



Ecological Assessment Rover 1 Project May 2022

CASTILE RESOURCES LTD



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EXECUTIVE SUMMARY

Castile Resources Limited (Castile) proposes to develop an underground gold mine at the Rover 1 deposit, approximately 70 km south-west of Tennant Creek. The project requires assessment under the Northern Territory *Environment Protection Act 2019* (likely at the level of an Environmental Impact Statement (EIS)).

EcOz Environmental Consultants (EcOz) was engaged by Castile to undertake an ecological assessment to inform NT referral documentation and to determine whether the proposal triggers a referral under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. The objectives for the ecological assessment were to:

- Describe and characterise the existing ecology within and around the Project area
- Identify which threatened species are known, or are likely, to occur within the Project area (as listed under the NT *Territory Parks and Wildlife Conservation Act 1976 (TPWC Act)* and *EPBC Act*).
- Identify any sensitive or significant vegetation and/or habitat
- Identify presence of any other matters of ecological significance that may require consideration in the risk assessment / impact assessment
- Baseline weed survey.

This report aims to provide detailed baseline information that will underpin management decisions. It consolidates all matters of conservation significance identified from desktop research and field investigations, with particular consideration for priority species which may require management actions beyond the general minimal impact standards. The field survey was undertaken in May 2022 by EcOz (Tom Ewers-Reilly, Mark Carter and Suzanne Barber).

Land types

The Project area occurs within one broad land type – a flat to gently sloping spinifex sandplain with *Acacia* shrubs (variable structure; mainly *Acacia lysiphloia*) over open-sparse low trees (*Acacia sericophylla* +/- *Hakea macrocarpa*) +/- sparse-scattered emergent trees (*Corymbia opaca*, *C. aparrerinja*). There are several floristic variations present within this land type, which are mainly associated with the shrub and tree layers (due to fire history, disturbance and/or subsoils).

Sensitive vegetation

No sensitive or significant vegetation/habitat (as defined in the NT *Land Clearing Guidelines*) was observed within the Project area. However, two locally important habitat tree species were observed and should be considered when designing the Project to minimise general biodiversity impacts:

- Large Bloodwoods (*C. opaca*) have potential to be hollow bearing; however, no significant hollow-bearing trees were recorded (potentially a consequence of fire history in the area).
- Ghost Gum (*C. aparrerinja*) were also noted if present within or adjacent to Project components. These trees (when mature) can be considered to hold local / regional biodiversity significance.

Threatened species

The Greater Bilby (*Macrotis lagotis*) was the only threatened species identified during the desktop review to have a reasonable chance of occurring within the Project area. Subsequently, targeted surveys were carried out for Greater Bilby. Other threatened species that have a 'low' likelihood of occurrence rating were not targeted during field survey; however, the field survey did include habitat suitability checks, and opportunistic surveys (where relevant), to validate the desktop assessment.

The survey confirmed Greater Bilby is present within the Project area and surrounds; and that the entire Project area supports potential habitat for the species. No sign was observed within the proposed mine components;

however, activities was observed in close proximity to the main access road – and the ROM, process plant, waste rock dump, decline box cut and mine camp are all positioned within the foraging area of the found active burrows (i.e. within 1 km). It is likely that Greater Bilby are also present in the surrounding areas, particularly patches of *Acacia lysiphloia* shrubland that were only partially burnt (or not burnt) in the 2017 fire (as shown in Figure 2-2). Additional field survey would be required to validate this assumption.

Subsequently, it is likely that the Project will require assessment under the *EPBC Act*.

Baseline weed survey

The survey identified three weed species – Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*) and Spiked Malvastrum (*Malvastrum americanum*) – mostly concentrated at the existing Rover exploration camp, with a few isolated occurrences on the edge of existing tracks. No weeds were observed in undisturbed areas, and the majority of the exploration tracks and drill pads did not support weeds at the time of survey. No weed species declared under the *Weed Management Act* were observed during the survey.

Buffel Grass is a Category 3 weed of concern in the *Tennant Creek Regional Weeds Strategy 2021-2026*. This species is present around the edge of the existing exploration camp and access roads. Infestation level is considered to be high and has likely been present for several years. The extent of the infestation it is currently limited to disturbed areas around the edge of the camp.

Recommendations

The survey identified the presence of an *EPBC* threatened species, the Greater Bilby, and therefore consideration should be given to making a referral under both the *NT EP Act* and the *EPBC Act*. The Project area is situated close to the eastern edge of the current Greater Bilby distribution, so the recorded occurrence will be classed as an 'important population' under the *EPBC* Significant Impact Guidelines. Further assessment is required to consider options to avoid and mitigate impacts to the species, and to determine the significance of residual impacts as part of the future environmental assessment and approvals process. As part of approvals, it is expected that the Project will require a Greater Bilby Management Plan that proposes well informed mitigation measures that will be implemented to avoid potential significant impact to the species. This will likely include staff awareness, road upgrade risk management, traffic management/precautions, pre-clearance surveys prior to land clearing, fire management, habitat management and predator control/management. It is likely that additional Greater Bilby field survey will be required to inform the risk assessment of this Project, with the objective to better understand local activity / occurrence so that appropriate mitigation measures can be proposed.

The following recommendations should also be considered to minimise impacts to general ecological / biodiversity aspects:

- Project activities should not result in bushfires in surrounding bushland / vegetation. This could have adverse impacts on biodiversity, including the Greater Bilby known to occur in the area.
- Where possible, minimise clearance of large trees (>10m height) – in particular large Ghost Gum (*Corymbia aparrerinja*) and Desert Bloodwood (*Corymbia opaca*). These are not specially protected species (under *EPBC Act* or *TPWC Act*) within the Project area, however large trees can have local biodiversity values and/or Aboriginal significance.
- Weed management – including:
 - o Control existing Buffel Grass infestations (this will involve herbicide treatment when grass is green / growth phase – seek advice for treatment method).
 - o Minimise potential for spreading Buffel Grass – as the majority of the Project area is currently weed free. This will involve avoiding contact with existing vegetation and/or applying suitable wash-down (or equivalent) protocols.
 - o Annual weed monitoring, and weed control, post summer rainfall should be conducted.
 - o Vehicles, machinery and equipment coming to site must have weed hygiene certificate to minimise chance of weed introduction to site.

1 INTRODUCTION

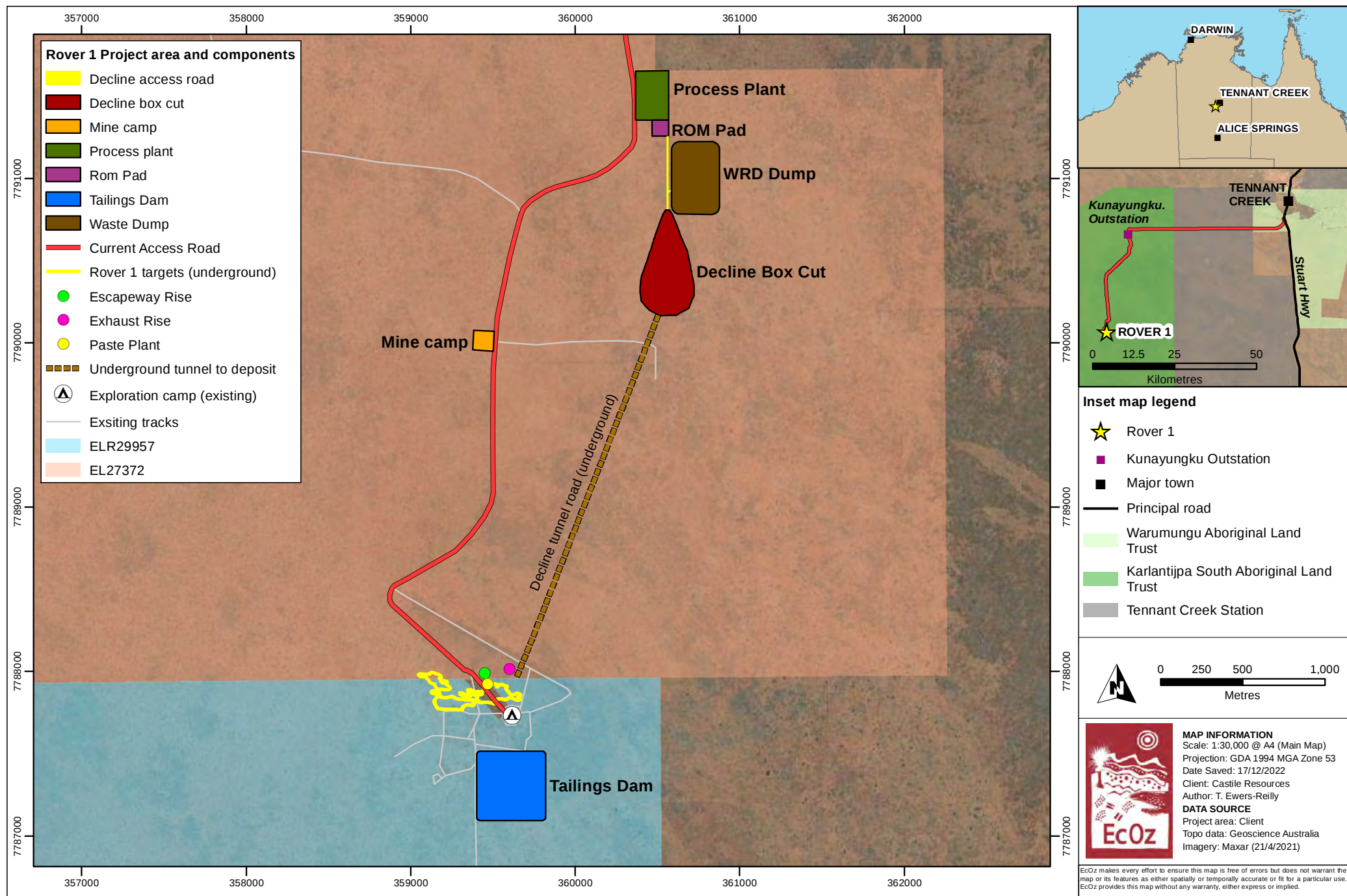
Castile Resources Limited (Castile) proposes to develop an underground gold mine at the Rover 1 deposit, approximately 70 km south-west of Tennant Creek (see Figure 1-1). The Rover 1 Project (here-in referred to as 'the Project') will comprise of a decline box cut, waste dump (WD), paste plant, processing plant, run-of-mine (ROM) pad, and mine site camp – all currently proposed within Exploration Licence (EL) 27372 – and a tailings dam (TD) located on Exploration Licence in Retention (ELR) 29957 (see Figure 1-1). These combined proposed disturbance areas are defined in this report as the 'Project area'. The ore will be processed on-site and trucked to Tennant Creek for transport to Darwin Port via rail. Access to the Project area from Tennant Creek will be via existing access tracks that will be upgraded to allow for truck movements.

The project requires assessment under the Northern Territory *Environment Protection Act 2019* (likely at the level of an Environmental Impact Statement (EIS)). EcOz Environmental Consultants (EcOz) was engaged by Castile to undertake an ecological assessment to inform NT referral documentation and to determine whether the proposal triggers a referral under the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. This report will form an appendix to the referral document and EIS.

The objectives for the ecological assessment were to:

- Describe and characterise the existing ecology within and around the Project area.
- Identify which threatened species are known, or are likely, to occur within the Project area (as listed under the *TPWC Act* and *EPBC Act*).
- Identify any sensitive or significant vegetation and/or habitat.
- Identify presence of any other matters of ecological significance that may require consideration in the risk assessment / impact assessment.
- Baseline weed survey.

This report aims to provide detailed baseline information that will underpin management decisions. It consolidates all matters of conservation significance identified from desktop research and field investigations, with particular consideration for priority species which may require management actions beyond the general minimal impact standards. This report does not assess the significance of potential impacts.



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Figure 1-1. Map of Rover 1 Project area and location

2 DESKTOP REVIEW

A desktop review has been undertaken to provide regional context for the ecological assessment, provide relevant background information on existing environment, and to identify key ecological values that may require field studies and/or management considerations. Information for the desktop review has been sourced from:

NT Government and Australian Government datasets and mapping tools:

- Natural Resources Maps (NR Maps) <https://nrmaps.nt.gov.au/nrmaps.html>
- NT Flora and Fauna Atlas Database
- North Australia and Rangelands Fire Information (NAFI) website <https://firenorth.org.au/nafi3/>
- Protected Matters Search Tool (PMST) <https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool>
- Bureau of Meteorology (BOM) <http://www.bom.gov.au/nt/index.shtml>

Previous ecological surveys within and around the Project area:

- Babylon / Area 1 Biological Assessment Survey, Ecologia Environmental Consultants (1999)
- Flora & Fauna Desktop Review and Survey Report, Rover 1 Project, VDM Consulting EcOz (2011)
- Flora and Fauna Assessment, Rover 1 Exploration Decline Project, EcOz Environmental Consultants (2012).

2.1 General context

2.1.1 Land use

The Project is located on Aboriginal land. Rover 1 is located on Karlantijpa South Aboriginal Land Trust. The main access road (Ngapamilamu access road) crosses Warumungu Aboriginal Land Trust, Tennant Creek Station (NT Por 949) and Karlantijpa South Aboriginal Land Trust; and there is an abandoned outstation (Kunayungku) 30 km north of the Rover 1 exploration camp (shown on inset map on Figure 1-1).

Mineral exploration has occurred historically within the current leases and surrounding area. Aero-magnetic surveys were conducted over the region, commencing in 1956, with more detailed surveys conducted since. In the 1970's, diamond drilling commenced within the Rover 1 area. Seventeen historic tenements have been held over the area of Castile's present Project area (Castile 2022). These historic tenements have been held by many different exploration companies. Castile have undertaken an exploration drilling program over the last few years across the Project area.

2.1.2 Climate

The Barkley region experiences a semi-arid climate with monsoonal influences from the north. The closest long-term Bureau of Meteorology weather station is Tennant Creek Airport (station number 015135) approximately 70 km north-east of the project area. Rainfall is summer dominant with an average annual rainfall of 460 mm (Tennant Creek Airport mean rainfall 1969 to 2022). Rainfall is highly unpredictable due to the potential for huge fluctuations from 100 to 500 mm (or more) per year. Long extended dry periods followed by high rainfall events result in a typical boom and bust environment, which influences the presence of many arid flora and fauna species during these times.

2.1.3 Bioregion

Bioregions are large land areas characterised by broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems. They capture the large-scale geophysical patterns across Australia. These patterns in the landscape are linked to fauna and flora assemblages and processes

at the ecosystem scale, thus providing a useful means for simplifying and reporting on more complex patterns of biodiversity (NSW 2003). NT bioregions are described in Baker et al. (2005).

The Project area occurs on the eastern edge of the Tanami bioregion which is the largest bioregion in the Northern Territory (229 811 km²) and is characterised by red Quaternary sand plains. Older Permian and Proterozoic formations appear as hills and outcrops from underneath the sandy layer. Dominated by Acacias in the upper story and Spinifex grasses in the lower story, the Tanami bioregion begins in WA (west of the NT border) and extends across much of central NT. The sandplains support mixed shrub steppes of *Hakea spp.*, desert bloodwoods, *Acacia spp.* and *Grevillea spp.* over soft spinifex (*Triodia pungens*) hummock grasslands. Wattle scrub over soft spinifex (*T. pungens*) hummock grass communities occur on the ranges (DCLM 2002).

2.1.4 Significant areas

There are no national parks or other reserves within or in close proximity to the Project area. The closest Sites of Conservation Significance (SoCS) to the Project area is the Davenport and Murchison Ranges located approximately 65 km to the south-east (Figure 2-1). The closest Site of Botanical Significance (SoBS), the Alcoolgoora Swamp, is located approximately 35 km to the south-east (Figure 2-1).

2.2 Land resource information

2.2.1 Land systems and units

Land system mapping is available at a scale of 1:1,000,000 (Perry et al. 1962). It shows that the Project area occurs within the Singleton land system, which comprises of desert sandplains (described in Table 2-1; shown in Figure 2-1). This is an extensive land system in the Tanami region. Land unit mapping is not available for the Project area.

Table 2-1. Summary of the land systems within the Project area

Name	Landform	Soil	Vegetation
Desert sandplains			
Singleton	Flat or gently undulating spinifex sand-plain	Red sands and red clayey sands	On sand-plains and rises, sparse shrubs and small trees over <i>Triodia</i> sp., or <i>Acacia aneura</i> over short grasses and forbs. On alluvial flats and drainage floors, woodland of <i>Acacia aneura</i> and <i>Eucalyptus coolabah</i> over short grasses and forbs

2.2.2 Vegetation communities

National Vegetation Information System (NVIS) mapping indicates that the Project area is situated within one broad vegetation unit – ID 1032 (as per NVIS Version 3.1 on NR Maps). This unit is described as follows:

- Level 3 description: *Triodia* low open hummock grassland
- Level 4 description: *Eucalyptus* low isolated trees / *Acacia* tall sparse shrubland / *Triodia* low open hummock grassland
- Community description:
 - o Upper strata: *Eucalyptus pruinosa*, *Corymbia opaca* +/- *Eucalyptus setosa*
 - o Mid strata: *Acacia stipuligera* +/- *Grevillea wickhamii*
 - o Ground strata: *Triodia pungens*, *Triodia schinzii* +/- *Yakirra australiensis*

2.2.3 Surface water

The project area occurs within the Victoria River-Wiso catchment. There are no surface water features within or surrounding the Project area (i.e. waterways / drainage lines, lakes, palaeo-drainage channels, clay pan etc.).

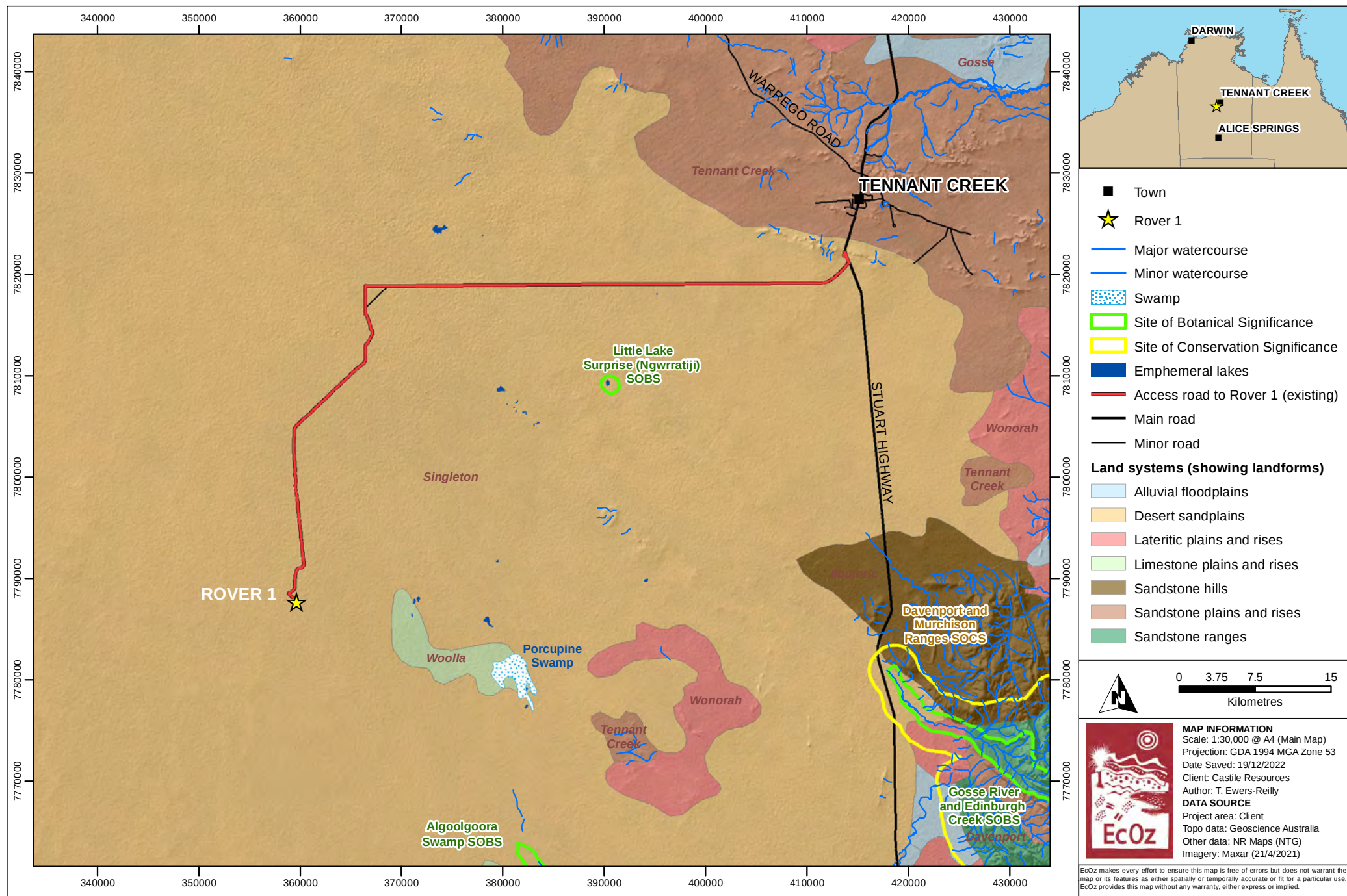


Figure 2-1. Map of SOCS, SOBS, surface water features and land systems in the vicinity of the Project area

2.3 Previous biodiversity surveys

2.3.1 Babylon / Area 1 Biological Assessment (1999)

A biological assessment survey of Babylon / Area 1 project area was conducted by Ecologia Environmental Consultants during 1999 for Normandy Tennant Creek Pty Ltd. This is located approximately 40 km west of Rover 1 Project area. The objective of the survey was to obtain baseline flora and fauna data as approval conditions of their exploration approval. The survey was thorough; flora survey methods included detailed floristic survey sites (15 sites) and broad-scale vegetation mapping. Fauna survey methods including systematic sampling (five sites) and opportunistic sampling over eight days.

No threatened flora or fauna were recorded (Ecologia 1999). Two Near Threatened species were recorded:

- Spectacled Hare-wallaby (*Lagochestes conspiculatus*) (scats and tracks were observed)
- Central Pebble-mound Mouse (*Pseudomys johnsonii*) (fresh burrow entrances on a laterite hill).

2.3.2 Rover 1 Flora and Fauna Survey (2012)

A flora and fauna assessment was undertaken by EcOz in 2011 for Westgold Resources Limited (a subsidiary of Castile Resources) for environmental approvals of the (then) proposed Rover 1 Exploration Decline Project (EcOz 2012), the same location as the current proposed Rover 1 Project area. The assessment included a desktop review and a flora and fauna survey.

Six sites were selected within the Rover 1 Project area for the flora and fauna surveys, conducted over four days during May 2011. Habitat descriptions were conducted in a 50 m by 50 m quadrat established within habitat representative of each fauna site. Sixty-four flora species were recorded during the flora survey, none of which were threatened or near threatened species. No weeds were detected during the survey.

The fauna survey involved three-nights of trapping (Elliott, pitfall and funnel traps). Seventy-six native fauna species were recorded during survey; 20 reptiles, 48 birds, and 8 mammals. No threatened or migratory species were identified. One Near Threatened species (TPWC Act) was recorded – Australian Bustard.

2.4 Potential threatening processes

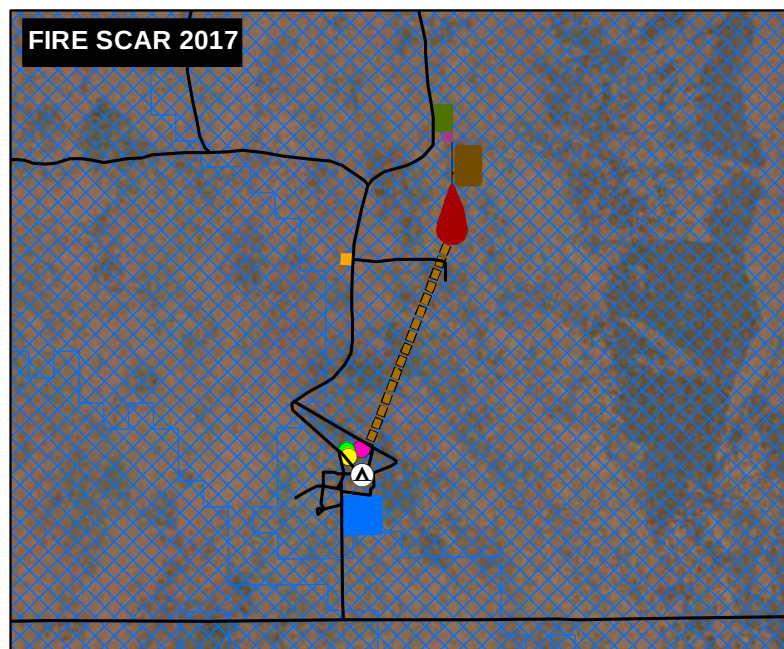
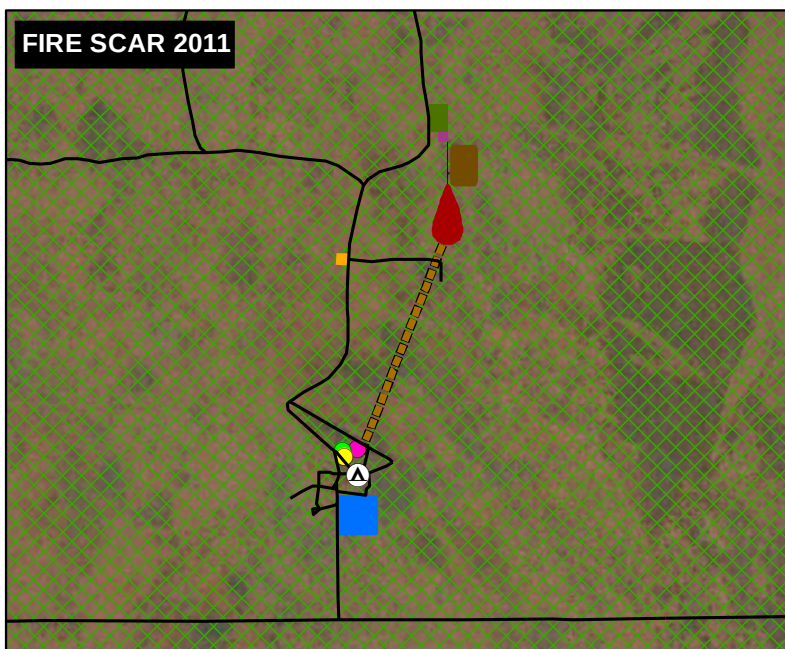
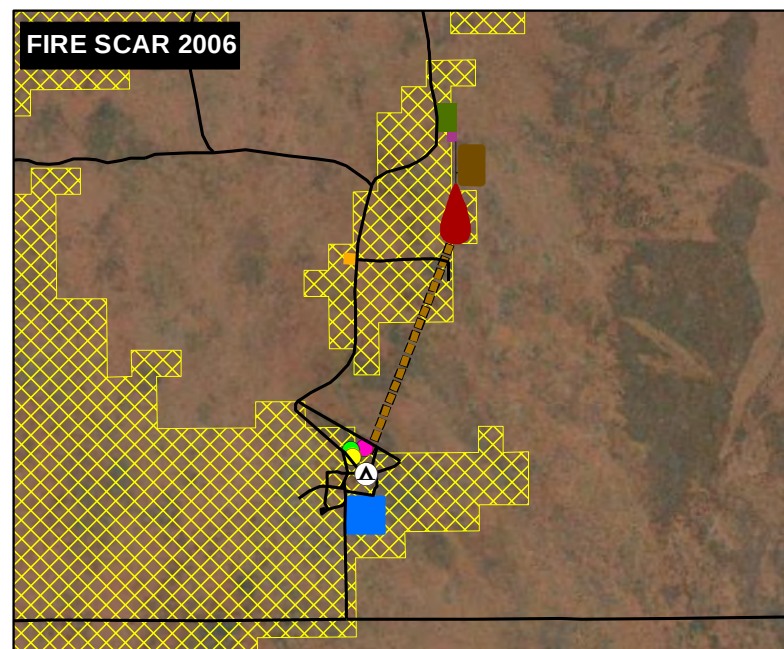
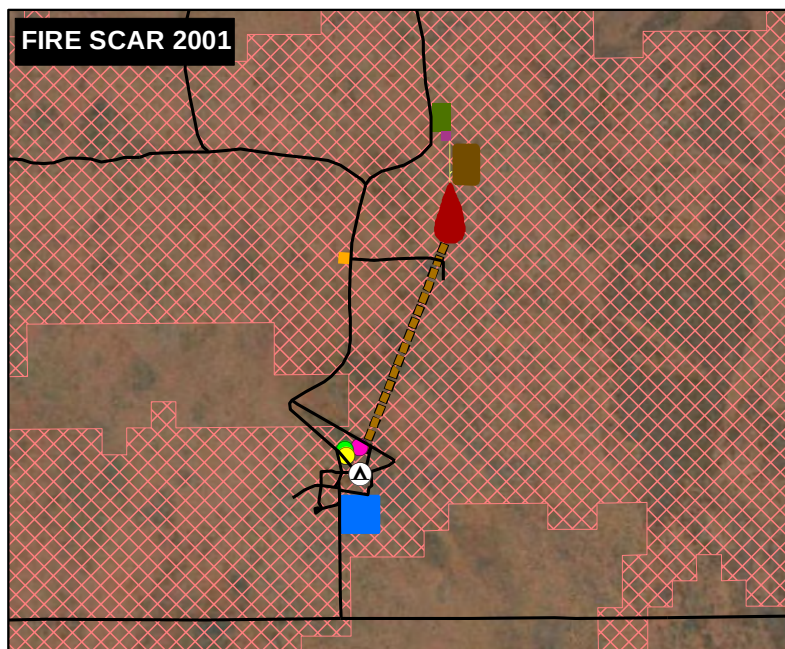
2.4.1 Fire history

Fire plays a major role in shaping the landscape throughout Central Australia, both through natural and human-induced burning practices (Latz 1995). As a result, fire tolerant/dependant plants have become dominant in the region, while fire sensitive plants are more sparsely distributed (Latz 1995). Frequent fires can result in fewer flora species and reduced structural complexity (McKay 2017), both of which can also significantly diminish the habitat quality for fauna and facilitate weed invasion.

Regional fire history and fire scar mapping was obtained through the [Northern Australia and Rangelands Fire Information](#) website. This dataset indicates that there have been four fire events in the past 20 years; 2017 (November), 2011 (August), 2006 (October) and 2001 (June). These fires have resulted in all parts of the Project area burning at least once within the past 20 years. According to NAFI fire scar data – the entire footprint burnt in 2011 and 2017 (see Figure 2-2).

However, a review of the most recent fire event (in 2017) (using satellite imagery) shows that several patches/areas were not burnt, or only partially burnt within the Project area (indicative areas shown on Figure 2-3), including vegetation around the existing exploration camp, and a large patch to the east.

Noting there has not been a large-scale burn in the area for approximately 4 to 5 years (since 2017), it is expected that fuel loads have re-established across the region.



Rover 1 Project Area

- Exploration camp (existing)
- Existing tracks
- Escapeway Rise
- Exhaust Rise
- Paste Plant
- Decline access road
- Decline box cut
- Mine camp
- Process plant
- Rom Pad
- Tailings Dam
- Waste Dump
- Underground tunnel to deposit

Fire scar data

- Fire scar 2001 (NAFI)
- Fire scar 2006 (NAFI)
- Fire scar 2011 (NAFI)
- Fire scars 2017 (NAFI)



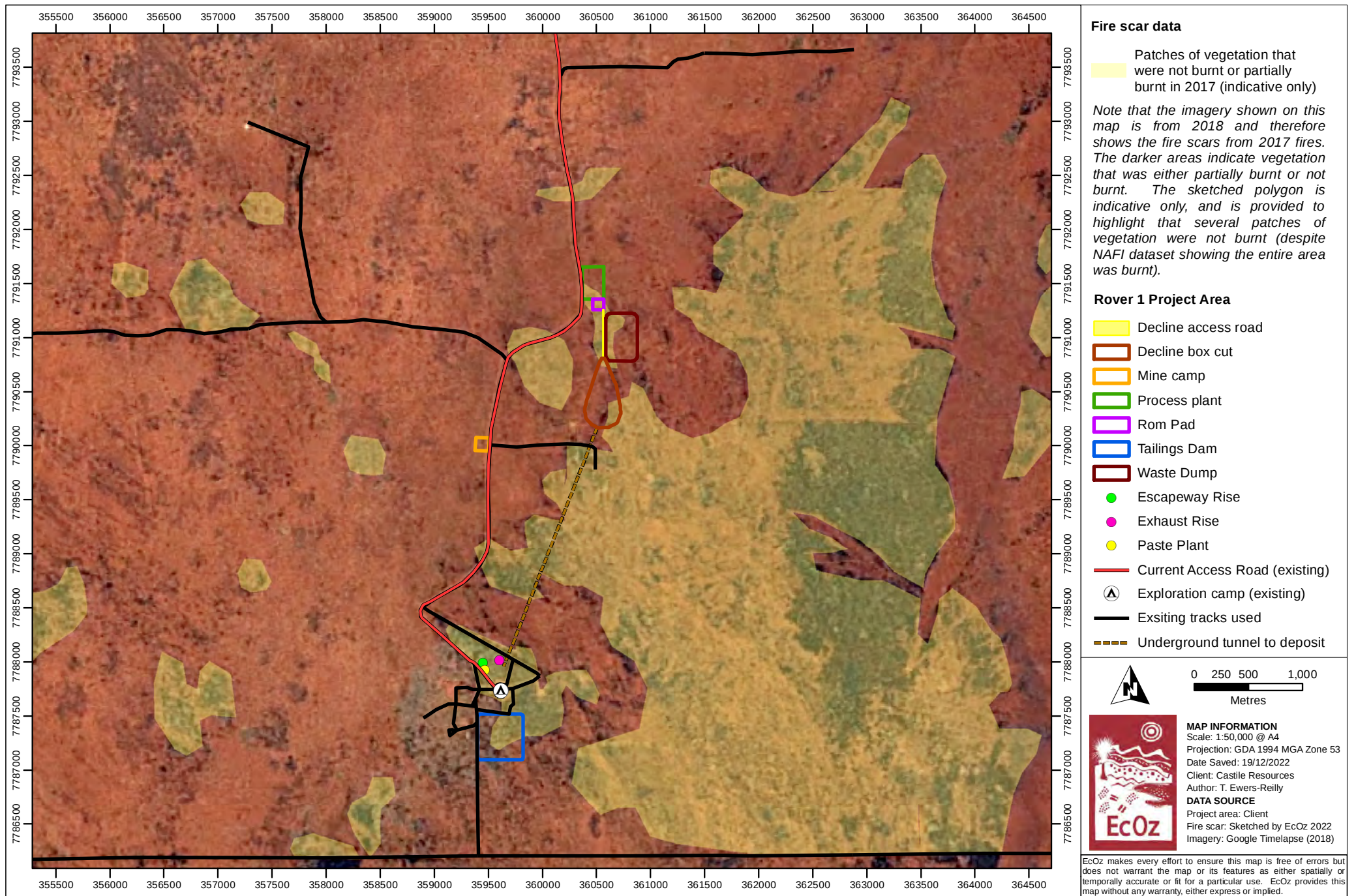
0 500 1,000 2,000
Metres



MAP INFORMATION
 Scale: 1:80,000 @ A4
 Projection: GDA 1994 MGA Zone 53
 Date Saved: 19/12/2022
 Client: Castile Resources
 Author: T. Ewers-Reilly
DATA SOURCE
 Project area: Client
 Fire data: NAFI 2022
 Imagery: Maxar (21/4/2021)

EcOz makes every effort to ensure this map is free of errors but does not warrant the map or its features as either spatially or temporally accurate or fit for a particular use. EcOz provides this map without any warranty, either express or implied.

Figure 2-2. Fire scars within the Project area (NAFI)



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Figure 2-3. Aerial image (from 2017) that shows patches of vegetation that were either not burnt or partially burnt during 2017 fire events

2.4.2 Weeds

Some species of introduced flora are declared to be weeds under the *NT Weeds Management Act 2001*, because of the environmental and/or economic harm they can cause. Class A weeds are to be eradicated by landowners and occupiers. Class B weeds must have their growth and spread controlled by land owners and occupiers. The remaining introduced flora species are referred to as *environmental weeds*. The Commonwealth Government has also categorised some species as Weeds of National Significance (WoNS).

The Project area lies within the Northern Territory Government *Tennant Creek Regional Weeds Strategy 2021-2026* (DEPWS 2021). The strategy focusses on weeds that are most important to the region, categorising them as:

- *Category 1 – Priority weeds for eradication* (requiring priority management action)
- *Category 2 – Priority weeds for strategic control* (including eradication of outliers)
- *Category 3 – Weeds of concern* (posing a threat to the values of the Tennant Creek Region)
- *Category 4 – Hygiene and biosecurity weeds* (low risk; however, has local impacts)
- *Category 5 – Alert weeds* (potential to have a high level of impact should it become established, and the likelihood of the species naturalising and spreading in the region is perceived to be high).

A review of the NT Weed Branch weed dataset shows that there are no weed records within the Project area; however, there are 857 weed records within a 100 km radius. The most frequently reported species are Rubber Bush (*Calotropis procera*) and Parkinsonia (*Parkinsonia aculeata*). Priority weed species for region are listed in Table 2-2 (i.e. species that are either declared as Class A, B or C under the Weeds Management Act; or listed in the regional weeds strategy).

Previous ecological surveys within the area (including Rover 1) did not record any weed species (Ecologia 1999; EcOz 2012). Weeds have been surveyed during the current survey (see Section 5).

Table 2-2. Key weed species within 100km for the Project area

Common name	Botanical name	Class	WoNS	Tennant Creek Regional Weeds Strategy 2021 – 2026	# of records (100km)
Athel pine	<i>Tamarix aphylla</i>	A/B	Yes	Category 2	41
Bellyache bush	<i>Jatropha gossypifolia</i>	A	Yes	Category 1	41
Buffel grass	<i>Cenchrus ciliaris</i>	-	-	Category 3	30
Caltrop	<i>Tribulus terrestris</i>	B	-	Category 4	1
Hyptis	<i>Hyptis suaveolens</i>	B	-	N/A	2
Khaki weed	<i>Alternanthera pungens</i>	B	-	N/A	2
Mossman river grass	<i>Cenchrus echinatus</i>	B	-	Category 3	8
Neem	<i>Azadirachta indica</i>	B	-	Category 2	6
Parkinsonia	<i>Parkinsonia aculeata</i>	B	Yes	Category 2	298
Prickly acacia	<i>Acacia nilotica</i>	A	Yes	Category 1	6
Prickly pears	<i>Opuntia spp.</i>	A	Yes	Category 1	8
Rubber bush	<i>Calotropis procera</i>	B	-	Category 2	358
Rope cactus sp	<i>Cylindropuntia sp</i>	A	-	Category 1	5
Senna – Coffee	<i>Senna occidentalis</i>	B	-	Category 4	1
Sida - Flannel weed	<i>Sida cordifolia</i>	B	-	N/A	3
Sida - Spiny head	<i>Sida acuta</i>	B	-	N/A	4
Star burr	<i>Acanthospermum hispidum</i>	B	-	N/A	2

2.4.3 Pest animals

According to the NT Fauna Atlas and the authors' knowledge of the area, the introduced fauna species listed in Table 2-3 are widespread and abundant within the region, and hence likely to occur within the Project area.

Feral Cats, European Rabbits, Red Foxes are each listed as a Key Threatening Process under the *EPBC Act*.

Table 2-3. Pest animals that may occur within the Project area (NT Atlas)

Common name	Scientific name	Habitats	Impacts
Feral Cattle	<i>Bos taurus</i>	Various	Erosion of soil and watercourses, weed spread, trampling and consumption of native flora, and sedimentation and increased nutrient levels in watercourses
Donkey	<i>Equus asinus</i>	Various	
Horse	<i>Equus caballus</i>	Grassland and shrubland	
Wild Dog	<i>Canis lupus</i>	Various	Prey on many species of native animals
Feral Cat	<i>Felis catus</i>	Various	
European Red Fox	<i>Vulpes</i>	Various	
House Mouse	<i>Mus domesticus</i>	Various	Compete with native species. May impact upon native vegetation via seed predation
Feral European Rabbit	<i>Oryctolagus cuniculus</i>	Various	Compete with native species, damage vegetation and degrade land
One-humped Camel	<i>Camelus dromedarius</i>	Various	Trampling, suppression of plant recruitment, damage to wetland and riparian areas, and competition with native animals for food and shelter
House Sparrow	<i>Passer domesticus</i>	Various Often nest in buildings	Compete with native species
Barbary Dove	<i>Streptopelia roseogrisea</i>	Various	Compete with native species

2.5 Biodiversity values

2.5.1 Threatened species

A desktop threatened species 'likelihood of occurrence' assessment was undertaken to identify which species have a reasonable chance of occurring within the Project area, and those that can be reasonably excluded from further consideration because likelihood of occurrence is inherently low (procedure in Appendix B). A total of 27 threatened species were assessed (results summarised in Table 2-4; assessment provided in Appendix B).

One species is considered to have a high chance of occurring within the Project area – Greater Bilby (*Macrotis lagotis*). This species was subject to field assessment to confirm likelihood of occurrence within the Project area (see section 4.1).

Nine species are considered to have a low likelihood of occurrence (i.e. unlikely to occur) within the Project area, meaning that apart from the occasional vagrant, it is not expected that these species occur within the Project area. These species will not be targeted during field work because the potential occurrence/impacts to these species is inherently low (refer to Appendix B for justifications).

The remaining species are considered to have no chance of occurring within the Project area and will not be subject to further assessment for this project.

Table 2-4. Summary results of desktop threatened species ‘likelihood of occurrence’ assessment

Likelihood rating	Common name	Scientific name	Status	
			Cth	NT
HIGH	Greater Bilby	<i>Macrotis lagotis</i>	VU	VU
LOW	Great Desert Skink	<i>Liopholis kintorei</i>	VU	VU
	Grey Falcon	<i>Falco hypoleucos</i>	VU	VU
	Night Parrot	<i>Pezoporus occidentalis</i>	EN	EN
	Painted Honeyeater	<i>Grantiella picta</i>	VU	VU
	Princess Parrot	<i>Polytelis alexandrae</i>	VU	VU
	Red Goshawk	<i>Erythroriorchis radiatus</i>	VU	VU
	Yellow-spotted Monitor	<i>Varanus panoptes</i>	-	VU
NONE	Crest-tailed Mulgara	<i>Dasycercus cristicauda</i>	-	VU
	Gouldian Finch	<i>Erythrura gouldiae</i>	EN	VU
	Greater Sand Plover	<i>Charadrius leschenaultii</i>	VU	VU
	Malleefowl	<i>Leipoa ocellata</i>	VU	CR
	Masked Owl (northern mainland)	<i>Tyto novaehollandiae kimberli</i>	VU	VU
	Red-tailed Phascogale	<i>Phascogale calura</i>	VU	EX
	Golden Bandicoot	<i>Isodon auratus</i>	VU	EN
	Brush-tailed Bettong	<i>Bettongia penicillata</i>	EN	EX
	Common Brushtail Possum (central)	<i>Trichosurus vulpecula</i>	-	EN
	Central Australian Rock-wallaby	<i>Petrogale lateralis</i>	VU	-
	Central Rock-rat	<i>Zyomys pedunculatus</i>	CR	CR
	Ghost Bat	<i>Macroderma gigas</i>	VU	NT
	Western Quoll	<i>Dasyurus geoffroii</i>	VU	EX
	Mala	<i>Lagorchestes hirsutus</i>	EN	EW
	Mertens' Water Monitor	<i>Varanus mertensi</i>	-	VU
	Land Snail	<i>Semotrachia euzyga</i>	EN	EN
	Spencer's Land Snail	<i>Bothriembryon spenceri</i>	-	VU
	Dwarf Desert Spike-rush	<i>Eleocharis papillosa</i>	VU	VU
	A herb	<i>Typhonium sp. Sandover</i>	-	VU

2.5.2 Migratory species

The *EPBC Act* also protects important habitat for, and significant occurrences of, migratory species. Ten migratory bird species were identified in the PMST (Appendix A). The Project area is situated within extensive area of desert sandplains, which does not constitute important habitat for any of the migratory birds listed in the PMST and, as such, they are not further considered as part of this assessment (as the inherent risk from the project on these species is deemed as low).

2.5.3 Significant vegetation and habitats

In the NT, certain vegetation types are significant under the *Land Clearing Guidelines* (DEPWS 2021) due to their unique and/or inherently high biodiversity values. They are rainforest, vine thicket, closed forest or riparian vegetation, mangroves, monsoon vine forest, sandsheet heath and vegetation containing large trees with hollows suitable for fauna. Desktop review indicates it is unlikely that sensitive or significant vegetation occurs within the Project area.

There is also no indication that any significant natural land features are present within the Project area (such as caves, scarp, rocky outcrop, sink holes). This will be confirmed during land type field survey (Section 3).

There are no groundwater-dependent ecosystems (GDEs) within the Project area. The closest potential GDE (unclassified) is a wetland approximately 10 km to the south-west of the Project area.

The *EPBC Act* allows for the listing of *threatened ecological communities* – of which there is only one in the NT, the Arnhem Plateau Sandstone Shrubland Complex. This does not occur within the Project area.

3 LAND TYPE ASSESSMENT

The objective of the land type survey was to describe, map and evaluate land within the Project area, and more specifically within each proposed project component (decline box cut, waste dump (WD), paste plant, processing plant, ROM pad, and mine site camp). This provides baseline data on landforms, soil types and vegetation to assist with planning of the Project to minimise environmental impacts to ALARP.

Field survey was conducted from 10 to 13 May 2022 by Tom Ewers-Reilly (Senior Ecologist), with plant identification checks undertaken by Andrew Schubert (post-field trip).

3.1 Methodology

A ground-based survey was undertaken for the general Project area, targeting each proposed project component (survey tracks shown as part of Greater Bilby survey, Figure 4-1). Survey preparation involved a detailed review of available resources and mapping datasets (summarised in Chapter 2), in conjunction with aerial imagery (using ESRI Basemaps) to select sites of interest to be targeted during field studies.

The survey was conducted to be spatially representative and to describe land type and vegetation floristics for each proposed project component, which include data on landform, dominant flora species, vegetation structure, soil type, slope (%), drainage potential, groundcover and presence/absence of outcrop. Additional detail and sampling effort was undertaken if potential sensitive vegetation/habitat was observed in the field (i.e. hollow-bearing trees, drainages) – although desktop review indicated that presence of sensitive vegetative/habitat is unlikely.

Land types and or floristic variations were mapped for each component (using ArcGIS software).

All flora species were recorded to generate an overall flora species list for the Project area.

This land type survey was designed to comply with the *Land Clearing Guidelines* (DEPWS 2021) and used methodology based on those referenced in *NT Guidelines and Field Methodology* (Brocklehurst et al. 2017).

3.2 Results

The Project area occurs within one broad land type – a flat to gently sloping spinifex sandplain with *Acacia* shrubs (variable structure; mainly *Acacia lysiphloia*) over open-sparse low trees (*Acacia sericophylla* +/- *Hakea macrocarpa*) +/- sparse-scattered emergent trees (*Corymbia opaca*, *C. aparrerinja*). There are several floristic variations present within this land type, which are mainly associated with the shrub and tree layers (due to fire history, disturbance and/or subsoils). These variations are listed below:

- Sparse shrubs (*Acacia* spp.) with scattered trees (*C. opaca*, *A. sericophylla*)
- Open tall-shrubs (*A. sericophylla*, *H. macrocarpa*, *A. lysiphloia*) +/- sparse trees (*Corymbia* spp.)
- Open mid-shrubs (*A. lysiphloia* +/- *A. stipuligera*, *A. adsurgens*)
- Closed patches of shrubs (*A. lysiphloia*) +/- scattered trees (*A. sericophylla*, *C. opaca*)
- Open-patchy shrubs (*A. ancistrocarpa*, *A. adsurgens*) +/- sparse trees (*A. sericophylla*, *C. opaca*)
- Open shrubs (*Melaleuca lasiandra*, *Acacia* spp.) +/- *A. sericophylla*, *H. macrocarpa*, *C. opaca*)
- Tussock grass dominated understorey (mainly *Eragrostis eriopoda*, +/- *Aristida holathera*)

No sensitive or significant vegetation/habitat (as defined in the NT *Land Clearing Guidelines*) was observed within the Project area. However, two locally important habitat tree species were observed and should be considered when designing the Project to minimise general biodiversity impacts:

- Large Bloodwoods (*C. opaca*) have potential to be hollow bearing; however, no significant hollow-bearing trees were recorded (potentially a consequence of fire history in the area).
- Ghost Gum (*C. aparrerinja*) were also noted if present within or adjacent to Project components. These trees (when mature) can be considered to hold local / regional biodiversity significance.

3.2.1 Decline box cut

Landform

Red sandplain; flat to gentle slopes (<1%); no drainage features; surface drainage is via sheet flow; run-off is expected to be low, with the majority of rainfall rapidly infiltrating into permeable sandy red earth soils.

Soil

Sandy red earth; thin sandy veneer on surface (Aeolian deposits); no surface gravel or rock; no outcrop present; erosion hazard is low; no salinity indicators present.

Vegetation

There are two main floristic variations present within the proposed decline box cut (photographs in Figure 3-1 and Figure 3-2; mapped in Figure 3-3).

- D-1: Spinifex grassland (*Triodia schinzii*) with scattered shrubs (*Acacia lysiphloia*) and scattered low trees (*Acacia sericophylla*) +/- emergent trees (*Corymbia opaca*) (upper image in Figure 3-1).
- D-2: Open Acacia shrubland (*Acacia lysiphloia*) over Spinifex grassland (*Triodia schinzii*) +/- emergent trees (*Corymbia opaca*, *Acacia sericophylla*) (lower image in Figure 3-1).

A small cluster of emergent Ghost Gum trees (*Corymbia aparrerinja*) are present at the south-eastern boundary of the proposed decline box cut (see Figure 3-3). These trees are not specifically protected (unless they are linked to Sacred Site or cultural significance); however, mature trees are considered to be locally/regionally important so efforts to minimise impact / disturbance should be undertaken where possible.



Figure 3-1. Photographs of floristic variations with the proposed decline box cut



Figure 3-2. Drone photograph (north view) of proposed decline box cut



Figure 3-3. Map of floristic variations present within proposed decline box cut

3.2.2 Waste rock dump and decline access road

Landform

Red sandplain; flat to gentle slopes (<1%); no drainage features; surface drainage is via sheet flow; run-off is expected to be low, with the majority of rainfall rapidly infiltrating into permeable sandy red earth soils.

Soil

Sandy red earth; thin sandy veneer on surface (Aeolian deposits); no surface gravel or rock; no outcrop present; erosion hazard is low; no salinity indicators present.

Vegetation

There are two main floristic variations present within the proposed WD and decline access (photographs in Figure 3-4 and Figure 3-5; mapped in Figure 3-6).

- **WD-1:** Spinifex grassland (*Triodia schinzii*) with scattered Acacia shrubs (*A. lysiphloia*, *A. adsurgens*) and scattered low trees (*Acacia sericophylla*) +/- emergent trees (*Corymbia opaca*, *C. aparrerinja*) (upper image in Figure 3-4).
- **WD-2:** Open Acacia shrubland (*Acacia lysiphloia*) over Spinifex grassland (*Triodia schinzii*) +/- scattered small trees (*Corymbia opaca*, *Acacia sericophylla*) (lower image in Figure 3-4).



Figure 3-4. Photographs of floristic variations with the proposed WD and decline access



Figure 3-5. Drone photograph (south view) of proposed WD

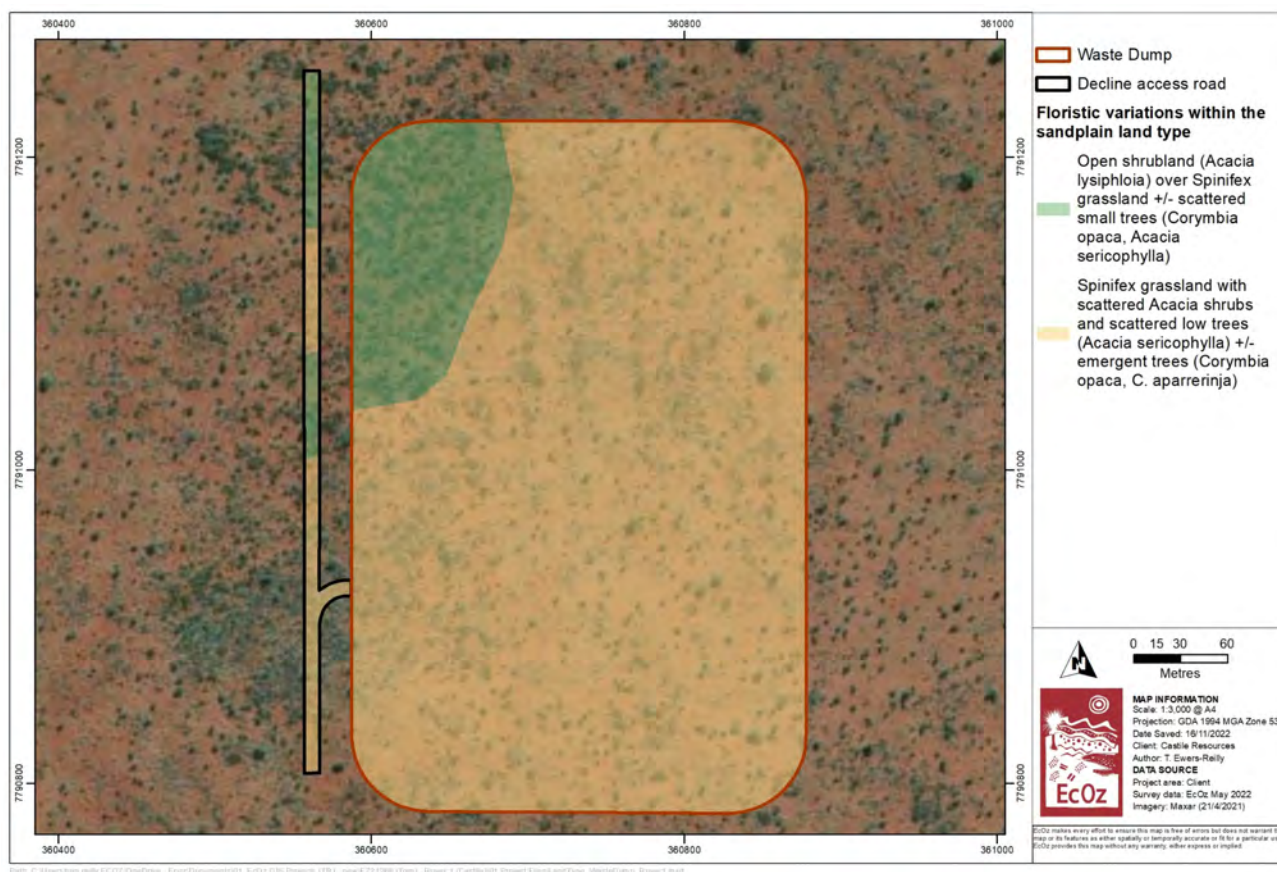


Figure 3-6. Map of floristic variations present within proposed WD and decline access road

3.2.3 Process plant site and ROM Pad

Landform

Red sandplain; flat to gentle slopes (<1%); no drainage features; surface drainage is via sheet flow; run-off is expected to be low, with the majority of rainfall rapidly infiltrating into permeable sandy red earth soils.

Soil

Sandy red earth; thin sandy veneer on surface (Aeolian deposits); no surface gravel or rock; no outcrop present; erosion hazard is low; no salinity indicators present.

Vegetation

There are two main floristic variations present within the proposed process plant and ROM pad (photographs in Figure 3-7 and Figure 3-8; mapped in Figure 3-9).

- PP-1: Spinifex grassland (*Triodia schinzii*) with scattered Acacia shrubs (*A. lysiphloia*, *A. adsurgens*) and low trees (*A. sericophylla*) +/- emergent *C. opaca* (upper image in Figure 3-7).
- PP-2: Open *A. lysiphloia* shrubland over open spinifex (*Triodia schinzii*) (lower image in Figure 3-7).

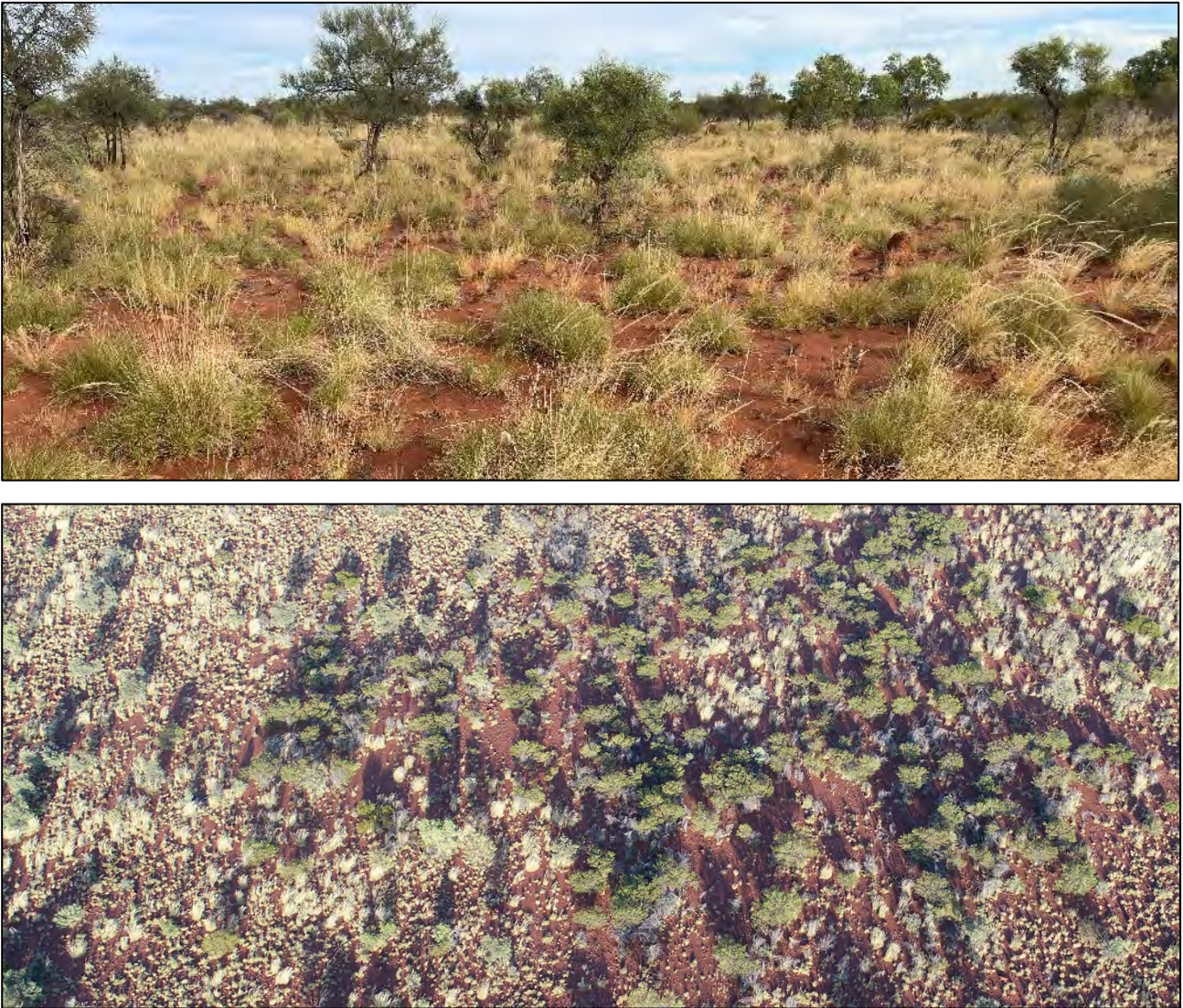


Figure 3-7. Photographs of floristic variations with the proposed process plant and ROM



Figure 3-8. Drone photograph (north view) of proposed process plant and ROM pad



Figure 3-9. Map of floristic variations present within proposed process plant and ROM pad

3.2.4 Mine site camp

Landform

Red sandplain; flat to gentle slopes (<1%); no drainage features; surface drainage is via sheet flow; run-off is expected to be low, with the majority of rainfall rapidly infiltrating into permeable sandy red earth soils.

Soil

Sandy red earth; thin sandy veneer on surface (Aeolian deposits); no surface gravel or rock; no outcrop present; erosion hazard is low; no salinity indicators present.

Vegetation

There are two main floristic variation present within the proposed mine camp (photographs in Figure 3-10 and Figure 3-11; mapped in Figure 3-12).

- MC-1: Spinifex grassland (*Triodia schinzii*) with scattered Acacia shrubs (*A. lysiphloia*, *A. adsurgens*) and low trees (*Acacia sericophylla*, *Corymbia opaca*) (upper image in Figure 3-10).
- MC-2: Acacia shrubland (*A. adsurgens*) over spinifex and low trees (*Acacia sericophylla*) (lower image Figure 3-10)



Figure 3-10. Photographs of floristic variations with the proposed mine camp



Figure 3-11. Drone photograph (west view) of proposed mine site camp



Figure 3-12. Map of floristic variations present within proposed mine site camp

3.2.5 Tailings dam

Landform

Red sandplain; flat to gentle slopes (<1%); no drainage features; surface drainage is via sheet flow; run-off is expected to be low, with the majority of rainfall rapidly infiltrating into permeable sandy red earth soils.

Soil

Sandy red earth; thin sandy veneer on surface (Aeolian deposits); no surface gravel or rock; no outcrop present; erosion hazard is low; no salinity indicators present.

Vegetation

There are three floristic variations present within the proposed tailings dam area (photographs in Figure 3-13 and Figure 3-14; mapped in Figure 3-15).

- **TD-1:** Open Acacia shrubland (*Acacia lysiphloia*, *A. adsurgens* – many dead/senesced shrubs in this area) over spinifex (*Triodia schinzii*) and scattered low trees (*Acacia sericophylla*, *Corymbia opaca*) (upper image in Figure 3-13).
- **TD-2:** Open to sparse shrubland (*Acacia lysiphloia*, *A. adsurgens*) over spinifex (*Triodia schinzii*) and scattered low trees (*A. sericophylla*, *Corymbia opaca*) (middle image in Figure 3-13).
- **TD-3:** *Melaleuca lasiandra* open shrubland over spinifex and scattered low trees (*Acacia sericophylla*) (lower image in Figure 3-13).



Figure 3-13. Photographs of floristic variations with the proposed tailings dam

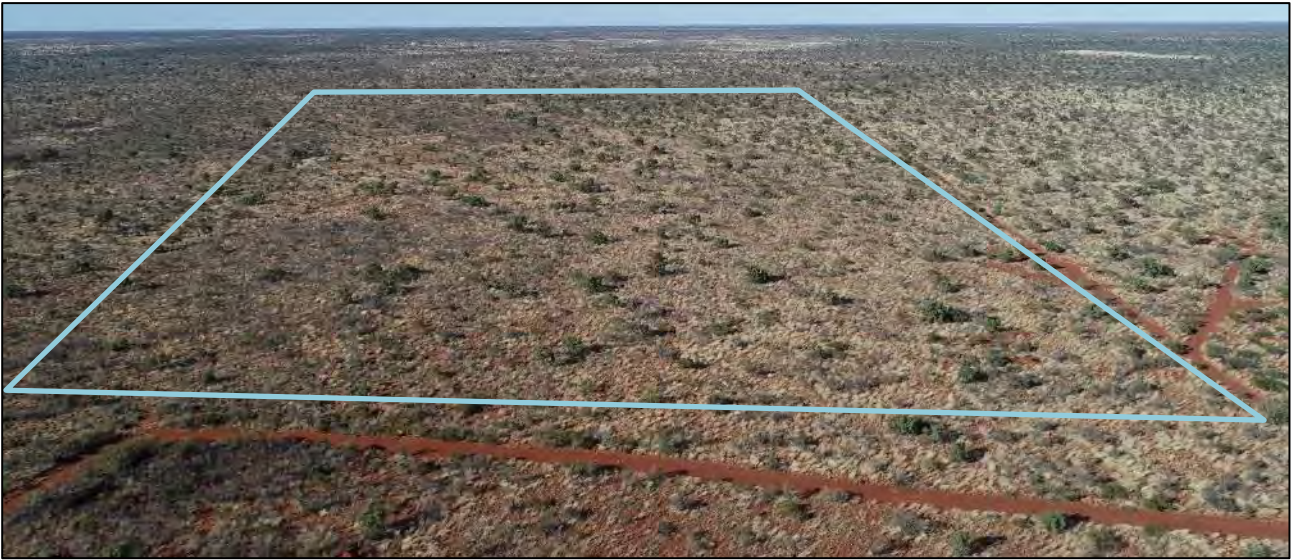


Figure 3-14. Drone photograph (south view) of proposed tailings dam

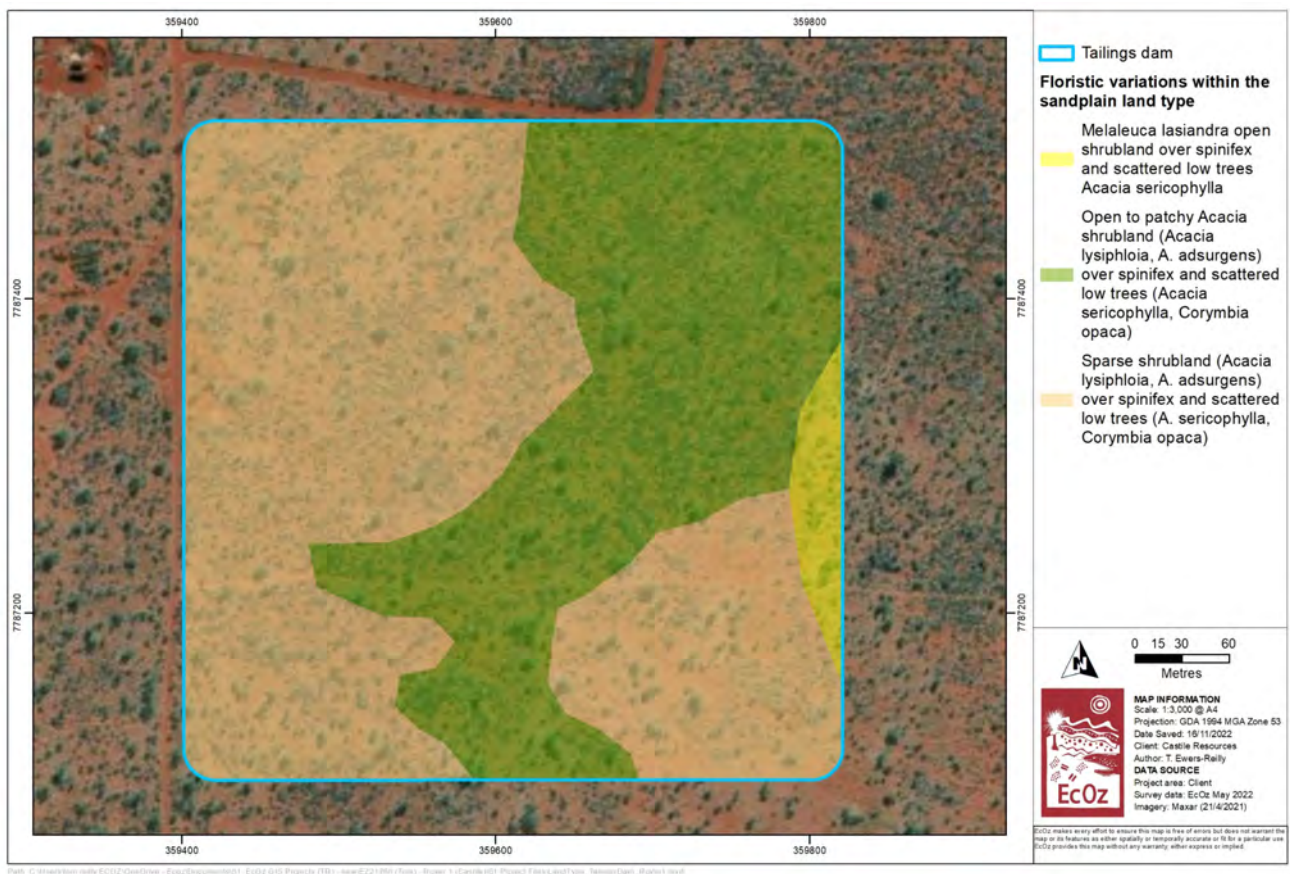


Figure 3-15. Map of floristic variations present within proposed tailings dam

3.2.6 Other areas

The escapeway rise (1), exhaust rise (2) and paste plant (3) locations are all small surface disturbances are located in close proximity to the existing Rover 1 exploration area (see location in Figure 1-1; depicted on drone image in Figure 3-16). All locations are situated in sandplain land type and support an open shrubland (*Acacia lysiphloia*, *Acacia adsurgens*) over spinifex with scattered *Acacia sericophylla* and *Corymbia opaca*.

The airstrip is existing; however, it would require an upgrade to become operational. Dense *Acacia lysiphloia* shrubs line the edge of the airport (approximate 10 – 20 m from edge); and then the vegetation transitions into open to patchy *Acacia* shrublands with open low trees (*Corymbia opaca*, *Acacia sericophylla*).

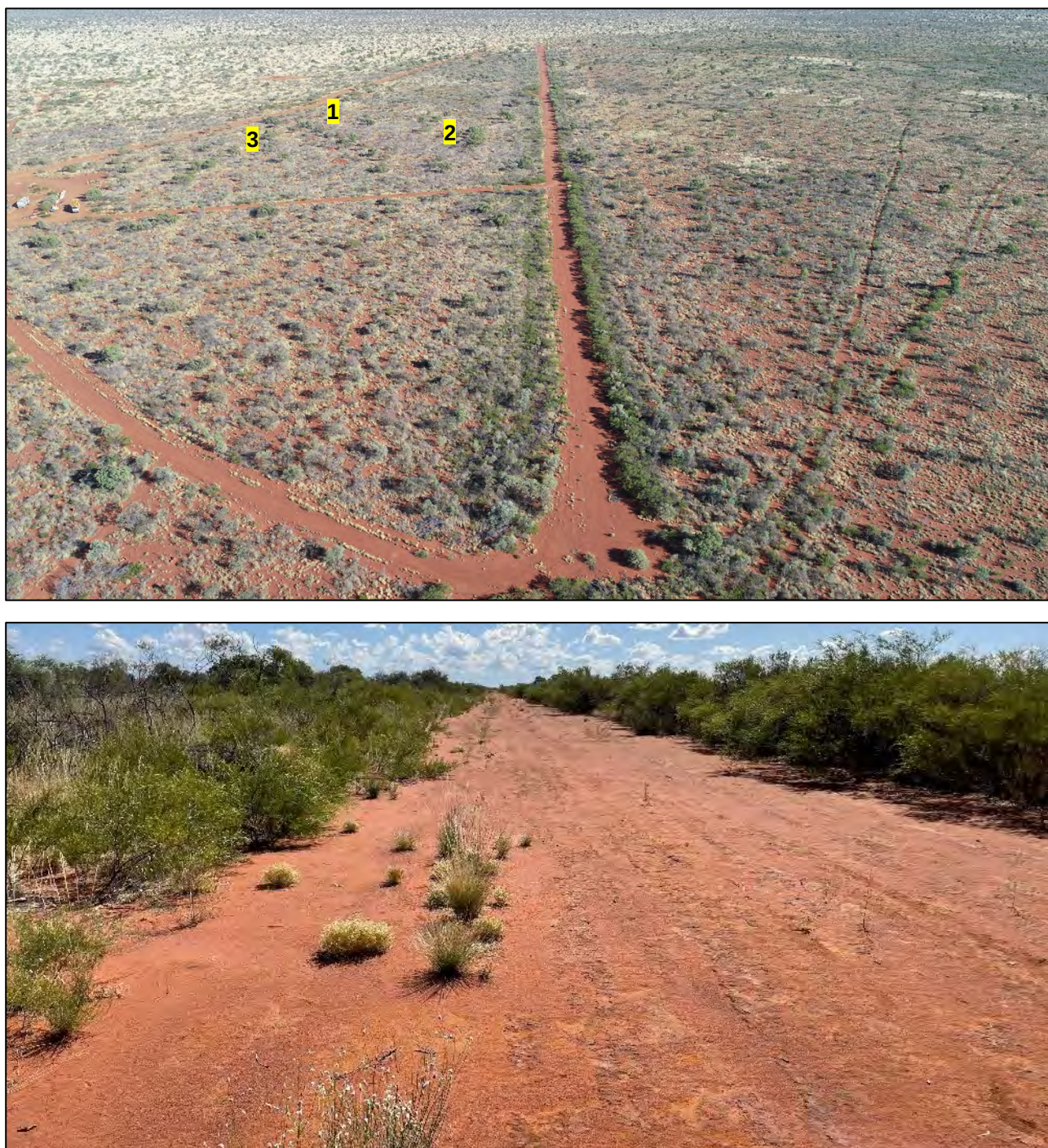


Figure 3-16. Photographs of (existing) airstrip and escapeway rise, exhaust rise and paste plant

4 THREATENED SPECIES SURVEY

The Greater Bilby (*Macrotis lagotis*) was the only threatened species identified during the desktop review in Section 2.5.1 to have a reasonable chance of occurring within the Project area. Subsequently, targeted surveys were carried out for Greater Bilby. Other threatened species that have a 'low' likelihood of occurrence rating were not targeted during field survey; however, the field survey did include habitat suitability checks, and opportunistic surveys (where relevant), to validate the desktop assessment.

Field surveys were conducted from 10 to 13 May 2022 by Tom Reilly (Senior Ecologist), Mark Carter (Zoologist) and Suzanne Barber (Senior Consultant). The survey team has experience in Greater Bilby survey and is very familiar with characteristic sign and habitat preferences.

Prior to field work, Tom Reilly met with Alistair Stewart and Lauren Young from DEPWS Flora and Fauna (in March 2022) to ensure that selected species and proposed methodologies are suitable for the study area and associated threatened species assessment.

4.1 Greater Bilby (*Macrotis lagotis*)

The Greater Bilby is listed as Vulnerable under the *TPWC Act* and *EPBC Act*. It is one of 20 mammals that the Australian Government has prioritised resource allocation to support the species' recovery effort. The Project area occurs at the eastern extent of the current Greater Bilby distribution and subsequently any occurrence of the (Vulnerable) species will be considered to be an important population (as defined in the EPBC Significant Impact Guidelines 1.1, (DCCEEW 2021). As such, the objective of this survey was to confirm if Greater Bilby currently occur (or have recently occurred) within the Project area, and to map the extent of current occupancy and suitable habitat (if applicable).

4.1.1 Ecology

The Greater Bilby is a rabbit-sized, omnivorous, burrowing marsupial. In the NT, the Greater Bilby occurs in a wide range of habitats – including stony uplands, lateritic areas, hummock grassland, sand-plains, mulga scrub and woodlands, drainage depressions and palaeo-drainage systems (Southgate 1987; Southgate 1990). Vegetation within these areas predominantly consists of spinifex shrublands and open woodlands. Typical habitat consists of sandy soils dominated by hummock grasslands predominantly of three species of spinifex – *Triodia basedowii*, *T. pungens* and *T. schinzii* (Pavey 2006). Surveys in the Tanami Desert indicate that spinifex-dominated laterite rises and drainage lines are occupied more frequently than sand plains and dune fields (Southgate et al. 2018; Southgate et al. 2005).

A mosaic of different post-fire ages is preferred (Southgate & Carthew 2007). Fire seems to maintain the sparse vegetation the species favours, and promotes ephemeral plants used as primary and secondary food sources (Southgate & Carthew 2006; Southgate & Carthew 2007; Johnson 1989). However, large-scale burns may restrict breeding, impede dispersal and reduce food options/availability (Southgate & Carthew 2006).

The species feeds on plant material (seeds and bulbs) and invertebrates such as beetles, termites and root-dwelling larvae (Pavey 2006; Southgate & Carthew 2006). Food is either excavated from the soil (referred to as diggings or scratchings to a depth of 250 mm), live captured on the surface, or seeds are eaten directly from the soil surface. In the Tanami Desert, seed and bulb plant foods are a major dietary component, in particular the seed of *Yakirra australiense* and the bulb of *Cyperus bulbosus* (Southgate & Carthew 2006). Other seed and bulb plants known to be foraged by Greater Bilby include *Scaevola parviflora*, *Calandrinia* spp., *Dactyloctenium radulans* and *Wurmbea deserticola* (Southgate & Carthew 2006). Invertebrates tend to be foraged when seed and bulb food plants become scarce (Southgate & Carthew 2006). Evidence of foraging for invertebrates is best observed by the presence of diggings, which are usually conspicuous and relatively numerous (Southgate et al. 2018). Diggings for root-dwelling larvae at the base of shrubs or forbs are unique to the Greater Bilby and are considered a key identification characteristic (Southgate et al. 2018). Plants that are known to be targeted by Greater Bilby for root-dwelling larvae (in the NT) include *Acacia hilliana*,

A. lysiphloia, *A. monticola*, *A. acradenia*, *A. melleodora*, *A. bivenosa*, *Senna notabilis* and *Indigofera georgei* (Southgate et al. 2018). These diggings can remain evident for months to years (Southgate 2017 pers. comm.); making surveys for occupancy or recent occupancy possible.

The Greater Bilby is nocturnal and shelters in deep burrows excavated in sand that are 2 to 3 metres long, and 100 to 150 mm in diameter, with a circular entrance. An individual may utilise over a dozen regularly-used burrows within its home range, and multiple burrows may be visited in a single night (Pavey 2006). Foraging distance from a burrow can range between 200 to 600 m (Johnson 1989). Greater Bilbies move over a wide area according to available food and vegetation cover conditions (associated with seasons and fires) (Southgate & Carthew 2006; Southgate & Carthew 2007; Southgate 1987; Johnson 1989), and the long-term seasonal home range may be large (up to hundreds of square kilometres) (Southgate 1987).

Predation is a major threat, with the Red Fox (*Vulpes vulpes*) and Feral Cat (*Felis catus*) being key predators (Abbott 2001; Pavey 2006; Southgate et al. 2007). Other threats include competition with Feral Rabbits (*Oryctolagus cuniculus*), pastoralism (Woinarski et al. 2014), and large scale fires (described above).

4.1.2 Methodology

The survey involved strategic searches for Greater Bilby sign (i.e. tracks, burrows, diggings, scats) using ground-based survey techniques. The survey area included the proposed disturbance areas within the Project area and a surrounding buffer area. Survey design is based on protocols developed by Southgate et al. (2018) and follows key elements of the Commonwealth survey guidelines for the species in terms of tracking and species detection in areas of suitable habitat (DSEWPaC 2011). Other general references used to inform survey design included Moseby et al. (2012) and Southgate et al. (2005).

Representative search transects within the survey area were either walked or driven slowly on an All-Terrain Vehicle (ATV). Additional effort was applied to habitats that are generally known to support, or be favourable for, Greater Bilbies (i.e. freshly burnt areas, laterite rises, patches of shrubs that support root-dwelling larvae such as *Acacia lysiphloia*).

When putative (i.e. suspected / potential) Greater Bilby sign was observed (such as a burrow/hole, large spoil heap, diggings), it was inspected and categorised based on criteria described in Table 4-1 using assessment protocols developed by Southgate et al. (2018) summarised in Table 4-2. If Greater Bilby sign was confirmed or highly likely at a site, a wider search was conducted to determine the extent of the activity. If an active burrow was identified, camera traps (including both Reconyx HyperFire 2 and Keep Guard IR) were set to capture footage of individuals using the burrows at the time of survey (2-day period only). Cameras were set to record three photographs per detection.

Table 4-1. Site categories used for the Greater Bilby survey

Site category	Criteria
Confirmed bilby	There is sufficient evidence that the sign is made by Greater Bilby (as per Table 4.2).
Likely bilby	There is strong evidence that the sign belongs to a Greater Bilby – such as a large round burrow with large characteristic spoil heap – however, there is no definitive sign present (i.e. scats, fresh tracks, RDL diggings – as described in Table 4.2).
Potential bilby	The sign has characteristics of Greater Bilby but there is not enough evidence to provide a definitive assessment (as per Table 4.2) (might be due to old, degraded sign).
Not bilby	There is clear evidence that sign was not Greater Bilby.

* RDL – Root-dwelling larvae; RDL vegetation are flora species that are known to support RDL.

Table 4-2. Protocol used to assess confidence of Greater Bilby sign

(Information presented in this table is adapted from Southgate et al. 2018)

Sign type and description	Recommended actions
Sign can be used to confirm presence of Greater Bilby	
Multiple diggings into roots of RDL vegetation Hole or diggings (usually less than 50cm in depth) under shrubs that support RDL. Direction or conical in shape with spoil evening distributed around the dig. Usually obvious and numerous. Can remain evident for months to years, depending on substrate and rainfall. Plants that are known to be targeted by Greater Bilby (in the NT) include <i>Acacia hilliana</i>, <i>A. lysiphloia</i>, <i>A. monticola</i>, <i>A. acradenia</i>, <i>A. melleodora</i>, <i>A. bivenosa</i>, <i>Senna notabilis</i> and <i>Indigofera georgei</i>. No other species in arid / semi-arid Australia is known to expose and rip open plant roots containing larvae.	- Identify plant species harbouring RDL, collect botanical specimen if uncertain for identification post field trip, and assess age of diggings. - For further confidence, search surrounding areas for scats, clear tracks and multiple diggings into roots of RDL vegetation.
Scats Typically in groups of 2 to 5 pellets and usually contain sand, plant and invertebrate material. They are firm, oblong-shaped, almost round in cross section, have a smooth coating, and rounded ends. Commonly found hidden within spoil of diggings; rarely found away from some form of digging activity. Can persist for several months. No other extant species in arid / semi-arid Australia produces scats with these characteristics.	- Collect several scats, store each set dry in separate paper bags or vials with silica gel beads and cotton wool; determine if juveniles are present (i.e. small pellets). - For further confidence, search surrounding areas for scats, clear tracks and multiple diggings into roots of RDL vegetation.
Clear tracks (generally limited to fresh tracks only) Bilbies move with a quadrupedal bounding overstep gait; with the front imprints staggered and the hind imprints mostly parallel. The presence of fresh and clear tracks that have three distinct parallel marks (representing toes) from front feet, and slender (narrow) hind foot imprints with indistinct side toes are necessary to confirm presence using track-based sign. It is not sufficient to rely on gait pattern alone.	- Record group width and length of several sets, assess if juveniles present, photograph with a scale; estimate age of tracks. - For further confidence, search surrounding areas for scats, clear tracks and multiple diggings into roots of RDL vegetation.
Sign can only be used to identify potential bilby presence / activity only	
Diggings other than for RDL These are similar to those described above for RDL, however they in the open targeting termites, spiders or bush onion bulbs. Several other taxa (including varanid lizards) can also produce similar diggings, as such presence cannot generally be confirmed solely on the detection of these type of diggings.	- Continue to search surrounding areas for scats, clear tracks and multiple diggings into roots of RDL vegetation. - Record age and characteristics of diggings (i.e. identify what diggings are into – termites, spider burrows, seed stores of ants etc.)
Burrow or burrows Burrows are round and may be single or multiple entrances. An apron of spoil of excavated sand is usually present. Several separate burrows are often found within a foraging area. Presence cannot generally be confirmed solely on the detection of a bilby-like burrow because other species can re-work inactive bilby burrows and make them appear active; as such, additional sign is often required to confirm presence.	- Continue to search surrounding areas for scats, clear tracks and multiple diggings into roots of RDL vegetation. - Record dimensions of burrow circumference, photograph with scale, describe presence of soil apron and age since last activity.
Unclear tracks If tracks do not have features as described above (i.e. only the gait pattern is visible), there is insufficient evidence to confirm that the track is made from Greater Bilby as there are several other taxa that can produce similar gait patterns – such as rabbits, mulgara and rodents / rats.	- Continue to search surrounding areas for scats, clear tracks and multiple diggings into roots of RDL vegetation. - Measure the length and width of several track groups, photograph with a scale. - Determine any other species responsible for tracks detected, estimate the age of tracks.

4.1.3 Survey conditions

Conditions were excellent for tracking, with sunny days experienced during the survey (i.e. good shadows for identifying tracks and other features in the sand) and no rainfall within the Project area in the week prior to survey (rain prior to surveys can cover up tracks and remove sign).

Fresh burrows and diggings (from a range of species) were highly conspicuous because excavated soil had a richer (red) colour in contrast to the sun-bleached paler surface soils. A range of fauna species could be reliably identified based on sign and tracks – ranging from small rodents and reptiles, to large mammals such as Camel. Refer to Appendix E for a full list of fauna species identified during the surveys.

The majority of the Project area has excellent visibility in terms of observing tracks and other fauna sign. The few patches of vegetation that did not burn in 2017 (which are mostly clustered around the exploration area) currently support dense shrubs (mostly a mix of alive and dead Turpentine) which were impenetrable for the ATV vehicles. Some search transects were walked through these dense patches; however, it was decided that bilby sign was unlikely in these dense patches – and more likely to be present in more open (and healthy) shrublands. As such, a lower survey effort was employed within densely vegetated, scrappy patches of shrubs.

4.1.4 Survey results

The survey resulted in approximately 150 km of search transects (refer to survey tracks in Figure 4-1), which included a mix of walked transects and ATV transects. This survey effort resulted in a detailed dataset for the proposed project components and immediate surrounds.

The survey confirmed Greater Bilby sign at two sites – GB1 and GB2 – and potential Greater Bilby sign at one site – GB3 (shown on Figure 4-1 and Figure 4-2; coordinates in Table 4-3; full sign dataset provided in Appendix C). The two confirmed sites are situated adjacent to the existing main access road, and are assumed to be associated with the same ‘cluster’ of individuals living in burrows identified at site GB1 (i.e. bilby can move up to 2km from burrow site). Site GB3 (potential sign only) is situated on the north-west corner of the proposed WD, also assumed to be associated with the same ‘cluster’.

No Greater Bilby sign was observed within the proposed decline box cut, mine camp, tailings dam and airstrip; or around the existing exploration camp.

Site GB1 covers a relatively large area of sign (indicative dimensions of 400 x 500 m). This site falls outside the proposed mine infrastructure; however, occurs immediately adjacent to the main access road. Site observations are summarised below:

- Habitat at site GB1 consists of a flat sandplain that supports an open Turpentine (*Acacia lysiphloia*) shrubland over Feathertop Spinifex (*Triodia schinzii*) and some patches of Woollybutt Grass (*Eragrostis eriopoda*), with scattered Dogwood trees (*Acacia sericophylla*) and Bloodwood (*Corymbia opaca*) (photographs in Figure 4-3; Figure 4-4). Other common shrub species include *A. stipuligera*, *A. adsurgens*, *A. ancistrocarpa* and *Croton arida*. This site is one of the few patches of vegetation (within the Project area) that was not burnt in the 2017 fires.
- Four active burrows are present:
 - o Burrow GB1-1 – single entrance burrow positioned on the windrow of the main access track under a dense cover of *Acacia ancistrocarpa* (see Figure 4-5).
 - o Burrow GB1-2 – single entrance burrow positioned on the windrow of the main access track under a dense cover of *Acacia ancistrocarpa* (see Figure 4-6).
 - o Burrow GB1-3 – single entrance burrow positioned amongst spinifex hummocks approximately 45 m from road edge (see Figure 4-7).
 - o Burrow GB1-4 – single entrance burrow positioned under a small patch of *Acacia stipuligera* approximately 165m from road edge (see Figure 4-8).
- Two old (inactive) burrows are present (GB1-5 and GB1-6), both in close proximity to the active burrows (photographs in Figure 4-9). These burrows likely collapsed within the past 2 years.

- Camera footage confirmed the bilby at burrows GB1-1, GB1-3 and GB-4 (selection of photographs provided in Appendix D). Fresh tracks and spoil were observed at GB1-2 (however camera trap set on this burrow malfunctioned during survey).
- Root diggings under Turpentine (*Acacia lysiphloia*) were abundant (see photograph in Figure 4-10). The majority of diggings were under small to medium-sized Turpentine. Root diggings under *Senna notabilis* were uncommon (these diggings often killed the Senna shrub).
- Some diggings in the open were observed (but were far less common than RDL diggings). These diggings likely targeted spider holes, or potentially shallow sub-surface seed stores made by ants.
- Bilby tracks and scats were observed (Figure 4-11). Based on track size, scat size (and camera footage) – it is likely that there are at least three bilbies currently present at this site (however, a systematic camera surveillance survey would be required to confirm actual numbers).
- Food sources observed:
 - o *Acacia lysiphloia* (Turpentine) – dominant species; RDL diggings common
 - o *Senna notabilis* (Cockroach Bush) – currently uncommon; old RDL diggings observed (rare)
 - o *Scaevola parviflora* – currently uncommon; bilby known to eat fruit from this species
 - o Small termite mounds and invertebrate holes (e.g. spiders).

Site GB2 occurs 500 m north-east of GB1 and is therefore likely associated with the same group/cluster of individuals. Site observations are summarised below:

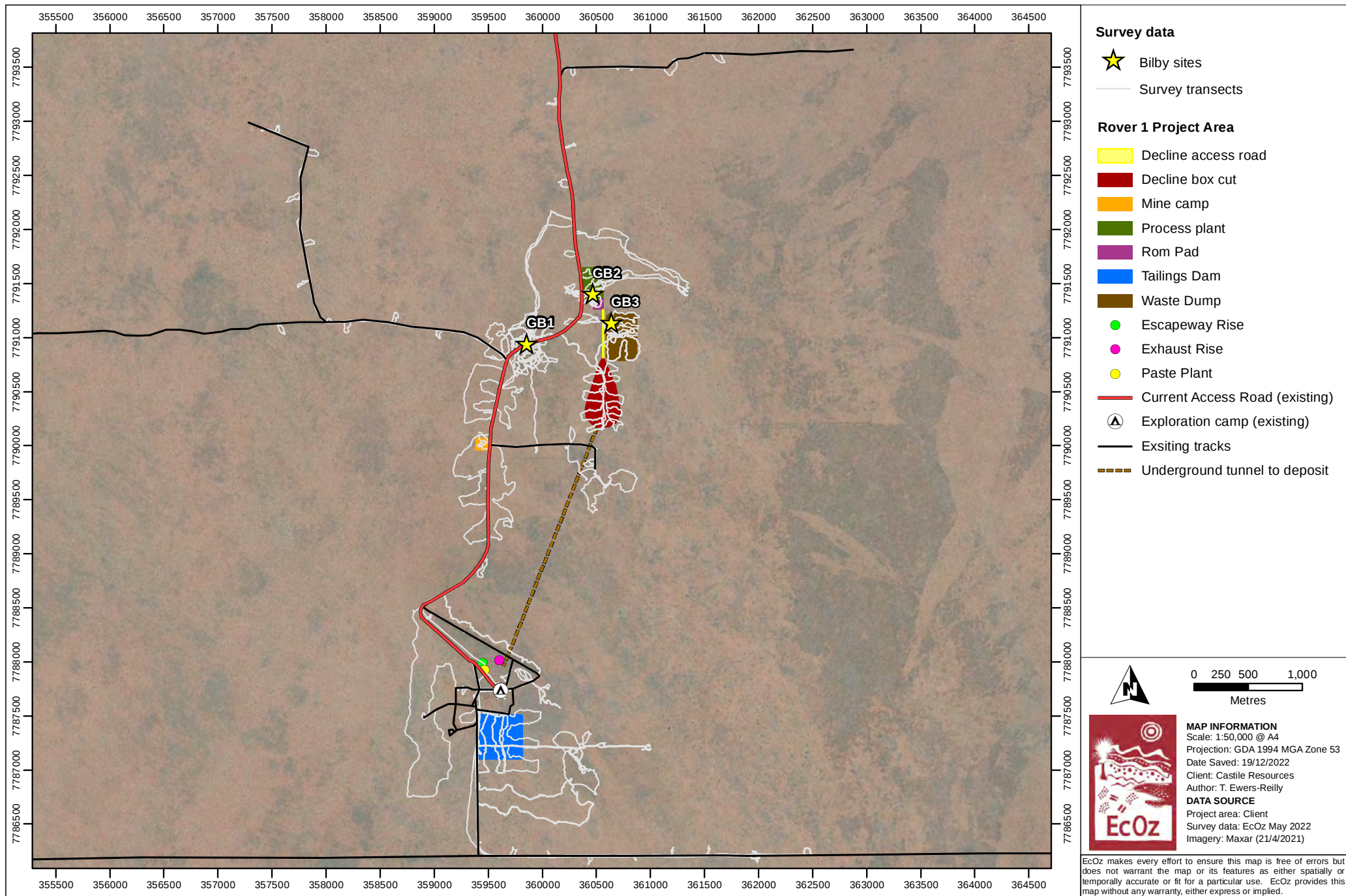
- Site GB2 is situated adjacent to the existing main access road and supports an open patch of *A. lysiphloia* (was not burnt in the 2017 fire) (see drone photograph in Figure 4-12).
- No burrows (active or inactive) were observed.
- Diggings and scats were scarce (only 2 observed).
- The majority of sign at this site was tracks assumed to be from one individual (based on similar size) foraging or transiting (size indicates female or young male). Tracks were followed to the north-east for approximately 500 m before they began to fade (and could not be reliably 'tracked') – which potentially indicates individual was transiting to another location. A review of satellite imagery indicates there are several large patches of shrubs 800 – 1000m north-east from GB2 that were patchily burnt in the 2017 fire (as shown in Figure 2-2). This mosaic burn pattern is often preferred by bilby (Southgate & Carthew 2007), and may be another location of bilby activity in the area.

Site GB3 was an old digging at the base of a small shrub (*Acacia lysiphloia*). This digging could not be confidently attributed to bilby – surveyors could not discount the possibility that the digging was from Sand Goanna (*Varanus gouldii*), a common species in the region).

It is likely that Greater Bilby are also present in the surrounding areas, particularly patches of *Acacia lysiphloia* shrubland that were only partially burnt (or not burnt) in the 2017 fire (as shown in Figure 2-2). Additional field survey would be required to validate this assumption.

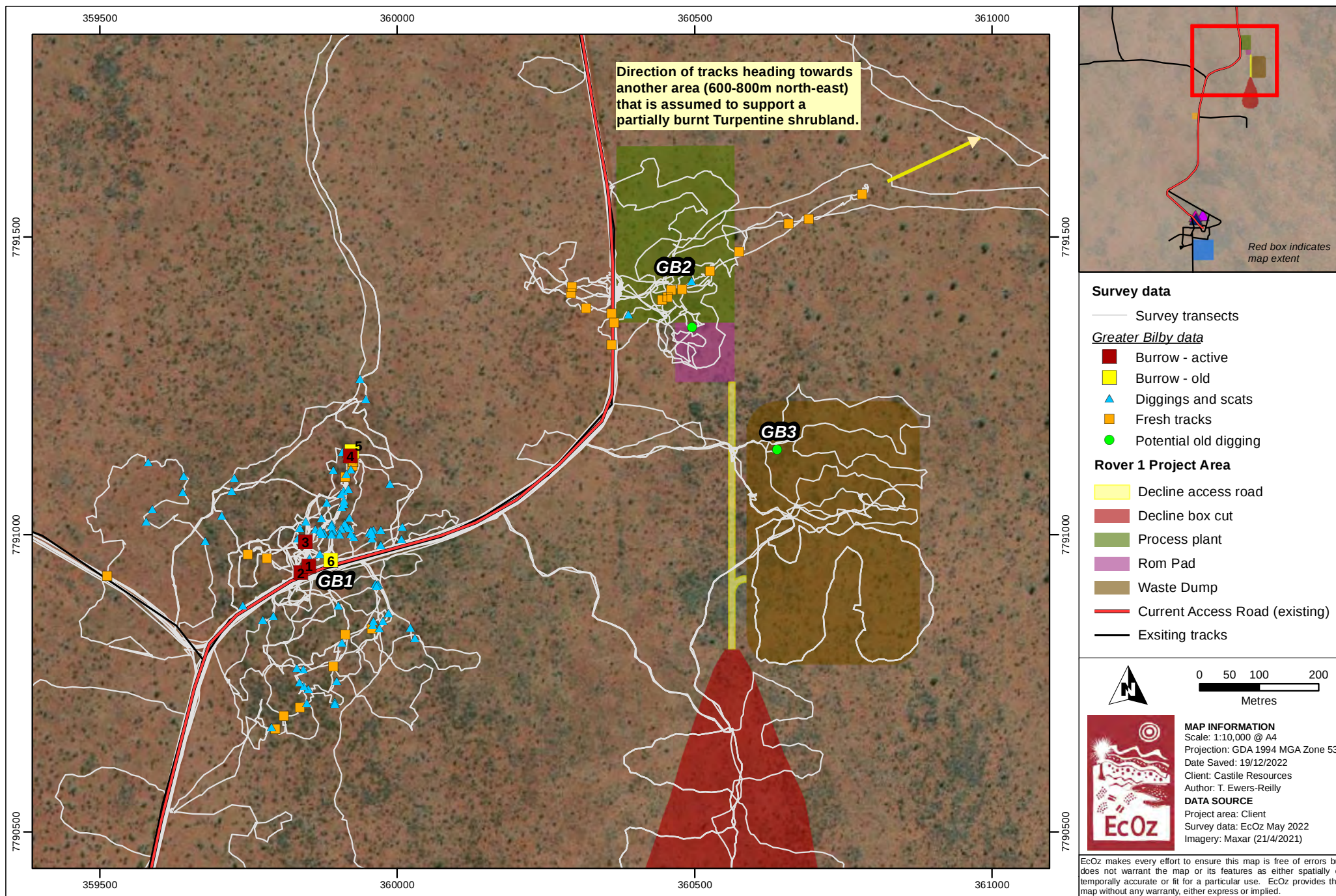
Table 4-3. Greater Bilby sites and burrow data

Site	Burrows	Comment	Easting	Northing	Zone
GB1	Burrow	Active, fresh tracks, scats and diggings	359921	7791132	Z53
	Burrow	Active, fresh tracks, scats and diggings	359852	7790947	Z53
	Burrow	Active, fresh tracks, scats and diggings	359846	7790988	Z53
	Burrow	Inactive, collapsed	359889	7790956	Z53
	Burrow	Inactive, collapsed	359925	7791140	Z53
	Burrow	Potentially active, tracks in area	359838	7790936	Z53
GB2	None observed	Tracks and diggings	360496	7791426	Z53
GB3	None observed	Old RDL diggings	360639	7791142	Z53



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Figure 4-1. Map of Greater Bilby survey effort and results, May 2022



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Figure 4-2. Map of Greater Bilby survey data at sites GB1, GB2 and GB3, May 2022



Figure 4-3. Photographs of vegetation where Greater Bilby sign was observed (site GB1)



Figure 4-4. Drone photograph showing open shrubland structure at Greater Bilby site GB1



Figure 4-5. Photographs of Greater Bilby burrow GB1-1



Figure 4-6. Photographs of Greater Bilby burrow GB1-2



Figure 4-7. Photograph of Greater Bilby burrow GB1-3



Figure 4-8. Photograph of Greater Bilby burrow GB1-4



Inactive burrow site GB1-5



Inactive burrow site GB1-6

Figure 4-9. Photographs of inactive (old) Greater Bilby burrows (sites GB1-5 and GB1-6)



RDL digging under *Acacia lysiphloia*



RDL digging under *Acacia lysiphloia*



RDL digging under *Senna notabilis*



Invertebrate digging



Scats



Invertebrate digging and fresh tail drag tracks



Invertebrate digging and fresh tail drag tracks



RDL digging under *Acacia lysiphloia*

Figure 4-10. Photographs of Greater Bilby diggings and scats at site GB1



Figure 4-11. Photographs of Greater Bilby tracks at sites GB1 and GB2



Figure 4-12. Drone photograph showing open shrubland structure at Greater Bilby site GB2

4.1.5 Habitat suitability

Despite the absence of sign from the majority of the proposed mine components, the entire Project area (i.e. all project components) is considered as suitable habitat for Greater Bilby. However, habitat quality is currently patchy potentially due to several large fires over the past two decades (fire has an important influence on the availability of plant species that provide key food resources for bilby – such as *Acacia lysiphloia*, *Senna notabilis*, *Scaevola parviflora*, *Yakirra australiensis* – which are all known to occur in the area).

The Project area and surrounding region currently supports several partially burnt patches of *Acacia lysiphloia* that are considered to meet essential habitat requirements for bilby. Therefore, although it is possible that Greater Bilby could utilise all areas within the Project area, it is considered more likely that current occurrence would be mostly limited to partially burnt *Acacia lysiphloia* shrublands (like those observed at sites GB1, GB2 and GB3), because this habitat provides a permanent food source (i.e. RDL) when fire ephemeral food sources are not available.

The spinifex sandplains that cover the Project area are widespread and common in the region, and do not provide unique or especial habitat value in the context of Greater Bilby occupancy in the Tanami bioregion (such as palaeo-drainage channels, lateritic rises). However, as discussed above, preferred fire regimes for Greater Bilby may be a limiting factor in terms of habitat quality across the region, because bilbies are known to prefer small-scale mosaic burns (Southgate & Carthew 2007) rather than the large-scale burns (which commonly occur across the region).

Feral Cat tracks were observed at several sites during the survey (including the bilby sites GB1 and GB2) and are assumed to be widespread in the general area. Feral Cats are major predator species to bilby – in particular, young and females. Dingo were also present and can prey on bilbies (but are also thought to suppress cat numbers). Nonetheless, predation pressure by cats and dingo has likely had an adverse impact on Greater Bilby in this area.

The Project area is not situated on a pastoral station – so related impacts from that land use are not apparent. Camel occupy the area (current low density based on tracks); however, it is unlikely that this species would significantly degrade habitat quality for Greater Bilby based on current numbers / population in area.

4.2 Low likelihood threatened species

Field surveys did not detect any evidence of threatened species (or suitable habitat) that were considered to have a low likelihood of occurrence at the desktop review (see explanations in Table 4-4). As such, field observation confirm that it is unlikely that these species utilise habitat within the Project area.

Table 4-4. Field validation of threatened species with a low likelihood of occurrence

Species	Assessment
Great Desert Skink <i>Liopholis kintorei</i>	- The survey did not observe any suspected burrows (or other sign) from this species, despite numerous ground transects conducted for targeted Greater Bilby surveys (it is noted that well established burrows are high conspicuous and would have been observed by surveyors – who are familiar with the burrows of this species). - Although this species occurs in spinifex sandplains, large-scale fires in the Project area have likely reduced habitat quality for this species - There are no known records (including historic) in the region. There is no indication that the species current occurs in the area.
Grey Falcon <i>Falco hypoleucos</i>	- The survey confirmed that suitable nesting habitat is not present within the Project area or surrounds (i.e. tall trees on watercourses or telecommunication towers). - The absence of water sources and hollow-bearing trees within the Project area indicates the potential for high numbers of flocking birds (such as Budgerigar and Zebra Finch) would be low – and therefore it is unlikely that Grey Falcon would be attracted to this area specifically for foraging potential. - If present, it would only be an individual foraging within or transiting through the Project area.
Night Parrot <i>Pezoporus occidentalis</i>	- The Project area supports Feathertop Spinifex (<i>Triodia schinzi</i>) dominated sandplain habitat which is generally not considered to be nesting or feeding habitat for this species. - Furthermore, vegetation within the Project area has burnt at least twice in the past 2 decades – which has likely resulted in habitat becoming unsuitable for the species (particularly for nesting / roosting purposes). - In this region (Tennant Creek), Night Parrot would more likely inhabit rocky hills and rises that support patches of Bull Spinifex (<i>Triodia longiceps</i>) that have not burnt for at least a few decades. Habitat such as this is not proximate to the Project area.
Painted Honeyeater <i>Grantiella picta</i>	- Inherent risk to this species from the Project is very low because the species is not known to breed within the NT (breeding is restricted to the inland slopes of south-eastern Australia); and the current survey has indicated that potential food resources are scarce within the Project area (i.e. Mistletoe). - If present, this species would only be expected to be an irregular visitor to the region and would only occur in the Project area if fruiting Mistletoe is present (which is only expected to occur in low densities due to sparse nature of <i>Corymbia</i> trees that would bear Mistletoe).
Princess Parrot <i>Polytelis alexandrae</i>	- The survey confirmed that suitable nesting habitat is not present within the Project area or surrounds (i.e. large hollow-bearing trees including Marble Gum, River Red Gum and occasionally Desert Oak). The only tree species present within the project area are Bloodwood (<i>Corymbia opaca</i>) and Ghost Gum (<i>Corymbia aparrerinja</i>). These species are not known to be used for nesting nor do they typically support suitable tree hollows. - The species is nomadic. If ever present, it would only be as fly-over dispersal individuals during boom periods.
Red Goshawk <i>Erythrorhynchus radiatus</i>	- The survey confirmed that suitable nesting habitat is not present within the Project area or surrounds (i.e. large trees near watercourses – Aumann and Baker-Gabb 1991). - The few records from central Australia are dispersive juveniles or seasonal migrants (Garnett et al. 2021).
Yellow-spotted Monitor <i>Varanus panoptes</i>	- The survey confirmed that suitable habitat for this species does not occur within the Project area. - If present in the region, it would most likely be encountered in alluvial plains, black soil plains or floodplains – all of which are not within the Project area.

4.3 General flora and fauna data

General flora and fauna data were collected during land type assessment (described in Section 3) and targeted Greater Bilby survey (described in Section 4.1). Additional survey methods included spotlighting and acoustic recording (for birds and bats) – which were conducted opportunistically by the surveyors.

A total of 79 flora species were recorded during the survey (species list provided in Appendix F). No species of conservation significance were identified (i.e. threatened, near threatened or data-deficient species). Three introduced flora species (weeds) were recorded – Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*) and Spiked Malvastrum (*Malvastrum americanum*) – all found around the edges of the existing exploration camp and road edges (weeds are discussed in Chapter 5). The remaining species are listed as Least Concern under the *TPWC Act*.

A total of 73 native fauna species were recorded during the survey – 17 reptiles, 45 birds and 11 mammals (species list provided in Appendix E). Data is summarised below:

- One threatened species was recorded – the Greater Bilby (listed as Vulnerable under the *EPBC Act* and *TPWC Act*) – described in Section 4.1.
- Four Near Threatened (*TPWC* listed) fauna species were recorded:
 - o Woma Python (*Aspidites ramsayi*) – uncommon; observed crossing main access road just south of Kunayungku Outstation (see Figure 4-13)
 - o Northern Nailtail Wallaby (*Onychogalea unguifera*) – uncommon; suspected tracks only
 - o Australian Bustard (*Ardeotis australis*) – uncommon; tracks and carcass; sandplain
 - o Bush-stone Curlew (*Burhinus grallarius*) – uncommon; tracks; sandplain
 - o Pictorella Mannikin (*Heteromunia pectoralis*) – uncommon; observed at camp, likely associated with water source.
- Two feral animals were recorded:
 - o Cat (*Felis catus*) – relatively common; tracks observed at several sites within Project area
 - o Camel (*Camelus dromedarius*) – relatively common; tracks and scats observed at several sites within Project area. Sighted once near proposed decline box cut.
- The remaining species are listed as Least Concern under the *TPWC Act*.



Figure 4-13. Photograph of Woma Python observed during the survey

5 WEED SURVEY

A weed survey of Project area was undertaken in conjunction with land type and targeted Greater Bilby surveys. The survey was conducted by Tom Reilly (Senior Ecologist, EcOz) who is very familiar with weed species in the region.

When a weed was observed, the following information was recorded – coordinate, species, seeding status, habitat/landform, photographs (representative only) and infestation level based on the following categories:

- Very low – isolated plant to a few tussocks
- Low – scattered tussocks to small patch (<10 m²)
- Moderate – medium sized patch (>10 m²)
- High – large or relatively large infestation (>50 m²).

The survey identified three weed species – Buffel Grass (*Cenchrus ciliaris*), Birdwood Grass (*Cenchrus setiger*) and Spiked Malvastrum (*Malvastrum americanum*) – mostly concentrated at the existing Rover exploration camp, with a few isolated occurrences on the edge of existing tracks. No weeds were observed in undisturbed areas, and the majority of the exploration tracks and drill pads did not support weeds at the time of survey. No weed species declared under the *Weed Management Act* were observed during the survey.

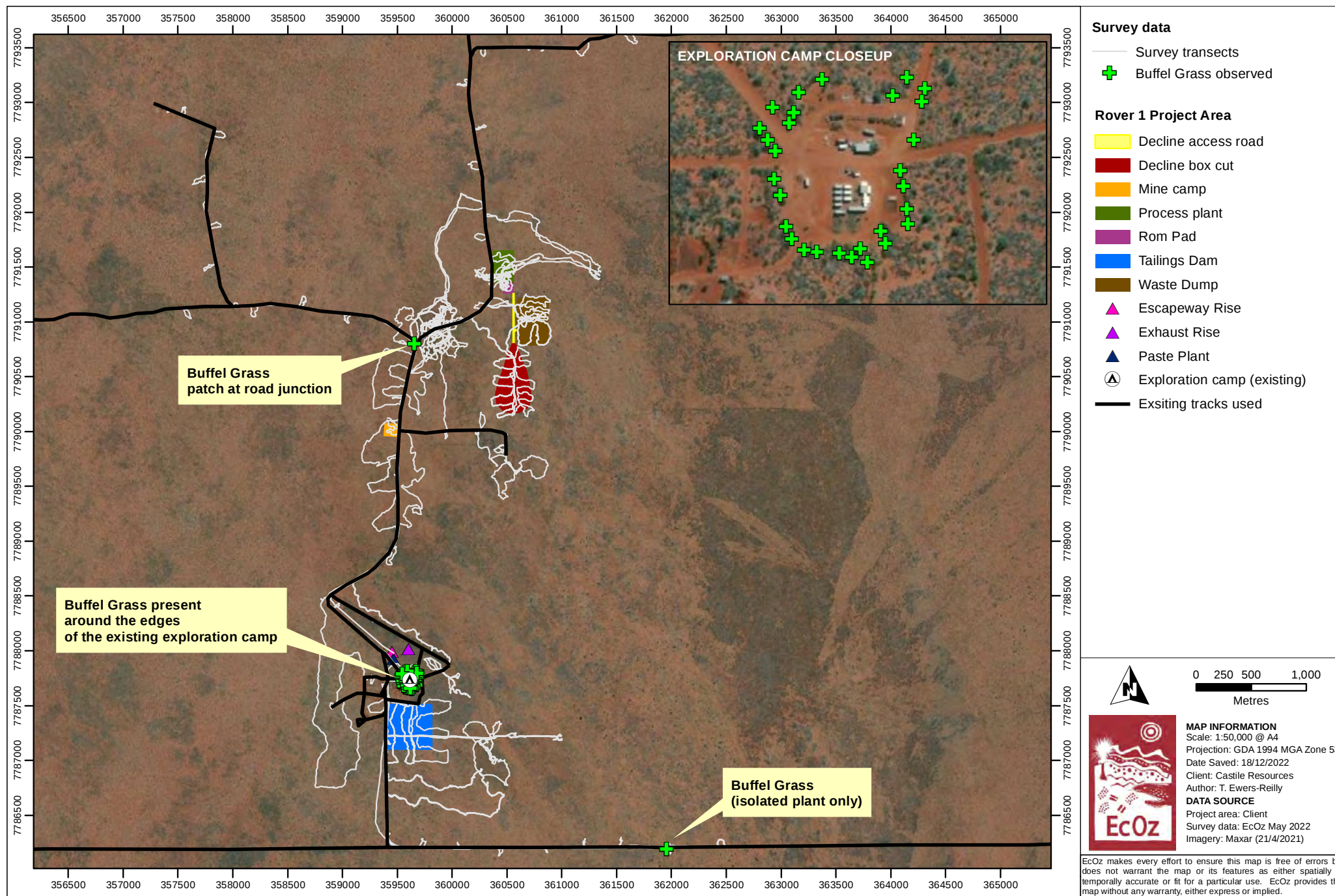
Buffel Grass is a Category 3 weed of concern in the *Tennant Creek Regional Weeds Strategy 2021-2026*. This species is present around the edge of the existing exploration camp and access roads (example photograph in Figure 5-1; extent shown on Figure 5-2). Infestation level is considered to be high and has likely been present for several years. The extent of the infestation it is currently limited to disturbed areas around the edge of the camp. A high amount of seed is likely present in the soil seed bank in this area and, as such, presents a risk of weed spread to weed-free areas if contaminated machinery comes into contact with seed.

Only one other Buffel Grass infestation was observed during the survey – on the edge of the main access road (shown on Figure 5-2). Infestation level is moderate and is also a seed risk location.

Birdwood Grass and Spiked Malvastrum were only present at very low numbers and were associated with the Buffel Grass infestation at the exploration camp described above. These species are not currently listed as weeds of concern in the *Tennant Creek Regional Weeds Strategy 2021-2026*.



Figure 5-1. Photograph of Buffel Grass infestation established at the Rover 1 exploration camp



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Figure 5-2. Map of Rover 1 weed survey effort and results, May 2022

6 RECOMMENDATIONS

The survey identified the presence of an EPBC threatened species, the Greater Bilby, and therefore consideration should be given to making a referral under both the *NT EP Act* and the *EPBC Act*. The Project area is situated close to the eastern edge of the current Greater Bilby distribution, so the recorded occurrence will be classed as an 'important population' under the EPBC Significant Impact Guidelines. Further assessment is required to consider options to avoid and mitigate impacts to the species, and to determine the significance of residual impacts as part of the future environmental assessment and approvals process.

As part of approvals, it is expected that the Project will require a Greater Bilby Management Plan that describes mitigation measures that will be implemented to minimise significant impact to the species, such as:

- Pre-clearance survey(s). It is likely that pre-clearance survey(s) will be required prior to any land disturbance / vegetation clearing (for all proposed Project components). The purpose of these survey(s) is to record active burrows so that mitigation strategies can be implemented (as per conditions / approvals to be sought during the impact assessment phase).
- Road upgrade risk. Road upgrades and maintenance activities need to consider potential impacts to Greater Bilby, including windrows and stormwater drainages (burrows were observed in the windrows at site GB1).
- Traffic management. Speed restrictions and staff awareness for driving at night time (bilbies are active at night; the current survey confirmed activity on and in close proximity to roads).
- Predator management. Implement strategies to minimise chance of increasing Feral Cat numbers within Project area (or other predator species – such as dingo / fox). Such as waste management to avoid attracting scavengers / predators to the Project area.
- Fire / habitat management. Consider fire management in surrounding areas to create mosaic burn patterns preferred by Greater Bilby. This could be undertaken away from proposed mine infrastructure to promote better quality habitat and attract bilby away from mine site. This would benefit local population, and may attract bilbies away from proposed disturbance area and therefore reduce potential risk of impact. Fire management should be developed by an experienced fire manager with knowledge on Greater Bilby land management, and any controlled / prescribed burns need to be conducted by experienced personnel. The Central Land Council (CLC) (Tennant Creek Rangers) need to be involved / consulted on any fire management as the Project area is located within the Karantijpa South Aboriginal Land Trust.

It is also essential that mining activities minimise chance of causing an uncontrolled fire in surrounding bushland.

- Additional survey. It is likely that additional Greater Bilby field data will be required to inform the risk assessment of this Project, with the objective to better understand local activity / occurrence. A systematic aerial-based survey is recommended to cover an area approximately 3 to 4 km surrounding the Project area. The survey would include ground-checks to confirm putative sign observed during aerial search transects, and 2 ha track-plot surveys in areas of preferred habitat (i.e. Turpentine open shrublands, freshly burnt areas if present, or other areas of notable habitat).

The following recommendations should also be considered to minimise impacts to general ecological / biodiversity aspects:

- Fire management. Project activities should not result in bushfires in surrounding bushland. This could have adverse impacts on biodiversity, including the Greater Bilby known to occur in the area (as described above).
- Habitat trees. Where possible, minimise clearance of large trees (>10m height) – in particular large Ghost Gum (*Corymbia aparrerinja*) and Desert Bloodwood (*Corymbia opaca*). These are not

specially protected species within the Project area, however large trees can have local biodiversity and/or Aboriginal significance.

- Weed management. The Project area currently has a low level of weed infestation with no known records of declared species (under the *Weed Management Act*). Buffel Grass (*Cenchrus ciliaris*) was the only species of concern records – with infestations recorded at the existing exploration camp and a road junction on the main access track. As such, the following is recommended:
 - o Control existing Buffel Grass infestations (this will involve herbicide treatment when grass is green / growth phase – seek advice for treatment method).
 - o Minimise potential for spreading Buffel Grass – as the majority of the Project area is currently weed free. This will involve avoiding contact with existing vegetation and/or applying suitable wash-down (or equivalent) protocols.
 - o Annual weed monitoring, and weed control, post summer rainfall should be conducted.
 - o Vehicles, machinery and equipment coming to site must have weed hygiene certificate to minimise chance of weed introduction to site.

7 REFERENCES

- Aumann, T. and Baker-Gabb, D.J. (1991). *The ecology and status of the Red Goshawk in northern Australia*. (Royal Australasian Ornithologists Union: Melbourne.)
- Australian Wildlife Conservancy (AWC) (2012). *Wildlife Matters*. Summer 2012/13. Subiaco East: Australian Wildlife Conservancy. <http://www.australianwildlife.org/media/27964/AWC-Wildlife-Matters-Summer-2012-2013.pdf> [Accessed 2022].
- Baker, B., Price, O., Woinarski, J., Gold, S., Connors, G., Fisher, A. & Hempel, C. (2005). *Northern Territory Bioregions – Assessment of Key Biodiversity Values and Threat*. Palmerston: Department of Natural Resources, Environment and the Arts, Northern Territory Government.
- Brock J. (1993). *Native Plants of Northern Australia*, CSIRO Publishing.
- Commonwealth of Australia (2022). *Species Profile Threats Database*. *Liopholis kintorei* — Great Desert Skink, Tjakura, Warrarna, Mulyamiji. Department of Agriculture, Water and the Environment, Australian Government. [Liopholis kintorei — Great Desert Skink, Tjakura, Warrarna, Mulyamiji \(environment.gov.au\)](https://www.environment.gov.au/species/profiles/liopholis-kintorei) [Accessed 16 June 2022].
- Commonwealth of Australia (2022). *Species Profile Threats Database*. *Macrotis lagotis* — Greater Bilby. Department of Agriculture, Water and the Environment, Australian Government. [Macrotis lagotis — Greater Bilby \(environment.gov.au\)](https://www.environment.gov.au/species/profiles/macrotis-lagotis) [Accessed 16 Jun 2022].
- Christian, C. S. and Stewart, G. A. (1968). *Aerial surveys and integrated studies – Methodology of integrated surveys*. In: Toulouse Conference. Toulouse: UNESCO. <http://unesdoc.unesco.org/images/0006/000674/067440mo.pdf> [Accessed 2022].
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2021). *Significant Impact Guidelines 1.1, Matters of National Environmental Significance*. *Environment Protection and Biodiversity Conservation Act 1999*, Australian Government. <https://www.dcceew.gov.au/environment/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance>. [Accessed 2022].
- Department of Environment and Natural Resources (DENR) (2018a). *Sensitive Vegetation in the Northern Territory: Riparian Vegetation*. https://nt.gov.au/_data/assets/pdf_file/0014/204206/sensitive-vegetation-riparian-english.pdf [Accessed 2022].
- Department of Environment and Natural Resources (DENR) (2018b). *Sensitive Vegetation in the Northern Territory: Monsoon Rainforest*. https://nt.gov.au/_data/assets/pdf_file/0013/204205/sensitive-vegetation-monsoon-rainforest-english.pdf [Accessed 2022].
- Department of Environment and Natural Resources (DENR) (2018c). *Sensitive Vegetation in the Northern Territory: Mangrove Forest*. https://nt.gov.au/_data/assets/pdf_file/0012/204204/sensitive-vegetation-mangrove-forest-english.pdf [Accessed 2022].
- Department of Environment and Natural Resources (DENR) (2018d). *Sensitive Vegetation in the Northern Territory: Sandsheet Heath*. https://nt.gov.au/_data/assets/pdf_file/0012/204204/sensitive-vegetation-sandsheet-heath-english.pdf [Accessed 2022].
- Department of Environment, Parks and Water Security (2021). *Threatened Species of the Northern Territory – Greater Bilby Macrotis lagotis*. [online] Available at: https://nt.gov.au/_data/assets/pdf_file/0017/205514/greater-bilby.pdf [Accessed 2022]
- Department of Conservation and Land Management (DCLM) (2002). *A Biodiversity Audit of Western Australia's 53 Biogeographical Subregions in 2002*. https://www.dpaw.wa.gov.au/images/documents/about/science/projects/waaudit/tanami_desert01_p624-628.pdf [Accessed 2022]
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPac) (2011a). *Invasive Species Factsheet: Feral European Rabbit (Oryctolagus Cuniculus)*. Canberra. <https://www.environment.gov.au/system/files/resources/7ba1c152-7eba-4dc0-a635-2a2c17bcd794/files/rabbit.pdf> [Accessed 2022].
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPac) (2011b). *Invasive Species Factsheet: Feral Horse (Equus caballus) and Feral Donkey (Equus asinus)*. Canberra. <https://www.environment.gov.au/system/files/resources/b32a088c-cd31-4b24-8a7c-70e1880508b5/files/feral-horse.pdf> [Accessed 2022].
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPac) (2011c). *Invasive Species Fact Sheet: The Feral Pig (Sus scrofa)*, Canberra. <https://www.environment.gov.au/biodiversity/invasive-species/publications/factsheet-feral-pig-susscrofa> [Accessed 2022]
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPac) (2011d). *Factsheet: European red fox (Vulpes vulpes)*. Canberra. <https://www.environment.gov.au/system/files/resources/1910ab1d-a019-4ece-aa98-1085e6848271/files/european-red-fox.pdf> [Accessed 2022].
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPac) (2010). *Camel Fact sheet*. <http://155.187.2.69/biodiversity/invasive/publications/camel-factsheet.html> [Accessed 2022],

- Department of the Environment (DoE) (2009). *Strategy for Australia's National Reserve System 2009- 2030*.
<https://www.environment.gov.au/system/files/resources/643fb071-77c0-49e4-ab2f-220733beb30d/files/nrsstrat.pdf> [Accessed 2022].
- Department of the Environment, Parks and Water Security (DEPWS) (2021). Northern Territory Government *Tennant Creek Regional Weeds Strategy 2021-2026*. https://depws.nt.gov.au/_data/assets/pdf_file/0006/258099/tennant-creek-regional-weeds-strategy.pdf [Accessed 17 June 2022].
- Department of Land Resource Management (DLRM) (2016). *Feral Animals in the Northern Territory: Feral Cattle*.
<https://nt.gov.au/environment/animals/feral-animals/feral-cattle> [Accessed 2022].
- Department of the Environment, Parks and Water Security (DEPWS) (2021). *Land Clearing Guidelines*. Darwin, Northern Territory (Version 1.3).
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2010). *Fact sheet: The Cane Toad (Bufo marinus)*.
<https://www.environment.gov.au/biodiversity/invasivespecies/publications/factsheet-cane-toad-bufo-marinus> [Accessed 2022]
- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2009). *Assessment of Australia's Terrestrial Biodiversity 2008*. Canberra: Commonwealth of Australia. <https://www.environment.gov.au/system/files/resources/e9f0d376-78eb-45cc-9359-797c6b0f72ff/files/terrestrial-assessment.pdf> [Accessed 2022].
- Duguid, A., Barnetson, J., Clifford, B., Pavey, C., Albrecht, D., Risler, J. and McNellie, M. (2005). *Wetlands in the arid Northern Territory*, a report to the Australian Government Department of the Environment and Heritage on the inventory and significance of wetlands in the arid NT, Northern Territory Government Department of Natural Resources, Environment and the Arts, Alice Springs.
- Eamus, D., Froend R., Loomes, R., Hose, G. and Murray, B. (2006). A functional methodology for determining the groundwater regime needed to maintain the health of groundwater-dependent vegetation. *Australian Journal of Botany*, Vol. 54, pp. 97-114.
- Ecologia Environmental Consultants (1999). *Babylon / Area 1 Biological Assessment Survey*. Prepared for Normandy Tennant Creek Pty Ltd by Ecologia Environmental Consultants, October 1999.
- EcOz Environmental Consultants (2012). *Flora and Fauna Assessment, Rover 1 Exploration Decline Project*. Prepared for Westgold Resources Limited by EcOz Environmental Consultants.
- Fisher, A., Baker, B. and Woinarski, J. (2002). *Biodiversity Audit – bioregional case study – Mitchell Grass Downs, Northern Territory*. Darwin: Parks and Wildlife Commission of the Northern Territory.
- Garnett ST and Baker BG (eds) (2021) *The Action Plan for Australian Birds 2020*. CSIRO Publishing.
- Harrison, L., McGuire, L., Ward, S. Fisher, A., Pavey, C., Fegan, M. and Lynch, B. (2009). *An inventory of sites of international and national significance for biodiversity values in the Northern Territory*. Department of Natural Resources, Environment, the Arts and Sport, Darwin, NT.
- Invasive Animals Cooperative Research Council (IACRC) (2015). *Feral Horse*. PetSmart Connect. <http://www.pestsmart.org.au/pest-animal-species/horse/> [Accessed 2022].
- Jessop P.J. and King, D. (1997). *The Land Resources of New Crown Station*, NTG Technical Report No. TM96/18.
- Liddle D.T., Harkness P., Westaway J., Lewis D.L. and Cowie I.D. (2013). *Vegetation communities and plant biodiversity values of the seasonally saturated lands of the Howard Sand Plains Site of Conservation Significance in the Northern Territory of Australia*, Northern Territory Department of Land Resource Management.
- McKay, L. (2017). *A Guide to the Wildlife and Protected Areas of the Top End*, The Environment Centre NT, Darwin.
- Natural Resource Management Ministerial Council (NRMCC) (2010). *National Feral Camel Action Plan: A national strategy for the management of feral camels in Australia*. [pdf] Commonwealth of Australia: Natural Resource Management Ministerial Council. <https://www.environment.gov.au/system/files/resources/2060c7a8-088f-415d-94c8-5d0d657614e8/files/feral-camel-action-plan.pdf> [Accessed 2022].
- NSW National Parks and Wildlife Service (NSW) (2003). *The Bioregions of New South Wales: their biodiversity, conservation and history*. NSW National Parks and Wildlife Service, Hurstville.
- Pavey, C. (2006). National Recovery Plan for the Greater Bilby *Macrotis lagotis*. Northern Territory Department of Natural Resources, Environment and the Arts. Available from: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-greater-bilby-macrotis-lagotis>.
- Phillips, B.L., Brown, G.P., and Shine, R. (2003), Assessing the potential impact of cane toads *Bufo marinus* on Australian snakes, *Conservation Biology*, 16(6), pp. 1738-1747.
- Price, O. and Baker, B. (2007). Fire regimes and their correlates in the Darwin region of northern Australia, *Pacific Conservation Biology*, Vol 13: 177-88.

- Russell-Smith, J. and Whitehead, P.J. (2015). Reimagining fire management if fire-prone northern Australia. In Murphy, B.P., Edwards, A.C., Meyer, M. and Russell-Smith, J. (eds), *Carbon Accounting and Savanna Fire Management*, CSIRO, Clayton South, Victoria.
- Russell-Smith, J. (1991). Classification, species richness, and environmental relations of monsoon rainforest vegetation in the Northern Territory, Australia. *Journal of Vegetation Science*, 2, pp. 259–78.
- Schoenjahn, J. 2013. A hot environment and one type of prey: investigating why the Grey Falcon (*Falco hypoleucos*) is Australia's rarest falcon. *Emu* 113: 19–25.
- Ward, S., Woinarski, J., Griffiths, T., McKay, L. (2012). *Threatened Species of the Northern Territory – Yellow-Spotted Monitor, Northern Sand Goanna, Floodplain Monitor* *Varanus panoptes*. https://nt.gov.au/_data/assets/pdf_file/0006/206466/floodplain-monitor.pdf [Accessed 2022].
- Ward, S. (2012). *Threatened Species of the Northern Territory – Grey Falcon* *Falco hypoleucos*. https://nt.gov.au/_data/assets/pdf_file/0020/206354/grey-falcon.pdf [Accessed 2022].
- West, P. (2008). *Assessing Invasive Animals in Australia - National Land & Water Resources Audit*. PetSmart Connect. <http://www.pestsmart.org.au/assessing-invasive-animals-in-australia-2008/> [Accessed 2022].
- Southgate, R. & Carthew, S.M. (2006). Diet of the bilby (*Macrotis lagotis*) in relation to substrate, fire and rainfall characteristics in the Tanami Desert. *Wildlife Research*, Vol. 33, pp. 507 – 519.
- Southgate, R. (1987). *Conservation of the Bilby, Report to World Wildlife Fund*. Alice Springs: Conservation Commission of the Northern Territory. Stace, H.C.T. and CSIRO & International Society
- Southgate, R. (1990). Habitat and diet of the greater bilby *Macrotis lagotis* Reid (Marsupialia: Peramelidae). In: J.H. Seebeck, P.R. Brown, R.L. Wallis, C.M. Kemper (eds), *Bandicoots and bilbies*. Sydney: Surry Beatty & Sons, pp. 303-309.
- Southgate, R. and Carthew, S. (2007). Post-fire ephemerals and spinifex-fuelled fires: a decision model for bilby habitat management in the Tanami Desert, Australia. *International Journal of Wildland Fire*, Vol. 16, pp 741 – 754.
- Southgate, R., Dziminski, M., Paltridge, R., Schubert, A., and Gaikhorst, G. (2018). Verifying bilby presenc and the systematic sampling of wild populations using sign-based protocols – with notes on aerial and ground survey techniques and asserting absence. *Australian Mammalogy* 41(1), pp. 27-38. Available from: <https://doi.org/10.1071/AM17028>
- Southgate, R., Paltridge, R., Masters, P. and Nano, T. (2005). An evaluation of transect, plot and aerial survey techniques to monitor the spatial pattern and status of the bilby (*Macrotis lagotis*) in the Tanami Desert. *Wildlife Research*, Vol. 32, pg 43-52, CSIRO Publishing.
- Southgate, S., Paltridge, R., Masters, P. and Carthew, S. (2007). Bilby distribution and fire: A test of alternative models of habitat suitability in the Tanami Desert, Australia. *Ecography* 30(6), pp. 759-776.
- VDM Consulting EcOz (2011). *Flora & Fauna Desktop Review and Survey Report, Rover 1 Project*. Prepared for Westgold Resources Limited by VDM Consulting / EcOz April 2011.
- White, M., Albrecht, D., Duguid, A., Latz, P., and Hamilton, M. (2000). Plant species and sites of botanical significance in the southern bioregions of the Northern Territory; Volume 2: significant sites. A report to the Australian Heritage Commission from the Arid Lands Environment Centre. Alice Springs, Northern Territory of Australia.
- Wightman, G. (2006). *Mangroves of the Northern Territory, Australia Identification and Traditional Use*. Northern Territory Botanical Bulletin No. 31. Department of Natural Resources, Environment and The Arts and Greening Australia NT, Darwin.
- Woinarski, J., Burbidge, A., and Harrison, P. (2014). *The Action Plan for Australian Mammals 2012*. CSIRO Publishing, Canberra.

APPENDIX A PROTECT MATTERS SEARCH TOOL (PMST) REPORT



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: 15-Jun-2022

[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:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	10
Listed Migratory Species:	10

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	14
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:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species

[Resource Information]

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			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythroriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In feature area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	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 feature area
MAMMAL			
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petrogale lateralis centralis Warru, Central Australian Rock-wallaby [90831]	Vulnerable	Species or species habitat may occur within area	In feature area

REPTILE			
Liopholis kintorei Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat may 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			
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area	In feature area
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 feature area

Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may 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 may 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
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may 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 likely to occur within area overfly marine area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area	In feature area
Hirundo rustica Barn Swallow [662]		Species or species habitat may 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 feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may 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
Southern Tanami	Indigenous Protected Area	NT	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
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 are 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

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

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

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
- 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](#)

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Please feel free to provide feedback via the [Contact Us](#) page.

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APPENDIX B THREATENED SPECIES 'LIKELIHOOD OF OCCURRENCE' ASSESSMENT

This appendix outlines the procedure and results of the desktop threatened species 'likelihood of occurrence' assessment conducted for this report. The purpose of this assessment is to identify those species that require further assessment as they may be impacted by the project, and those that can be reasonably excluded from further consideration because they are unlikely to occur within the Project area.

The assessment was undertaken using available desktop information, and targeted field and/or assessment will occur for species considered to potentially occur within the Project area.

This assessment focuses on species that are listed as Vulnerable, Endangered or Critically Endangered under either the *Territory Parks and Wildlife Conservation Act (TPWC Act)* or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*.

The following procedure was used to determine which threatened species have the potential to occur in the region of the study area:

- Species records from the latest version of the [NT Atlas](#) were clipped to the Tanami bioregion. Bioregions give a broad area with largely similar habitat characteristics and species assemblages. Clipping data to them ensures all potential species are captured in order to undertake a project-specific 'likelihood of occurrence' assessment.
- Species records from the latest version of the [NT Atlas](#) were also clipped to within 100 km of the project area and data used for discussion purposes.
- [EPBC Protected Matters Search Tool](#) (PMST) was used to generate a report using a 50 km buffer from the project area. This PMST is an online enquiry tool managed by the Commonwealth Department of the Environment and Energy which interrogates a range of existing flora and fauna data, as well as predictive modelling to speculate on the presence of species within a search area. The PMST uses a grid system to determine which protected matters it encapsulates for a particular search. The PMST report (Appendix A) was generated on 15 June 2022.
- For each threatened species, the likelihood of it occurring within the Project area was then assessed based on desktop information that relates to habitat requirements, distribution, number and dates of proximate records (obtained from NT Atlas and/or [Atlas of Living Australia](#)), and the ecological information described in the desktop review for the Project area.
- Likelihood ratings are defined in Table below.

Ratings for the desktop threatened species likelihood of occurrence assessment

Rating	Definition
HIGH	It is expected that this species occurs within the Project area because there is core habitat and recent (post-2000) proximate records or knowledge that the species occurs in the local area.
MEDIUM	Species may occur within the Project area because there is suitable habitat; however, there is evidence that lowers its likelihood of occurrence (known range contraction of the species in the region, no recent records within or close to the project area, substantial loss of habitat within the project area since previous records, species is naturally-rare or occurs at a low density etc.).
LOW	Species may occur, as a vagrant, within the Project area; only marginally-suitable habitat is expected.
NONE	There is strong evidence that this species will not occur within the Project area (i.e. there is no suitable habitat and/or the species is considered to be regionally-extinct).

DESKTOP THREATENED SPECIES LIKELIHOOD OF OCCURRENCE ASSESSMENT					
Likelihood	Common name	Scientific name	Status		Likelihood of occurrence summary
			Cth	NT	
HIGH	Greater Bilby	<i>Macrotis lagotis</i>	VU	VU	• 26 records (7 recent) within 100km of Project area. • No records within 60km of Project area. • Species known to occur in bioregion; with most records >100km to west. • Identified within 50km buffer of Project area EPBC PMST, as 'known' occurrence. • Project area occurs close to the eastern extent of current species distribution. • Suitable habitat present within Project area and surrounds. • Has large foraging area and will move home range in search for food (Johnson 2008).
LOW	Great Desert Skink	<i>Liopholis kintorei</i>	VU	VU	• 11 historic records within 100km of Project area. • Identified within 50km buffer of Project area EPBC PMST, as 'may' occur. • No known populations in the region surrounding the Project area. • Suitable habitat is present within Project area (generally occurs in tall open shrubland, hummock grasslands and on red sandplains and sand ridges, Cogger et al. 1993). • The relatively high fire impacts in the Project area likely reduces habitat quality/suitability. This species does not cope well with frequent fires.
LOW	Grey Falcon	<i>Falco hypoleucos</i>	VU	VU	• 4 Records within 100km of Project area (no date). • Many records within bioregion. • Identified within 50km buffer of Project area EPBC PMST, as 'likely' occurrence. • Occupy nests (often built by other bird species) in the tallest trees along watercourses (Garnett et al. 2011) – current studies and review of aerial imagery indicate this habitat is not present within or surrounding Project area. • Also known to nest on telecommunication towers (Ward 2012) – which are not present within the Project area. • Foraging habitat within Project area only (species occurs in areas of lightly-timbered lowland plains, typically on inland drainage systems, where the average annual rainfall is less than 500mm (Ward 2012). • Vagrant – occasional irruption from arid stronghold. • Naturally rare bird, occurring at low densities in arid and semi-arid areas.
LOW	Yellow-spotted Monitor	<i>Varanus panoptes</i>	-	VU	• No records within 100km of Project area. • 15 recent records in the bioregion. • Low suitability habitat within Project area: the sandplain habitat is not characteristic habitat for the species. • Species may be present in the wider region but would be more likely to occur in alluvial / floodplain based habitat / landforms. • Species inhabits a broad range of habitats – including coastal beaches, savanna woodlands and floodplains.

DESKTOP THREATENED SPECIES LIKELIHOOD OF OCCURRENCE ASSESSMENT					
Likelihood	Common name	Scientific name	Status		Likelihood of occurrence summary
			Cth	NT	
LOW	Night Parrot	<i>Pezoporus occidentalis</i>	EN	EN	- No records within 100km of Project area. 2 historic records in bioregion. - Identified within 50km buffer of Project area EPBC PMST, as 'may' occur. - Marginally suitable habitat within Project area: Flat spinifex (<i>Triodia spp.</i>) grasslands in stony or sandy environments and samphire and chenopod shrublands – including genera such as Atriplex, Bassia and Maireana – on floodplains and claypans, and on the margins of salt lakes, creeks or other sources of water (from a variety of sources cited in DoE 2017). - The relatively high fire impacts in the Project area likely reduces habitat quality/suitability. This species does not cope well with frequent fires.
LOW	Painted Honeyeater	<i>Grantiella picta</i>	VU	VU	- Recent records within 100km of Project area – Tennant Creek wastewater treatment plant. 2 recent records in the bioregion. Identified within 50km buffer of Project area EPBC PMST, as 'may' occur. - Marginally suitable habitat: Acacia and Eucalyptus-dominated woodlands and open forest, preferring habitats with more mature trees that host more mistletoe. - Breeding does not occur in the NT.
LOW	Princess Parrot	<i>Polytelis alexandrae</i>	VU	VU	- No records within 100km of Project area. 3 records in bioregion. - Identified within 50km buffer of Project area EPBC PMST, as 'may' occur. - Suitable habitat is not present within Project area: Swales between desert sand dunes with a shrub layer and scattered trees (Pavey 2006). - Desktop review indicates that the Project area does not support suitable nesting habitat (i.e. Marble Gum, River Red Gum, and occasionally Desert Oak). - If present, would only be expected to be dispersal flocks transiting through Project area during boom periods.
LOW	Red Goshawk	<i>Erythrotriorchis radiatus</i>	VU	VU	2 Recent records within 100km of Project area. 1 historic record in bioregion. - Identified within 50km buffer of Project area EPBC PMST, as 'may' occur. - Suitable habitat is not present within Project area (species prefers tall, open Eucalyptus forest and riparian areas. Nests in large trees within 1 km of permanent water.)
NONE	Greater Sand Plover	<i>Charadrius leschenaultii</i>	VU	VU	- Recent records within 100km of Project area – Tennant Creek wastewater treatment plant. 5 records within bioregion. - No suitable habitat within Project area: coasts and estuaries with intertidal sand and mudflats.
NONE	Malleefowl	<i>Leipoa ocellata</i>	VU	CR	- No records within 100km of Project area. 2 historic records in the bioregion. - Species is considered to be extinct in the bioregion.

DESKTOP THREATENED SPECIES LIKELIHOOD OF OCCURRENCE ASSESSMENT					
Likelihood	Common name	Scientific name	Status		Likelihood of occurrence summary
			Cth	NT	
					Marginally suitable habitat: In arid Australia, occupies mulga scrub, either pure stands or mixed with mallee (Pavey 2006).
NONE	Crest-tailed Mulgara	<i>Dasycercus cristicauda</i>	-	VU	- No records within 100km of project. 4 records in bioregion (recent and historic). - No suitable habitat within Project area: Prefers sand dune habitats that are vegetated with cane grass and spinifex (Masters 1997).
NONE	Gouldian Finch	<i>Erythrura gouldiae</i>	EN	VU	- No records within 100km of Project area. - No suitable habitat within Project area: Prefers areas with certain grass species (especially Sorghum), a nearby source of surface water and – in the breeding season – hollow-bearing Snappy Gum trees on slopes.
NONE	Masked Owl (northern mainland)	<i>Tyto novaehollandiae kimberli</i>	VU	VU	- No records within 100km of Project area. 1 historic record in bioregion. - No suitable habitat within Project area; Eucalyptus tall open forests, but also roosts in monsoon rainforests and forages in more open vegetation types, including grasslands.
NONE	Red-tailed Phascogale	<i>Phascogale calura</i>	VU	VU (EX)	7 historic records within 100km of Project area. 1 historic record in bioregion. - Extinct in the NT, previously occurred widely in arid and semi-arid Australia. - No suitable habitat within Project area: In central Australia, occupied sandhills and hilly country, sheltering in hollow limbs of Eucalypts (especially bloodwoods) (Pavey 2006).
NONE	Golden Bandicoot	<i>Isoodon auratus</i>	VU	EN	- Many historic records within 100km of Project area and bioregion. - Regionally extinct. Now extinct on the mainland except in a few locations in the north-west Kimberley (TSSC 2015).
NONE	Brush-tailed Bettong	<i>Bettongia penicillata</i>	EN (as <i>B. p. ogilbyi</i>)	EN (EX)	- No records within 100km of Project area. 7 historic records within bioregion. - Regionally extinct.
NONE	Common Brushtail Possum (central and south-eastern)	<i>Trichosurus vulpecula vulpecula</i>		EN	5 historic records within 100km of Project area. - Many historic records within bioregion. - No suitable habitat within Project area: Riverine habitat that is close to rocky outcrops and moist gullies within the ranges or rocky slopes (Kerle et al. 1992). - Occurs in isolated populations in southern NT; closely associated with significant rocky ranges
NONE	Central Australian Rock-wallaby	<i>Petrogale lateralis centralis</i>	VU	-	9 historic records within 100km of Project area. - Many historic records within bioregion. - Identified within 50km buffer of Project area EPBC PMST, as 'May' occur. - No suitable habitat within Project area: Upland rocky areas with associated steep slopes (Pavey 2006). Heavily weathered outcrops, caves, cliffs and rock piles provide suitable habitat as daytime shelter (Woinarski et.al. 2014).

DESKTOP THREATENED SPECIES LIKELIHOOD OF OCCURRENCE ASSESSMENT					
Likelihood	Common name	Scientific name	Status		Likelihood of occurrence summary
			Cth	NT	
NONE	Central Rock-rat	<i>Zyzomys pedunculatus</i>	CR	CR	- No records within 100km of Project area. 4 historic records within bioregion. - Restricted range MacDonnell Ranges - No suitable habitat within Project area: refuge habitat is quartzite mountains and ridge tops characterised by shallow gravelly soils and exposed rock outcrop with abundant rock-crevices (TSSC 2018).
NONE	Ghost Bat	<i>Macroderma gigas</i>	VU	NT	- No records within 100km of Project area. 1 record in bioregion. - Regionally extinct. - No suitable roost sites. Permanent roost sites are generally deep natural caves or disused mines.
NONE	Western Quoll	<i>Dasyurus geoffroii</i>	VU	VU (EX)	6 historic records within 100km of Project area. - Historic records in bioregion. - Considered extinct in the NT since the 1960's.
NONE	Mala	<i>Lagorchestes hirsutus</i>	EN	EN (EW)	3 historic records within 100km of Project area. - Numerous historic records in bioregion. - Extinct in the wild on mainland Australia.
NONE	Mertens' Water Monitor	<i>Varanus mertensi</i>	-	VU	- No records within 100km of Project area. 1 historic record in the bioregion. - No suitable habitat within Project area: Locally common along the edges of freshwater watercourses and lagoons.
NONE	Land Snail	<i>Semotrachia euzyga</i>	EN	EN	- No records within 100km of Project. 2 recent records within bioregion. - Restricted range including about 1km² along the Todd River in Alice Springs, on nearby Choritza Hill, and Mt Gillen less than 8 km away (Ward et al. 2006). - No suitable habitat within Project area: found in areas in and around fig trees.
NONE	Spencer's Land Snail	<i>Bothriembryon spenceri</i>	-	VU	1 recent record within 100km of Project. - No suitable habitat within Project area: Found in leaf litter, under fig trees and/or rocky areas.
NONE	Dwarf Desert Spike-rush	<i>Eleocharis papillosa</i>	VU	VU	- No records within 100km of Project. 4 records within bioregion (one recent). - No suitable habitat within Project area: Ephemeral wetlands in freshwater and semi-saline swamps. In the NT, recorded growing amongst Coolabah (<i>Eucalyptus coolabah</i>), Samphire (<i>Halosarcia spp.</i>), Northern Bluebush (<i>Chenopodium auricomum</i>) and <i>Eragrostis spp.</i> including Swamp Cane grass (<i>E. australasica</i>) (DoE 2017).
NONE	A herb	<i>Typhonium sp. Sandover</i>	-	VU	- No records within 100km of Project. 2 records within bioregion (one recent). - No suitable habitat within Project area: Among the species-rich understorey along Red Gum creek lines (Albrecht & Westaway 2012).

CR = Critically Endangered; EN = Endangered; VU = Vulnerable

APPENDIX C GREATER BILBY SITE DATA

Site	Other ID	Sign type	Age of sign	Easting	Northing	Zone	Comment (if made)
GB1		Digging - RDL	Recent	359948	7791228	Z53	<i>Acacia lysiphloia</i>
GB1	GB1-4	Burrow - active	Fresh	359921	7791132	Z53	Under <i>Acacia stipuligera</i>
GB1		Digging - RDL	Check	360030	7790826	Z53	Check
GB1		Digging - RDL	Check	360023	7790843	Z53	Check
GB1		Digging - RDL	Check	359964	7790916	Z53	Check
GB1	GB1-2	Burrow - pot active	Recent	359838	7790936	Z53	Very close to road (windrow). Established under <i>Acacia lysiphloia</i> , recent tracks but not sure if burrow is currently used
GB1	GB1-1	Burrow - active	Fresh	359852	7790947	Z53	Very close to road (windrow). Established under <i>Acacia lysiphloia</i> .
GB1	GB1-3	Burrow - active	Fresh	359846	7790988	Z53	Established in the open amongst spinifex hummocks
GB1		Digging - RDL	Recent	359877	7791003	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359875	7791001	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359872	7791004	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359863	7791009	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359847	7791022	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359891	7791017	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359705	7791032	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359722	7791073	Z53	<i>Acacia lysiphloia</i>
GB1		Tracks	Fresh	359925	7791116	Z53	
GB1		Tracks	Fresh	359927	7791121	Z53	
GB1		Tracks	Fresh	359924	7791126	Z53	
GB1	GB1-6	Burrow - old	Old	359889	7790956	Z53	Burrow recently infilled, collapsed. established in old stockpile on edge of road
GB1	GB1-5	Burrow - old	Old	359925	7791140	Z53	Collapsed burrow, infilled. Very close to active burrow. Established in open amongst spinifex.
GB1		Digging - RDL	Recent	359893	7791108	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359908	7791139	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359923	7791110	Z53	<i>Acacia lysiphloia</i>
GB1		Tracks	Fresh	359913	7791097	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359928	7790996	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359961	7791008	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359973	7791008	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	360009	7791013	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	360008	7790992	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359973	7790981	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359958	7790993	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - in open	Recent	359882	7791053	Z53	Invertebrate diggings
GB1		Digging - RDL	Recent	359923	7791001	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359921	7791011	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359916	7791013	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359912	7791018	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359907	7791010	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359904	7791000	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359893	7791006	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359891	7791009	Z53	<i>Acacia lysiphloia</i>

Site	Other ID	Sign type	Age of sign	Easting	Northing	Zone	Comment (if made)
GB1		Digging - RDL	Recent	359889	7791016	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359871	7791007	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	0	0	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359833	7790993	Z53	<i>Senna notabilis</i>
GB1		Digging - RDL	Recent	359837	7791011	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359873	7791027	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359907	7791046	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - in open	Recent	359911	7791051	Z53	
GB1		Digging - RDL	Recent	359911	7791057	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359906	7791067	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359910	7791073	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359919	7791076	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359915	7791101	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359870	7790968	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359891	7790999	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359852	7790959	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359920	7791028	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359890	7791000	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Old	359727	7791096	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359986	7790867	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Recent	359977	7790854	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Old	359970	7790842	Z53	<i>Acacia lysiphloia</i>
GB1		Digging - RDL	Old	359960	7790847	Z53	<i>Acacia lysiphloia</i>
GB1		Tracks	Fresh	359958	7790842	Z53	
GB1		Digging - RDL	Fresh	359899	7790754	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359895	7790719	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Old	359896	7790716	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359851	7790740	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359844	7790745	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359836	7790751	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359842	7790773	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359832	7790776	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359792	7790863	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359774	7790857	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359938	7791261	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Tracks	Fresh	359782	7790960	Z53	
GB1		Tracks	Fresh	359749	7790967	Z53	
GB1		Digging	Recent	359988	7791085	Z53	Digging type not recorded
GB1		Digging	Recent	359678	7790988	Z53	Digging type not recorded
GB1		Digging	Recent	359741	7790880	Z53	Digging type not recorded
GB1		Digging	Recent	359640	7791071	Z53	Digging type not recorded
GB1		Digging	Recent	359641	7791098	Z53	Digging type not recorded
GB1		Digging	Recent	359902	7790881	Z53	Digging type not recorded
GB1		Digging	Recent	359960	7790854	Z53	Digging type not recorded
GB1		Digging	Recent	359907	7790818	Z53	Digging type not recorded
GB1		Digging	Recent	359848	7790716	Z53	Digging type not recorded
GB1		Tracks	Fresh	359914	7790832	Z53	
GB1		Tracks	Fresh	359893	7790778	Z53	
GB1		Tracks	Fresh	359836	7790709	Z53	

Site	Other ID	Sign type	Age of sign	Easting	Northing	Zone	Comment (if made)
GB1		Tracks	Fresh	359796	7790673	Z53	
GB1		Tracks	Fresh	359810	7790695	Z53	
GB1		Digging	Old	359789	7790676	Z53	Digging type not recorded
GB1		Digging	Fresh	359582	7791121	Z53	Digging type not recorded
GB1		Digging	Recent	359589	7791042	Z53	Digging type not recorded
GB1		Digging	Recent	359579	7791022	Z53	Digging type not recorded
GB1		Tracks	Fresh	359513	7790931	Z53	On access road
GB1		Digging - RDL	Recent	359968	7790916	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359967	7790915	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359965	7790914	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359953	7791003	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Recent	359958	7791001	Z53	<i>Acacia lysiphloia (small)</i>
GB1		Digging - RDL	Fresh	359956	7791006	Z53	<i>Acacia lysiphloia (small)</i>
GB2		Track	Fresh	360782	7791572	Z53	
GB2		Track	Fresh	360692	7791531	Z53	
GB2		Track	Fresh	360576	7791476	Z53	
GB2		Track	Fresh	360527	7791443	Z53	
GB2		Track	Fresh	360480	7791412	Z53	
GB2		Track	Fresh	360461	7791411	Z53	
GB2		Potential Digging	Old	360496	7791349	Z53	Potential digging only (very old); <i>Acacia lysiphloia</i>
GB2		Track	Fresh	360455	7791399	Z53	
GB2		Track	Fresh	360446	7791395	Z53	
GB2		Track	Fresh	360361	7791320	Z53	
GB2		Track	Fresh	360365	7791356	Z53	
GB2		Track	Fresh	360361	7791372	Z53	
GB2		Track	Fresh	360318	7791381	Z53	
GB2		Track	Fresh	360292	7791405	Z53	
GB2		Track	Fresh	360294	7791416	Z53	
GB2		Track	Fresh	360658	7791523	Z53	
GB2		Digging - RDL	Check	360496	7791426	Z53	<i>Acacia lysiphloia</i>
GB2		Digging - RDL	Fresh	360389	7791370	Z53	<i>Acacia lysiphloia</i>
GB3		Potential Digging	Very old	360639	7791142	Z53	Too old to confidently confirm ID. May be goanna digging.

APPENDIX D GREATER BILBY CAMERA TRAP PHOTOGRAPHS



KeepGuard ECOZ 08

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BURROW SITE GB1-1



BURROW SITE GB1-3



BURROW SITE GB1-3



BURROW SITE GB1-3 (action sequence of bilby jumping into burrow)



BURROW SITE GB1-3



BURROW SITE GB1-4

APPENDIX E FAUNA SPECIES LIST

Class	Family	Scientific name	Common name	TPWC	EPBC	Notes
AVES	ACANTHIZIDAE	<i>Aphelocephala nigricincta</i>	Banded Whiteface	LC	-	
AVES	ACCIPITRIDAE	<i>Accipiter cirrhocephalus</i>	Collared Sparrowhawk	LC	-	
AVES	ACCIPITRIDAE	<i>Accipiter fasciatus</i>	Brown Goshawk	LC	-	
AVES	ACCIPITRIDAE	<i>Circus assimilis</i>	Spotted Harrier	LC	-	
AVES	ACCIPITRIDAE	<i>Hieraaetus morphnoides</i>	Little Eagle	LC	-	
AVES	AEGOTHELIDAE	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar	LC	-	
AVES	ALCEDINIDAE	<i>Todiramphus pyrrhopygius</i>	Red-backed Kingfisher	LC	-	
AVES	ARTAMIDAE	<i>Artamus cinereus</i>	Black-faced Woodswallow	LC	-	
AVES	ARTAMIDAE	<i>Artamus leucorhynchus</i>	White-breasted Woodswallow	LC	-	
AVES	ARTAMIDAE	<i>Artamus personatus</i>	Masked Woodswallow	LC	-	
AVES	ARTAMIDAE	<i>Artamus superciliosus</i>	White-browed Woodswallow	LC	-	
AVES	BURHINIDAE	<i>Burhinus grallarius</i>	Bush Stone-curlew	NT	-	
AVES	CACATUIDAE	<i>Eulophus roseicapilla</i>	Galah	LC	-	
AVES	CACATUIDAE	<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	LC	-	
AVES	CAMPEPHAGIDAE	<i>Lalage tricolor</i>	White-winged Triller	LC	-	
AVES	COLUMBIDAE	<i>Geopelia cuneata</i>	Diamond Dove	LC	-	
AVES	COLUMBIDAE	<i>Ocyphaps lophotes</i>	Crested Pigeon	LC	-	
AVES	COLUMBIDAE	<i>Phaps chalcoptera</i>	Common Bronzewing	LC	-	
AVES	CORVIDAE	<i>Corvus orru</i>	Torresian Crow	LC	-	
AVES	ESTRILDIDAE	<i>Emblema pictum</i>	Painted Finch	LC	-	
AVES	ESTRILDIDAE	<i>Heteromunia pectoralis</i>	Pictorella Mannikin	NT	-	Observed at camp
AVES	ESTRILDIDAE	<i>Taeniopygia guttata</i>	Zebra Finch	LC	-	
AVES	FALCONIDAE	<i>Falco berigora</i>	Brown Falcon	LC	-	
AVES	HIRUNDINIDAE	<i>Petrochelidon nigricans</i>	Tree Martin	LC	-	
AVES	MALURIDAE	<i>Malurus lamberti</i>	Variegated Fairy-wren	LC	-	
AVES	MALURIDAE	<i>Malurus leucopterus</i>	White-winged Fairy-wren	LC	-	
AVES	MELIPHAGIDAE	<i>Epthianura tricolor</i>	Crimson Chat	LC	-	
AVES	MELIPHAGIDAE	<i>Gavicalis virescens</i>	Singing Honeyeater	LC	-	
AVES	MELIPHAGIDAE	<i>Lichmera indistincta</i>	Brown Honeyeater	LC	-	
AVES	MELIPHAGIDAE	<i>Manorina flavigula</i>	Yellow-throated Miner	LC	-	
AVES	MELIPHAGIDAE	<i>Ptilotula keartlandi</i>	Grey-headed Honeyeater	LC	-	
AVES	MELIPHAGIDAE	<i>Sugomel niger</i>	Black Honeyeater	LC	-	
AVES	MONARCHIDAE	<i>Grallina cyanoleuca</i>	Magpie-lark	LC	-	
AVES	NEOSITTIDAE	<i>Daphoenositta chrysoptera</i>	Varied Sittella	LC	-	
AVES	OTIDIDAE	<i>Ardeotis australis</i>	Australian Bustard	NT	-	
AVES	PACHYCEPHALIDAE	<i>Colluricincla harmonica</i>	Grey Shrike-thrush	LC	-	
AVES	PACHYCEPHALIDAE	<i>Oreoica gutturalis</i>	Crested Bellbird	LC	-	
AVES	PARDALOTIDAE	<i>Pardalotus rubricatus</i>	Red-browed Pardalote	LC	-	
AVES	PSITTACIDAE	<i>Barnardius zonarius</i>	Australian Ringneck	LC	-	
AVES	PSITTACIDAE	<i>Melopsittacus undulatus</i>	Budgerigar	LC	-	
AVES	PSOPHODIDAE	<i>Cinclosoma cinnamomeum</i>	Cinnamon Quail-thrush	LC	-	
AVES	PSOPHODIDAE	<i>Psophodes occidentalis</i>	Chiming Wedgebill	LC	-	

Class	Family	Scientific name	Common name	TPWC	EPBC	Notes
AVES	RHIPIDURIDAE	<i>Rhipidura leucophrys</i>	Willie Wagtail	LC	-	
AVES	STRIGIDAE	<i>Ninox boobook</i>	Australian Boobook	LC	-	Songmeter detection
AVES	TURNICIDAE	<i>Turnix pyrrhorostrax</i>	Red-chested Button-quail	LC	-	
AVES	TURNICIDAE	<i>Turnix velox</i>	Little Button-quail	LC	-	
AVES	TYTONIDAE	<i>Tyto javanica</i>	Eastern Barn Owl	LC	-	Songmeter detection
MAMMALIA	CAMELIDAE	<i>Camelus dromedarius</i>	Camel	(Int)	-	
MAMMALIA	CANIDAE	<i>Canis familiaris dingo</i>	Dingo	LC	-	
MAMMALIA	DASYURIDAE	<i>Dasyurid spp.</i>		-	-	
MAMMALIA	FELIDAE	<i>Felis catus</i>	Cat	(Int)	-	
MAMMALIA	MACROPODIDAE	<i>Onychogalea unguifera</i>	Northern Nailtail Wallaby	NT	-	scats only
MAMMALIA	MACROPODIDAE	<i>Osphranter rufus</i>	Red Kangaroo	LC	-	Skull only
MAMMALIA	MURIDAE	<i>Notomys alexis</i>	Spinifex Hopping-mouse	LC	-	
MAMMALIA	MURIDAE	<i>Pseudomys hermannsburgensis</i>	Sandy Inland Mouse	LC	-	
MAMMALIA	TACHYGLOSSIDAE	<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	LC	-	
MAMMALIA	THYLACOMYIDAE	<i>Macrotis lagotis</i>	Greater Bilby	VU	VU	see separate spreadsheet for point record data
MAMMALIA	VESPERTILIONIDAE	<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	LC	-	Confirmed via bat detector
REPTILIA	AGAMIDAE	<i>Ctenophorus isolepis</i>	Central Military Dragon	LC	-	
REPTILIA	AGAMIDAE	<i>Ctenophorus nuchalis</i>	Central Netted Dragon	LC	-	
REPTILIA	AGAMIDAE	<i>Diporiphora lalliae</i>	Lally's Two-lined Dragon	LC	-	
REPTILIA	AGAMIDAE	<i>Moloch horridus</i>	Thorny Devil	LC	-	potential tracks and burrow
REPTILIA	BOIDAE	<i>Aspidites melanocephalus</i>	Black-headed Python	LC	-	
REPTILIA	BOIDAE	<i>Aspidites ramsayi</i>	Woma	NT	-	Crossing access track
REPTILIA	DIPLODACTYLIDAE	<i>Lucasium stenodactylum</i>	Sand-plain Gecko	LC	-	
REPTILIA	DIPLODACTYLIDAE	<i>Rhynchoedura ornata</i>	Western Beaked Gecko	LC	-	
REPTILIA	ELAPIDAE	<i>Pseudonaja nuchalis</i>	Northern Brown Snake	LC	-	
REPTILIA	GEKKONIDAE	<i>Gehyra purpurascens</i>	Purplish Dotted Gecko	LC	-	
REPTILIA	PYGOPODIDAE	<i>Pygopus nigriceps</i>	Western Hooded Scaly-foot	LC	-	
REPTILIA	SCINCIDAE	<i>Ctenotus leonhardii</i>	Leonhard's Ctenotus	LC	-	
REPTILIA	SCINCIDAE	<i>Ctenotus sp.</i>			-	
REPTILIA	SCINCIDAE	<i>Eremiascincus richardsonii</i>	Broad-banded Sand-swimmer	LC	-	camera trap
REPTILIA	SCINCIDAE	<i>Tiliqua multifasciata</i>	Centralian Blue-tongue	LC	-	Potential ID only (from tracks)
REPTILIA	VARANIDAE	<i>Varanus eremius</i>	Pygmy Desert Monitor	LC	-	
REPTILIA	VARANIDAE	<i>Varanus gouldii</i>	Sand Goanna	LC	-	

APPENDIX F FLORA SPECIES LIST

Family	Scientific name	TPWC	EPBC	Exotic	Lifeform
AMARANTHACEAE	<i>Ptilotus calostachyus</i>	LC			fo
AMARANTHACEAE	<i>Ptilotus fusiformis</i>	LC			fo
AMARANTHACEAE	<i>Ptilotus macrocephalus</i>	LC			sh.fo
AMARANTHACEAE	<i>Ptilotus obovatus</i>	LC			sh.fo
AMARANTHACEAE	<i>Ptilotus polystachyus</i>	LC			fo
AMARANTHACEAE	<i>Salsola tragus</i>	LC			sh.fo
ASTERACEAE	<i>Pterocaulon sphacelatum</i>	LC			sh.fo
ASTERACEAE	<i>Streptoglossa macrocephala</i>	LC			sh
CLEOMACEAE	<i>Cleome viscosa</i>	LC			fo
CONVOLVULACEAE	<i>Bonamia media</i>	LC			fo
CONVOLVULACEAE	<i>Evolvulus alsinoides</i>	LC			fo
CUCURBITACEAE	<i>Cucumis maderaspatanus</i>	LC			vn
ELATINACEAE	<i>Bergia henshallii</i>	LC			sh.fo
EUPHORBIACEAE	<i>Croton aridus</i>	LC			sh
EUPHORBIACEAE	<i>Euphorbia tannensis</i>	LC			sh.fo
FABACEAE	<i>Acacia adsurgens</i>	LC			tr.sh
FABACEAE	<i>Acacia ancistrocarpa</i>	LC			sh
FABACEAE	<i>Acacia aneura</i>	LC			tr
FABACEAE	<i>Acacia colei</i>	LC			tr.sh
FABACEAE	<i>Acacia elachantha</i>	LC			sh
FABACEAE	<i>Acacia hemignosta</i>	LC			tr.sh
FABACEAE	<i>Acacia lysiphloia</i>	LC			sh
FABACEAE	<i>Acacia sericophylla</i>	LC			tr.sh
FABACEAE	<i>Acacia stipuligera</i>	LC			sh
FABACEAE	<i>Indigofera georgei</i>	LC			sh.fo
FABACEAE	<i>Indigofera linifolia</i>	LC			fo
FABACEAE	<i>Leptosema chambersii</i>	LC			sh.fo
FABACEAE	<i>Petalostylis cassioides</i>	LC			sh
FABACEAE	<i>Senna artemisioides subsp. filifolia</i>	LC			sh
FABACEAE	<i>Senna artemisioides subsp. helmsii</i>	LC			sh
FABACEAE	<i>Senna artemisioides subsp. oligophylla</i>	LC			sh
FABACEAE	<i>Senna notabilis</i>	LC			sh
FABACEAE	<i>Tephrosia sp. D Kimberley Flora</i>	-			sh.fo
GOODENIACEAE	<i>Scaevola ovalifolia</i>	LC			sh.fo
GOODENIACEAE	<i>Scaevola parvifolia</i>	LC			sh.fo
GYROSTEMONACEAE	<i>Codonocarpus cotinifolius</i>	LC			tr.sh
LAMIACEAE	<i>Dicrastylis exsuccosa</i>	LC			sh
LORANTHACEAE	<i>Lysiana exocarpi subsp. exocarpi</i>	LC			sh.pb
MALVACEAE	<i>Abutilon otocarpum</i>	LC			sh.fo
MALVACEAE	<i>Corchorus sidoides</i>	LC			sh.fo
MALVACEAE	<i>Gossypium australe</i>	LC			sh
MALVACEAE	<i>Malvastrum americanum</i>	(int)		YES	sh.fo
MALVACEAE	<i>Rulingia loxophylla</i>	LC			sh
MALVACEAE	<i>Sida arenicola</i>	LC			sh
MALVACEAE	<i>Sida cardiosperma</i>	LC			sh.fo
MALVACEAE	<i>Sida fibulifera</i>	LC			sh.fo
MALVACEAE	<i>Sida sp. Suplejack Station</i>	LC			sh.fo

Family	Scientific name	TPWC	EPBC	Exotic	Lifeform
MENISPERMACEAE	<i>Tinospora smilacina</i>	LC			vn
MYRTACEAE	<i>Calytrix carinata</i>	LC			sh
MYRTACEAE	<i>Corymbia aparrerinja</i>	LC			tr
MYRTACEAE	<i>Corymbia opaca</i>	LC			tr
MYRTACEAE	<i>Melaleuca lasiandra</i>	LC			sh
NYCTAGINACEAE	<i>Boerhavia coccinea</i>	LC			fo
OLEACEAE	<i>Jasminum calcareum</i>	LC			sh.vn
PLANTAGINACEAE	<i>Stemodia florulenta</i>	LC			fo
POACEAE	<i>Aristida contorta</i>	LC			gr
POACEAE	<i>Aristida holathera</i>	LC			gr
POACEAE	<i>Aristida inaequiglumis</i>	LC			gr
POACEAE	<i>Cenchrus ciliaris</i>	(int)		YES	gr
POACEAE	<i>Cenchrus setiger</i>	(int)		YES	gr
POACEAE	<i>Enneapogon polyphyllus</i>	LC			gr
POACEAE	<i>Enneapogon sp. (possibly E. purpurascens)</i>	LC			gr
POACEAE	<i>Eragrostis eriopoda</i>	LC			gr
POACEAE	<i>Eriachne obtusa</i>	LC			gr
POACEAE	<i>Eulalia aurea</i>	LC			gr
POACEAE	<i>Monachather paradoxus</i>	LC			gr
POACEAE	<i>Paraneurachne muelleri</i>	LC			gr
POACEAE	<i>Sporobolus australasicus</i>	LC			gr
POACEAE	<i>Triodia pungens</i>	LC			gr
POACEAE	<i>Triodia schinzii</i>	LC			gr
PORTULACACEAE	<i>Portulaca oleracea</i>	LC			fo
PROTEACEAE	<i>Hakea macrocarpa</i>	LC			tr.sh
RUBIACEAE	<i>Psydrax ammophila</i>	LC			tr.sh
RUBIACEAE	<i>Spermacoce hillii</i>	LC			fo
SANTALACEAE	<i>Santalum lanceolatum</i>	LC			tr.sh.pr
SAPINDACEAE	<i>Dodonaea coriacea</i>	LC			sh
SCROPHULARIACEAE	<i>Eremophila latrobei</i>	LC			sh
SCROPHULARIACEAE	<i>Eremophila longifolia</i>	LC			sh
SOLANACEAE	<i>Solanum centrale</i>	LC			sh
SOLANACEAE	<i>Solanum sp.</i>	LC			Sh.fo



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