Zone 50 Projection: Transverse Mercator

Legend

CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas

Pre-European Vegetation Association

- 18
- 39
- 125
- 240
- 268
- 1127
- 2081
- 313



Vegetation associations within and nearby the Study Areas have over 80% pre-European Vegetation extent remaining. Conservation significance ranking of vegetation associations occurring within the Study Areas are of 'Least Concern', however vegetation type 2081, present in the northern half of the Big Bell Study Area, has a low extent in the East Murchison sub-region, being more widely distributed in the Western Murchison, and association 313 is endemic to the Murchison bioregion.

2.7 HYDROLOGY AND HYDROGEOLOGY

The Study areas are situated in the Sandford River sub-catchment of the Murchison River Catchment area. Surface hydrology of the local area is disconnected from the surrounding region, with surface and groundwater flows draining centrally into Lake Austin. Lake Austin is located south of the Big Bell mining area and is the terminal sink of an endorheic (internally draining) catchment within the Murchison River basin. The waterways in the local area (shown in Figure 2-4) are largely ephemeral and generally only flow after rainfall events. Nallan Creek flows through the central portion of the Cuddingwarra Study Area, approximately 18 km downstream of Nallan Lake, an ephemeral claypan lake.

On a regional scale groundwater discharge occurs to the southwest into Lake Austin. Deeper groundwater flow within the underlying fractured bedrock is governed by the regional north-south trending foliation and associated jointing. Shallow flow through the superficial sediments is controlled by the local topography and drainage. Groundwater recharge is from rainfall. Very limited supplies of fresh to saline quality are available from fractured bedrock and clayey superficial sediments. Moderate to large supplies of brackish to saline groundwater are available from calcrete deposits.

2.8 GROUNDWATER DEPENDENT ECOSYSTEMS

The BoM GDE Atlas provides information to support the recognition and identification of GDEs in natural resource management, including water planning and environmental impact assessment. It indicates where ecosystems potentially interact with groundwater, and some of the characteristics of those ecosystems that may be useful in determining water requirements.

The GDE Atlas shows general areas where groundwater interaction may occur. It does not imply that an entire mapped ecosystem is using groundwater, but rather groundwater interaction may be occurring somewhere within the mapped ecosystem. It is recommended that the GDE Atlas be used to flag the location and characteristics of potential GDEs (BoM 2026b).

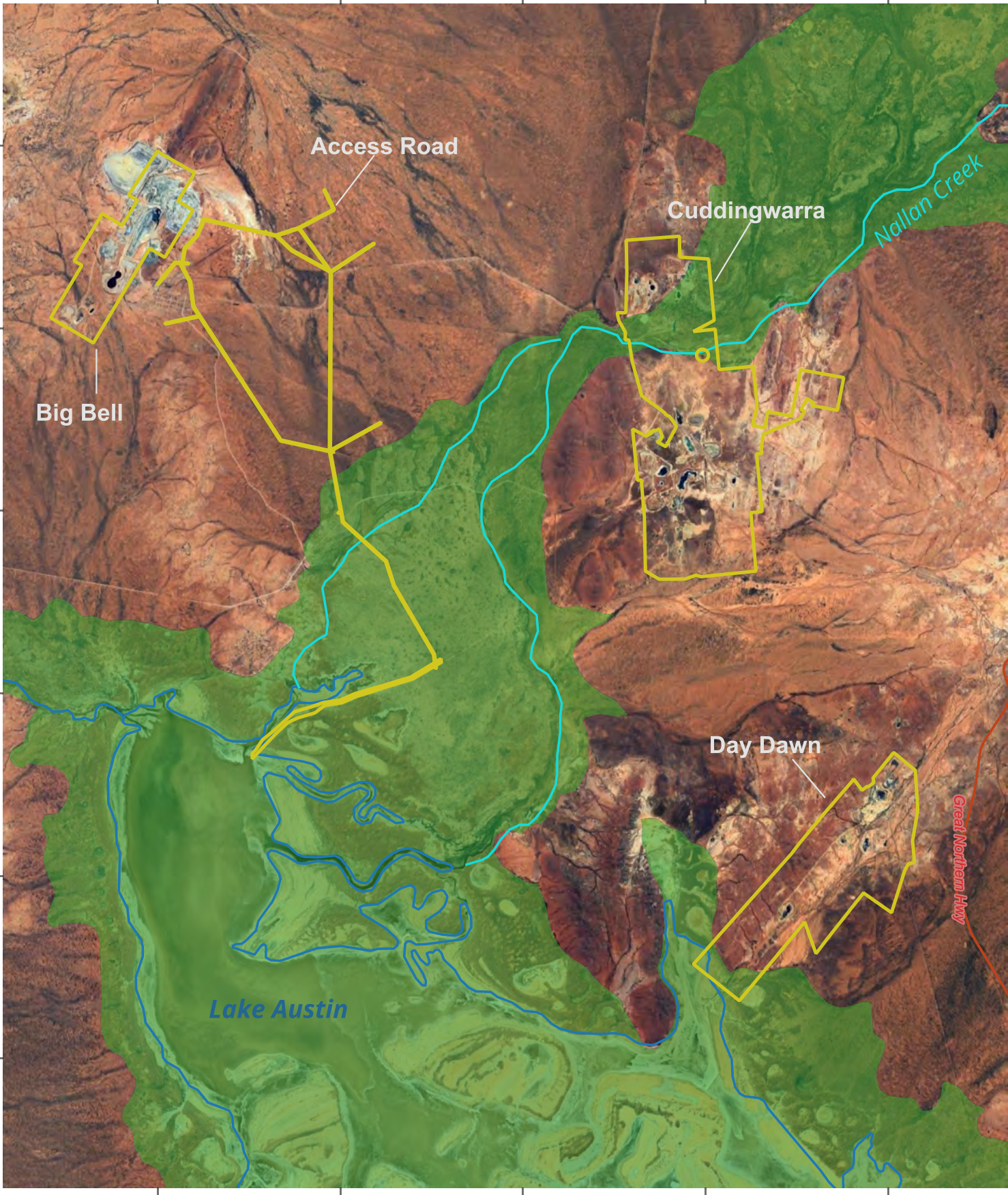
For WA, the Atlas contains information about two types of ecosystems:

- Aquatic ecosystems that rely on the surface expression of groundwater—this includes surface water ecosystems which may have a groundwater component, such as rivers, wetlands and springs.
- The terrestrial GDE layer expresses the potential for groundwater and mapped vegetation communities across Australia to interact. It shows the vegetation communities that interact with groundwater from the water table or in the capillary zone.

Based on the national assessment, there are no potential aquatic GDE listed on the GDE Atlas within or near the Study Areas. Under the national assessment the Mileura and Carnegie Land Systems have High potential for Terrestrial GDE. Figure 2-4 shows the GDE Atlas terrestrial layers in relation to the Study Areas.

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Author: EH Date: 13/02/2026

Hydrology and Hydrogeology

Prepared for: **WESTGOLD** 2-4

Scale: @ A4 1: 150,000

Coordinate System: GDA 2020 MGA Zone 50 Projection: Transverse Mercator

Legend

- CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
- Hydrography_Linear_Hierarchy_DWER_031**
- Major River
- Major Trib
- BoM GDE Atlas - Terrestrial Layer**
- High potential GDE - from national assessment



2.9 ENVIRONMENTALLY SIGNIFICANT AREAS

2.9.1 Conservation Estate

The Western Australian Conservation Estate includes land and waters vested in the Conservation and Parks Commission under the *Conservation and Land Management Act 1984*. The Conservation Estate is managed by the Parks and Wildlife Service of DBCA to protect WA's biodiversity, and includes National Parks, Nature Reserves, Conservation Reserves, and other areas managed primarily for biodiversity conservation (DEE 2016).

DBCAs Protected Areas was viewed to identify conservation estates located near the Study Areas. Lakeside Conservation Park (WA_53840) is a Class C Reserve with legal vesting to the Conservation and Parks Commission and Wajarri Yamatji Aboriginal Corporation RNTBC. The southern end of the Access Road Study Area intersects Lakeside Conservation Park (Figure 2-5).

Lakeside National Park (WA_53839) and Dalgaringa National Park (WA_54419) are approximately 40 km south west of the Study Areas (Figure 2-5). These conservation Reserves were formerly Lakeside and Dalgaringa Pastoral Leases, purchased by the WA Government in 2009 for gazettal into the Conservation Reserve system.

2.9.2 Environmentally Sensitive Areas

Environmentally Sensitive Areas (**ESA**) are areas that are defined by the Department of Water and Environment Regulation (**DWER**) (2023) as:

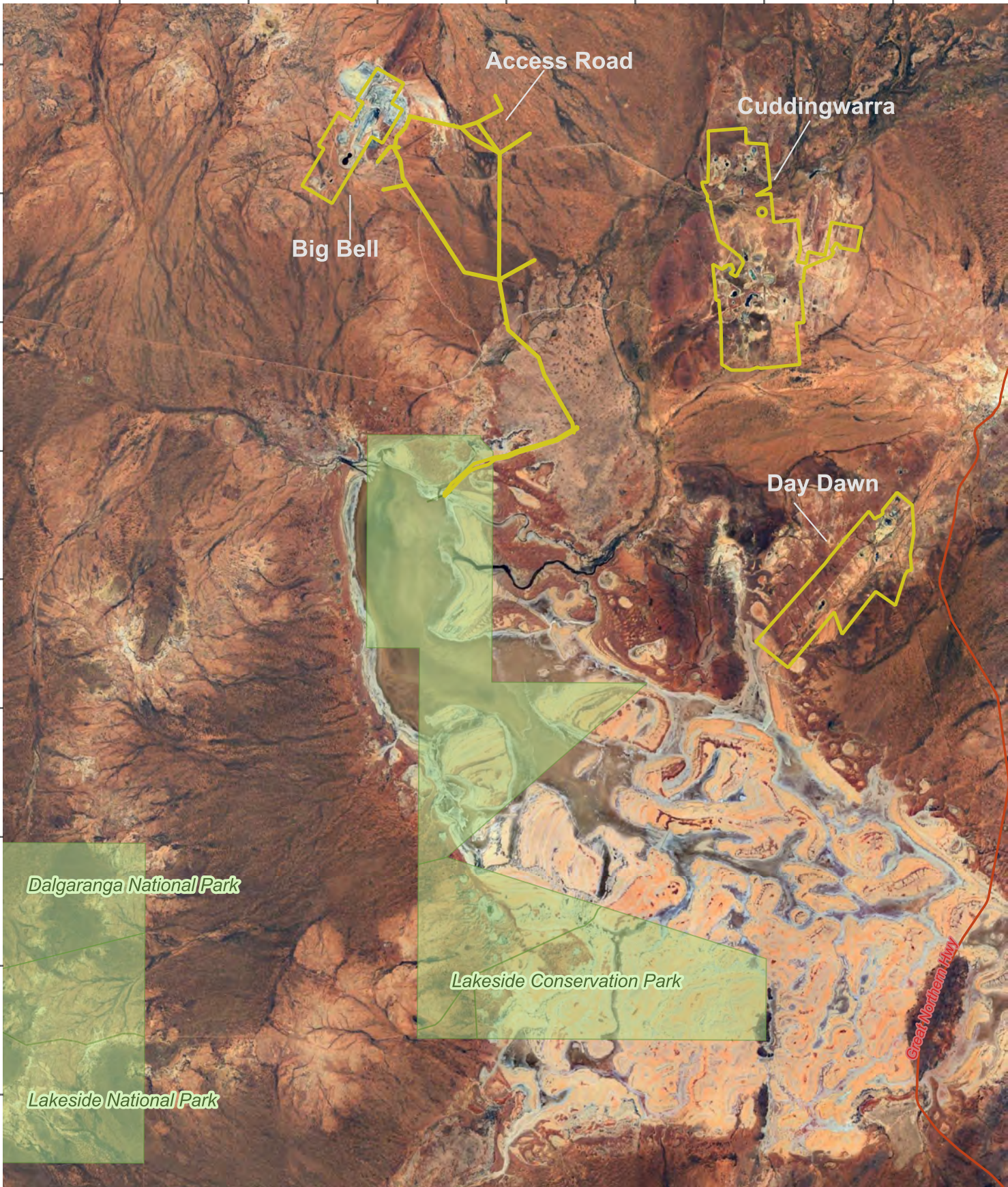
- A declared World Heritage property as defined in s.13 of the EPBC Act;
- An area that is included on the Register of the National Estate, because of its natural heritage value under the *Australian Heritage Council Act 2003*;
- A defined wetland and the area within 50 m of the wetland;
- The area covered by vegetation within 50 m of T flora, to the extent to which the vegetation is continuous with the vegetation in which the T flora is located;
- The area covered by a TEC;
- A Bush Forever site;
- Areas covered by the Gngarara Mound Crown Land Policy and Western Swamp Tortoise Policy;
- Areas covered by lakes, wetlands, and fringing vegetation of the Swan Coastal Plain Lakes Policy, including Southwest Agricultural Zone Wetlands Policy and Swan and Canning Rivers Policy; and
- Protected wetlands as defined in the Environmental Protection (Southwest Agricultural Zone Wetlands) Policy 1998.

Environmentally Sensitive Areas can be viewed on the DWER clearing permit system map viewer. There are no ESA's within the Study Areas.

The Australian Wetlands Database includes nationally significant wetlands (as listed in the directory of important wetlands), wetlands listed under the Ramsar convention, wetlands that are representative, rare or unique, or wetlands that are considered of international importance (DEE 2019). The nearest wetlands listed in the Directory are Lake Annean (Lake Nannine) 62 km north east and Wooleen Lake 147 km north west of the Study Areas.

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Author: EH Date: 13/02/2026



Conservation Reserves

Prepared for: **WESTGOLD** 2-5

Scale: @ A4 1: 150,000  

Coordinate System: GDA 2020 MGA Zone 50 Projection: Transverse Mercator 

Legend

-  CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
-  Legislated_Lands_and_Waters_DBCA_011_WA_GDA2020_Public — Legislated_Lands_and_Waters_DBCA_011



3 METHODOLOGY

3.1 DATABASE SEARCHES

A search for EPBC Act MNES was undertaken using the DCCEE Protected Matters Search Tool (**PMST**). The PMST identifies EPBC listed flora and fauna species and communities based on predicted distributions of the species and/or their habitat, in conjunction with species records. The PMST may predict the occurrence of a species or community in an area where there are no documented records, or documented records are historic. For this search, the Study Areas were imported into the PMST viewer as the feature area and a buffer of 30 km applied. The conservation codes are described in Appendix A. The results of the PMST search are included in Appendix B.

The DBCA maintains databases for records of T and P species and communities. A request was made for a search of DBCA databases for T and P flora and fauna and the presence of TECs or PECs. A 30 km buffer was applied to the search results from a central coordinate of 696681, 7674607 (GDA 2020, MGA Zone 50).

Records for Introduced flora and fauna from within 30 km, were obtained from the Dandjoo Biodiversity Data Repository hosted by the DBCA Biodiversity Office (DBCA 2026a).

Table 3-1 lists the database searches conducted for the desktop study.

Table 3-1. Database Searches

Attribute	Search Area	Database	Location
Threatened and Priority Ecological Communities	30 km radius	DBCA	Figure 4-4
	30 km radius	PMST	Appendix B
Groundwater Dependent Ecosystems (GDE)	Study Area	BoM GDE Atlas	Section 4.2
Threatened Flora	30 km radius	DBCA	Figure 4-5
	30 km radius	PMST	Appendix B
Introduced Flora	30 km radius	Dandjoo	Section 4.5
Threatened Fauna	30 km radius	DBCA	Figure 5-2
	30 km radius	PMST	Appendix B
Introduced Fauna	30 km radius	Dandjoo	Section 5.3

The DBCA fire history database (DBCA 2026b) was consulted to identify local fire history.

3.2 LITERATURE REVIEW

Flora, vegetation, and terrestrial vertebrate fauna surveys have been conducted in the local areas of the Big Bell, Cuddingwarra and Day Dawn mine sites. The local surveys were reviewed, and the results incorporated into the Desktop Study where relevant. Table 3-2 lists the locally available surveys, the survey intensity and any limitations identified in the survey reports.

Table 3-2. Previous surveys, survey level and limitations

Reference	Report Title/Survey Level	Limitations
Outback Ecology (2012a)	Central Murchison Gold Project Level 1 Vegetation, Flora and Fauna Assessment	<p>Information sources: Partial constraint identified. Predominantly regional surveys and those undertaken for mining operations in surrounding region. Prepared prior to changes in listing status of several values.</p> <p>Survey Completeness: Partial constraint identified. Two of the Study areas could not be accessed for the spotlighting component of the survey due to concerns about access to the areas at night and the potential to disturb livestock.</p> <p>Survey timing/conditions: Field survey conducted in October/November 2011. Survey conditions not reported but above average rainfall experienced in 2011. Timing suitable for fauna survey (EPA 2020) and the supplementary season for flora and vegetation (EPA 2016).</p> <p>Scope: systematic survey following substantial rainfall required to increase confidence in likelihood of occurrence for Short Range Endemic (SRE) fauna. Prepared prior to Index of Biodiversity Surveys for Assessment (IBSA) data management guidelines.</p>
MWH (2015)	Targeted Search for Malleefowl Mounds and Western Spiny-tailed Skinks Habitat	None reported
Maia (2017)	Big Bell Haul Road (Tenements L20/76 and L20/77) Level 1 Reconnaissance and Targeted Flora Survey	<p>Completeness: The entire Study Areas was covered at a low intensity for vegetation mapping and habitat suitability assessment. Possible limitation: 16.37% of the Study Areas was surveyed at a high intensity for conservation significant flora.</p> <p>Survey timing/conditions: Field survey conducted in November 2017 following above average rainfall. Timing suitable for the supplementary season for flora and vegetation (EPA 2016).</p>
Maia (2019)	Crème dOr, Racecourse and Mt Fingall Project Area Reconnaissance and Targeted Flora Survey	<p>Survey timing/conditions: The survey was conducted in winter (late June) and spring (late September) 2019. Rainfall over the three full months before both surveys was below average, however the proportion of annual flora and fertile specimens indicate conditions were adequate. Timing suitable for the supplementary season for flora and vegetation (EPA 2016).</p>

Reference	Report Title/Survey Level	Limitations
Maia (2019b)	City of Sydney and Fleece Pool Project Area Reconnaissance and Targeted Flora Survey	Survey timing/conditions: The survey was conducted in spring (late September) 2019. Rainfall over the three months before the survey was below average however the proportion of annual flora and fertile specimens indicate conditions were adequate. Timing suitable for the supplementary season for flora and vegetation (EPA 2016).

Table 3-3 lists the proportion of each current Study Area that has been subject to previous survey.

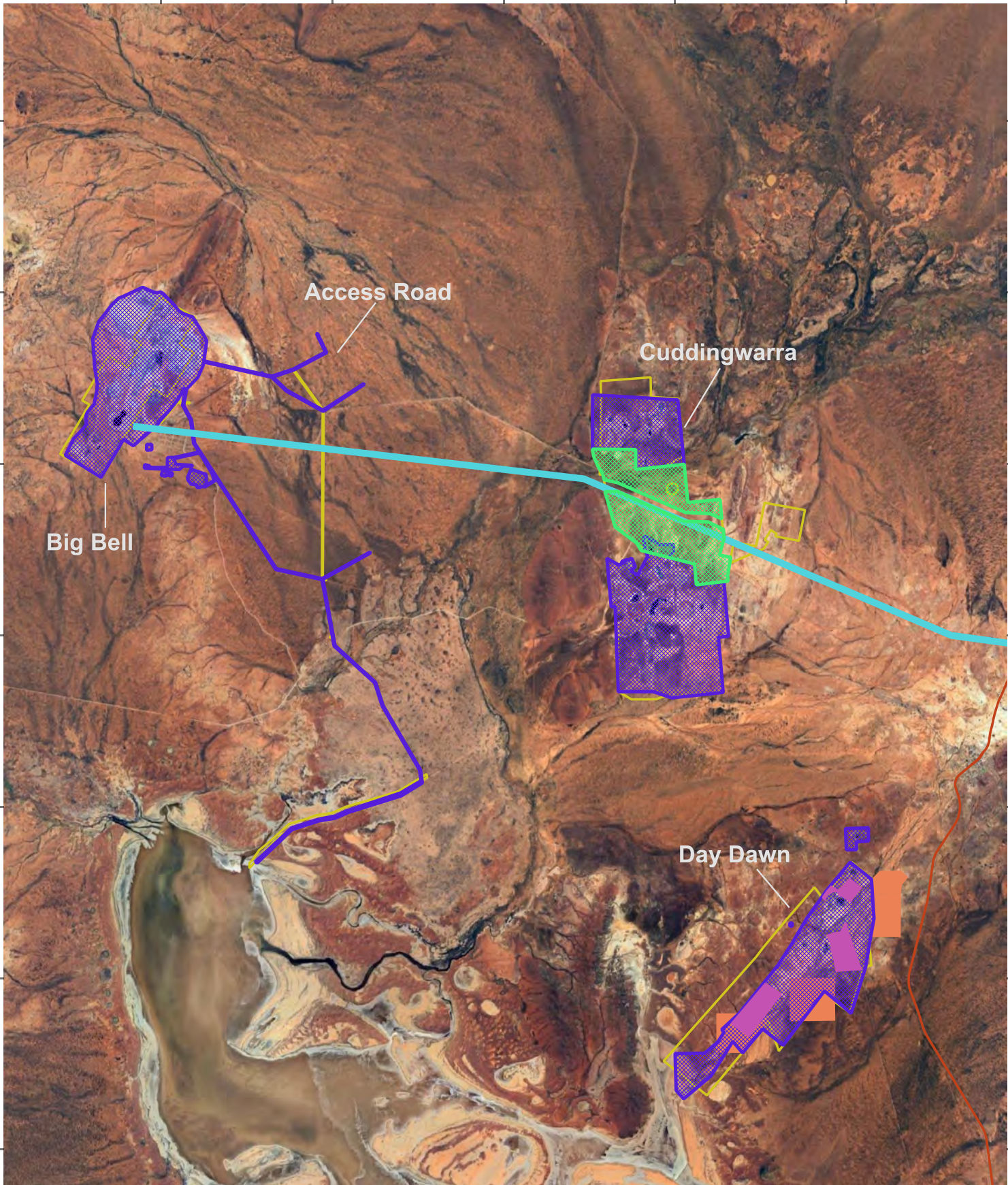
Table 3-3. Previous survey effort

Study Area	Scope	Survey	Proportion surveyed
Big Bell	Flora, Vegetation and Fauna	Outback Ecology (2012a)	94.0 %
Access Road	Flora, Vegetation and Fauna	Outback Ecology (2012a) Maia (2017)	48.9 %
Cuddingawarra	Flora and Vegetation	Outback Ecology (2012a) Maia (2017) Maia (2019b)	90.8 %
	Fauna	Outback Ecology (2012a)	60.9 %
Day Dawn	Flora and Vegetation	Outback Ecology (2012a) Maia (2019a)	73.8 %
	Fauna	Outback Ecology (2012a) MWH (2015)	70.7 %

Figure 3-1 shows the extent of previous survey effort.

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Big Bell

Access Road

Cuddingwarra

Day Dawn

Author: EH Date: 13/02/2026







Previous Surveys

Prepared for:
WESTGOLD **3-1**

Scale: @ A4 0 2 4 km
1: 150,000

Coordinate System: GDA 2020 MGA Zone 50
Projection: Transverse Mercator

Legend

-  CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
-  Outback Ecology 2012
-  MWH 2015
-  Maia 2017
-  Maia 2019a
-  Maia 2019b



3.3 LIKELIHOOD OF OCCURRENCE

Threatened and Priority flora, fauna and communities returned from the database searches and literature review were assessed for their likelihood of occurrence within the Study Areas using the likelihood of occurrence criteria listed in Table 3-4.

Table 3-4. Likelihood of occurrence criteria

Likelihood of occurrence	Criteria
Recorded	Identified from database records or field survey as occurring within the Study Areas
Likely	Suitable habitat is present in the Study Areas and the species has previously been recorded within 15 km within the last 15 years
Possible	Suitable habitat is present within the Study Areas and the species has previously been recorded between 15 – 30 km in any time period, or within 15 km more than 15 years ago
Unlikely	No suitable habitat is present in the Study Areas

4 FLORA AND VEGETATION RESULTS

4.1 VEGETATION

Table 4-1 lists the vegetation types previously described in the Study Areas. The extent of vegetation types within and surrounding the Study Areas are shown in Figure 4-1 (Big Bell and Access Road), Figure 4-2 (Cuddingwarra) and Figure 4-3 (Day Dawn). Where areas were covered in multiple surveys, the most recent survey is applied. Disturbed areas were updated using aerial imagery.

Inspection of the latest ESRI Satellite Imagery and the DBCA Fire layers identified no record of fire within the Study Areas. A fire in 2012 was located approximately 26 km south west of the Study Areas.

Table 4-1: Vegetation types

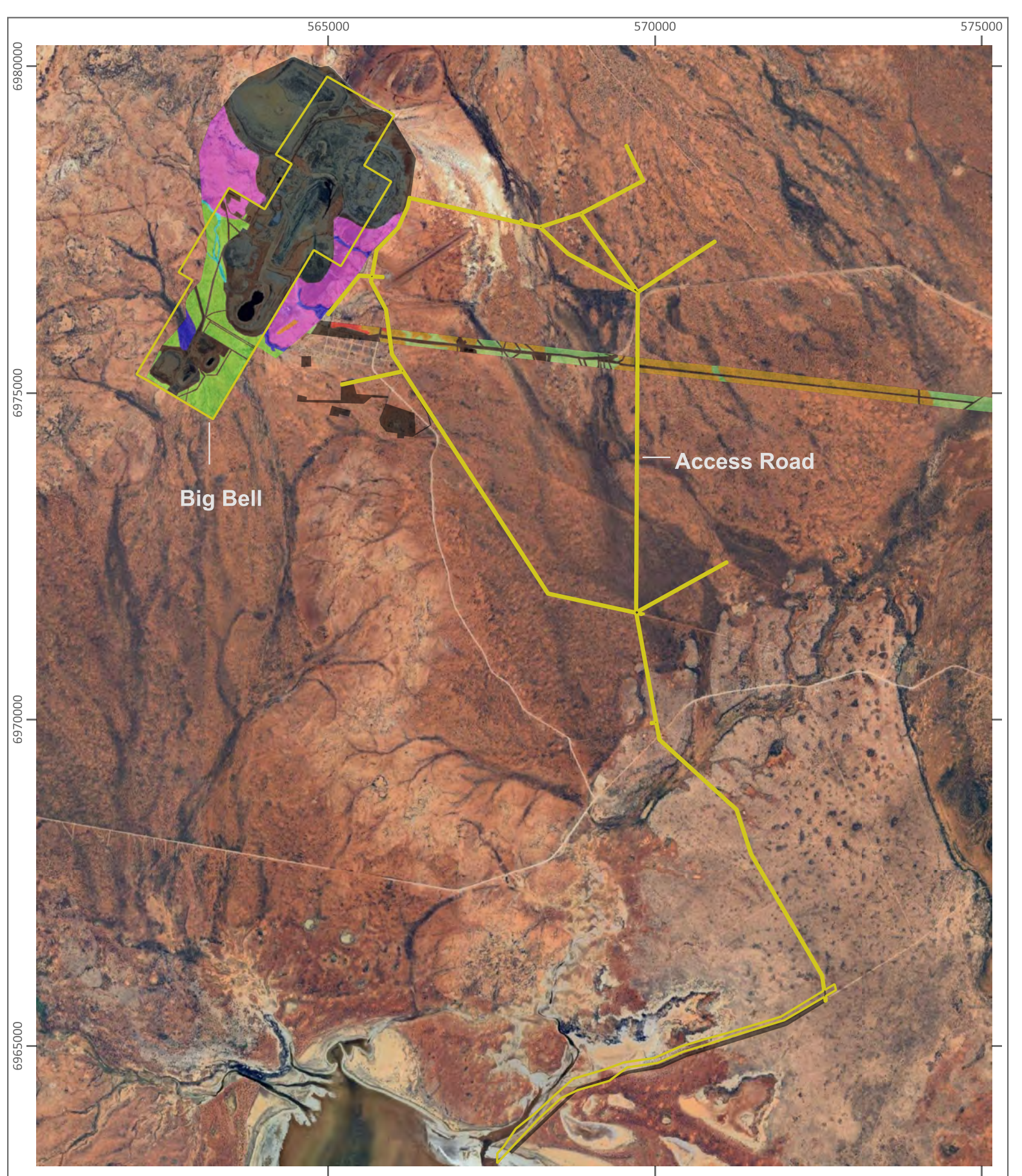
Code	Landform	Vegetation Description	Area (ha)	% of current Study Area
Big Bell				
BB2	Stony slopes and undulating plains	<i>Acacia aneura</i> Low Open Woodland over <i>Ptilotus rotundifolius</i> Open Shrubland over <i>Ptilotus</i> spp. Low Open Shrubland over <i>Aristida contorta</i> Tussock Grassland	29.3	3.7
BB3	Cemented alluvium on footslopes and extensive gently sloping plains	<i>Acacia aneura</i> Low Open Woodland over Scattered Low Shrubs over <i>Aristida contorta</i> Tussock Grassland	136.3	17.2
BB4	Lower order drainages, cemented alluvium	<i>Acacia aneura</i> low woodland over <i>A. tetragonophylla</i> and <i>Eremophila</i> spp. Scattered tall shrubs over <i>Aristida contorta</i> and <i>Eragrostis falcata</i> tussock grasslands	12.1	1.5
BB5	Higher order drainages, sandy channels	Mixed <i>Acacia</i> low woodland over scattered tall shrubland over open tussock grassland	5.8	0.7
D		Disturbed	563.2	70.9
U		Unsurveyed	47.4	6.0
Access Road				
D		Disturbed	81.3	51.1
U		Unsurveyed	77.7	48.9
Cuddingwarra				

ATSSL	Undulating plains and low hills	Tall Sparse Shrubland of <i>Acacia aptaneura</i> , <i>A. caesaneura</i> , <i>A. tetragonophylla</i> with a mixed Low Sparse Shrubland mainly of <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>E. galeata</i> and <i>Ptilotus schwartzii</i> with Low Isolated Trees of <i>Acacia pruinocarpa</i> .	0.6	<0.1
CC1	Calcrete floodplains with alluvium	<i>Acacia aneura</i> and <i>Grevillea berryana</i> Low Open woodland over <i>A. tetragonophylla</i> over <i>Ptilotus obovatus</i> low open shrubland over grasses and herbs	136.8	5.1
CC2	Saline stony plains	<i>Maireana pyramidata</i> Open Shrubland over Scattered Low Shrubs over <i>Aristida contorta</i> Scattered Tussock Grassland	59.4	2.2
CC3	Calcrete platform	<i>Acacia xiphophylla</i> Scattered Tall Shrubs over <i>Maireana pyramidata</i> and mixed <i>Sclerolaena</i> Scattered Low Shrubs	18.7	0.7
CC4	Gravelly alluvium on the margin of calcreted river plain	<i>Tecticornia</i> Low Shrubland over Scattered Tussock Grasses and Herbs	6.5	0.2
CC5	Calcrete floodplains with deeper alluvium	<i>Acacia aneura</i> , <i>A. tetragonophylla</i> , <i>A. pruinocarpa</i> and <i>Grevillea berryana</i> Tall Open Scrub over mixed Scattered Tall Shrubs/Shrubs over Tussock Grassland.	22.6	0.8
Cu1	Alluvium on saline plains	<i>Tecticornia disarticulata</i> , <i>Maireana</i> , <i>Sclerolaena</i> spp., <i>Solanum lasiophyllum</i> Low Shrubland over <i>Aristida contorta</i> Open Tussock Grassland.	55.1	2.1
Cu2	Non saline Low rise	<i>Acacia aneura</i> and <i>A. pruinocarpa</i> Scattered Tall Shrubs over <i>A. tetragonophylla</i> Scattered Shrubs over <i>Aristida contorta</i> Very Open Tussock Grassland.	18.6	0.7
Cu3	white quartz plain	Mixed Low Open Shrubland over Scattered Herbland and Tussock Grassland	543.8	20.4
MCSL	Saline sometimes stony plains and broad drainage flats.	Mixed Sparse Chenopod Shrubland mainly of <i>Maireana glomerifolia</i> , <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> and <i>Sclerolaena clelandii</i> with Isolated Low Shrubs of <i>Frankenia setosa</i> .	1.0	<0.1
MgMaOCSL	Outcrops of quartz and dolerite	Open Chenopod Shrubland of <i>Maireana glomerifolia</i> and <i>M. atkinsiana</i> with a mixed Sparse Low Shrubland mainly of <i>Frankenia setosa</i> , <i>Ptilotus beardii</i> (P3) and <i>P. obovatus</i> and a	2.2	0.1

		Sparse Samphire Shrubland of <i>Tecticornia halocnemoides</i> subsp. <i>catenulata</i> and/or <i>T. calyptrata</i> .		
MLOCSL	low lying areas, stony and sandy plains	Low Open mixed Chenopod Shrubland of mainly <i>Atriplex nana</i> , <i>Maireana glomerifolia</i> and <i>M. pyramidata</i> with Tall Isolated Shrubs of <i>Acacia synchronicia</i> .	225.5	8.5
MLSCSL	Saline sometimes stony plains, broad drainage flats and depressions	Mixed Low Sparse Chenopod Shrubland mainly of <i>Maireana glomerifolia</i> , <i>M. trichoptera</i> and <i>M. pyramidata</i> occasionally with a Low Open Samphire Shrubland of <i>Tecticornia calyptrata</i> and Low Isolated Shrubs of <i>Frankenia pauciflora</i> .	159.4	6.0
MLOSL	Ironstone and dolerite outcrops	Mixed Open Low Shrubland mainly of <i>Ptilotus obovatus</i> , <i>Dodonaea petiolaris</i> and <i>Eremophila latrobei</i> subsp. <i>latrobei</i> with a Sparse Tall Shrubland of <i>Acacia fuscaneura</i> and +/- Isolated Low Trees of <i>Acacia pruinocarpa</i> .	32.3	1.2
MOSL	Sandplains, drainage lines and minor sand dunes	Mixed Open Shrubland mainly of <i>Scaevola spinescens</i> , <i>Eremophila glabra</i> subsp. <i>tomentosa</i> , <i>Rhagodia eremaea</i> with a mixed Low Open Shrubland mainly of <i>Atriplex amnicola</i> , <i>Cratystylis subspinescens</i> and <i>Tecticornia indica</i> subsp. <i>bidens</i> .	130.6	4.9
MSL(3)	Minor drainage channels	Open mixed Mid Shrubland of <i>Cratystylis subspinescens</i> , <i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i> and <i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i> with a Sparse Tall Shrubland of <i>Hakea preissii</i> and a Sparse Chenopod Shrubland of <i>Tecticornia doleiformis</i> and <i>Atriplex vesicaria</i> .	14.2	0.5
TOLSSL	Seasonal wetlands, floodplains, creek banks and bed and minor depressions.	Open Low Samphire Shrubland of <i>Tecticornia halocnemoides</i> subsp. <i>catenulata</i> , and <i>T. disarticulata</i> with a Sparse Shrubland of <i>Atriplex amnicola</i> , <i>A. nummularia</i> and <i>Maireana glomerifolia</i> , and a Sparse Low Shrubland of <i>Frankenia pauciflora</i> and <i>F. setosa</i> .	148.6	5.6
D		Disturbed	848.8	31.8
U		Unsurveyed	244.3	9.2
		Day Dawn		

AcAaTOSL	Undulating hardpan plains and low relief hills	Tall Open Shrubland of <i>Acacia craspedocarpa</i> and <i>A. aptaneura</i> with a Low Sparse Chenopod Shrubland of <i>Maireana pyramidata</i> and Isolated Shrubs of <i>Eremophila galeata</i> , <i>Sida ectogama</i> and <i>Ptilotus obovatus</i> .	1.3	0.1
ATSL	Minor drainage channels	Tall Shrubland of <i>Acacia aptaneura</i> and + / - <i>A. caesaneura</i> (narrow phyllode variant) with a Low Shrubland of <i>Ptilotus obovatus</i> and <i>Sida ectogama</i> .	3.8	0.2
ATSSL	Undulating plains and low hills	Tall Sparse Shrubland of <i>Acacia aptaneura</i> , <i>A. caesaneura</i> , <i>A. tetragonophylla</i> with a mixed Low Sparse Shrubland mainly of <i>Eremophila latrobei</i> subsp. <i>latrobei</i> , <i>E. galeata</i> and <i>Ptilotus schwartzii</i> with Low Isolated Trees of <i>Acacia pruinocarpa</i> .	2.4	0.2
DD1	relatively well-defined flow lines	<i>Acacia cyperophylla</i> var. <i>cyperophylla</i> Tall Shrubland over <i>Eremophila longifolia</i> Open Shrubland over * <i>Cenchrus ciliaris</i> , * <i>Cynodon dactylon</i> Tussock Grassland	52.6	3.3
DD2	poorly defined flow lines	<i>Acacia aneura</i> Low Open Woodland over <i>Acacia tetragonophylla</i> Tall Open Shrubland over Herbland	6.6	0.4
DD2/6	Shallow flow lines in the slopes and slightly elevated plains	Combination of DD2 and DD6	24.8	1.6
DD3	low basalt and dolerite rocky rises.	Mixed Acacia Tall Open Shrubland over <i>Eremophila phyllopoda</i> Open Shrubland over <i>Ptilotus obovatus</i> Low Open Shrubland over <i>Aristida contorta</i> Very Open Tussock Grassland	13.1	0.8
DD4/5	broad drainage areas intersected by sometimes shallowly incised flow lines	Combination of DD4 and DD5 where DD4 is: <i>Acacia xiphophylla</i> , <i>A. synchronicia</i> Tall Open Shrubland over mixed Scattered Low Shrubs over <i>Eriachne</i> and <i>Digitaria</i> Very Open Tussock Grassland	106.2	6.7
DD5	Water washed plain	<i>Eremophila phyllopoda</i> Open Shrubland over <i>Tecticornia disarticulata</i> Low Open Shrubland over <i>Enneapogon caerulescens</i> and <i>Aristida contorta</i> Open Tussock Grassland	143.4	9.0
DD6	Slopes, slightly elevated plains	Sparse low <i>Acacia aneura</i> over mid <i>Eremophila phyllopoda</i> , <i>A. tetragonophylla</i> and <i>A. xiphophylla</i> over <i>Aristida contorta</i> open tussock grassland	252.3	15.8

DD7	Red sand dunes	<i>Acacia aneura</i> Low Open Woodland over <i>Hibiscus sturtii</i> var. <i>grandiflorus</i> Low Open to Open Shrubland over <i>Eragrostis lanipes</i> Open Grassland	16.1	1.0
DD8	Stony rise	<i>Eremophila eriocarpa</i> Shrubland over <i>Chenopodium gaudichaudianum</i> Low shrubland over <i>Aristida contorta</i> Open Tussock Grassland	8.2	0.5
DD9A/B/C	A. Fringing community of Lake Austin, Deep saline clay flat with cracking surface	<i>Tecticornia halocnemoides</i> Open to Closed Heath over scattered <i>Dissocarpus paradoxus</i> .	62.3	3.9
	B. Fringing community of Lake Austin, elevated	<i>Tecticornia indica</i> subsp. <i>bidens</i> and <i>Tecticornia doleiformis</i> Low Open Heath over <i>Frankenia</i> sp. Scattered Low Shrubs		
	C. Fringing community of Lake Austin, depressions	<i>Frankenia</i> spp. Scattered Low Shrubs		
MLOCSL	low lying areas, stony and sandy plains	Low Open mixed Chenopod Shrubland of mainly <i>Atriplex nana</i> , <i>Maireana glomerifolia</i> and <i>M. pyramidata</i> with Tall Isolated Shrubs of <i>Acacia synchronicia</i> .	4.3	0.3
MLOSL	Basalt and Dolerite hills	Mixed Low Open Shrubland mainly of <i>Eremophila macmillaniana</i> , <i>E. exilifolia</i> and / or <i>Ptilotus obovatus</i> with Tall Isolated Shrubs of <i>Acacia pteraneura</i> , <i>A. aptaneura</i> and / or <i>A. wanyu</i> .	27.4	1.7
D		Disturbed	452.3	28.3
U		Unsurveyed	418.8	26.2



Author: EH Date: 13/02/2026

Big Bell and Access Road Vegetation











Prepared for:
 **4-1**

Scale: @ A4 0 2
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Coordinate System: GDA 2020 MGA Zone 50
 Projection: Transverse Mercator

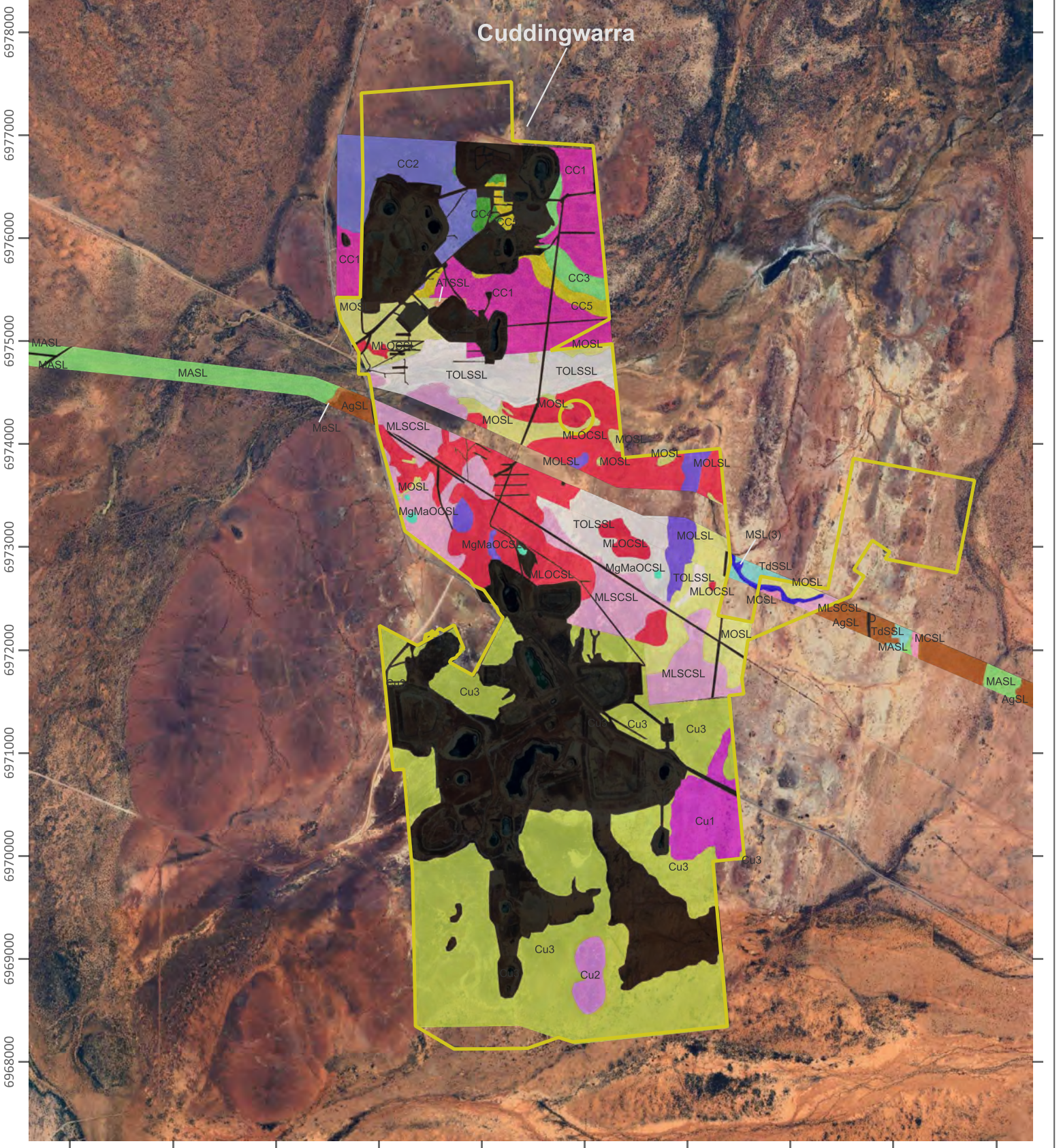


Legend

-  CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
-  AgSL
-  ApWL
-  BB1
-  BB2
-  BB3
-  BB4
-  BB5
-  MASL
-  Disturbed



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Author: EH Date: 13/02/2026

Cuddingwarra Vegetation

Prepared for:
WESTGOLD **4-2**

Scale: @ A4 0 1 2 krr
1: 50,000

Coordinate System: GDA 2020 MGA Zone 50
Projection: Transverse Mercator

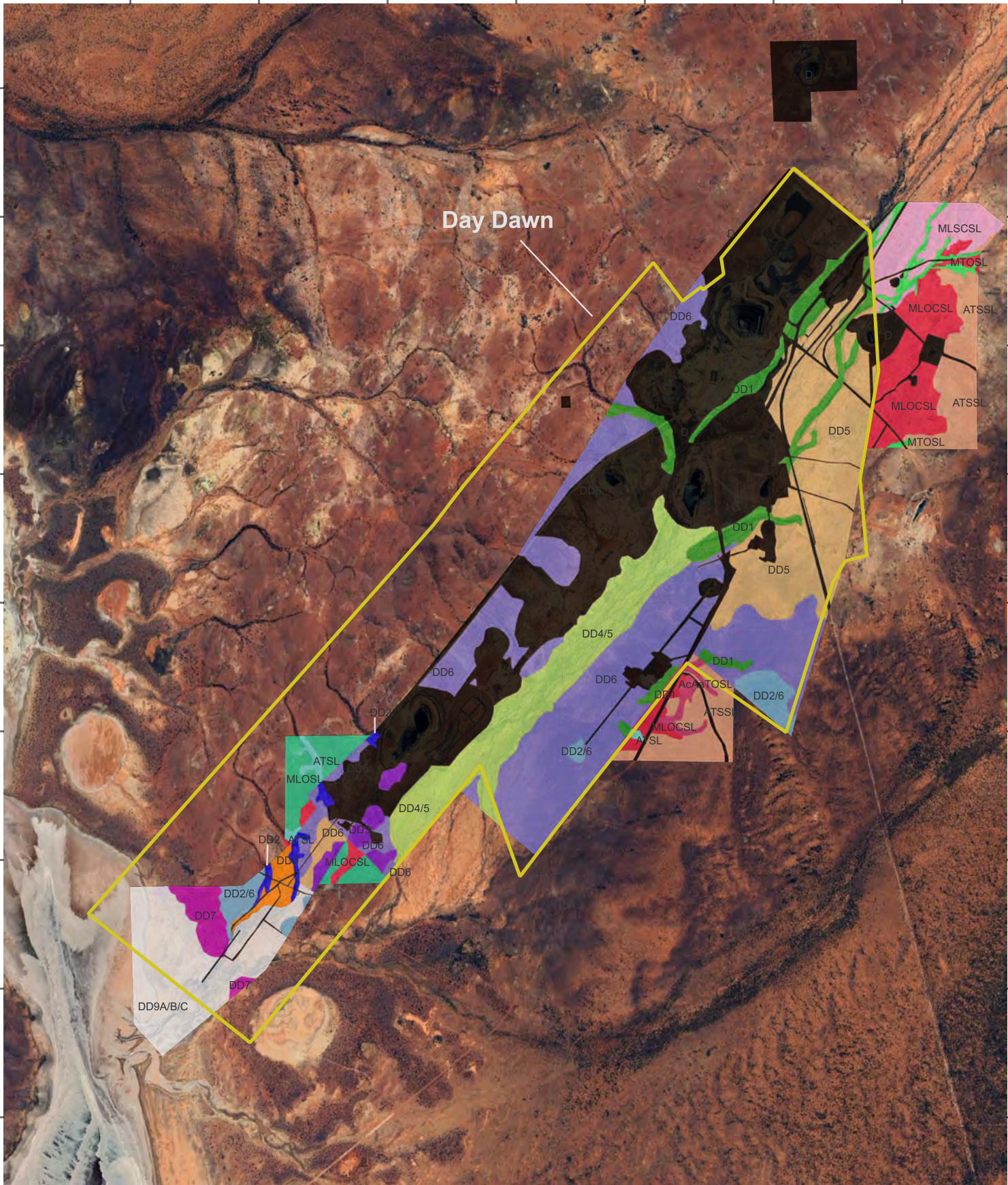
Legend

- CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
- AgSL
- Cu1
- MLOCSL
- Disturbed
- ATSSL
- Cu2
- MLSCSL
- CC1
- Cu3
- MOLSL
- CC2
- MASL
- MOSL
- CC3
- MCSL
- MSL(3)
- CC4
- MeSL
- TdSSL
- CC5
- MgMaOCSL
- TOLSSL



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Day Dawn

Author: EH Date: 13/02/2026

Day Dawn Vegetation

Prepared for:
WESTGOLD 4-3

Scale: @ A4 1: 40,000 0 0.5 1 km

Coordinate System: GDA 2020 MGA Zone 50
Projection: Transverse Mercator

Legend

- CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
- AcAaTOSL
- ATSL
- ATSSL
- DD1
- DD2
- DD3
- DD4/5
- DD5
- DD6
- DD7
- DD8
- DD9A/B/C
- MLOCSL
- MLOSL
- MLSCSL
- MTOSL
- Disturbed



Vegetation mapping by Maia (2017, 2019a and 2019b) is of significantly greater resolution than that conducted and reported by Outback Ecology (2012a). Maia (2017, 2019a and 2019b) vegetation mapping is based on 157 relevés under seasonal conditions allowing high taxonomic certainty. Outback Ecology (2012a) vegetation mapping was based on 19 relevés and a low level of taxonomic certainty.

Overlap of vegetation mapping during different surveys has led to an overly complex and disjointed product when the surveys are combined. Rescoring of relevés conducted by Outback Ecology (2012a), additional relevés in currently unsurveyed areas and reanalysis of all flora data is expected to simplify the vegetation types present within the Study Areas and provide higher resolution than currently applied under Outback Ecology (2012a).

4.2 SIGNIFICANT VEGETATION

There are no TECs listed under the BC Act or EPBC Act known to occur within the Study Areas.

Three PEC's intersect with the Study Areas. Two are subterranean fauna assemblages:

- The Taincrow calcrete groundwater drainage is a Priority One (P1) Ecological Community that intersects the Cuddingwarra Mine Site.
- The Lake Austin Calcrete Assemblage is a P1 Ecological community that intersects the Big Bell Mine Site.

Given the conservation of the Lake Austin Calcrete and Taincrow Calcrete PEC is a result of unique invertebrate assemblages identified in the groundwater calcretes, the removal of native vegetation will unlikely cause a significant effect on the biological values of these two PECs (DMIRS, 2023).

The third is defined by the extent of the Austin Land System, which is listed as a Priority 3 (P3iii) Ecological Community by the DBCA, as occurrence is limited to the Murchison bioregion. The Cuddingwarra and Day Dawn Mine Sites intersect the Austin Land System, as shown in Figure 5-1. Twenty-five vegetation types described in previous surveys are wholly or partially occurring within the extent of the Austin Land System PEC. The Austin Land System PEC requires conservation of its saline stony plains with low rises and drainage foci supporting low halophytic shrublands with scattered mulga (DPIRD 2023). The five land units described for the Austin LS Curry et al (1994) are all classified as the P3 PEC (Maia 2019b). All vegetation types occurring within the P3 designated area are part of the PEC. Vegetation communities occurring within the Austin Land System are considered to be of Moderate conservation value, as they are well represented outside of the Study Area.

The GDE Atlas (BoM 2026b) maps the area where Nallan Creek intersects Cuddingwarra as having a high potential to be terrestrial GDE based on the National Assessment. The high potential GDE area overlies the south western extent of the Taincrow calcrete PEC. Depth to groundwater was reported in Outback Ecology (2012b) as being 2-6 m below ground level (mbgl) and salinity 3-30 ppm in the shallow calcrete aquifer and is therefore capable of supporting ecosystems dependent on subsurface presence of groundwater (Richardson et al 2011).

The literature review identified several significant vegetation types due to potential GDE, potential dependence on surface water regime (i.e. banded mulga potentially dependent on sheetflow), drainage channel features and habitat that hosts P flora.

Table 4-2 summarises the significant vegetation identified from the database searches and literature review. These are shown in Figure 4-4. Significant Vegetation. Only vegetation types that occur within the current Study Areas are considered.

Table 4-2. Significant vegetation

Veg type	Attributes	Within current Study Area	Remaining extent	Proportion within Study Areas
Austin Land System	PEC occurs only within the Murchison bioregion.	Cuddingwarra and Day Dawn	19,646 ha (86.9% of Pre-European extent) remains, predominantly occurring in the East Murchison.	1693.3 ha (8.6% of remaining)
Beard 313	Occurs only within the Murchison bioregion	Cuddingwarra and Day Dawn	65,261 ha (94.8% of Pre-European extent) remains within the East Murchison sub-region.	2659.0 ha (4.1% of remaining)
Beard 2081	Occurrence within the East Murchison is at the extent of the range of this Vegetation Association	Big Bell	2,117 ha (80.8% of Pre-European extent) remains within the East Murchison sub-region. Extant within the West Murchison and Woomarel (Carnarvon).	24 ha (0.9% of remaining)
BB4, BB5, MSL(3), TOLSSL, ATSL, DD1, DD2, DD2/6, DD4/5, DD9	Vegetation of drainage areas	Big Bell, Cuddingwarra and Day Dawn	Not calculated	437 ha (8.37% of Study Area)

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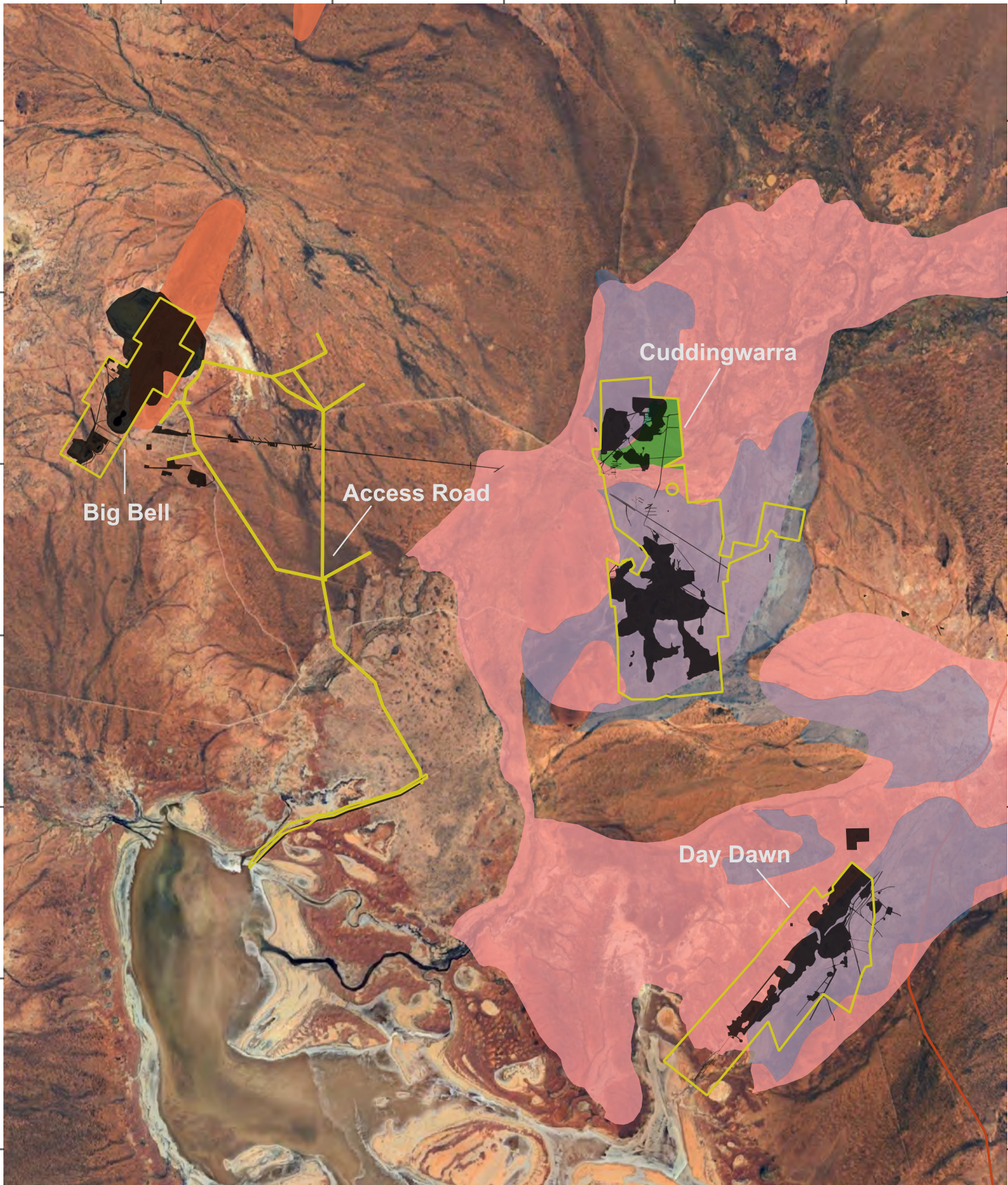
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Author: EH Date: 13/02/2026

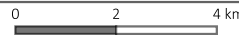
Significant Vegetation

Prepared for:



4-4

Scale: @ A4 1: 150,000



Coordinate System: GDA 2020 MGA Zone 50
Projection: Transverse Mercator



Legend

- CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
- Disturbed
- Austin Land System PEC
- Potential GDE
- Beard Vegetation Association 313
- Beard Vegetation Association 2081



4.3 FLORA

Table 4-3 lists the flora richness and dominant families recorded for the studies included in the literature review.

Table 4-3. flora statistics from the literature review

Study	Total richness	Average richness	Dominant families	Indeterminate specimens
Outback Ecology (2012)	151 taxa from 41 families and 91 genera	16.7	Asteraceae (17), Chenopodiaceae, Fabaceae (23), Poaceae (19) and Scrophulariaceae (10)	52
Maia (2017)	One hundred and ninety-eight (198) taxa were recorded from 84 genera and 38 families (85.35% perennial, 14.65% annual)	Not calculated	Fabaceae (35), Chenopodiaceae (25) and Scrophulariaceae (21)	2
Maia (2019a)	One hundred and seventy-six (176) taxa were recorded from 95 genera and 88 families (69% perennial and 31% annual).	12.1	Chenopodiaceae (30), Asteraceae (29) and Fabaceae (28)	10
Maia (2019b)	Two hundred and seven (207) taxa (including hybrids, crosses and queries) were recorded from 94 genera and 36 families (72% perennial and 28% annual).	12.9	Chenopodiaceae (41), Fabaceae (32) and Asteraceae (25)	7

4.4 SIGNIFICANT FLORA

The DBCA database returned 27 species of significant flora that have database records within 30 km of the Study Areas. Of these, 1 is T, nine are P1, two are P2, 11 are P3 and four are P4. T and P flora returned from the DBCA database search are shown in Figure 4-5. The database search does not contain any records for flora within the Study Areas. Some records included in the database return are of low spatial accuracy, being historic records where the general location was recorded as 'Cue'. The database has assigned these records to the townsite, which is within 30 km of the Study Areas, however the actual record location is unknown and may be significantly remote from the township.

The PMST returned two flora from the 30 km buffered search area: *Minuria tridens* (name revised to *Minuria* sp. Murchison T. Lowrey 1713 in WA) and *Eremophila rostrata*, which were included in the DBCA return. *Minuria* sp. Murchison is considered P1 in WA, and Threatened, in the category Vulnerable under the EPBC Act. *Eremophila rostrata* is listed as Threatened in the category Critically Endangered under both the EPBC Act and the BC Act.

No T flora listed under the BC Act and/or EPBC Act have database records within the Study Areas or have been recorded in the Study Areas during previous survey.

The literature review identified nine P flora from studies conducted in the local area. Three of these (*Hibiscus krichauffianus*, *Ptilotus luteolus* and *Sauropus* sp. Woolgorong) were in addition to the database searches and additional records for the remaining species were also added. All records within the current Study Area are sourced from the literature review.

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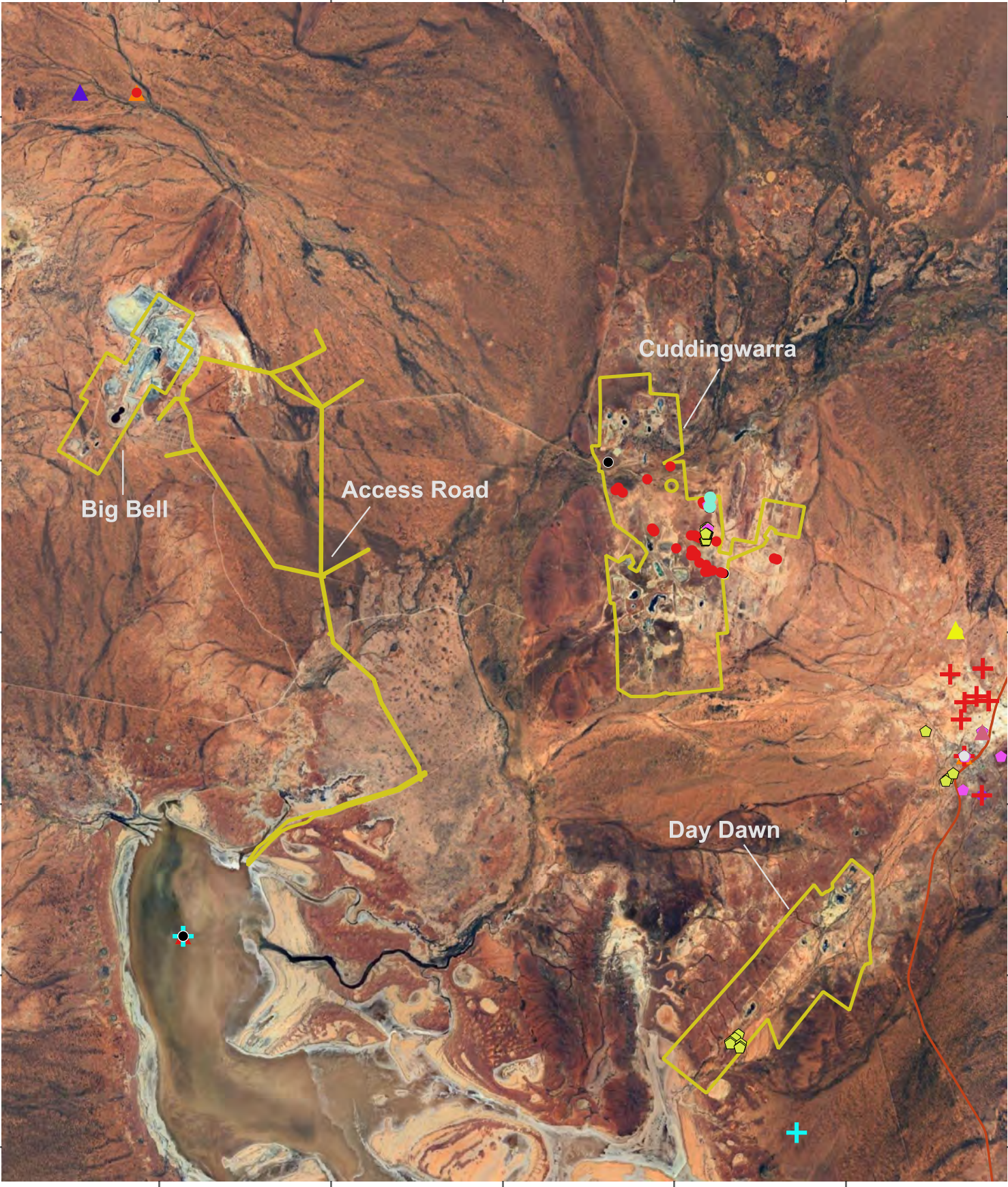
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Author: EH Date: 13/02/2026

Significant Flora


Prepared for:


























4-5

Scale: @ A4 0 2 4 km
1: 150,000

Coordinate System: GDA 2020
MGA Zone 50
Projection: Transverse Mercator



Legend

- | | | |
|--|---|--|
|  Hibiscus krichauffianus |  Ptilotus sp. Cue |  Petrophile pauciflora |
|  Eremophila rostrata subsp. rostrata |  Angianthus microcephalus |  Prostanthera ferricola |
|  Minuria sp. Murchison |  Bergia auriculata |  Prostanthera petrophila |
|  Anacampteros sp. Eremaean |  Atriplex lindleyi subsp. conduplicata |  Ptilotus beardii |
|  Angianthus uniflorus |  Calotis sp. Perrinvale Station |  Ptilotus luteolus |
|  Dicrastylis sp. Cue |  Drummondita miniata |  Sauropus sp. Woolgorong |
|  Eremophila glabra subsp. Lake Austin |  Hemigenia tysonii |  Tecticornia fimbriata |
|  Isotropis petrensis |  Hibiscus sp. Belele |  Acacia speckii |
| Jacksonia lanicarpa | Maireana prosthocochaeta | Dodonaea amplisemina |
| | Micromyrtus placoides | Goodenia berringbinensis |
| | | Grevillea inconspicua |

An assessment of the likelihood of occurrence of these 27 species within the Study Areas was performed using the criteria listed in Table 3-2. The results of the assessment are listed in Table 4-4. Preferred habitats were sourced from Florabase (Western Australian Herbarium 1998-) where available, and/or from DBCA database return attribute data for local context.

Table 4-4. Threatened and Priority Flora Likelihood of Occurrence

Species	Cons. Code		Preferred Habitat	Likelihood of Occurrence
	BC Act	EPBC Act		
<i>Eremophila rostrata</i> subsp. <i>rostrata</i>	CR	CR	In the Cue subpopulation the species grows on stony, buff-coloured saline clays at the base of quartzite hills in an open shrubland (to 2.5 m) of Acacia and Eremophila species over open low shrubs of <i>Ptilotus polakii</i> .	Possible. Records are 7 km to the east of quartz bearing rises (MgMaOCSL veg type) in the Cuddingwarra Study Area, however the vegetation in and around these hills is dominated by mid chenopod shrublands. Suitability of habitat to be verified by field survey.
<i>Minuria</i> sp. Murchison (T. Lowrey 1713)	P1	VU	Edge of salt lake on calcrete/gypsum rises in halophytic shrubland	Possible. Modern records 12 km to southeast of Lake Austin fringing vegetation within the Day Dawn Study Area, however inspection of aerial imagery indicates no calcrete/gypsum rises present. Suitability of habitat to be verified by field survey.
<i>Anacampteros</i> sp. Eremaean (F. Hort, J. Hort and J. Shanks 3248)	P1	-	Sand patches inside rocks, brown sandy clay, granite. Depressions in rock outcrops, breakaways, flats.	Unlikely. No suitable habitat.
<i>Angianthus uniflorus</i>	P1	-	Margin of calcrete rise near gypseous salt lake.	Possible. Lake Austin fringing vegetation within the Day Dawn Study Area, however no calcrete/gypsum rises expected to be present. Suitability of habitat to be verified by field survey.
<i>Dicrasyllis</i> sp. Cue (A.A. Mitchell 764)	P1	-	Drainage area, near granite.	Possible. Drainage in Challenge Land System on the western side of the Big Bell Study Area (BB4/BB5) may host suitable habitat.
<i>Eremophila glabra</i> subsp. Lake Austin (P.J. Curry and P. Hennig 367)	P1	-	Edge of saline dune (Carnegie Land System). Red sand.	Possible. Veg type DD7 within Day Dawn Study Area may host suitable habitat.
<i>Hibiscus krichauffianus</i>	P1	-	Calcrete plains at the base of breakaways veg type AgSL within the Haul Road Study Areas.	Likely. Suitable habitat in MLSCSL veg type in Cuddingwarra Study Area.
<i>Isotropis petrensis</i>	P1	-	Edge of flat granite sheet. Yellow brown sandy loam.	Unlikely, suitable habitat not present.
<i>Jacksonia lanicarpa</i>	P1	-	Red/orange sandy plains.	Unlikely, suitable habitat not present.
<i>Millotia depauperata</i>	P1	-	Sandy loam. Granite outcrops.	Unlikely. No suitable habitat.
<i>Ptilotus</i> sp. Cue (P. Armstrong PA 16/362)	P1	-	Unknown – inferred from record location as Buff-coloured saline clays at the base of quartzite hills	Possible. Quartz bearing rises (MgMaOCSL veg type) in the Cuddingwarra Study Area. Suitability

				of habitat to be verified by field survey.
<i>Angianthus microcephalus</i>	P2	-	Sandy or clayey soils. Salt swamps and pans.	Possible. Lake Austin fringing vegetation within the Day Dawn Study Area, however record location on calcrete/gypsum rises not expected to be present. Suitability of habitat to be verified by field survey.
<i>Bergia auriculata</i>	P2		Clay soils. Mud flats.	Unlikely, suitable habitat not present, not known to tolerate saline soils.
<i>Atriplex lindleyi subsp. conduplicata</i>	P3	-	Crabhole plains.	Unlikely, suitable habitat not present.
<i>Calotis</i> sp. Perrinvale Station (R.J. Cranfield 7096)	P3	-	Banded ironstone formation or laterised ridges and outcrops	Unlikely. Record is > 100 years old. Suitable habitat not present.
<i>Drummondita miniata</i>	P3	-	Laterite. Breakaways.	Unlikely. No suitable habitat.
<i>Hemigenia tysonii</i>	P3	-	Red sand, sandy clay, lateritic sand. Flats, sand dunes, hills.	Possible. Yanganoo Land System in the Access Road may host suitable habitat.
<i>Hibiscus</i> sp. Belele (D.W. Goodall 3417)	P3	-	Flat. Orange sandy loam with 50-100% cover of quartz rock, over alluvial and lacustrine valley-fill deposits; in places saline or calcreted.	Possible. Cu3 veg type on the south eastern side of Cuddingwarra Study Area may host suitable habitat.
<i>Maireana prosthochaeta</i>	P3	-	Laterite. Hills, salty places.	Unlikely. Database record of low spatial accuracy.
<i>Micromyrtus placoides</i>	P3	-	Red-orange sandy clay, orange-yellow sandy clay to clayey loam, coarse gravel, banded ironstone, laterite, quartz, basalt. Gently undulating plains, dry creek beds, hillcrests, ridges.	Unlikely. Local records on BIF, suitable habitat not present, nearby record of low spatial accuracy.
<i>Petrophile pauciflora</i>	P3	-	Decaying and dissected granite breakaways.	Unlikely. No suitable habitat.
<i>Prostanthera petrophila</i>	P3	-	Lateritic soils.	Unlikely. Local records on BIF, suitable habitat not present, nearby record of low spatial accuracy.
<i>Prostanthera ferricola</i>	P3		Shallow red-brown skeletal sandy loam on banded ironstone, laterite, basalt or quartz. Gently inclined mid to upper slopes of hills, rocky crests, outcrops.	Unlikely. Recorded in the Haul Road Study Areas, similar habitats not present in the current Study Area.
<i>Ptilotus beardii</i>	P3	-	Clayey soils. Saline flats, low breakaways.	Present. Recorded in the central Cuddingwarra Study Area in vegetation types MgMaOCSL, MLOCSL, MOLSL, MOSL and TOLSSL.
<i>Ptilotus luteolus</i>	P3	-	Hillslopes, minor rocky drainage line, BIF	Present. Recorded in the central Cuddingwarra Study Area in vegetation type MOLSL.
<i>Sauropus</i> sp. <i>Woolgorong</i> (M.	P3		BIF, plains.	Unlikely. Recorded in the Haul Road Study Areas, similar habitats not present in the current Study Area.

<i>Officer s.n.</i> (10/8/94)				
<i>Tecticornia fimbriata</i>	P3	-	Margins of salt and gypsum lakes.	Present. Recorded in the MOSL veg type in the central Cuddingwarra Study Area. May also occur in the Lake Austin fringing vegetation within the Day Dawn Study Area.
<i>Acacia speckii</i>	P4	-	Rocky soils over granite, basalt or dolerite. Rocky hills or rises.	Possible. Suitable habitat may be present on the slopes and rises.
<i>Dodonaea amplisemina</i>	P4	-	Red-brown sandy clay on basalt and gabbro and banded ironstone or on dolerite and quartzite. Rocky hills.	Present. Occurs in the MLOSL veg type in the south east of the Day Dawn Study Area.
<i>Goodenia berrinbinensis</i>	P4	-	Along watercourses.	Unlikely. Not known to occur in saline areas. No suitable habitat.
<i>Grevillea inconspicua</i>	P4	-	Along drainage lines on rocky outcrops, creeklines.	Present. Known to occur in the MOLS L veg type in the central Cuddingwarra Study Area.

Five P flora are known to be present within the Study Areas, based on the literature review. One P1 flora is likely to be present based on recent local records and presence of suitable habitat. Twelve T and P flora are potentially occurring based on records being distant from the suitable habitat within the Study Areas, records being old, and habitat not expected to be suitable, but verification required through field survey.

The literature review identified numerous flora taxa that were considered at the time of survey to be range extensions. Distributions of these species have been reviewed and all species are now known from at least one other record in the East Murchison sub region and therefore are no longer significant extensions of the known range. All flora taxa previously recorded in the studies included in the Literature Review were reviewed for taxonomic currency and conservation status. The updated list of flora is included as Appendix C.

4.5 INTRODUCED FLORA SPECIES

Dandjoo returned 17 introduced flora species as occurring within the 30 km of the Study Areas. Sixteen are categorised as S11-Permitted under the BAM Act. One species *Optunia stricta* – one of the prickly pears, is a Declared pest and also listed as a WONS. Most of the weed species identified from the database occur close to the centre of the Shire of Cue in public and historically disturbed areas, when compared to the broader mining region.

Eighteen introduced flora species categorised as S11-Permitted under the BAM Act were identified from the literature review as occurring in the local area, including from within the Study Areas. No records of Declared weeds were identified in the literature review as occurring within the Study Areas.

Table 4-5 lists the introduced flora species recorded within 30 km of the Study Area.

Table 4-5. Introduced Flora Records within 30 km of the Study Area

Species	Common Name	BAM Act Listing	WONS
<i>Brassica tournefortii</i>	Mediterranean turnip	Permitted - s11	
<i>Callitriche stagnalis</i>	Common water starwort	Permitted - s11	
<i>Cenchrus ciliaris</i>	Buffel grass	Permitted - s11	
<i>Cenchrus setiger</i>	Birdwood grass	Permitted - s11	
<i>Centaurea melitensis</i>	Maltese star thistle	Permitted - s11	
<i>Centaureum tenuiflorum</i>	Slender Centaury	Permitted - s11	
<i>Chenopodium murale</i>	Nettleleaf goosefoot	Permitted - s11	
<i>Citrullus amarus</i>	Bitter melon	Permitted - s11	
<i>Cucumis myriocarpus</i>	Striped wild cucumber	Permitted - s11	
<i>Cuscuta planiflora</i>	Dodder	Permitted - s11	
<i>Cynodon dactylon</i>	Couch grass	Permitted - s11	
<i>Hordeum glaucum</i>	Meadow barley	Permitted - s11	
<i>Hypochaeris glabra</i>	Smooth cat's ear	Permitted - s11	
<i>Lysimachia arvensis</i>	Scarlet pimpernel	Permitted - s11	
<i>Medicago polymorpha</i>	California burclover	Permitted - s11	
<i>Mesembryanthemum crystallinum</i>	Common iceplant	Permitted - s11	
<i>Opuntia stricta</i>	Prickly Pear	Declared Pest - s22(2) (C3 Restricted)	Yes
<i>Pentameris airoides</i> subsp. <i>airoides</i>	-	Permitted - s11	
<i>Rostraria pumila</i>	Mediterranean grass	Permitted - s11	
<i>Rumex vesicarius</i>	Ruby Dock	Permitted - s11	
<i>Rumex hypogaeus</i>	Spiny emex	Permitted - s11	
<i>Schinus molle</i>	California peppertree	Permitted - s11	
<i>Sisymbrium erysimoides</i>	Mediterranean rocket	Permitted - s11	
<i>Solanum nigrum</i>	Black nightshade	Permitted - s11	
<i>Sonchus oleraceus</i>	Annual sowthistle	Permitted - s11	

Buffel grass is listed as likely major threat to Night Parrot habitat (DCCEEW 2025).

5 TERRESTRIAL VERTEBRATE FAUNA RESULTS

5.1 FAUNA HABITATS

Broad fauna habitats were described by Outback Ecology (2012a) and are listed in Table 5-1 and shown in Figure 5-1.

Table 5-1. Broad fauna habitats

Study Area	Broad Fauna Habitat	Area (ha)	% of current Study Area	Habitat value
Big Bell	Drainage Line	17.9	2.3	Moderate
	Open Acacia woodland	136.3	17.2	Low
	Open stony plain	29.3	3.7	Low
	Disturbed	563.2	70.9	None
	Unsurveyed	47.4	6.0	
Access Road	Disturbed	81.3	51.1	None
	Unsurveyed	77.7	48.9	
Cuddingwarra	Drainage line	22.4	0.8	Moderate
	Open Acacia woodland	140.3	5.3	Low
	Open stony plain	668.7	25.1	Low
	Samphire plains	6.5	0.2	Low
	Disturbed	848.8	31.8	None
	Unsurveyed	1831.2	36.8	
Day Dawn	Drainage Line	181.9	11.4	Moderate
	Lake	33.5	2.1	Low
	Open stony plain	447.0	28.0	Low
	Quartz outcrop	14.6	0.9	High
	Disturbed	452.3	28.3	None
	Unsurveyed	466.6	29.2	

Quartz Outcrop and Drainage Line habitats were identified as significant fauna habitats within the 2012 study (Outback Ecology 2012a). Quartz Outcrop is potential habitat for short-range endemic (SRE) invertebrate species, and refugia for small mammals and reptiles. The elevation from the surrounding flat landscape may offer vantage points for conservation significant birds of prey such as the Grey Falcon (*Falco hypoleucos*) and the Peregrine Falcon (*Falco peregrinus*). Quartz Outcrop habitats are restricted in distribution in the local area and can be isolated.

Drainage Line habitat provides refugia and dispersal corridors for fauna, however, is more readily available and connected in the broader landscape.

Several fauna habitats and areas unsurveyed for fauna habitat overlie the Taincrow and Lake Austin groundwater assemblages, which are considered P1 ecological communities in WA. Terrestrial vegetation supports these ecosystems and alteration of the vegetation may reduce the quality of fauna habitats and impact on faunal assemblages due to a reduction in food resources availability and shelter (Outback Ecology, 2012b), although this was assessed as unlikely by DMIRS (2023).

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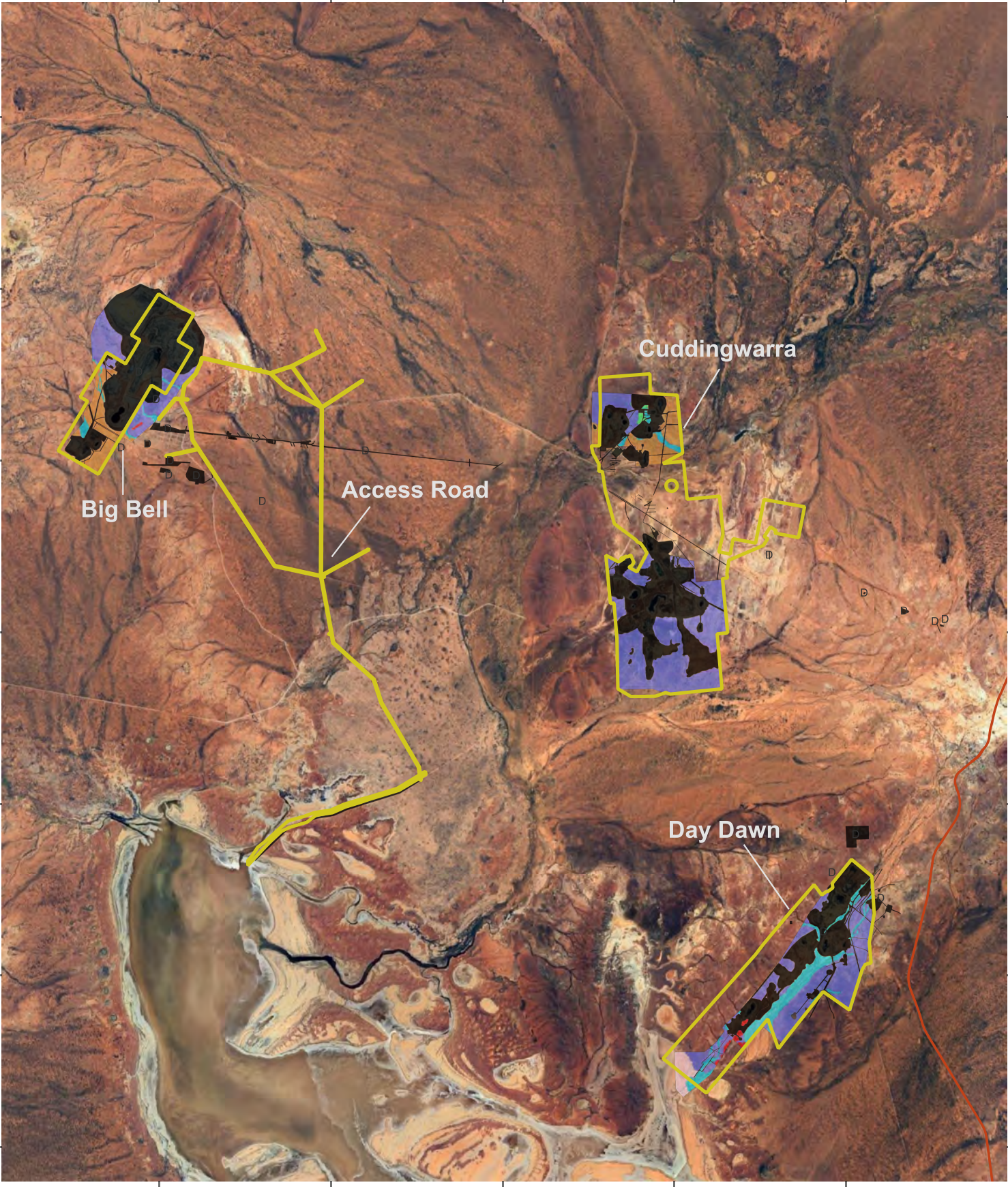
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Author: EH Date: 13/02/2026

Fauna Habitat

Prepared for:

5-1

Scale: @ A4 0 2 4 km
1: 150,000

Coordinate System: GDA 2020
MGA Zone 50
Projection: Transverse Mercator

- Legend**
- CPS 8087_Big Bell_Cuddingwarra_Day Dawn NVCP Areas
 - Quartz outcrop
 - Drainage line
 - Lake
 - Samphire plains
 - Open Acacia woodland
 - Open stony plain
 - Disturbed



5.2 SIGNIFICANT FAUNA

The DBCA database returned 20 species of significant fauna that have previously been recorded within 30 km of the Study Areas. Of these, four are T, three are P, 12 are migratory bird species (**MI**) and one is Other Specifically Protected (**OS**). Record locations of significant fauna in relation to the Study Areas are shown in Figure 5-2. The database does not contain any records for fauna within the Study Areas.

The PMST returned three additional T species, five T, and two MI species. These are species that do not have records within 30 km but where modelling has identified that suitable habitat is known to occur, likely to occur or may occur.

No records of T or P fauna were identified from the literature review. Outback Ecology (2012a) determined that potential SRE habitat within the Study area is limited to the Quartz Outcrops that occur in the Big Bell and Day Dawn Study Areas. The extent of this habitat is limited and it does not appear to be well connected within the wider landscape. Consequently, there may be some potential for SRE species to reside within this habitat type. Outback Ecology (2012a) also identified areas of relatively undisturbed Drainage Line habitat in Big Bell, Day Dawn and City of Chester Study areas that have potential to support SRE species.

Database search results of T, P and MI fauna within 30 km of the Study Areas are listed in Table 5-2, with the outcome of the likelihood of occurrence assessment. A summary of fauna recorded in the local area (Outback Ecology 2012a) is included in Appendix D.



Author: EH Date: 13/02/2026

Significant Fauna

Prepared for:

5-2

Scale: @ A4 1: 275,000

Coordinate System: GDA 2020 MGA Zone 50 Projection: Transverse Mercator

- Legend**
- | | | |
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Table 5-2. Significant fauna database records and likelihood of occurrence

Species	Common Name	Conservation Code		Assessment of Occurrence
		BC Act	EPBC Act	
<i>Actitis hypoleucos</i>	Common sandpiper	MI	MI	
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	MI	VU, MI	
<i>Calidris ferruginea</i>	Curlew sandpiper	CR	CR, MI	
<i>Calidris melanotos</i>	Pectoral Sandpiper	MI	MI	Likely. Inland Salt Lake habitat available. Distribution limited to the southern end of the Day Dawn Study Area. Surface water expected to be periodically available on the fringe of Lake Austin and the ephemeral creek draining the Day Dawn area. These migratory wading species are non-breeding visitors to Australia, more frequently inhabiting coastal areas. Occasional visitation of inland salt lakes occurs when surface water is available and often in transit between southern and northern coastal habitats. Visitation is occasional, temporary and relies on the presence of surface water.
<i>Calidris ruficollis</i>	Red Necked Stint	MI	MI	
<i>Charadrius cucullatus</i>	hooded plover, hooded dotterel	P4	-	
<i>Chlidonias leucopterus</i>	White-winged Black Tern	MI	MI	
<i>Gelochelidon nilotica</i>	Gull-billed Tern	MI	MI	The proportion in the Day Dawn Study Area is a very small and insignificant proportion of the same habitat available outside of the Study Area. No unique or specifically significant habitats are known to be present within the portion of this habitat that occurs within the Day Dawn Study Area.
<i>Hydroprogne caspia</i>	Caspian tern	MI	MI	
<i>Limosa lapponica</i>	Bar – tailed Godwit	MI	MI	
<i>Plegadis falcinellus</i>	Glossy Ibis	MI	MI	Surface water is also present within inactive pits and farm dams. Wading birds may sometimes be attracted to these features.
<i>Tringa glareola</i>	Wood sandpiper	MI	MI	
<i>Tringa nebularia</i>	Common Greenshank	MI	EN, MI	
<i>Tringa stagnatilis</i>	Marsh Sandpiper	MI	MI	
<i>Aphelocephala leucopsis</i>	Southern Whiteface	VU	VU	Likely. Contemporary database record 12 km northeast of Cuddingwarra Study Area near Lake Nallan. Suitable habitat may occur in undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both, where low tree densities and an herbaceous understorey with litter cover provides

Species	Common Name	Conservation Code		Assessment of Occurrence
		BC Act	EPBC Act	
				essential foraging habitat and living and dead trees with hollows and crevices for roosting and nesting are present. This habitat is most likely to be present in the Nallan Creek floodplain area.
<i>Apus pacificus</i>	fork-tailed swift	MI	MI	Likely. The species occurs broadly but rarely come to land.
<i>Falco hypoleucos</i>	Grey Falcon	VU	VU	Possible. The species has been recorded in the region and suitable habitat may occur if large trees are present in the Nallan Creek area within the Cuddingwarra Study Area.
<i>Falco peregrinus</i>	Peregrine falcon	OS	-	Possible. All areas are suitable for foraging. No suitable nesting habitat.
<i>Pezoporus occidentalis</i>	Night parrot	CR	CR	Possible. Recorded south west of Lake Austin in 1854. No reported contemporary records however East Murchison is within the High Priority survey area for Night Parrot (DBCA 2024) and suitable habitat may be present in the chenopod dominated habitats within the Cuddingwarra and Day Dawn Study Areas.
<i>Leipoa ocellata</i>	Malleefowl	VU	VU	Unlikely. Historically known to be present in the region but extensive surveys in the local area have recorded no signs of presence and habitat was noted to be degraded from grazing. A record of an inactive nest occurs near to Day Dawn Study Area; however, these can persist for many decades. A record from near Cue township in 2016 is from a mound, however the age and status of the mound is not reported and may be historic.
<i>Motacilla cinerea</i>	Grey Wagtail	MI	MI	Unlikely. Primarily found near fast-flowing, clear water sources such as rocky streams, rivers, and waterfalls in upland, wooded areas. No suitable habitat present.
<i>Oxyura australis</i>	Blue-billed Duck	P4	-	Unlikely. Requires freshwater wetlands, no suitable habitat present.
<i>Egernia stokesii badia</i>	Western spiny-tailed skink	VU	EN	Unlikely. Local 'black form' lives on granite outcrops and ironstone breakaways and shelters in horizontal crevices. Outcropping in the Study Areas consists of

Species	Common Name	Conservation Code		Assessment of Occurrence
		BC Act	EPBC Act	
				quartz, dolerite and basalt, being blocky and lacking in suitable horizontal crevices required to support the species. This has been confirmed during targeted searches.
<i>Lerista eupoda</i>	West Coast Mulga Slider	P1	-	Possible. Historic records to the east and west of the Study Areas. Suitable habitat is present within open mulga areas on loamy soils, where the Cuddingwarra and Access Road areas intersect the Mileura Land System.
<i>Idiosoma nigrum</i>	Shield-backed Trapdoor Spider	EN	VU	Unlikely. Taxonomy of <i>Idiosoma</i> revised and extent of <i>I. nigrum</i> limited to include only those populations from the central and central-western Wheatbelt bio-region. Local records revised to <i>I. clypeatum</i> (P3), which is restricted to BIF in the local area.

5.3 INTRODUCED FAUNA

Database records for introduced fauna species within 30 km of the Study Area include:

- Rock Dove (*Columba livia gmelin*)
- Cattle (*Bos taurus*);
- Dog (*Canis familiaris*)
- European rabbit (*Oryctolagus cuniculus*)

During field survey (Outback Ecology 2012), the following introduced fauna were recorded:

- Cattle
- Goat (*Capra hircus*)
- Sheep (*Ovis aries*)
- Common Dog/Dingo
- Brumby / Horse (*Equus caballus*)
- Cat (*Felis cattus*)
- Rabbit
- House Mouse (*Mus musculus*).

Several introduced fauna are linked to key threatening processes of significant fauna occurring in the region. Goats, cattle, sheep, horse and rabbit degrade native habitat for species such as Night Parrot, Malleefowl and Southern whiteface. Feral cats are inferred to impact Night Parrot populations through predation (DCCEEW 2026).

6 CONCLUSIONS

6.1 VEGETATION

Previous surveys were reviewed and combined to assess extent of coverage and identify limitations in the interpretation of survey data.

All of the Study Areas have been previously surveyed, with survey coverage ranging from around 50% for the Access Road to 94% for the Big Bell Study Area. Outback Ecology (2012) covers the greatest proportions of the Study Areas; however the field survey was completed at a Reconnaissance level and vegetation mapping is based on a small number of relevés conducted during marginal conditions. This is apparent from the high number of uncertain taxonomic determinations (approximately 30% of the collection).

Subsequent vegetation mapping by Maia (2017, 2019a and 2019b) partially overlaps the Outback Ecology (2012a) mapping, and there is some overlap between Maia (2017) and Maia (2019b). Whilst the Maia surveys are generally of greater reliability, being performed in better seasonal conditions and more recently, the naming conventions applied to the vegetation types have resulted in an overly complex and disjointed product when the survey data is combined.

It is possible to retain and extend the historic data through rescoring of relevés conducted by Outback Ecology (2012a), applying additional relevés in currently unsurveyed areas and reanalysis of all flora data. This is expected to simplify the vegetation types present within the Study Areas and provide higher resolution than currently applied under Outback Ecology (2012).

6.2 SIGNIFICANT VEGETATION

The Austin Land System is a P3iii PEC that intersects Cuddingwarra and Day Dawn Study Areas, with 8.6% of the remaining 19,646 ha Pre-European extent being within the Study Areas.

The presence of the PEC was not identified in the Outback Ecology (2012a) study as at the time the Land System was not listed as a PEC. The more recent studies conducted by Maia identify the presence of the PEC within the Study Areas. Contemporary field survey to describe the extent and condition of the PEC may be beneficial where disturbance is proposed to occur within the DBCA mapped extent of the PEC.

The occurrence of the Austin land System within the Study Areas is of Moderate conservation significance, as clearing the entire occurrence (which is a highly conservative approach, and unlikely to be proposed) would not result in an increase in the conservation category for the vegetation type. Clearing within the Study Area would not result in a reduction in the number of occurrences of the Land System and the Pre-European extent would remain above 70%. Whilst it is expected that proposals will actively minimise clearing in P3(iii) PEC's where possible, minor losses to this PEC are not expected to result in unacceptable environmental harm that is add odds with the DMPE Environmental Objectives.

The Taincrow calcrete groundwater drainage is a Priority One (P1) Ecological Community that intersects the Cuddingwarra Study Area. This PEC is generally aligned with the Nallan Creek drainage feature and the modelled occurrence of potential GDE. Whilst DMIRS (2023) did not consider terrestrial vegetation to be a significant feature of these subterranean fauna assemblage based PEC's, the quality and extent of vegetation can influence the subterranean fauna habitats through control of resources such as water

quality and food. Studies conducted for subterranean fauna in the Taincrow Calcrete (Outback Ecology 2012b) indicate groundwater to be 2-6 mbgl and of fresh water quality. This is within the accessible range for many GDE species and therefore the presence of GDE in the central Cuddingwarra Study Area is probable.

The Lake Austin Calcrete Assemblage PEC intersects the Access Road Study Area. As the Study Area is a small proportion of the overall extent and the roads are currently cleared, any minor additional clearing would not be expected to have a significant impact on the quality of the PEC.

Vegetation associations within and nearby the Study Areas have over 80% pre-European Vegetation extent remaining. Conservation significance ranking of vegetation associations occurring within the Study Areas are of 'Least Concern', however vegetation type 2081, present in the northern half of the Big Bell Study Area, has a low extent in the East Murchison sub-region, being more widely distributed in the Western Murchison, and association 313 is endemic to the Murchison bioregion. The proportion of remaining East Murchison extent within the Study Area is 1 to 4% of the 2081 and 313 vegetation types respectively. Clearing of these vegetation types within the Study Area would not lead to an unacceptable reduction in the number of occurrences or extent within the East Murchison sub-region.

Native vegetation growing in, or in association with, an environment associated with a watercourse or wetland is significant for supporting environmental processes. Ephemeral watercourses occur in the Study Area and host native vegetation. No wetlands are known to occur; however some areas were identified by Outback Ecology (2012) as retaining surface water following significant rainfall. These features are generally protected under standard conditions issued in NVCPs.

Due to the complex and disjointed nature of the combined vegetation mapping, there are several described vegetation types that have a low extent within the Study Areas. Reassessment of existing flora and vegetation data and extension of the proportion of currently surveyed area may improve the known extent of several vegetation types. This may be advantageous to reducing their local significance, by demonstrating a wider distribution and extent in the landscape.

6.3 SIGNIFICANT FLORA

No T flora have been recorded within the Study Areas. Three P3 and two P4 flora have been previously recorded within the Study Areas. One P1 species is assessed as likely to occur and 10 taxa are possibly occurring (subject to verification of suitable habitat) including two species listed as Threatened.

Table 6-1. Significant flora present or likely to occur

Likelihood of occurrence	Species	Conservation Code (WA/Cth)	Period of fertility/survey timing	Habitat in the Study Area (ha) or veg type
Present	<i>Ptilotus beardii</i>	P3/-	Flowers August to October	MgMaOCSL, MLOCSL, MOLSL, MOSL and TOLSSL
	<i>Ptilotus luteolus</i>	P3/-	September and October	MOLSL

	<i>Tecticomia fimbriata</i>	P3/-	Following substantial rainfall	MOSL, DD9
	<i>Dodonaea amplisemina</i>	P4/-	Fruits recorded July to October	MLOSL
Likely	<i>Hibiscus krichauffianus</i>	P1/-	Flowers March or October	MLSCSL
Possible	<i>Eremophila rostrata</i> subsp. <i>rostrata</i>	CR/CR	Flowers have been recorded in April, July and August. Fruits have been recorded in September.	MgMaOCSL
	<i>Minuria</i> sp. Murchison (T. Lowrey 1713)	P1/VU	Flowering recorded February- March, May-October and December.	Verification of the presence or absence of calcrete/gypsum rises in DD9
	<i>Angianthus uniflorus</i>	P1/-	Flowering recorded August	Inspection of habitat not seasonally dependent.
	<i>Angianthus microcephalus</i>	P2/-	Flowering September to December.	
	<i>Dicrastylis</i> sp. Cue (A.A. Mitchell 764)	P1/-	Flowering recorded September and October.	BB4 and BB5
	<i>Eremophila glabra</i> subsp. Lake Austin (P.J. Curry and P. Hennig 367)	P1/-	Flowering recorded in July	DD7
	<i>Ptilotus</i> sp. Cue (P. Armstrong PA 16/362)	P1/-	Flowering recorded in July	MgMaOCSL
	<i>Hemigenia tysonii</i>	P3/-	Flowering May or July to December	Yanganoo Land System
	<i>Hibiscus</i> sp. Belele (D.W. Goodall 3417)	P3/-	Flowers recorded March and November	Cu3
	<i>Acacia speckii</i>	P4/-	Rocky soils over granite, basalt or dolerite. Rocky hills or rises.	BB2, ATSSL, MgMaOCSL, MLOSL, AcAaTOSL, ATSSL, DD3, DD6, DD8.

Periods of fertility follow the trend of rainfall peaks, with common flowering and fruiting in autumn following summer rains and in spring following winter rains.

A Section 40 permit is required to take T flora. A Section 40 license for flora requires a lead time of 5-8 weeks, however it is not expected that collection of *Eremophila rostrata* subsp. *rostrata* is necessary for survey. Given appropriate survey conditions this species may be positively identified from habitat, foliage and particularly fruit shape. A Flora Taking (Biological Assessment) Licence under Regulation 62, Biodiversity Conservation Regulations 2018 is required for general flora and vegetation survey. APM maintains current Regulation 62 licenses.

6.4 SIGNIFICANT FAUNA

No T or P fauna species have previously been recorded in the Study Areas; however survey effort has been minimal and pre-dates the rediscovery of night Parrot in WA. Several T and P fauna are considered Likely or possibly occurring due to the potential presence of habitat and are discussed below.

Migratory shorebirds, including species listed as T under the EPBC and BC Acts, are likely to occur in Lake Austin at some time. Occurrence within the lake would be transitory and during the non-breeding season. Due to the size of the lake and the infrequency with which it fills, the occurrence of these species within the Day Dawn and Access Road Study Areas is expected to be extremely rare. Lake Annean to the north of the study area is a wetland of national significance due to the more regular occurrence of surface water and the increased habitat suitability this holds for wading birds. Loss of any habitat value within the salt lake area of Day Dawn and Access Road Study Areas would have a negligible impact on the overall habitat quality and availability of Lake Austin. Survey for migratory shorebirds is unlikely to provide any meaningful outcomes for environmental impact assessment, as detection is rare and therefore lack of detection does not imply absence.

Southern Whiteface is a recently listed species under the EPBC and BC Acts, due to the sudden and large decline in populations that were previously widespread. The species has a reasonably wide habitat suitability, however due to the historic and current grazing pressure, the highest quality habitat remaining in the Study Area is expected to occur in the central Cuddingwarra area in the vicinity of Nallan Creek. Field survey at a Reconnaissance level would be required to assess the suitability/quality/condition of habitats and Targeted survey would be required within the breeding season (July to December) to assess presence or absence. Targeted survey would consist of traverses on foot within suitable habitat to identify nesting sites. Permitting (i.e. wildlife ethics and DBCA fauna licensing) is not required for low intensity Reconnaissance level survey however targeted search on foot in suitable habitat requires permits.

Night Parrot survey guidelines indicate the Study Areas are within the High Priority survey area. Night Parrot was historically recorded at Lake Austin and salt lake environments are considered to host potentially suitable habitat, as they may host a range of chenopod flora that provide food and shelter. In addition to the Lake Austin fringing vegetation (vegetation type DD9), the vegetation in the Nallan Creek area of Cuddingwarra Study Area may be suitable foraging and nesting habitat where chenopods and herbs make up a high proportion of the groundcover and tree/tall shrub cover is absent.

Field survey at a Reconnaissance level would be required to assess the suitability/quality/condition of habitats. If suitable habitat is confirmed present, Targeted search would be required to assess presence or absence. Where suitable roosting habitat is highly restricted a Targeted survey using Autonomous Recording Units (ARU's) over a period of 6 nights following significant rainfall is sufficient. Where extensive roosting habitat is present a longer duration study is required. Night Parrot may utilise

foraging habitat within 10 km of roosts and therefore the area surrounding the Study Area may also need to be considered (DBCA 2024).

ARU's may be deployed during a Reconnaissance survey and left for long periods to increase the opportunity for deployment during and shortly after significant rainfall events. Permitting is not required for Reconnaissance survey if activity is limited to currently disturbed areas and high suitability habitat is not entered. Permitting is required for deployment of ARU's in high quality roosting habitat and for high intensity grid searches on foot.

Targeted survey for Grey Falcon habitat can be simultaneously delivered with Southern Whiteface and Night Parrot Reconnaissance survey, as Nallan Creek riparian vegetation is most likely to hold roosting habitat for the species, which relies on tall trees.

Suitable habitat for West Coast Mulga Slider is present within open mulga areas on loamy soils, where the Cuddingwarra and Access Road areas intersect the Mileura Land System. Targeted surveys are restricted to the season of highest activity, typically in spring and autumn when temperatures are moderate and reptiles generally are active above ground. Suitable methods include pitfall and/or funnel trapping with drift fences combined with active searches under logs, rocks, and leaf litter in mulga woodland and chenopod habitats. Permitting is required for trapping of West Coast Mulga Slider.

Applications to the Wildlife Animal Ethics Committee and DBCA Fauna Licensing branch generally require a 1-week preparation period followed by an 8 week assessment period. Requests for information require additional time of 4 weeks. The applications and approvals can be prepared and submitted concurrently for a 9-13 week lead time prior to fauna survey.

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APPENDICES

APPENDIX A: CONSERVATION AND DECLARED CATEGORIES

Commonwealth Conservation Category descriptions are available at

<https://www.dcceew.gov.au/environment/biodiversity/threatened/nominations/forms-and-guidelines>

A list of Weeds of National Significance is available at

<https://weeds.org.au/lists/established/>

Western Australian Conservation Categories are available at

<https://www.dbca.wa.gov.au/media/792/download>

Western Australian Declared species category descriptions are available at

<https://www.dpir.wa.gov.au/online-tools/western-australian-organism-list/>

APPENDIX B: PMST SEARCH RESULTS



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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. Please see the caveat for interpretation of information provided here.

Report created: 09-Feb-2026

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment 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:	1
Wetlands of International Importance (Ramsar)	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	12
Listed Migratory Species:	8

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 <https://www.dcceew.gov.au/parks-heritage/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 Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	12
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	4
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Indigenous			
Wilgie Mia Aboriginal Ochre Mine	WA	Listed place	In buffer area only

Listed Threatened Species			[Resource Information]
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Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
PLANT			
Eremophila rostrata Beaked Eremophila [65124]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Minuria tridens Minnie Daisy [13753]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat known to occur within area	In feature area
SPIDER			
Idiosoma nigrum Shield-backed Trapdoor Spider, Black Rugose Trapdoor Spider [66798]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Dalgaranga	National Park	WA	In buffer area only
Lakeside	National Park	WA	In buffer area only
Lakeside	Conservation Park	WA	In feature area
Lakeside Pastoral Lease	NRS Addition - Gazettal in Progress	WA	In feature area

EPBC Act Referrals

[\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Oakajee Rail Development	2010/5500	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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 INVENTORY

BIG BELL, CUDDINGWARRA, DAY DAWN DESKTOP STUDY

Appendix C - Flora inventory

Family	Taxa	Status	In current Study Area
Aizoaceae	<i>Mesembryanthemum crystallinum</i>	Int	
	<i>Carpobrotus</i> sp.		
	<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>		
	<i>Gunniopsis quadrifida</i>		
	<i>Trianthena</i> sp.		
	<i>Trianthena triquetrum</i>		
Amaranthaceae	<i>Ptilotus beardii</i>	P3	Yes
	<i>Ptilotus luteolus</i>	P3	Yes
	<i>Alternanthera angustifolia</i>		
	<i>Alternanthera</i> sp.		
	<i>Ptilotus aevoides</i>		
	<i>Ptilotus divaricatus</i>		
	<i>Ptilotus exaltatus</i>		
	<i>Ptilotus helipteroides</i>		
	<i>Ptilotus obovatus</i>		
	<i>Ptilotus polystachyus</i>		
	<i>Ptilotus rotundifolius</i>		
	<i>Ptilotus schwartzii</i>		
	<i>Ptilotus</i> sp.		
	<i>Ptilotus</i> sp.2		
Anacardiaceae	<i>Schinus molle</i>	Int	
Apocynaceae	<i>Leichhardtia</i> sp.		
	<i>Leichhardtia australis</i>		
	<i>Vincetoxicum lineare</i>		
	<i>Centaurea melitensis</i>	Int	
	<i>Sonchus oleraceus</i>	Int	
	<i>Thistle</i> sp.	Int	
	<i>Actinobole oldfieldianum</i>		
	<i>Angianthus milnei</i>		
	<i>Angianthus tomentosus</i>		
	Asteraceae sp.		
	<i>Brachyscome ciliaris</i>		
	<i>Calocephalus francisii</i>		
	<i>Calocephalus</i> sp.		
	<i>Calotis hispidula</i>		
	<i>Calotis multicaulis</i>		
	<i>Cephalipterum drummondii</i>		
	<i>Cratystylis subspinescens</i>		
	<i>Erymophyllum glossanthus</i>		
	<i>Feldstonia nitens</i>		
	<i>Gnephosis brevifolia</i>		
	<i>Helipterum craspedioides</i>		

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Asteraceae	<i>Hyalosperma glutinosum</i> subsp. <i>venustum</i>		
	<i>Lemooria burkittii</i>		
	<i>Minuria cunninghamii</i>		
	<i>Olearia</i> sp.		
	<i>Pluchea dunlopii</i>		
	<i>Pluchea</i> sp.		
	<i>Podolepis gardneri</i>		
	<i>Pogonolepis muelleriana</i>		
	<i>Rhodanthe charsleyae</i>		
	<i>Rhodanthe floribunda</i>		
	<i>Rhodanthe humboldtiana</i>		
	<i>Rhodanthe</i> sp.		
	<i>Rhodanthe sterileszens</i>		
	<i>Rhodanthe stricta</i>		
	<i>Sondottia connata</i>		
	<i>Streptoglossa cylindriceps</i>		
	<i>Streptoglossa liatroides</i>		
	<i>Streptoglossa</i> sp.		
	<i>Vittadinia</i> sp.		
<i>Vittadinia sulcata</i>			
Boraginaceae	<i>Euploca ovalifolia</i>		
	<i>Halgania cyanea</i>		
Brassicaceae	<i>Brassica tournefortii</i>	Int	
	<i>Sisymbrium erysimoides</i>	Int	
	<i>Lepidium oxytrichum</i>		
	<i>Lepidium</i> sp.		
	<i>Stenopetalum ?anfractum</i>		
	<i>Stenopetalum anfractum</i>		
Campanulaceae	<i>Wahlenbergia</i> sp.		
	<i>Wahlenbergia tumidifructa</i>		
Celastraceae	<i>Stackhousia muricata</i> subsp. annual (W.R. Barker 2172)		
	<i>Tecticornia fimbriata</i>	P3	Yes
	<i>Atriplex ?vesicaria</i>		
	<i>Atriplex amnicola</i>		
	<i>Atriplex bunburyana</i>		
	<i>Atriplex codonocarpa</i>		
	<i>Atriplex nummularia</i>		
	<i>Atriplex vesicaria</i>		
	Chenopodaceae sp.		
	<i>Chenopodium</i> sp.		
	<i>Chenopodium</i> sp.2		
	<i>Chenopodium gaudichaudianum</i>		
	<i>Didymanthus roei</i>		

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Appendix C - Flora inventory

	<i>Dissocarpus paradoxus</i>		
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>		
	<i>Maireana amoena</i>		
	<i>Maireana atkinsiana</i>		
	<i>Maireana carnosae</i>		
	<i>Maireana georgei</i>		
	<i>Maireana glomerifolia</i>		
	<i>Maireana planifolia</i>		
	<i>Maireana platycarpa</i>		
	<i>Maireana pyramidata</i>		
	<i>Maireana</i> sp.		
	<i>Maireana</i> sp.		
	<i>Maireana</i> sp. 2		
Chenopodiaceae	<i>Maireana tomentosa</i> subsp. <i>tomentosa</i>		
	<i>Maireana trichoptera</i>		
	<i>Maireana triptera</i>		
	<i>Maireana villosa</i>		
	<i>Rhagodia drummondii</i>		
	<i>Rhagodia eremaea</i>		
	<i>Rhagodia</i> sp.		
	<i>Rhagodia</i> sp. Watheroo (R.J. Cranfield & P.J. Spencer 8183)		
	<i>Salsola australis</i>		
	<i>Sclerolaena cuneata</i>		
	<i>Sclerolaena densiflora</i>		
	<i>Sclerolaena diacantha</i>		
	<i>Sclerolaena eriacantha</i>		
	<i>Sclerolaena eurotioides</i>		
	<i>Sclerolaena fusiformis</i>		
	<i>Sclerolaena gardneri</i>		
	<i>Sclerolaena lanicuspis</i>		
	<i>Sclerolaena</i> sp.		
	<i>Tecticornia</i> ? <i>disarticulata</i>		
	<i>Tecticornia</i> ? <i>doliiformis</i>		
	<i>Tecticornia</i> ? <i>laevigata</i>		
	<i>Tecticornia calyptrata</i>		
	<i>Tecticornia disarticulata</i>		
	<i>Tecticornia doliiformis</i>		
	<i>Tecticornia halocnemoides</i> subsp. <i>catenulata</i>		
	<i>Tecticornia indica</i> subsp. <i>bidens</i>		
	<i>Tecticornia</i> sp.		
Cleomaceae	<i>Arivela viscosa</i>		
	<i>Cuscuta planiflora</i>	Int	
Convolvulaceae	<i>Convolvulus</i> sp.		
	<i>Duperreya commixta</i>		

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Appendix C - Flora inventory

Crassulaceae	<i>Crassula</i> sp.		
Cucurbitaceae	<i>Cucumis myriocarpus</i>	Int	
Cyperaceae	<i>Cyperus ?vaginatus</i>		
Euphorbiaceae	<i>Euphorbia australis</i>		
	<i>Euphorbia boophthona</i>		
	<i>Euphorbia</i> sp.		
Fabaceae	<i>Medicago polymorpha</i>	Int	
	<i>Acacia speckii</i>	P4	No
	<i>Acacia ?trachycarpa (constricted pods)</i>		
	<i>Acacia ?ramulosa</i> var. <i>linophylla</i>		
	<i>Acacia ?sibilans</i>		
	<i>Acacia ?victoriae</i>		
	<i>Acacia aneura</i>		
	<i>Acacia aneura recurved pod</i>		
	<i>Acacia aptaneura</i>		
	<i>Acacia burkittii</i>		
	<i>Acacia caesaneura</i> (narrow phyllode variant)		
	<i>Acacia craspedocarpa</i>		
	<i>Acacia craspedocarpa</i> (hybrid)		
	<i>Acacia cyperophylla</i> var. <i>cyperophylla</i>		
	<i>Acacia eremaea</i>		
	<i>Acacia fuscaneura</i>		
	<i>Acacia grasbyi</i>		
	<i>Acacia murrayana</i>		
	<i>Acacia pruinocarpa</i>		
	<i>Acacia pteraneura</i>		
	<i>Acacia ramulosa</i> var. <i>linophylla</i>		
	<i>Acacia ramulosa</i> var. <i>ramulosa</i>		
	<i>Acacia rhodophloia</i>		
	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>		
	<i>Acacia</i> sp.		
	<i>Acacia</i> sp. 2		
	<i>Acacia synchronicia</i>		
	<i>Acacia tetragonophylla</i>		
	<i>Acacia tysonii</i>		
	<i>Acacia victoriae</i>		
	<i>Acacia wanyu</i>		
	<i>Acacia xiphophylla</i>		
	<i>Alysicarpus muelleri</i>		
	<i>Chorizema genistoides</i>		
	<i>Cullen cinereum</i>		
	<i>Cullen leucanthum</i>		
<i>Indigofera monophylla</i>			
<i>Lotus australis</i>			

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	<i>Lotus cruentus</i>		
	<i>Neptunia</i> sp.		
	<i>Senna artemisioides</i> subsp. <i>x artemisioides</i>		
	<i>Senna artemisioides</i> subsp. <i>x sturtii</i>		
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>		
	<i>Senna artemisioides</i> subsp. <i>helmsii</i>		
	<i>Senna glaucifolia</i>		
	<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>		
	<i>Senna glutinosa</i> subsp. <i>glutinosa</i>		
	<i>Senna pleurocarpa</i>		
	<i>Senna</i> sp. Austin (A. Strid 20210)		
	<i>Senna</i> sp. Billabong (J.D. Alonzo 721)		
	<i>Senna</i> sp. Meekatharra (E. Bailey 1-26)		
	<i>Swainsona</i> sp.		
	<i>Vigna lanceolata</i>		
Frankeniaceae	<i>Frankenia pauciflora</i>		
	<i>Frankenia setosa</i>		
	<i>Frankenia</i> sp.		
Gentianaceae	<i>Centaurium tenuiflorum</i>	Int	
Geraniaceae	<i>Erodium cygnorum</i>		
Goodeniaceae	<i>Goodenia</i> sp.		
	<i>Goodenia berardiana</i>		
	<i>Goodenia mimuloides</i>		
	<i>Goodenia quasilibera</i>		
	<i>Goodenia rosea</i>		
	<i>Goodenia</i> sp.		
	<i>Scaevola</i> sp.		
	<i>Scaevola</i> sp.2		
	<i>Scaevola spinescens</i>		
<i>Scaevola tomentosa</i>			
Gyrostemonaceae	<i>Codonocarpus cotinifolius</i>		
Haloragaceae	<i>Haloragis</i> sp.		
	<i>Haloragis trigonocarpa</i>		
Hemerocallidaceae	<i>Dianella revoluta</i>		
Juncaginaceae	<i>Triglochin hexagona</i>		
	<i>Triglochin mucronata</i>		
Lamiaceae	<i>Prostanthera ferricola</i>	P3	No
	<i>Teucrium racemosum</i>		
	<i>Teucrium teucriiflorum</i>		
Loranthaceae	<i>Amyema nestor</i>		
	<i>Lysiana murrayi</i>		
	<i>Hibiscus krichauffianus</i>	P1	No
	<i>Abutilon cryptopetalum</i>		
	<i>Abutilon lepidum</i>		

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Malvaceae	<i>Abutilon</i> sp.		
	<i>Brachychiton gregorii</i>		
	<i>Hibiscus</i> sp. (sterile)		
	<i>Hibiscus</i> sp. Gardneri (A.L. Payne PRP 1435)		
	<i>Lawrenzia densiflora</i>		
	<i>Lawrenzia glomerata</i>		
	<i>Lawrenzia spicata</i>		
	<i>Malvastrum americanum</i>		
	<i>Sida</i> aff. <i>fibulifera</i>		
	<i>Sida calyxhymenia</i>		
	<i>Sida ectogama</i>		
	<i>Sida fibulifera</i>		
	<i>Sida</i> sp.		
	<i>Sida</i> sp. dark green fruits (S. van Leeuwen 2260)		
	<i>Sida</i> sp. Golden calyces glabrous (H.N. Foote 32)		
	<i>Waltheria</i> sp.		
Marsileaceae	<i>Marsilea hirsuta</i>		
Myrtaceae	<i>Calytrix ?amethystina</i>		
	<i>Melaleuca eleuterostachya</i>		
	<i>Melaleuca stereophloia</i>		
	<i>Thryptomene decussata</i>		
Nyctaginaceae	<i>Boerhavia</i> sp.		
Papaveraceae	<i>Argemone ?mexicana</i>		
Phyllanthaceae	<i>Sauropus</i> sp. Woolgorong (M. Officer s.n. 10/8/94)	P3	No
Pittosporaceae	<i>Pittosporum angustifolium</i>		
	<i>Pittosporum phillyreoides</i>		
Plantaginaceae	<i>Plantago debilis</i>		
	<i>Plantago drummondii</i>		
Poaceae	<i>Cenchrus ciliaris</i>	Int	
	<i>Cenchrus setiger</i>	Int	
	<i>Cynodon dactylon</i>	Int	
	<i>Rostraria pumila</i>	Int	
	<i>Aristida contorta</i>		
	<i>Aristida holathera</i> var. <i>holathera</i>		
	<i>Aristida inaequilatera</i>		
	<i>Austrostipa elegantissima</i>		
	<i>Chloris pectinata</i>		
	<i>Cymbopogon ambiguus</i>		
	<i>Dactyloctenium radulans</i>		
	<i>Digitaria</i> sp.		
	<i>Enneapogon caerulescens</i>		
	<i>Enteropogon ramosus</i>		
	<i>Eragrostis cumingii</i>		
	<i>Eragrostis dielsii</i>		

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	<i>Eragrostis falcata</i>		
	<i>Eragrostis lacunaria</i>		
	<i>Eragrostis setifolia</i>		
	<i>Eragrostis</i> sp.		
	<i>Eriachne aristidea</i>		
	<i>Eriachne flaccida</i>		
	<i>Eriachne helmsii</i>		
	<i>Eriachne pulchella</i> subsp. <i>pulchella</i>		
	<i>Eriachne</i> sp.		
	<i>Iseilema</i> sp.		
	<i>Lachnagrostis filiformis</i>		
	<i>Poaceae</i> sp.		
	<i>Sporobolus actinocladus</i>		
	<i>Themeda triandra</i>		
	<i>Tripogonella loliiformis</i>		
Polygonaceae	<i>Rumex vesicarius</i>	Int	
Portulacaceae	<i>Calandrinia eremaea</i>		
	<i>Calandrinia holtumii</i>		
	<i>Calandrinia</i> sp.		
	<i>Calandrinia translucens</i>		
	<i>Portulaca oleracea</i>		
Primulaceae	<i>Lysimachia arvensis</i>	Int	
Proteaceae	<i>Grevillea inconspicua</i>	P4	Yes
	<i>Grevillea berryana</i>		
	<i>Grevillea deflexa</i>		
	<i>Grevillea sarissa</i> subsp. <i>bicolor</i>		
	<i>Hakea lorea</i>		
	<i>Hakea preissii</i>		
Pteridaceae	<i>Cheilanthes adiantoides</i>		
	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>		
Rhamnaceae	Rhamnaceae sp.		
Rubiaceae	<i>Psyrdrax</i> sp.		
Santalaceae	<i>Anthobolus leptomerioides</i>		
	<i>Exocarpos aphyllus</i>		
	<i>Exocarpos sparteus</i>		
	<i>Santalum acuminatum</i>		
	<i>Santalum lanceolatum</i>		
	<i>Dodonaea amplisemina</i>	P4	Yes
	<i>Dodonaea petiolaris</i>		
	<i>Dodonaea viscosa</i>		
	<i>Eremophila ?margarethae</i>		
	<i>Eremophila eriocalyx</i>		
	<i>Eremophila exilifolia</i>		
	<i>Eremophila forrestii</i>		

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Appendix C - Flora inventory

Scrophulariaceae	<i>Eremophila forrestii</i> subsp. <i>forrestii</i>		
	<i>Eremophila fraseri</i>		
	<i>Eremophila galeata</i>		
	<i>Eremophila georgei</i>		
	<i>Eremophila glabra</i> subsp. <i>tomentosa</i>		
	<i>Eremophila jucunda</i> subsp. <i>jucunda</i>		
	<i>Eremophila lachnocalyx</i>		
	<i>Eremophila latrobei</i>		
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i>		
	<i>Eremophila longifolia</i>		
	<i>Eremophila macmillaniana</i>		
	<i>Eremophila maculata</i> subsp. <i>brevifolia</i>		
	<i>Eremophila oppositifolia</i> subsp. <i>angustifolia</i>		
	<i>Eremophila pantonii</i>		
	<i>Eremophila phyllopoda</i>		
	<i>Eremophila punicea</i>		
	<i>Eremophila</i> sp.		
	<i>Eremophila</i> sp.2		
	<i>Eremophila youngii</i> subsp. <i>youngii</i>		
Solanaceae	<i>Solanum nigrum</i>	Int	
	<i>Nicotiana ?heterantha</i>		
	<i>Nicotiana occidentalis</i> subsp. <i>occidentalis</i>		
	<i>Solanum lasiophyllum</i>		
	<i>Solanum perarmatum</i>		
Thymelaeaceae	<i>Pimelea microcephala</i>		
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>		
	<i>Pimelea trichostachya</i>		
Violaceae	<i>Pigea floribunda</i>		
Zygophyllaceae	<i>Roepera kochii</i>		
	<i>Tribulus suberosus</i>		
	<i>Zygophyllum</i> sp.		
Indet.	<i>Weedy burred herb</i>		

APPENDIX D: FAUNA INVENTORY

BIG BELL, CUDDINGWARRA, DAY DAWN DESKTOP STUDY

Appendix D - Fauna inventory

Family	Scientific Name	Common Name	Status	Outback Ecology (2012)
BOVIDAE	<i>Bos taurus</i>	European Cattle	Introduced	*
	<i>Capra hircus</i>	Goat	Introduced	*
	<i>Ovis aries</i>	Sheep	Introduced	*
CANIDAE	<i>Canis familiaris/Canis lupus dingo</i>	Common Dog/Dingo	Introduced	*
DASYURIDAE	<i>Sminthopsis macroura</i>	Stripe-faced Dunnart		*
EQUIDAE	<i>Equus caballus</i>	Brumby / Horse	Introduced	*
FELIDAE	<i>Felis catus</i>	Cat	Introduced	*
LEPORIDAE	<i>Oryctolagus cuniculus</i>	Rabbit	Introduced	*
MACROPODIAE	<i>Macropus robustus erubescens</i>	Euro		*
	<i>Macropus rufus</i>	Red Kangaroo		*
RODENTIA	<i>Mus musculus</i>	House Mouse	Introduced	*
TACHYGLOSSIDAE	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna		*
ACANTHIZIDAE	<i>Acanthiza apicalis</i>	Broad-tailed Thornbill		*
ACCIPITRIDAE	<i>Aquila audax</i>	Wedge-tailed Eagle		*
	<i>Circus assimilis</i>	Spotted Harrier		*
ANATIDAE	<i>Anas superciliosa</i>	Pacific Black Duck		*
ARTAMIDAE	<i>Artamus cinereus</i>	Black-faced Woodswallow		*
CRACTICIDAE	<i>Cracticus nigrogularis</i>	Pied Butcherbird		*
	<i>Cracticus tibicen</i>	Australian Magpie		*
CACATUIDAE	<i>Eolophus roseicapillus</i>	Galah		*
CAMPEPHAGIDAE	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		*
CHARADRIIDAE	<i>Cladorhynchus leucocephalus</i>	Banded Stilt		*
COLUMBIDAE	<i>Geopelia cuneata</i>	Diamond Dove		*
	<i>Phaps chalcoptera</i>	Common Bronzewing		*
DICRURIDAE	<i>Rhipidura leucophrys</i>	Willie Wagtail		*
ESTRILDIDAE	<i>Taeniopygia guttata</i>	Zebra Finch		*
FALCONIDAE	<i>Falco cenchroides</i>	Nankeen Kestrel		*
MALURIDAE	<i>Malurus lamberti</i>	Variegated Fairy-wren		*

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Appendix D - Fauna inventory

MONARCHIDAE	<i>Grallina cyanoleuca</i>	Magpie-lark	*
	<i>Anthus novaeseelandiae</i>	Australasian Pipit	*
POMATOSTOMIDAE	<i>Pomatostomus superciliosus</i>	White-browed Babbler	*
PSITTACIDAE	<i>Melopsittacus undulatus</i>	Budgerigar	*
	<i>Nymphicus hollandicus</i>	Cockatiel	*
PSOPHODIDAE	<i>Psophodes occidentalis</i>	Chiming Wedgebill	*
TURNICIDAE	Turnix velox	Little Button-quail	*
AGAMIDAE	<i>Ctenophorus reticulatus</i>	Western Netted Dragon	*
	<i>Ctenophorus scutulatus</i>	Lozenge-marked Dragon	*
VARANIDAE	<i>Varanus gouldii</i>	Gould's Monitor	*

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