MOUNT TODD REFERRAL

Current Status of Gouldian Finch Populations
Literature Review and Ground Truth Survey

Prepared for:

Vista Gold
43 Cavanagh St
Darwin NT 0800

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Vista Gold (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
680.30120-R02-v1.0	16 May 2023	Giorgio De Nola	Evan Webb	Jill Woodworth

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1 Introduction

Vista Gold Australia Pty Ltd (Vista Gold) purchased the mineral lease rights to the Mount Todd Project Area (MTPA) on 1 March 2006 under an Operations and Management Agreement (Agreement D92226) with the Northern Territory Government (NTG). Vista Gold has been undertaking the Care and Maintenance activities on the MTPA on behalf of the NTG under this agreement. The intention of Vista Gold is to re- establish and operate the MTPA and then progressively rehabilitate the site. Vista Gold have submitted an Operations MMP to the Department of Industry Tourism and Trade (DITT) for approval that include the following changes from those approved in the EIS. The changes to the MTPA include:

- Extension of mine life (from 13.5 years to 17 years)
- WRD extension
- General site layout
- Sorter rejects
- Batman Pit design
- Construction of accommodation camp

The Northern Territory Environmental Protection Authority (NT EPA) consider that the changes listed in the Operation MMP have the potential to have a significant impact on the environment, in particular, clearing of the Gouldian Finch habitat within the enlarged footprint of the WRD. The changes may result in clearing of approximately 35.7 ha of breeding habitat and approximately 11.4 ha of foraging habitat[1,2] in addition to the approved clearing of 158 ha of potential breeding habitat and 458 ha of potential foraging habitat. This clearing will occur within the 102,500 ha of the Yinberrie Hills Sites of Conservation Significance (SOCS). **Table 1** shows the percentage of clearing of potential Gouldian Finch habitat within the SOCS that may be required for the Mt Todd Project.

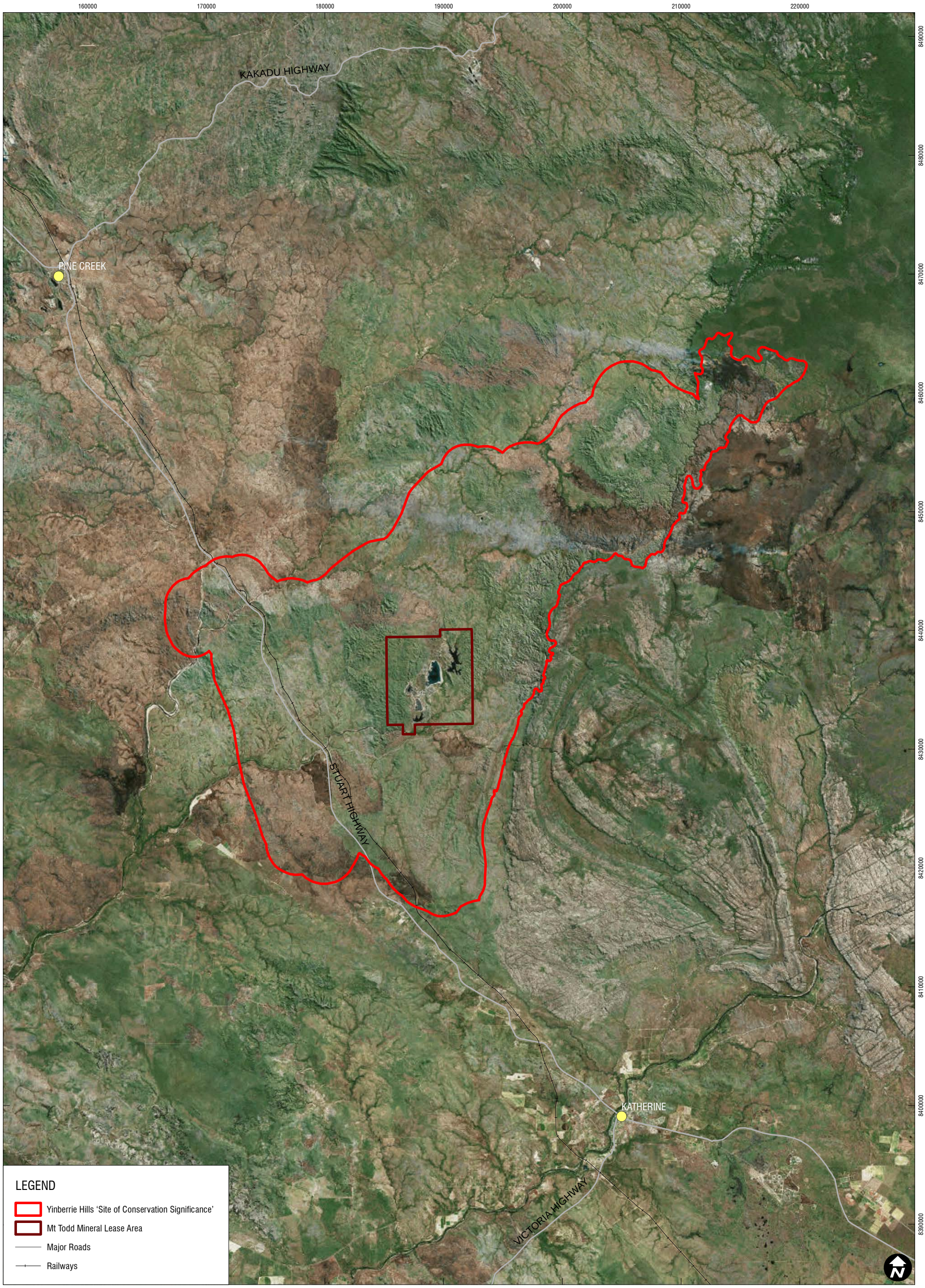
Table 1 Clearing of Potential Habitat

Aspect	Potential Breeding Habitat	Potential Foraging Habitat
Approved clearing	158 ha	458 ha
% of SOCS (102,500 ha)	0.154%	0.45%
Potential additional clearing	~35.7 ha	~11.4 ha
Potential total clearing	~193.7 ha	~469.4 ha
% of SOCS (102,500 ha)	~0.19 %	~0.46 %
% increase from approved clearing	~0.036 %	~0.01 %

[1] It is important to note that the foraging and breeding habitat identified in the MTPA was based on a NT Government vegetation community dataset (Wilson and Clark, 1990) and has not been recently validated in its entirety.

[2] We would note that the figures provided are likely to have an error margin of +20% to -5% and are therefore not absolute. We have applied contemporary methods to calculate the areas but recognise that the assumptions result in a range of values.

The NT EPA served Vista Gold with a Call-In Notice on the changes to the MTPA and requested specific information on the potential impacts to the Gouldian Finch populations related to the Yinberrie Hills. To assist in responding to the Call-In Notice a literature review on recent research on Gouldian Finch populations throughout Northern Australia was conducted. This report provides up to date information on Gouldian Finch populations in Northern Australia.



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Yinberrie Hills
Site of Conservation Significance

Mt Todd Mine Project EPBC 2011/5967

FIGURE 1

160000 170000 180000 190000 200000 210000 220000 230000

8490000 8480000 8470000 8460000 8450000 8440000 8430000 8420000 8410000 8400000

KAKADU HIGHWAY

PINE CREEK

STUART HIGHWAY

KATHERINE

VICTORIA HIGHWAY

N

LEGEND

- Yinberrie Hills 'Site of Conservation Significance'
- Mt Todd Mineral Lease Area
- Major Roads
- Railways
- Approved Clearing

Gouldian Finch Habitat

- Breeding Habitat
- Existing Disturbance
- Wet Season Foraging Habitat

0 5 10 15 20 Kilometers

Scale: 1:300,000
GDA 1994 MGA Zone 53

31-Oct-2018
680.10533

H:\Projects-SLR\610-Snr\SYD\680-DRW\680.10533 Vista Gold GP\MPI\SLR680.10533 F05 Breeding and Foraging Habitat within Yinberrie Hills Site of Significance.mxd

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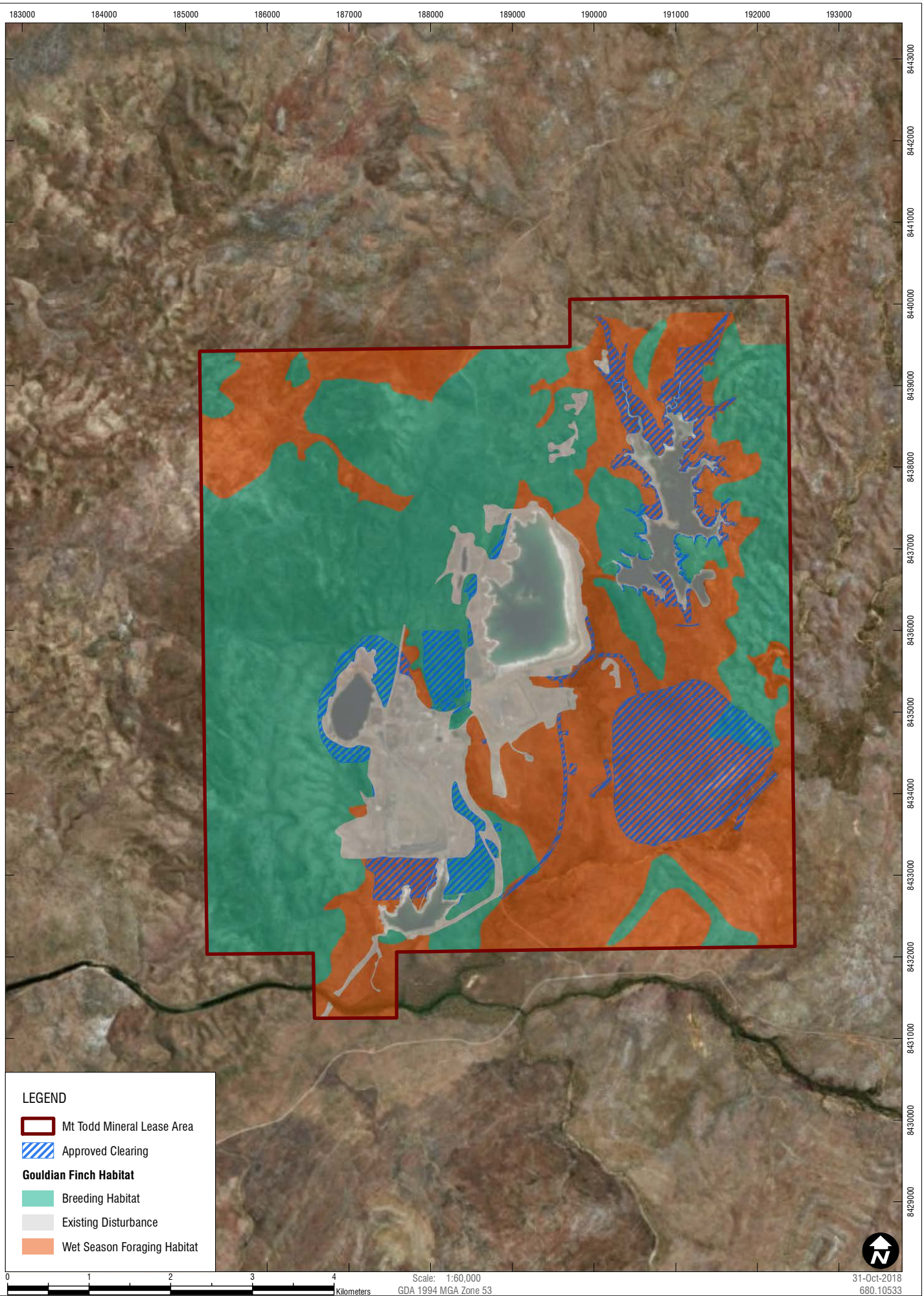
Breeding and Foraging Habitat within the Yinberrie Hills Site of Conservation Significance

Mt Todd Mine Project EPBC 2011/5967

FIGURE 2



Breeding and Foraging Habitat within the Project Area

Mt Todd Mine Project EPBC 2011/5967

FIGURE 3

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2 Background Information

The Gouldian Finch is a small, brightly coloured seed-eating bird restricted to the northern savannas of Australia (O'Malley 2006). Habitat suitable for the Gouldian Finch is considered to range from Cape York Peninsula to the Kimberley region in Western Australia. O'Malley (2006) reported that the range of the Gouldian Finch was estimated to be 101,000 km^2, however, this has since been revised to 1,780,000 km^2 (IUCN 2022).

Table 2 Summary Description of the Gouldian Finch (DEPWS 2021).

Property	Detail
General Description	Adults have a purple breast, yellow belly, green back and wings, bright blue rump and a black tail with finely elongated streamers (DEPWS 2021). Gouldian Finches are highly mobile and are sparsely scattered across the landscape, often occurring in mixed flocks with other seed-eating birds such as the masked and long-tailed finches (NESP 2023).
Colour Morphs	Individuals with a black-face (most common), red-face, or yellow-face (very rare) (DEPWS 2021).  *Zhang (2015)*
Gender differences	Males are considerably more brightly coloured than females, and juveniles are entirely dull green (DEPWS 2021)

2.1 Ecology

2.1.1 Habitat

Gouldian Finches live in the tropical savannah, thickets, and woodlands with grassy plains usually near water as it needs to drink several times during the day (AM 2020, Animalia 2023).

2.1.2 Nesting

The Gouldian Finch is an obligate user of tree hollows for nesting. It breeds in the second half of the wet season between February and April in hollow-bearing trees of open woodlands, particularly salmon gum (*Eucalyptus tintinnans*), snappy gum (*E. brevifolia*) and possibly bloodwood (*E. dichromophloia*) and woollybutt (*E. miniate*) (DEPWS 2021, AM 2020, O'Malley 2006b). The breeding season can be prolonged, with a longer season (January to August) when extended rains provide ample seeds

The Gouldian Finch has highly specialised nest requirements with nests generally found at heights of 6–13 m above the ground in tree hollows in either salmon gum or snappy gum (Magrath et al. 2008, Brazill-Boast et al. 2010). A shallow cup-shaped nest of grass is generally built inside a termite-formed tree hollow (O'Malley 2006b). However, frequent fires can reduce the number of tree hollows suitable for breeding (DEPWS 2021). The availability of excess high quality nest sites (reducing inter- and intraspecific competition) potentially allows

a greater number of pairs to nest earlier in preferred sites (Brazill-Boast 2012). Breeding sites can be further increased as nest-boxes can be effective as an interim tool for enhancing reproduction.

The relatively specialised nest-size requirements for the Gouldian Finch affects how early and successfully they breed (noting they are out-competed for hollows in trees by long-tailed finches) (Brazill-Boast 2012). Nest availability and the proximity of the nest to food and water are vitally important to them. Feeding/watering sites can be classified by distance as follows:

- Optimal (0-500 m)
- Marginal (500-2500 m)
- Distant (2500-7000 m)
- Unreachable (>7000 m) (Liedloffetel et al. 2009).

Note that it is likely to be the availability of food and water rather than nest sites that limits the majority of population for Gouldian Finches (Brazill-Boast 2012).

In addition to the availability of water, the Gouldian Finch seems to have a preferred habitat in the Northern Territory, with most known breeding sites found in hilly terrain that consists of generally west facing, gently sloping (~15°) sandstone ridges (Brazill-Boast 2012). These areas are characterised as savannah grassland with an overstorey dominated by hollow-bearing smooth-barked gums such as hills salmon gum, *E. tintinans*, snappy gum, *E. brevifolia*, northern white gum, *E. leucophloia,* bloodwood, *Corymbia dichromophloia* and woollybutt, *E. miniate* (Magrath et al. 2008, Brazill-Boast 2012, DEPWS 2021).

In Queensland, reintroduced Gouldian Finch have been observed nesting in poplar gum (*Eucalyptus platyphylla),* a close relative of salmon gum (W. Goulding pers. obs.), and ghost gum (*Corymbia dallachiana*) (O'Malley 2006b).

2.1.3 Diet

2.1.3.1 Wet season feeding

Gouldian Finches are found in areas with lowland drainages and a variety of woodland types where they forage on the ground and feed on seeds of a variety of perennial grasses that begin to set seed in mid-December (cockatoo grass (*Alloteropsis semialata*), golden beard grass (*Chysopogon fallax*) or spinifex-dominated communities (*Triodia bitextura; T. acutispicula; T. bynoei; T. schinzii))* (O'Malley 2006b). Other important wet season grasses include giant spear grass (*Heteropogon triticeus*), white grass (*Sehima nervosum*), ricegrass (*Xerochloa laniflora*) and kangaroo grass (*Themeda triandra*) (O'Malley 2006, 2006b). Gouldian Finches will also feed on red grass (*Mnesithea formosa*), northern wanderrie (*Eriachne obtusa*), mauve sandgrass (*Whiteochloa biciliata*) and *Aristida dominii* (O'Malley 2006b). At the start of the wet season Gouldian Finches may also feed on *Schizachyrium* spp. and *Mnesithea formosa* and non-native grasses including; buffel, barnyard grass (*Echinochloa colona*) or *Panicum maximum* (O'Malley 2006b). This may be due to large-scale fires late in the dry season can reduce the amount of seed available for Gouldian Finches early in the wet season (DEPWS 2021). This wide range of grass seeds in the diet is in contrast to DCCEEW (2016) who reported that in the wet season they rely on a small number of perennial grass species including cockatoo grass (*Alloteropsis semialata*) and golden beard grass (*Chrysopogon fallax*). However, the grass seeds in the diet will be related to location and availability.

2.1.3.2 Dry Season feeding

Gouldian Finches forage on the ground, feeding on shed grass seeds (mostly *Sorghum* spp.), and find water at small rocky waterholes (DEPWS 2021). Dry season feeding habitat is generally dominated by annual spear grasses or native sorghum (O'Malley 2006, 2006b, Garnett et al. 2011, 2021). Grass species targeted will vary depending on the time of the year and grass maturity and there is evidence that the Gouldian Finches do utilise a wider range of grass seeds in their diet than previously reported and will consume insects if seeds become scarce (Collett et al. 2022, AM 2020).

2.1.4 Clutch Size

The average clutch size is five eggs several times per year however only one or two fledge per clutch (DEPWS 2021, Garnett et al. 2010). The incubation time is approximately 13 days, with the birds becoming independent in 40 days (AM 2020, Animalia 2023). Interestingly, the population mean clutch size, brood size and number of fledged offspring (per attempt) all tended to increase when the habitat was supplemented with nest-boxes (Brazill-Boast 2012).

2.1.5 Life span

The life span of the Gouldian Finch has been reported as varying from 2.7 years (DEPWS 2021) to 9 years (Animalia 2023). However, a life span of up to 3 years is generally observed.

2.1.6 Genetic variability

O'Malley (2006b) reported that there were no substantial genetic differences existing between Gouldian Finch populations across northern Australia. This was also reported in DCCEEW (2016) which stated that there is one continuous genetic population in the west, while nuclear markers indicate contemporary gene flow from the Kimberley to the Northern Territory.

2.1.7 Key Threats

Animalia (2023) reported that the major threats to Gouldian Finches are bushfires that occur during the dry season. These fires can destroy birds' native habitat, particularly the trees with hollows required for nesting, and seeds used in their diet while altering vegetation growth. The loss of nesting hollows will increase the competition and result in population decline due to lack of suitable nesting hollows.

Other serious threats come from increasing human developments and from cattle grazing and feral herbivores which also destroys grasses that Gouldian Finches are so dependent on for food, however, it has been reported that Gouldian Finches will forage for non-native grass species (O'Malley 2006). Current information indicates that the Gouldian Finch can adapt readily to changes in the environment from human activities (Woinarski *et al.* 2023).

Gouldian Finches are also a popular bird in aviculture because of their striking colours. In the past, these small colourful birds were trapped for aviculture and were often reported as one of the more common of the eleven cultured finch species (O'Malley 2006b).

The Gouldian Finches susceptibility to the parasitic air-sac mite, *Sternastoma tracheacolum*, reduced their numbers in the past (AM 2020), but is currently not reported as a threat.

2.2 Population Numbers

Gouldian Finch populations were historically reported to have undergone a significant population decline (O'Malley 2006). Prior to 2006, a National population of <2,500 was assumed, and then estimated to be <2,500 in 2006 based on recorded observations at a small number of sites within Northern Territory and Western Australia (O'Malley 2006). Similar population declines were reported in other granivorous birds inhabiting the northern savannas at the time. Nonetheless, the Gouldian Finch is now more common than it was 20 years ago (Woinarski *et al.* 2023). Woinarski et al. (2023) suggests that the increase in population numbers may be related to better management of fire and livestock or that it may have learned or evolved to thrive in an environment modified by humans. In 2022, the population of the Gouldian Finch was considered stable and estimated to be between 5,000 and 50,000 mature individuals with a best estimate of 25,000 (Garnett et al. 2021, IUCN 2022). **Table 3** shows the recorded population numbers from 2000 – 2023.

Table 3 Population number, Population Trend, IUCN Red List Criteria and Occurrence for the Gouldian Finch (2000 – 2022)

Year	Listing	In decline	Population Trend	Population Number (Mature Individuals)			Estimated Extent of Occurrence (Km²)	Reference
				Lower Estimate	Best Estimate	Upper Estimate		
1988	Threatened	-	-	-	-	-	-	
1994	Endangered (EN)	-	-	-	-	-	-	
1996	Endangered (EN)	-	-	-	-	-	-	
2000	Endangered (EN)	Yes	Decreasing		2,499		101,000	IUCN 2000
2004	Endangered (EN)	Yes	Decreasing		2,499		101,000	IUCN 2004
2006	Endangered (EN)	Yes	Decreasing		2,499		101,000	IUCN 2006
2008	Endangered (EN)	Yes	Decreasing	2,000		10,000	101,000	IUCN 2008
2012	Near Threatened (NT)	No	Stable	1,000	2,400	10,000	101,000	IUCN 2012
2013	Near Threatened (NT)	No	Stable	1,000	2,400	10,000	101,000	IUCN 2013
2016	Near Threatened (NT)	No	Stable	1,000	2,400	10,000	101,000	IUCN 2016
2022	Least Concern (LC)	No	Stable	5,000	25,000	50,000	1,780,000	IUCN 2022

2.3 Conservation Status

Currently, the Gouldian Finch is listed as **Endangered** (En) under the Environment Protection and Biodiversity Conservation Act 1999 and as **Vulnerable** (V) under Northern Territory Parks and Wildlife Conservation Act 1976 (DEPWS 2021). The Gouldian Finch was considered **Endangered** (En) in 1990, **Vulnerable** (V) in 2,000 and **Near Threatened** (NT) in 2010 (according to Garnett et al. 2021). The listings in 1990 and 2000 are mainly associated with assumptions of bird populations that were in decline and numbering less than 2,500 mature individuals (Garnett et al. 2011, IUCN 2000).

In 2010, the population estimates from the 2006 National Recovery Plan for the Gouldian Finch (O'Malley 2006) and the 2010 Action Plan for Australian Birds (Garnett et al. 2011) were used to identify a stable population with less than 2,500 mature individuals with a **Near Threatened** (NT) status that was reflected in subsequent International Union for Conservation of Nature (IUCN) Red Listing assessments (IUCN 2012, 2013, 2016). It is noted, however, that these estimates were considered "*unduly conservative*" and it is possible that the number of mature individuals may exceed 2,500 mature individuals (O'Malley 2006b). The latest estimates for the Gouldian Finch from the 2020 Action Plan for Australian Birds (Garnett et al. 2021) indicate a status of **Low Concern** (LC) for the Gouldian Finch based on population numbers of mature individuals being stable and range from 5,000 to 50,000, with a best estimate of 25,000. Similarly, the IUCN Red List assessment has also updated the status for the Gouldian Finch to **Least Concern** (LC) (IUCN 2022) based on the estimates from the 2020 Action Plan for Australian Birds (Garnett et al. 2021).

A comparison of the extent of the Gouldian Finch bird populations as per the relevant Action Plan for and in the IUCN Red List assessments Birds (pre 2020 or 2021 onwards) are provided below in **Figure 4**. There appears to be an increase in the number of sightings (as indicated by the dots) in the images from the 2020 Action Plan for Birds (Garnett et al. 2021) compared to the 2010 Action Plan for Birds (Garnett et al. 2011) albeit with the same extent in both figures. However, the assumed extent of Gouldian Finch populations in the IUCN Red List in 2021 onwards is considerably larger than shown pre 2020. These figures indicate that the Gouldian Finch is more numerous and more widespread than was considered in previous population estimates (including when the **Vulnerable** (V) status for this bird was considered appropriate in the Northern Territory).

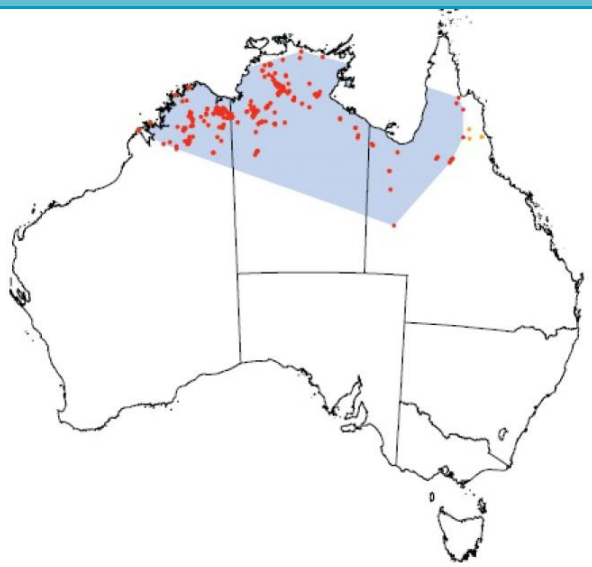
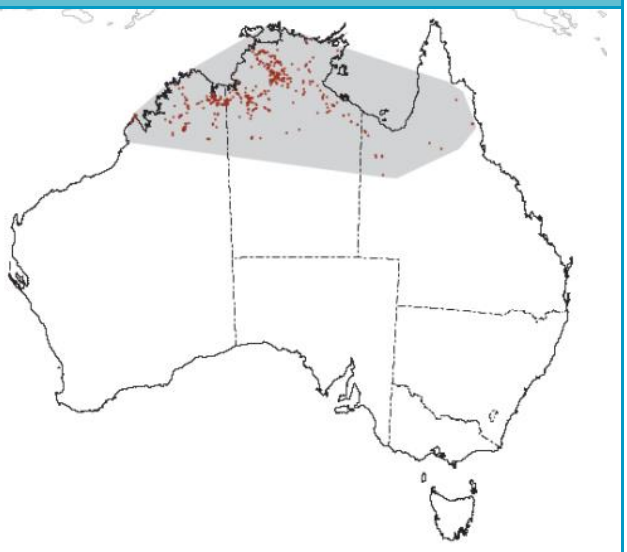
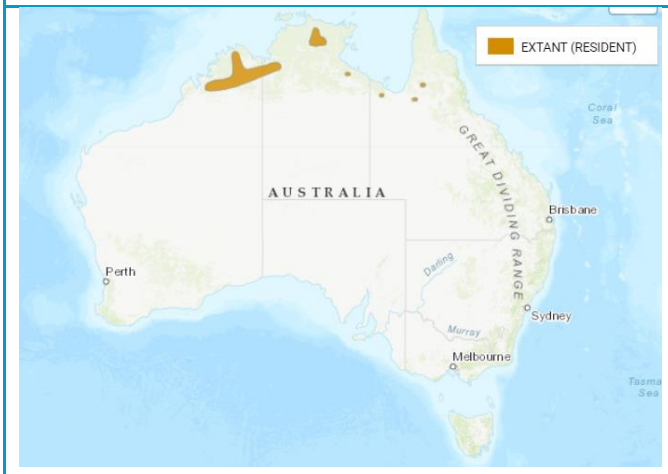
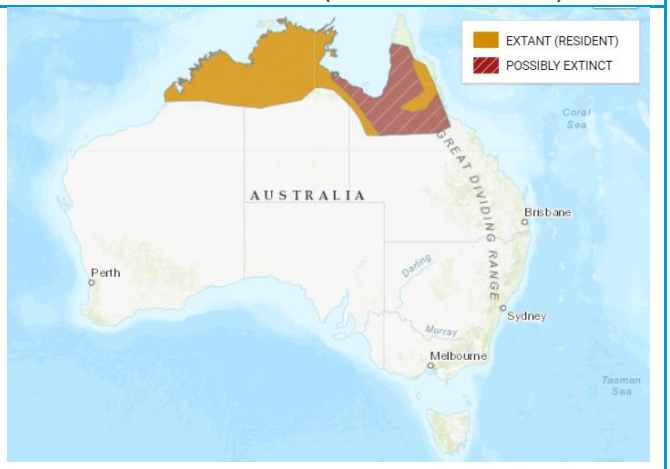
Prior to 2020	2021 onwards
 2010 Action Plan for Birds (Garnett et al. 2011)	 2020 Action Plan for Birds (Garnett et al. 2021)
 2016 IUCN Red List Assessment (IUCN 2016)	 2021 IUCN Red List Assessment (IUCN 2022)

Figure 4 Population Extent for Gouldian Finch from Action Plan for Birds and IUCN Red List Assessments.

2.4 Conclusions

Based on recent literature discussed above, the population of the Gouldian Finch has increased since it was declared Endangered under the EPBC Act in 2000 (ICUM 2022). The increase may be due to several issues:

1. Incorrect estimation of population size during 2000 – 2016.

2. Adaptability of Gouldian Finches to opportunistically add to the grass seed species used for their dietary need, including incorporating non-native grasses in their diet. This may mean that increasing the pastoral areas may provide a benefit to the birds.

3. Improved fire management to reduce the impact on food resources.

3 Ground Truthing Study

3.1 Introduction

SLR conducted a study to ground truth the areas designated foraging and breeding habitat within the proposed accommodation camp area (**Figure 5**) and the proposed WRD extension area (**Figure 6**).

3.2 Methods

Associate Zoologist Evan Webb and Project Consultant Mathi Sakthivel undertook the ground truthing field survey on the 3rd and 4th of May 2023. The field survey was undertaken within proposed WRD extension area (23.0 ha) and the proposed accommodation camp area (3.0 ha) (herein collectively referred to as the survey area) (**Figures 7 - 8**). The survey area was traversed on foot.

Habitat was assessed at five locations within the survey area. The following information was collected at each habitat assessment location:

- Site photo.
- Aspect.
- Evidence of fire.
- Presence of a water source (particularly those that remain in the late dry season).
- General description of vegetation, particularly the presence of dominant grass species known to be used for foraging by Gouldian finches such as *Sorghum* spp., *Schizachyrium* spp., and *Triodia* spp.

Habitat mapping was undertaken using GIS software based on a combination of field observations and aerial imagery.

All trees within the survey area were inspected from the ground, regardless of tree species. Trees were recorded in the dataset if they contained cavities that were physically possible for a finch-sized bird to enter, which was defined as a minimum entrance of 2.5 cm. The following variables, which are adapted from Brazil-Boast *et al*. (2010), were estimated from the ground:

- Perpendicular measures of the internal diameter of the entrance (height and width).
- Height above ground of the entrance to the cavity (measured to the bottom edge of entrance).
- Angle of the entrance (in relation to trunk: 0 = facing directly upward, 90° = facing horizontally).
- Height of tree.
- Circumference of trunk 1.5 m above the ground.
- Compass bearing of cavity entrance (16 cardinal directions).
- Type (hollow intruding into the stem or hollow branch extruding from a stem).
- Tissue state (alive or dead).
- Fragility score (description of vulnerability to damage or collapse, with 1 = most robust, 5 = most fragile).
- Species of tree.

Internal dimensions of cavities were not recorded during this study as internal inspections were not undertaken, therefore the number of potentially suitable cavities recorded during this field survey is likely to overestimate the actual number of suitable cavities present within the survey area.

If observed, any evidence of Gouldian Finches, including primary evidence such as direct sightings or calls, or secondary evidence such as feathers or nests were opportunistically recorded.

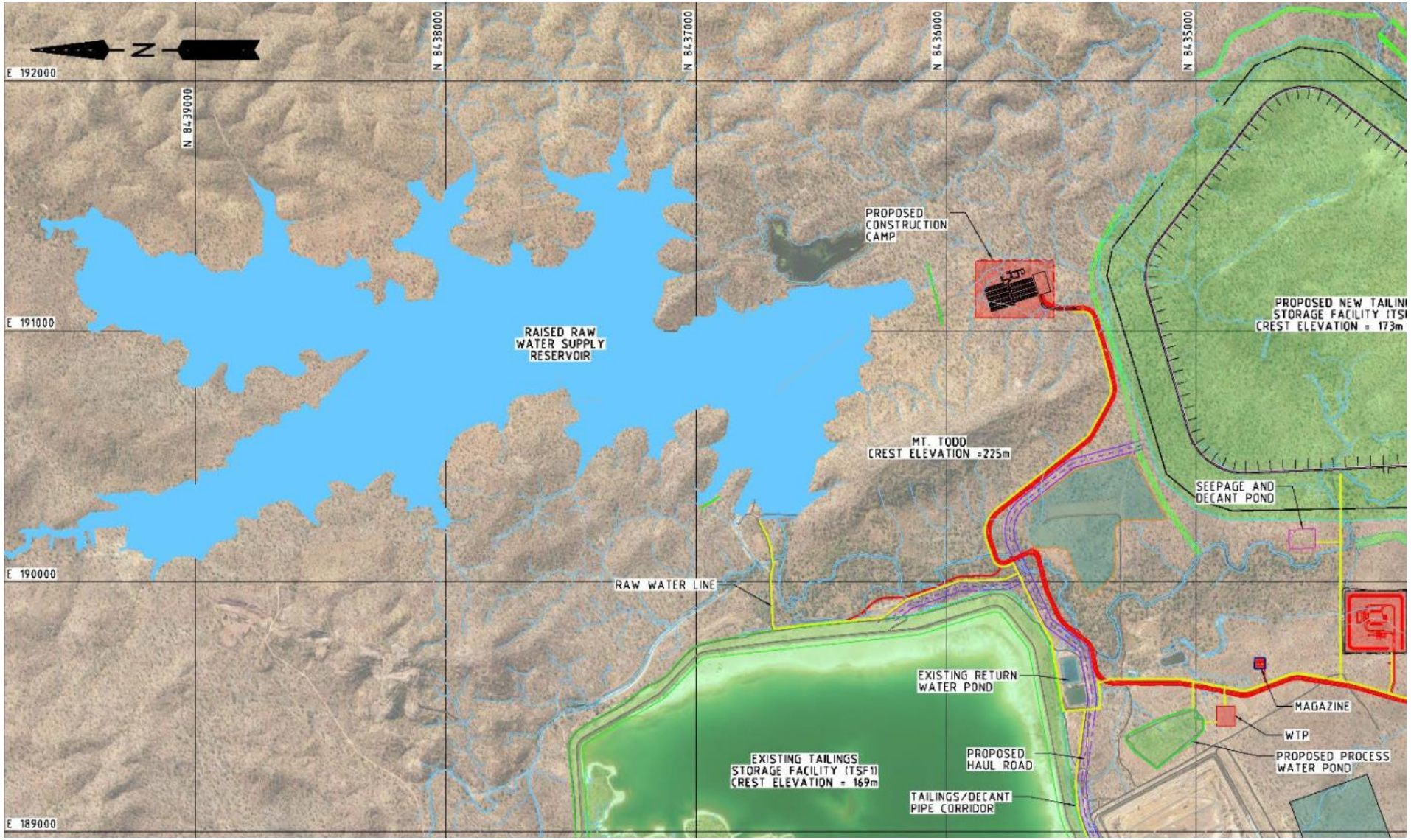
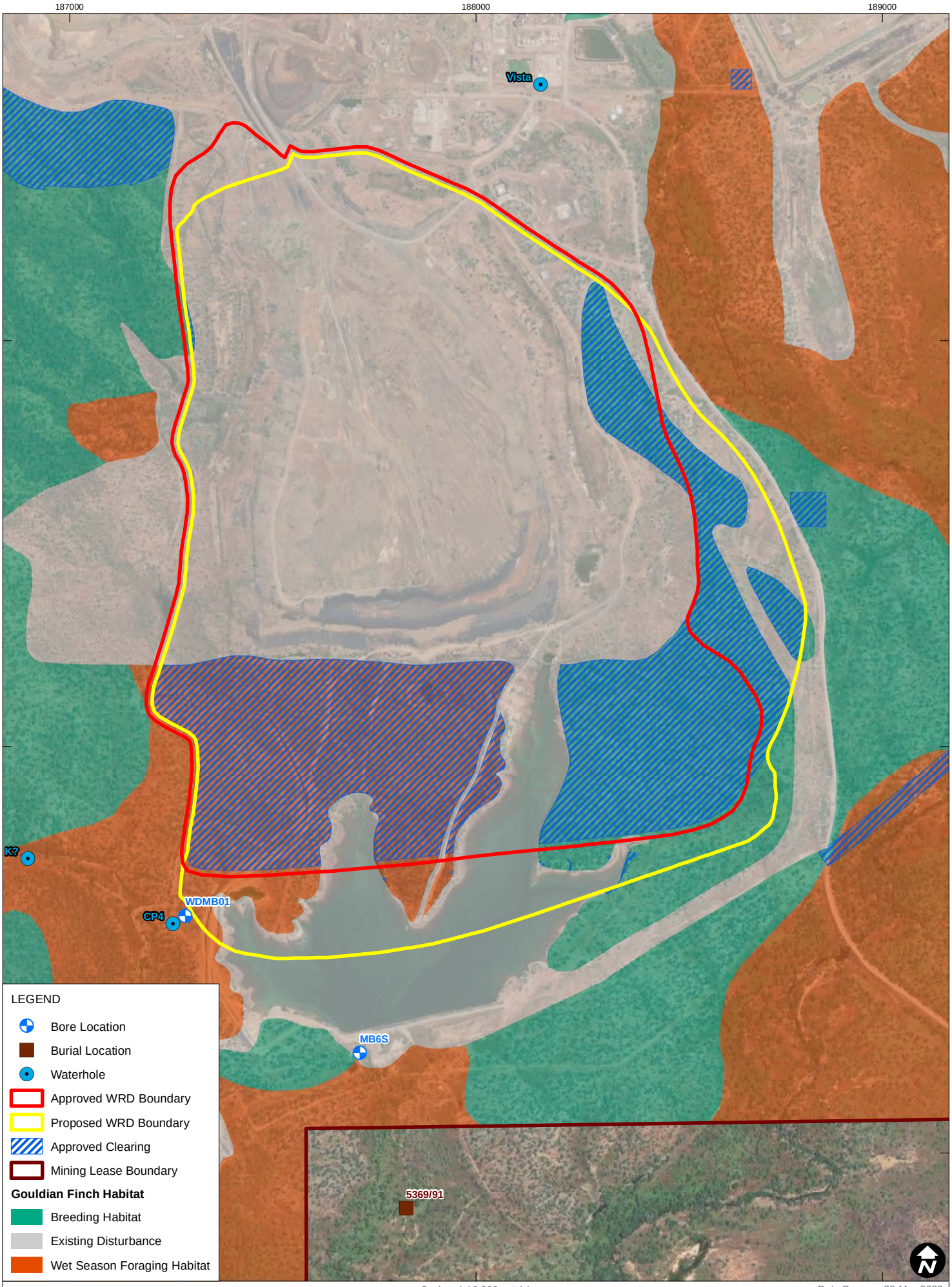


Figure 5 Proposed Construction Camp (Tetra Tech 2022)



Scale: 1:12,000 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 30-Mar-2023
Project Number: 680.30120

Data Source:
ESRI Basemaps

SLR

PROPOSED WRD LOCATION AND REQUIRED CLEARING

FIGURE 6

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3.3 Results

One habitat type, *Eucalyptus* woodland, was identified across both portions of the survey area (excluding cleared or inundated areas), comprising 9.1 ha (40%) of the proposed WRD extension area and 3.0 ha (60%) of the proposed accommodation camp area. The overstorey vegetation comprised a mid-woodland dominated by *Eucalyptus tectifica* (Darwin box) with scattered *E. tintinnans* (hills salmon gum), *Corymbia latifolia* (round-leaved bloodwood), and *C. confertifolia* (broad-leaved carbeen) and the understorey vegetation comprised a mid-tussock grassland dominated by *Sorghum stipoideum* (annual sorghum) and *Themeda triandra* (kangaroo grass) with scattered grasses including *Heteropogon triticeus* (giant spear grass) and *Sehima nervosum* (white grass). The understorey vegetation was patchy, with roughly 50% coverage within the survey area due to recent burning. The *Eucalyptus* woodland occurs on predominantly gentle (< 20°) stony slopes, with some steeper slopes in the east portion of the proposed WRD extension area. The aspect varied throughout the proposed WRD extension area, generally facing the nearest point of the RP1 tailings dam, while the proposed accommodation camp area has an easterly aspect.

Within the proposed WRD extension area a total of 76 trees were found to have 120 cavities with a minimum entrance size of 2.5 cm, comprising:

- 45 *E. tectifica* (Darwin box), within which 63 cavities were recorded.
- 16 *C. latifolia* (round-leaved bloodwood), within which 34 cavities were recorded.
- Three *E. tintinnans* (hills salmon gum), within which five cavities were recorded.
- Three *C. confertifolia* (broad-leaved carbeen), within which three cavities were recorded.
- Two *Erythrophleum chlorostachys* (Cooktown ironwood), within which three cavities were recorded.
- Seven stag trees[3] , within which 12 cavities were recorded.

Within the proposed accommodation camp area a total of 12 trees were found to have 21 cavities with a minimum entrance size of 2.5 cm, comprising:

- Six *E. tectifica* (Darwin box), within which 12 cavities were recorded.
- Two *E. tintinnans* (hills salmon gum), within which three cavities were recorded.
- Two *C. latifolia* (round-leaved bloodwood), within which three cavities were recorded.
- Two stags, within which three cavities were recorded.

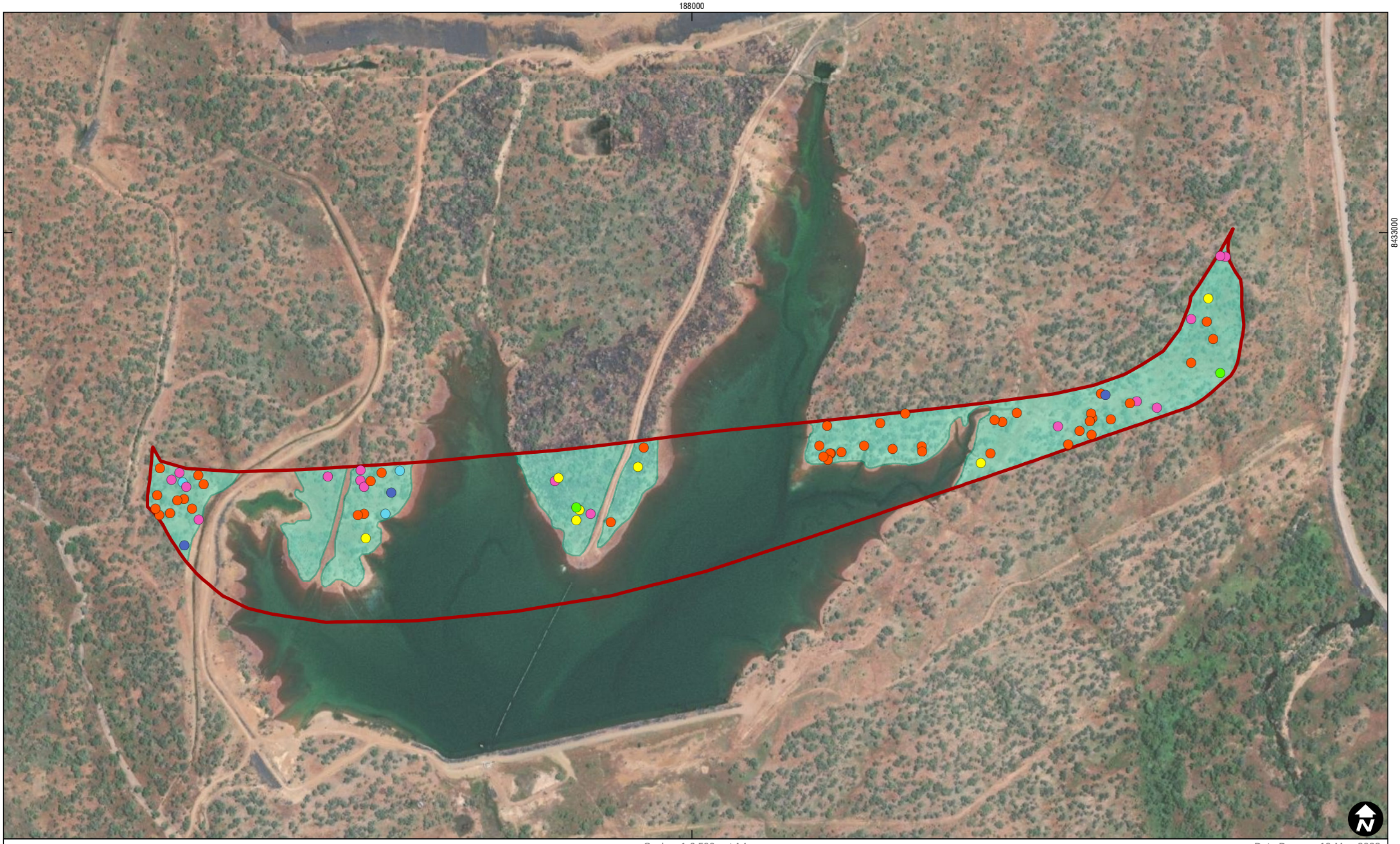
There were no observations of primary or secondary evidence of Gouldian Finches occurring within the survey area during the field survey.

Figure 7 shows the habitat at the base of the WRD footprint and **Figure 8** shows the habitat at the accommodation camp footprint.

[3] A tree with all live branches removed leaving branch stubs and trunk only, usually burnt and dead.

Figure 7 WRD Footprint habitat

Figure 8 Accommodation Camp Footprint Habitat



Scale: 1:6,500 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 19-May-2023
Project Number: 680.30120

Potential breeding and foraging habitat
Ground truthing survey boundary

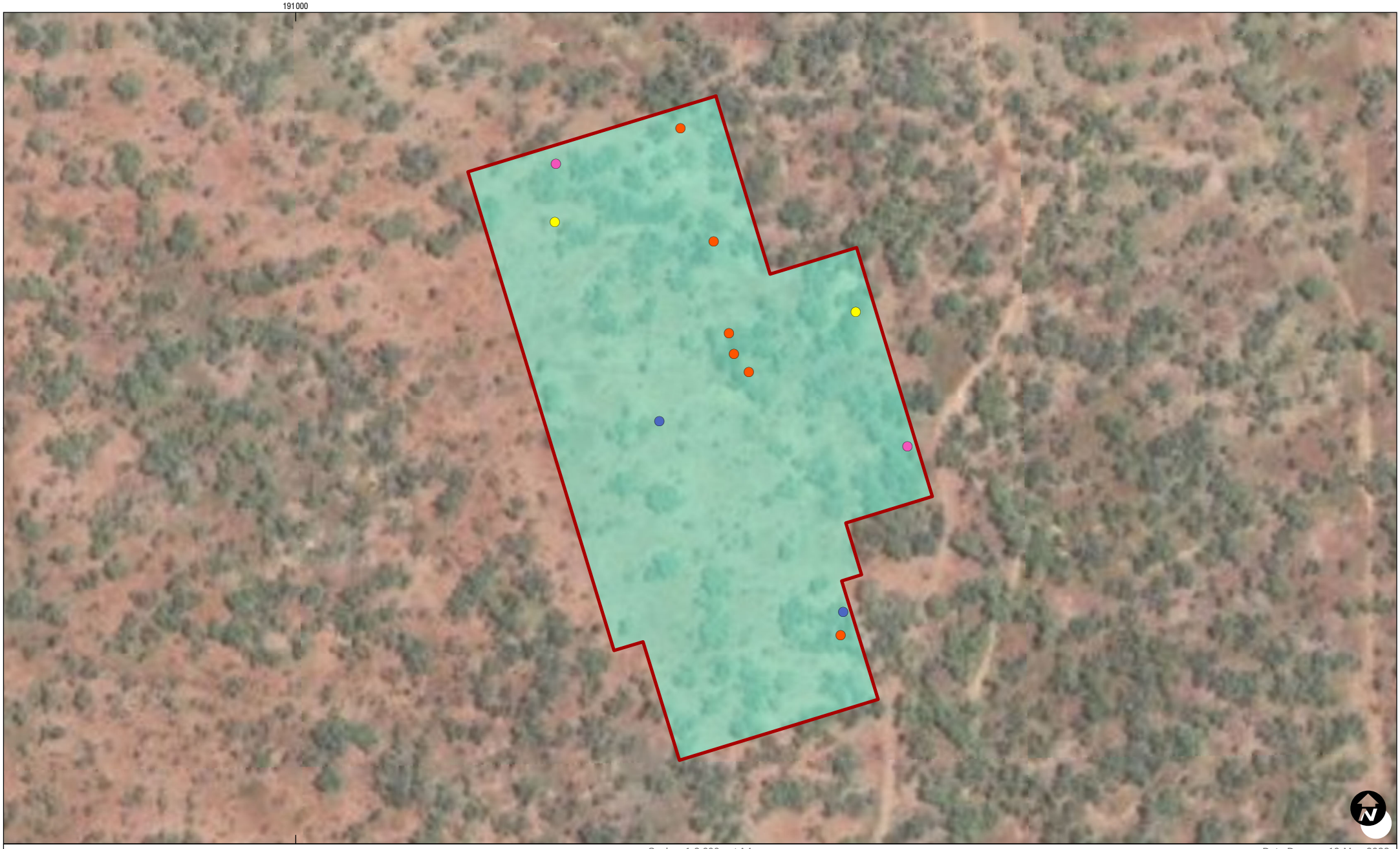
Tree Species

- *Corymbia confertifolia* - Broad-leaved Carbeen
- *Corymbia latifolia* - Round-leaved Bloodwood
- *Erythrophleum chlorostachys* - Cooktown Ironwood
- *Eucalyptus tectifica* - Darwin Box
- *Eucalyptus tintinnans* - Hills Salmon Gum
- Stag

Gouldian Finch Ground Truthing Survey Results - WRD

FIGURE 9

H:\Projects-SLR\680-DRW\680-DRW\680.30120.00000 Vista Gold Mt Todd WMP and environmental\06 SLR Data\01 CADGIS\GIS\SLR68030120_F7 Gouldian Finch Ground Truthing Survey Results.mxd



Scale: 1:2,000 at A4
Coordinate System: GDA 1994 MGA Zone 53

Date Drawn: 19-May-2023
Project Number: 680.30120

SLR

Potential breeding and foraging habitat
Ground truthing survey boundary

Tree Species

- *Corymbia confertifolia* - Broad-leaved Carbeen
- *Corymbia latifolia* - Round-leaved Bloodwood
- *Erythrophleum chlorostachys* - Cooktown Ironwood
- *Eucalyptus tectifica* - Darwin Box
- *Eucalyptus tintinnans* - Hills Salmon Gum
- Stag

Gouldian Finch Ground Truthing Survey Results - Accommodation

FIGURE 10

H:\Projects-SLR\680-DRW\680-DRW\680.30120.00000 Vista Gold Mt Todd WMP and environmental\06 SLR Data\01 CADGIS\GIS\SLR68030120_F7 Gouldian Finch Ground Truthing Survey Results.mxd

3.4 Discussion

3.4.1 Breeding habitat

The *Eucalyptus* woodland habitat identified within the survey area was found to contain a low density of *E. tintinnans* (hills salmon gum) trees with suitably sized cavities for Gouldian Finch breeding. *E. tintinnans* is listed as a preferred nesting tree species for Gouldian Finches (O'Malley, 2006, Magrath *et al*., 2008). While suitably sized cavities were identified in other trees species, these tree species are not listed as preferred breeding trees for Gouldian Finches in existing literature, and therefore may be of less value than *E. tintinnans*. A total of 141 cavities were identified during the study with only 20 (14%) of these being potentially suitable for Gouldian Finch use (**Appendix C**).

3.4.2 Wet season foraging habitat

The understorey vegetation was dominated by suitable grasses for both wet and dry season foraging, including *Sorghum stipoideum* (annual sorghum), *Themeda triandra* (kangaroo grass), *Heteropogon triticeus* (giant spear grass), and *Sehima nervosum* (white grass). Given the presence of both breeding and foraging plant species within the *Eucalyptus* woodland, the *Eucalyptus* woodland was assessed as potential breeding and foraging habitat during the ground truthing field survey.

3.5 Conclusion

The extents of Gouldian Finch habitat identified during the ground truthing study are largely consistent with previous Gouldian Finch habitat mapping based on the NT Government vegetation community dataset (Wilson and Clark, 1990). However, the ground truthing study results differed from the previous habitat mapping in that a single habitat type which is suitable for both breeding and foraging was identified. This contradicts the previous habitat mapping, which had separated the Gouldian Finch habitat into ~5.5 ha of potential breeding habitat and 5.2 ha of potential foraging habitat at the WRD site. In addition, although 141 cavities were identified only 14% were potentially suitable for Gouldian Finch nests.

4 Quantitative Analysis of Significant Impact

The NT EPA Call-in Notice (November 2022) requested the following:

> *Demonstrate through quantitative analysis against the EPBC Act significant impact guidelines criteria, that the clearing or disturbance as a result of the variation will not have a significant impact on Gouldian Finch habitat in the SOCS.*

An action is likely to have a significant impact on a critically endangered or endangered species if there is a real chance or possibility that it will meet the significant impact criteria in **Table 4**.

Table 4 Quantitative analysis against the EPBC Act significant impact guidelines criteria

Significant Impact Criteria	Response	Significance
Lead to a long-term decrease in the size of a population.	Based on recent data as shown in Section 2.2, the Gouldian Finch population in Northern Australia has increased from an estimated 2,500 in 2000 to 50,000 in 2022. Further, the extent of Gouldian Finch occurrence has now been estimated as 1,780,000 km^2, it is unlikely that removal of approximately 47.1 ha of habitat at a mine site would lead to a long-term decrease in the population number of the Gouldian Finch.	Not significant
Reduce the area of occupancy of the species.	The proposed changes to the Mt Todd mine will require the clearing of an additional of ~11.4 ha of designated foraging habitat and ~35.7 ha of designated breeding habitat. Currently Vista Gold have approval to clear 458 ha of wet season foraging habitat and 158 ha of breeding habitat. The additional clearing and the approved clearing will comprise of ~0.65% of the SOCS, an increase of 0.05% of the approved clearing.	Not significant
Fragment an existing population into two or more populations.	Gouldian Finches are found in an area of 1,780,000 km^2 across northern Australia. O'Malley (2006b) reported that there were no substantial genetic differences existing between Gouldian Finch populations across northern Australia. This was also reported in DCCEEW (2016) which stated that there is one continuous genetic population in the west, while nuclear markers indicate contemporary gene flow from the Kimberley to the Northern Territory. Therefore, it is unlikely that the removal of ~47.1 ha of foraging and breeding habitat would impact on the genetic variability of the Gouldian Finch population across northern Australia.	Not significant
Adversely affect habitat critical to the survival of a species.	The habitat to be cleared at the mine site is not critical habitat. Habitat to be cleared due to changes to the proposed mine operations consists of a total of 47.1 ha. Gouldian Finches are known to occur in an area across northern Australia of 1,780,000 km^2 with an estimated population of up to 50,000.	Not significant
Disrupt the breeding cycle of a population.	The clearance will be conducted in the dry season and will not impact on the breeding cycle of the Gouldian Finch.	Not significant

Significant Impact Criteria	Response	Significance
Modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.	The removal of an additional 11.4 ha of designated wet season foraging habitat and 35.7 ha of designated breeding habitat (0.045% of the SOCS) is unlikely to significantly decrease the availability or quality of habitat in the SOCS as the preferred breeding habitat for Gouldian Finches is to the wet of the mine site. In addition only 14% of tree cavities identified in the WRD area had potential to be used as nesting sites for the Gouldian Finch.	Not significant
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.	The risk of introducing invasive species that would impact on the Gouldian Finch population from mining activities is negligible.	Not significant
Introduce disease that may cause the species to decline.	The risk of introducing disease to the Gouldian Finches from mining activities is negligible.	Not significant
Interfere with the recovery of the species.	Based on recent data as shown in Section 2.2 of this report, the Gouldian Finch population in Northern Australia has increased from an estimated 2,500 in 2000 to 50,000 in 2022.	Not significant

The assessment shows that no significant impact is expected to occur from the additional clearance of designated Gouldian Finch wet season foraging and breeding habitat at the Mt Todd site due to the expansion of Batman Pit, WRD, accommodation camp construction and associated access road.

4.1 Mitigation

The following actions will be undertaken to mitigate potential impacts from additional clearing for the Batman Pit enlargement, WRD resize and construction camp that make up 0.045% (~45.7 ha) of the wider Yinberrie Hills (SOCS30). The site inspection identified this area includes some undisturbed woodland, some previously disturbed (revegetated) areas and some disturbed areas (tracks):

- The Gouldian Finch Management Plan (GFMP) (Draft) has been prepared by the Technical Advisory Committee (TAC).The plan includes management measures that will be updated and implemented during construction and operation of the Project to minimise impacts to the Gouldian Finch.
- A comprehensive environmental monitoring program will be implemented for the Mt Todd Gold Mine for the construction phase which will then be modified and rolled over into the operational phase which will also include a specific GFMM Program.
- Clearing of mapped Gouldian Finch habitat will occur in line with a site-specific vegetation clearing plan prior to clearing. Before clearing is undertaken the areas directly impacted will be checked as part of the site clearing process and appropriate actions will implemented. Clearing of mapped breeding habitat (including *Eucalyptus tintinnans* woodlands) will only occur outside of the breeding season, i.e. September through to February. Clearing of mapped wet season foraging habitat will occur during the breeding season, i.e. undertaken from March to August.

5 References

AM (2020). Australian Museum Gouldian Finch Fact Sheet. https://australian.museum/learn/animals/birds/gouldian-finch/

Collett, S.J., Crewe, T.L., Radford, I.J., Garnett, S.T. and Campbell, H.A. (2022). Coexisting finch species change where they go and what they eat when food resources decline. June 2022, Behavioural Ecology.

Brazill-Boast J., Pryke S.R. and Griffith S.C. (2010). Nest-site utilisation and niche overlap in two sympatric, cavity-nesting finches. EMU. 110:170-177.

Brazill-Boast, J., S.R. Pryke and Griffith S.C. (2013). Provisioning habitat with custom-designed nest-boxes increases reproductive success in an endangered finch. Austral Ecology. 38(4):405-412.

DCCEEW (2016). Conservation Advice. *Erythrura gouldiae*. Gouldian finch. 07/12/2016. Threatened Species Scientific Committee. Department of Climate Change, Energy, the Environment and Water (DCCEEW) Available at http://www.environment.gov.au/biodiversity/threatened/species/pubs/413-conservation-advice-07122016.pdf

DEPWS (2021). Threatened species of the Northern Territory. Gouldian finch. *Erythrura gouldiae*. November 2021. Department of Environment, Parks and Water Security (DEPWS). Northern Territory Government. https://nt.gov.au/environment/animals/threatened-animals

Garnett, S., Szabó, J. and Dutson, G. (2011). The action plan for Australian birds 2010. CSIRO Publishing.

Garnett, S. T. and Baker, G.B. (2021). The Action Plan for Australian Birds 2020. CSIRO Publishing.

Garnett S.T., Woinarski J.C.Z., Crowley G.M. and Kutt A.S. (2010) Biodiversity conservation in Australian tropical rangelands. In Can Rangelands be Wildlands? Wildlife and Livestock in Semi-arid Ecosystems. (Eds J. du Toit, R. Kock and J. Deutsch) pp. 191–234. Blackwell Scientific, London.

IUCN (2000). Gouldian Finch. IUCN Red List. 01 May 2000. Published 2000. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/27692915

IUCN (2004). Gouldian Finch. IUCN Red List. 01 May 2004. Published 2004. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/27692194

IUCN (2006). Gouldian Finch. IUCN Red List. 01 May 2006. Published 2006. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/27691231

IUCN (2008). Gouldian Finch. IUCN Red List. 01 May 2008. Published 2008. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/27690493

IUCN (2012). Gouldian Finch. IUCN Red List. 01 May 2012. Published 2012. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/38430059

IUCN (2013). Gouldian Finch. IUCN Red List. 01 November 2013. Published 2013. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/48152068

IUCN (2016). Gouldian Finch. IUCN Red List. 01 October 2016. Published 2016. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/94642482

IUCN (2022). Gouldian Finch. IUCN Red List. 02 December 2021. Published 2022. International Union for Conservation of Nature (IUCN). Last accessed 28 February 2023 at this location: https://www.iucnredlist.org/species/22719744/211561819

Magrath, M., Weston, M., Olsen, P., Antos, M., and Herrod, A. (2008). Survey guidelines for Australia's threatened birds. Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999. Updated 2008. Department of the Environment, Water, Heritage and the Arts.

NESP (2023). Finding finches – using eDNA to track endangered birds. Article. National Environmental Science Program (NESP). Last accessed 17 February 2023 at this location: https://nesplandscapes.edu.au/impact/finding-finches-using-edna-to-track-endangered-birds/

O'Malley, C. (2006). National Recovery Plan for the Gouldian Finch (*Erythrura gouldiae*). WWF-Australia, Sydney and Parks and Wildlife NT, Department of Natural Resources, Environment and the Arts, NT Government, Palmerston.

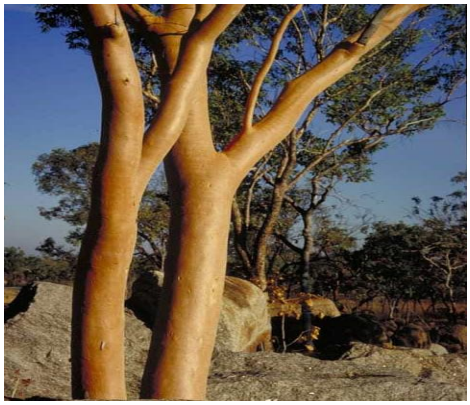
O'Malley, C. (2006b). Appendix to National Recovery Plan for the Gouldian Finch (*Erythrura gouldiae*). Background information. WWF-Australia, Sydney and Parks and Wildlife NT, Department of Natural Resources, Environment and the Arts, NT Government, Palmerston.

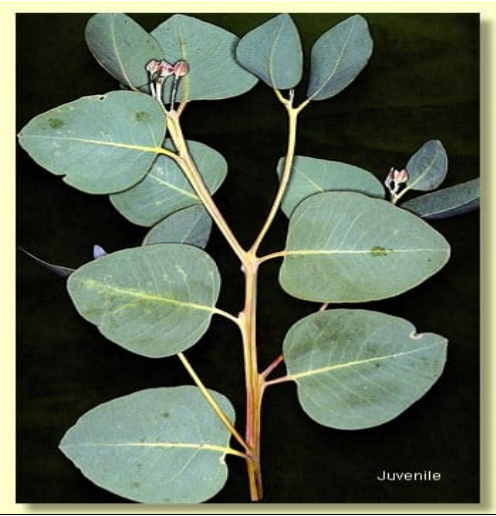
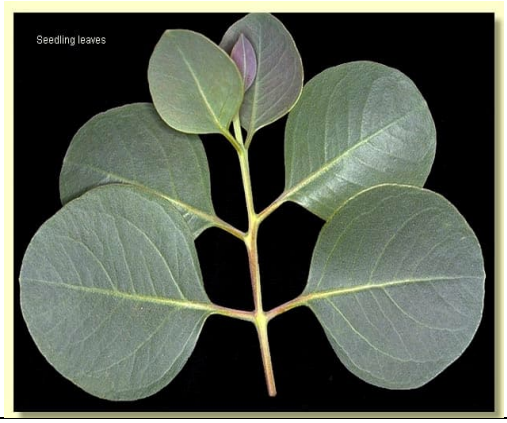
Wilson, B. A., and Clark, M. J., (1990). The vegetation of an area surrounding the proposed Batman mine site, Edith River, Northern Territory. Land Conservation Unit, Conservation Commission of the Northern Territory. Technical memorandum 90/4.

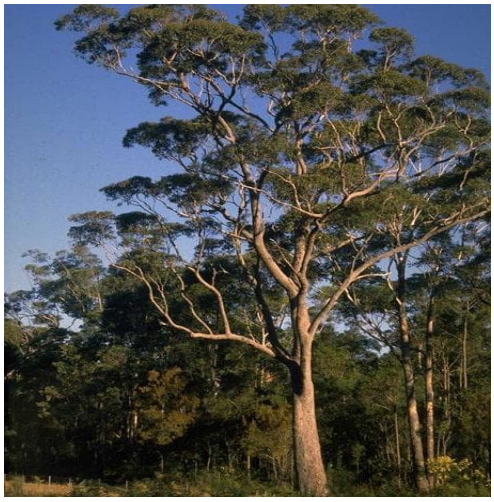
Appendix A:

Tree and Grass Identification

Mt Todd Mine Site Vegetation Identification

Species	**Identification** Photo
Trees	
E. tintinnans It is closely related to red gums. Endemic to Northern Territory. 15 m tall tree with a short and straggly appearance. Deciduous during the drier months prior to the wet season. Bark is smooth with pale orange or pale cream colour. It matures to salmon pink and greys before decortication. Flowering season is July and September.	 
E. brevifolia It has smooth, powdery white bark, lance-shaped adult leaves, buds arranged in group of seven, white flowers and cup-shaped or barrel-shaped fruit. It typically grows to a height of 10 metres (33 ft) and forms a lignotuber. It is endemic to Northern Australia. It grows on rocky hill tops and slopes. Flowering season occurs in March and August.	

	
E. leucophloia snappy gum It is a small tree that forms a lignotuber. It typically grows to a height of 2.5 to 10 metres (8 to 33 ft). It has smooth, powdery bark, lance-shaped to egg-shaped adult leaves, flower buds usually in groups of seven, white flowers and cup-shaped, barrel-shaped, or hemispherical fruit. Flowering occurs between March and August.	 

Corymbia gummifera Bloodwood It is a tree that typically grows to a height of 20–35 m (66–115 ft), rarely a mallee, and forms a lignotuber. It has rough, tessellated bark on the trunk and branches, lance-shaped adult leaves, flower buds in groups of seven, creamy white flowers and urn-shaped fruit. Flowering occurs from December to June and the flowers are creamy white. It is endemic to Northern Australia.	  
Corymbia dichromophloia It has smooth white bark sometimes with flaky bark on the trunk, lance-shaped adult leaves, flower buds usually in groups of seven, creamy white flowers and	

urn-shaped fruit. The seeds are reddish brown and boat-shaped with a wing on the end. It grows in woodland on hills, ridges, plains and near river banks on red or yellow sandy soils over granite or sandstone.	 
E. miniata Darwin Woollybutt It has rough, fibrous, brownish bark on the trunk, smooth greyish bark above. Adult leaves are lance-shaped, the flower buds are ribbed and arranged in groups of seven, the flowers orange or scarlet and the fruit is cylindrical to barrel-shaped or urn-shaped, with ribs	

along the sides. Flowering occurs from May to September and the flowers are orange or scarlet	
Eucalyptus platyphylla poplar gum (Queensland only?) It has smooth. powdery bark, heart-shaped, egg-shaped to almost round leaves, flower buds in groups of seven, white flowers and conical to hemispherical fruit. It is a tree that typically grows to a height of 20 m (66 ft) and forms a lignotuber. Flowering occurs from June to October	 

	
Corymbia dallachiana Dallachy's ghost gum It is a tree that typically grows to a height of 15 m (49 ft), sometimes more, and forms a lignotuber.It has smooth bark, lance-shaped or curved adult leaves, flower buds usually in groups of three, white flowers and cup-shaped, cylindrical or barrel-shaped fruit. Flowering has been observed in November and December	 

Grasses

Sorghum stipoideum

Annual sorghum is a slender, erect annual grass growing up to 3m tall (depending on soil and rainfall). The leaf blades are blue-green, flat and up to 30cm long. The seed head is a light brown single spike 10–40cm long. It flowers from February to May.

Schizachyrium spp. Little Bluestem Little Bluestem is a very ornamental bunchgrass with fine-textured foliage that forms very dense mounds 18-24 inches tall. Slender blue-green stems often reach 5 feet, or more, by September, and become radiant mahogany-red with white, shining seed tufts in the fall. Colour remains nearly all winter. Perennial clumps grow up to a foot in diameter.	  

Triodia bitextura Curly spinifex is a perennial grass with a straggly tussock or hummock that can grow to 80cm tall and up to 2m across. Stems are smooth and slender with many branches. The leaf blades are rolled, slender and up to 30cm long. The seed head is a single spike and has a feathery appearance. It flowers from February to May.	 
Alloteropsis semialata cockatoo grass This plant typically reaches 20-150 centimetres tall, growing from a short, white rhizome. The leaf blades are typically 10-50 centimetres long and 1-10 millimetres wide. The plant produces 2-flowered fertile spikelets.	

	
Chysopogon fallax golden beard grass Chrysopogon fallax is an erect, tufted, perennial grass 30–150 cm tall. Leaves are mostly basal; the old leaf sheaths persist and have a woolly appearance. The inflorescence is a panicle 7–21 cm long, with whorled branches. The spikelets appear at the end of the branches and are purplish to golden brown.	

	 
T. acutispicula Lazarides Tussock-forming resinonus perennial, grass-like or herb, 0.5-1.5 m high, lemma bi-textured, glabrous, with transverse demarcation, spikelet terete. Fl. cream-brown, Jan to Apr. Sandy soils. River levees, pindan plains, rocky hillslopes & outcrops.	

	
T. bynoei Tussock-forming aromatic resinous perennial, grass-like or herb, 0.3-1.5 m high, panicle large, racemose, spikelet relatively small, lemma unequally awned. Fl. brown-red/cream, Jan to May. Rocky soils, sandstone, laterite, quartzite. Mountain ranges.	 

T. schinzii Tussock-forming resinous perennial, grass-like or herb, 0.6-2.1 m high, glumes aristulate, much longer than body of spikelet. Flowering occurs in Aug to Oct or Jan to Mar. Grows in red sandy soils. sandplains, red sand dunes.	 
Heteropogon triticeus giant spear grass Hardy erect perennial tussock grass found across tropical grasslands of Northern Australia particularly eucalypt woodlands and occasionally gravelly soils in wetter areas. In the dry season, when not flowering, it is about 50–70 cm tall. In the wet season, the flowering stems grow quickly by a section of the	

pale-yellow stem being pushed upwards until it protrudes well above the green leaf sheath that previously enclosed it.	
Sehima nervosum white grass White grass is a tufted, erect perennial grass that can grow to 100cm tall, with slender brittle stems. The leaves are up to 30cm long and dry off to give the plant a characteristic white colour when mature. The seed head consists of a single spike that is 6–10cm long and has a rat's tail appearance. It flowers from February to May.	 

Xerochloa laniflora Ricegrass Rice grass is an erect annual or short-lived perennial grass that can grow to 30cm tall. Stems are smooth and slender. The leaf blades are rolled, narrow and up to 10cm long. The seed heads appear woolly and are 5–15cm long on a single spike	 
Themeda triandra kangaroo grass *Themeda triandra* is a tufted perennial that can grow to 1.5 m tall and 0.5 m across. Its leaves are 10-50 cm long and 2-5 mm wide, green to grey drying to an orange brown in summer. The flowering period is from December to February. It produces distinct large red-brown spikelets, which occur on branched stems. Spikelets have long distinguishing spathes at their base and bare florets with black awns 4-7 cm long, which remain with the seed when it falls.	 

Mnesithea Formosa red grass An annual grass up to 60 cm high. The leaves are cauline (arising along the stem of the plant), with leaf blades from 1-12 cm long and 1-4 mm wide. The inflorescence or flowering branch is a solid, cylindrical, jointed raceme or spike to 8 cm long and is fragile at the nodes, the segment or internodes 2-2.5 mm long. Spikes are solitary and terminate the culm.	 
Eriachne obtusa northern wanderrie Wire grass is a slender, erect, tufted perennial grass that can grow to 60cm tall, with a thickened hairy base. The stems are very fine. The leaves are stiff and flat, and about 5–10cm long. The seed head is 4–8cm long and is open with several fine branchlets	

bearing a few silky-haired seeds.	
Whiteochloa biciliata mauve sandgrass Slender tufted annual, grass-like or herb, 0.4-1 m high. Fl. green-purple, Jan to May. Alluvium, sand, sandy loam, sometimes saline.	No field photo available https://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:426734-1
Aristida domini It is a compactly tufted annual, grass-like or herb, 0.3-0.6 m high. Flowers are yellow-brown/green.	No field photo available https://ausgrass2.myspecies.info/content/aristida-dominii
Buffel grass *(Cenchrus echinatus)* Buffel grass is declared a Class B weed in the NT. It is a slightly-tufted, short-lived grass usually growing 25-60 cm tall.	

Its stem bases and lower leaf sheaths often have a reddish or purplish-coloured tinge. Its seed-heads are spike-like with numerous, almost stalkless, burr-like structures (4-10 mm in size). The 'burrs' contain several flower spikelets enclosed in numerous spine-tipped bracts and hairy bristles. The 'burrs' are reddish or purplish-green when young, but turn straw-coloured or dark brown as they mature.	
Barnyard grass *(Echinochloa colona)* Tufted annual grass to 150 cm high with flat, hairless leaves to 30 cm long and 2 cm wide. Flower-head is a green or purple panicle, 6-13 cm long, with spikelets crowded in clusters along short branches and several bristles subtending each group of spikelets. Spikelets 3-3.7 mm long, containing an empty lower floret and a bisexual upper floret. It is considered an environmental weed in Northern Territory.	 

Guinea grass (Panicum maximum) Panicum maximum is a densely clump-forming, perennial grass with erect or ascending culms. The plant often has shortly creeping rhizomes at the base and can also produce new roots at the lower nodes of the culms. Widely cultivated, there are low/medium height forms from 100 - 150cm tall and also tall forms that can reach 250 - 300cm or more. The plant tillers profusely, producing tufts or clumps up to 30 cm or more wide. It has the potential to become weeds if not properly managed.	  

Appendix B:

Potential Gouldian Finch Breeding Trees

Potential Gouldian Finch Breeding Trees

Tree ID	**Latitude** (WGS84)	Longitude (WGS84)	Date	Tree taxa	Tree height (m)	Tree diameter (cm)
1	-14.1605595	132.1036437	03-05-2023	*Eucalyptus tintinnans* - Hills Salmon Gum	14	90
2	-14.1601645	132.1034710	03-05-2023	*Eucalyptus tectifica* - Darwin Box	17	120
3	-14.1601914	132.1033389	03-05-2023	*Eucalyptus tectifica* - Darwin Box	17	90
4	-14.1601164	132.1032967	03-05-2023	*Eucalyptus tectifica* - Darwin Box	17	77
5	-14.1599514	132.1033162	03-05-2023	*Eucalyptus tectifica* - Darwin Box	16	100
6	-14.1596267	132.1033553	03-05-2023	*Eucalyptus tectifica* - Darwin Box	18	85
7	-14.1596835	132.1035936	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	17	110
8	-14.1597686	132.1034972	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	20	130
9	-14.1597989	132.1036348	03-05-2023	*Corymbia confertifolia* - Broad-leaved Carbeen	15	80
10	-14.1598554	132.1036777	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	15	90
11	-14.1597128	132.1038317	03-05-2023	*Eucalyptus tectifica* - Darwin Box	20	80
12	-14.1598220	132.1038925	03-05-2023	*Eucalyptus tectifica* - Darwin Box	17	100
13	-14.1600020	132.1036494	03-05-2023	*Eucalyptus tectifica* - Darwin Box	18	110
14	-14.1600192	132.1035648	03-05-2023	*Eucalyptus tectifica* - Darwin Box	18	100
15	-14.1601165	132.1037466	03-05-2023	*Eucalyptus tectifica* - Darwin Box	8	75
16	-14.1602553	132.1038256	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	18	130
17	-14.1597520	132.1054325	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	17	120
18	-14.1596782	132.1058401	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	18	135
19	-14.1598030	132.1058372	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	20	90
20	-14.1598826	132.1058785	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	20	90
21	-14.1598133	132.1059612	03-05-2023	*Eucalyptus tectifica* - Darwin Box	15	50
22	-14.1597096	132.1061043	03-05-2023	*Eucalyptus tectifica* - Darwin Box	17	100

Tree ID	Latitude (WGS84)	Longitude (WGS84)	Date	Tree taxa	Tree height (m)	Tree diameter (cm)
23	-14.1596927	132.1063249	03-05-2023	Corymbia confertifolia - Broad-leaved Carbeen	12	80
24	-14.1599557	132.1062149	03-05-2023	*Eucalyptus tintinnans* - Hills Salmon Gum	14	110
25	-14.1602099	132.1061429	03-05-2023	Corymbia confertifolia - Broad-leaved Carbeen	14	90
26	-14.1602130	132.1058757	03-05-2023	*Eucalyptus tectifica* - Darwin Box	12	90
27	-14.1602237	132.1058023	03-05-2023	*Eucalyptus tectifica* - Darwin Box	14	80
28	-14.1605026	132.1058935	03-05-2023	Stag	10	70
29	-14.1594485	132.1093520	03-05-2023	*Eucalyptus tectifica* - Darwin Box	14	90
30	-14.1596798	132.1092759	03-05-2023	Stag	4	60
31	-14.1603492	132.1089290	03-05-2023	*Eucalyptus tectifica* - Darwin Box	10	80
32	-14.1602372	132.1086851	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	10	100
33	-14.1601937	132.1085476	03-05-2023	Stag	15	150
34	-14.1603170	132.1085028	03-05-2023	Stag	12	100
35	-14.1601601	132.1085052	03-05-2023	*Erythrophleum chlorostachys* - Cooktown Ironwood	12	100
36	-14.1598380	132.1082448	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	15	165
37	-14.1598003	132.1082923	03-05-2023	Stag	5	130
38	-14.1586332	132.1165044	03-05-2023	*Erythrophleum chlorostachys* - Cooktown Ironwood	12	60
39	-14.1590476	132.1157134	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	14	165
40	-14.1591793	132.1151425	03-05-2023	*Eucalyptus tectifica* - Darwin Box	14	100
41	-14.1591629	132.1149140	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	100
42	-14.1591060	132.1148951	03-05-2023	*Eucalyptus tectifica* - Darwin Box	9	87
43	-14.1591937	132.1148802	03-05-2023	*Eucalyptus tectifica* - Darwin Box	8	90
44	-14.1593607	132.1148974	03-05-2023	*Eucalyptus tectifica* - Darwin Box	10	110
45	-14.1593112	132.1147533	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	80
46	-14.1592563	132.1144819	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	14	150

Tree ID	Latitude (WGS84)	Longitude (WGS84)	Date	Tree taxa	Tree height (m)	Tree diameter (cm)
47	-14.1594767	132.1146051	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	90
48	-14.1591917	132.1137982	03-05-2023	*Eucalyptus tectifica* - Darwin Box	8	60
49	-14.1591672	132.1136996	03-05-2023	*Eucalyptus tectifica* - Darwin Box	11	80
50	-14.1595696	132.1136432	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	85
51	-14.1596844	132.1135253	03-05-2023	Stag	17	85
52	-14.1590845	132.1139768	03-05-2023	*Eucalyptus tectifica* - Darwin Box	15	100
53	-14.1594795	132.1127912	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	70
54	-14.1595363	132.1127957	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	65
55	-14.1595037	132.1124299	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	70
56	-14.1594569	132.1120816	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	100
57	-14.1595348	132.1118015	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	70
58	-14.1595511	132.1116693	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	75
59	-14.1595448	132.1116542	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	105
60	-14.1596257	132.1116277	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	75
61	-14.1595855	132.1115751	03-05-2023	*Eucalyptus tectifica* - Darwin Box	10	75
62	-14.1594506	132.1115259	03-05-2023	*Eucalyptus tectifica* - Darwin Box	13	90
63	-14.1592176	132.1116240	03-05-2023	*Eucalyptus tectifica* - Darwin Box	14	90
64	-14.1591895	132.1122810	03-05-2023	*Eucalyptus tectifica* - Darwin Box	14	80
65	-14.1590772	132.1125970	03-05-2023	*Eucalyptus tectifica* - Darwin Box	10	70
66	-14.1588645	132.1150207	03-05-2023	*Eucalyptus tectifica* - Darwin Box	12	90
67	-14.1588865	132.1150792	03-05-2023	*Eucalyptus tintinnans* - Hills Salmon Gum	12	90
68	-14.1589623	132.1154642	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	17	100
69	-14.1589830	132.1153758	03-05-2023	*Eucalyptus tectifica* - Darwin Box	15	90
70	-14.1585049	132.1161445	03-05-2023	*Eucalyptus tectifica* - Darwin Box	17	100

Tree ID	Latitude (WGS84)	Longitude (WGS84)	Date	Tree taxa	Tree height (m)	Tree diameter (cm)
71	-14.1582254	132.1164229	03-05-2023	*Eucalyptus tectifica* - Darwin Box	12	115
72	-14.1580176	132.1163421	03-05-2023	*Eucalyptus tectifica* - Darwin Box	17	105
73	-14.1579787	132.1161470	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	10	80
74	-14.1577324	132.1163653	03-05-2023	Stag	12	90
75	-14.1572267	132.1165861	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	15	170
76	-14.1572206	132.1165193	03-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	15	150
77	-14.1327536	132.1403665	04-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	15	95
78	-14.1322544	132.1401757	04-05-2023	Stag	12	75
79	-14.1323273	132.1396961	04-05-2023	*Eucalyptus tectifica* - Darwin Box	18	95
80	-14.1324053	132.1397138	04-05-2023	*Eucalyptus tectifica* - Darwin Box	17	140
81	-14.1324728	132.1397693	04-05-2023	*Eucalyptus tectifica* - Darwin Box	18	90
82	-14.1319871	132.1396425	04-05-2023	*Eucalyptus tectifica* - Darwin Box	12	100
83	-14.1315686	132.1395216	04-05-2023	*Eucalyptus tectifica* - Darwin Box	12	120
84	-14.1316950	132.1390483	04-05-2023	*Corymbia latifolia* - Round-leaved Bloodwood	20	150
85	-14.1319084	132.1390411	04-05-2023	Stag	12	90
86	-14.1326495	132.1394284	04-05-2023	*Eucalyptus tintinnans* - Hills Salmon Gum	13	80
87	-14.1334486	132.1401046	04-05-2023	*Eucalyptus tectifica* - Darwin Box	14	120
88	-14.1333607	132.1401156	04-05-2023	*Eucalyptus tintinnans* - Hills Salmon Gum	13	80

Appendix C:

Potential Gouldian Finch Breeding Cavities

Potential Gouldian Finch **Breeding Cavities**

Suitability of cavities for nesting by Gouldian Finches has been based on the following nesting requirements of the birds:

- Cavity entrance <10 cm
- Height from ground between 6 -13 m
- Tree is alive with a fragility scale of 1-2

Tree ID – Green = possibly suitable for nesting
Tree ID – Red = unsuitable for nesting

Tree ID	Latitude	Longitude	Hollow entrance height (cm)	Hollow entrance width (cm)	Height above ground (m)	Angle of entrance (°)	Compass bearing	Hollow type	Tissue status	Fragility
1	-14.1605503	132.1036396	5	5	7	90	N	Hollow branch extruding from a stem	Dead	4
1	-14.1605170	132.1037091	5	5	6	60	NE	Hollow branch extruding from a stem	Dead	4
1	-14.1605323	132.1036334	8	8	5	45	N	Hollow branch extruding from a stem	Dead	4
2	-14.1601191	132.1034792	20	5	2	90	NW	Hollow intruding into the stem	Alive	1
3	-14.1601968	132.1033526	5	5	6	20	N	Hollow branch extruding from a stem	Dead	3
3	-14.1602108	132.1033646	7	7	6	45	E	Hollow intruding into the stem	Alive	1
4	-14.1601351	132.1033033	7	7	4	60	NW	Hollow branch extruding from a stem	Dead	3
5	-14.1599388	132.1033408	8	8	2	10	SW	Hollow branch extruding from a stem	Dead	3
6	-14.1596019	132.1033619	5	5	6	45	NW	Hollow intruding into the stem	Alive	2
7	-14.1596438	132.1035903	7	7	6	30	NW	Hollow branch extruding from a stem	Dead	3
7	-14.1596580	132.1035841	7	7	8	0		Hollow branch extruding from a stem	Dead	3
8	-14.1597399	132.1035220	7	7	10	90		Hollow intruding into the stem	Alive	2
8	-14.1597296	132.1035121	5	5	9	30	NE	Hollow intruding into the stem	Alive	3
8	-14.1597557	132.1035156	7	7	12	10	SE	Hollow branch extruding from a stem	Dead	3

Tree ID	Latitude	Longitude	Hollow entrance height (cm)	Hollow entrance width (cm)	Height above ground (m)	Angle of entrance (°)	Compass bearing	Hollow type	Tissue status	Fragility
9	-14.1598016	132.1036484	7	7	9	45	E	Hollow intruding into the stem	Alive	3
10	-14.1598347	132.1036841	10	10	12	0		Hollow intruding into the stem	Alive	2
10	-14.1598343	132.1036732	7	7	10	45	NE	Hollow intruding into the stem	Alive	2
10	-14.1598253	132.1036909	7	7	9	25	N	Hollow branch extruding from a stem	Dead	4
11	-14.1597084	132.1038057	7	7	3	35	SW	Hollow branch extruding from a stem	Dead	2
11	-14.1596953	132.1038410	7	7	6	30	NW	Hollow branch extruding from a stem	Dead	3
11	-14.1597410	132.1038168	5	5	6	45	SW	Hollow intruding into the stem	Alive	2
12	-14.1598592	132.1039001	7	7	5	0		Hollow intruding into the stem	Alive	1
12	-14.1598608	132.1039174	5	5	4	30	SE	Hollow branch extruding from a stem	Dead	4
13	-14.1599886	132.1036350	5	5	9	0		Hollow branch extruding from a stem	Dead	5
13	-14.1600018	132.1036046	5	5	9	30	NW	Hollow branch extruding from a stem	Dead	3
13	-14.1600097	132.1036047	5	5	5	10	W	Hollow intruding into the stem	Dead	2
14	-14.1600132	132.1035842	5	5	7	90	N	Hollow intruding into the stem	Alive	3
15	-14.1600794	132.1037716	7	7	3	0		Hollow branch extruding from a stem	Dead	3
15	-14.1600879	132.1037508	5	5	4	10	NE	Hollow intruding into the stem	Dead	3
16	-14.1602415	132.1038289	7	7	12	45	NE	Hollow branch extruding from a stem	Dead	3
16	-14.1602457	132.1038426	10	10	3	30	SW	Hollow intruding into the stem	Alive	2
16	-14.1602396	132.1038248	5	5	13	90	SE	Hollow branch extruding from a stem	Alive	3
17	-14.1597650	132.1054215	5	5	12	45	NW	Hollow intruding into the stem	Alive	1
17	-14.1597843	132.1054180	5	5	10	30	SW	Hollow intruding into the stem	Alive	2
17	-14.1597676	132.1054164	7	7	12	10	SW	Hollow intruding into the stem	Dead	3
18	-14.1596755	132.1058416	5	5	4	90	W	Hollow branch extruding from a stem	Dead	4

Tree ID	Latitude	Longitude	Hollow entrance height (cm)	Hollow entrance width (cm)	Height above ground (m)	Angle of entrance (°)	Compass bearing	Hollow type	Tissue status	Fragility
18	-14.1596773	132.1058384	5	5	5	45	W	Hollow branch extruding from a stem	Dead	3
18	-14.1596853	132.1058375	5	5	10	45	SW	Hollow branch extruding from a stem	Dead	3
19	-14.1597831	132.1058579	5	5	10	10	N	Hollow branch extruding from a stem	Alive	3
20	-14.1598911	132.1059019	5	5	4	10	NW	Hollow branch extruding from a stem	Dead	4
21	-14.1598135	132.1059603	5	5	4	0		Hollow branch extruding from a stem	Dead	3
22	-14.1597202	132.1060850	7	7	0	45	NW	Hollow intruding into the stem	Alive	1
22	-14.1597193	132.1060825	10	10	8	30	SW	Hollow branch extruding from a stem	Dead	4
23	-14.1597037	132.1063263	5	5	6	0		Hollow branch extruding from a stem	Dead	3
24	-14.1599491	132.1061926	15	15	6	10	SW	Hollow branch extruding from a stem	Alive	1
25	-14.1602099	132.1061047	5	5	8	45	W	Hollow branch extruding from a stem	Dead	3
26	-14.1601984	132.1058750	7	7	2	45	N	Hollow branch extruding from a stem	Dead	2
26	-14.1601952	132.1058647	7	7	4	35	W	Hollow branch extruding from a stem	Dead	4
26	-14.1602217	132.1058398	5	5	6	10	W	Hollow branch extruding from a stem	Dead	4
27	-14.1602171	132.1057984	10	10	6	10	N	Hollow branch extruding from a stem	Dead	3
28	-14.1604972	132.1058858	5	5	6	20	W	Hollow branch extruding from a stem	Dead	4
28	-14.1605022	132.1058698	5	5	6	10	W	Hollow intruding into the stem	Dead	1
28	-14.1605070	132.1058914	6	6	6	70	W	Hollow branch extruding from a stem	Dead	3
29	-14.1594469	132.1093196	5	5	2	0		Hollow branch extruding from a stem	Dead	4
30	-14.1596746	132.1092799	7	7	4	90	W	Hollow intruding into the stem	Dead	4
31	-14.1603384	132.1089110	6	6	3	30	E	Hollow intruding into the stem	Alive	2
32	-14.1602607	132.1086985	10	10	6	30	S	Hollow branch extruding from a stem	Dead	3
33	-14.1602137	132.1085713	12	12	9	0		Hollow intruding into the stem	Dead	1

Tree ID	Latitude	Longitude	Hollow entrance height (cm)	Hollow entrance width (cm)	Height above ground (m)	Angle of entrance (°)	Compass bearing	Hollow type	Tissue status	Fragility
33	-14.1602143	132.1085704	10	10	7	30	NE	Hollow intruding into the stem	Dead	3
33	-14.1602144	132.1085752	15	15	5	10	S	Hollow branch extruding from a stem	Dead	4
34	-14.1603139	132.1085388	10	10	5	0		Hollow branch extruding from a stem	Dead	4
35	-14.1601741	132.1084962	7	7	5	10	NE	Hollow branch extruding from a stem	Dead	4
35	-14.1601565	132.1084878	7	7	4	0		Hollow intruding into the stem	Alive	2
36	-14.1598615	132.1081917	13	13	7	0		Hollow intruding into the stem	Alive	1
36	-14.1598192	132.1082673	15	15	7	0	NE	Hollow intruding into the stem	Alive	1
36	-14.1598186	132.1082672	10	10	7	10	N	Hollow intruding into the stem	Dead	3
36	-14.1597988	132.1082478	7	7	8	45	S	Hollow branch extruding from a stem	Dead	4
37	-14.1597827	132.1083029	10	10	4	10	S	Hollow branch extruding from a stem	Dead	4
37	-14.1597822	132.1082883	20	20	5	10	NW	Hollow intruding into the stem	Dead	4
38	-14.1586606	132.1164930	10	10	7	10	S	Hollow branch extruding from a stem	Dead	3
39	-14.1590837	132.1157164	10	10	4	0		Hollow intruding into the stem	Alive	1
39	-14.1590755	132.1157055	20	10	8	70	S	Hollow intruding into the stem	Alive	1
39	-14.1590606	132.1156999	15	15	6	35	SW	Hollow intruding into the stem	Alive	1
40	-14.1591646	132.1151306	5	5	4	20	N	Hollow branch extruding from a stem	Dead	4
41	-14.1591539	132.1149069	5	5	8	45	N	Hollow branch extruding from a stem	Dead	5
42	-14.1591281	132.1148913	30	5	3	45	SE	Hollow intruding into the stem	Alive	1
43	-14.1591757	132.1148693	7	7	5	30	W	Hollow branch extruding from a stem	Dead	4
44	-14.1593463	132.1148984	10	10	2	45	NE	Hollow branch extruding from a stem	Dead	4
45	-14.1593500	132.1147685	7	7	7	10	SW	Hollow branch extruding from a stem	Dead	4
46	-14.1592253	132.1144801	10	10	9	45	N	Hollow branch extruding from a stem	Dead	4

Tree ID	Latitude	Longitude	Hollow entrance height (cm)	Hollow entrance width (cm)	Height above ground (m)	Angle of entrance (°)	Compass bearing	Hollow type	Tissue status	Fragility
47	-14.1594823	132.1145786	7	7	6	0		Hollow branch extruding from a stem	Dead	4
47	-14.1594628	132.1145815	20	10	4	45	W	Hollow intruding into the stem	Dead	1
48	-14.1591963	132.1137919	5	5	3	10	W	Hollow intruding into the stem	Dead	4
49	-14.1591907	132.1136999	10	10	6	0		Hollow intruding into the stem	Alive	1
50	-14.1595628	132.1136254	5	5	6	45	N	Hollow branch extruding from a stem	Dead	3
50	-14.1595571	132.1136245	5	5	3	45	NW	Hollow branch extruding from a stem	Alive	2
50	-14.1595601	132.1136242	5	5	4	45	W	Hollow intruding into the stem	Dead	3
51	-14.1596533	132.1135260	10	10	8	10	NW	Hollow branch extruding from a stem	Dead	4
52	-14.1590567	132.1139814	10	10	3	30	NE	Hollow branch extruding from a stem	Dead	3
53	-14.1594685	132.1127821	10	10	3	0		Hollow intruding into the stem	Alive	1
54	-14.1595233	132.1128018	4	10	10	45	N	Hollow branch extruding from a stem	Dead	3
55	-14.1595082	132.1124209	6	6	4	10	NW	Hollow branch extruding from a stem	Dead	3
55	-14.1594852	132.1124006	5	5	7	10	NW	Hollow branch extruding from a stem	Dead	4
56	-14.1594561	132.1120893	10	10	8	90	NW	Hollow intruding into the stem	Alive	2
56	-14.1594366	132.1120762	7	7	6	30	W	Hollow branch extruding from a stem	Dead	4
57	-14.1595393	132.1118260	10	10	3	30	S	Hollow branch extruding from a stem	Dead	4
58	-14.1595357	132.1116907	10	10	7	30	E	Hollow intruding into the stem	Dead	3
59	-14.1595362	132.1116442	20	20	4	45	NW	Hollow intruding into the stem	Alive	1
60	-14.1596510	132.1116314	10	10	4	80	SW	Hollow branch extruding from a stem	Dead	3
60	-14.1596455	132.1116303	15	15	2	30	SE	Hollow intruding into the stem	Alive	1
61	-14.1595549	132.1115799	10	10	3	20	NE	Hollow branch extruding from a stem	Dead	3
62	-14.1594262	132.1114876	7	7	5	10	NE	Hollow branch extruding from a stem	Dead	4

Tree ID	Latitude	Longitude	Hollow entrance height (cm)	Hollow entrance width (cm)	Height above ground (m)	Angle of entrance (°)	Compass bearing	Hollow type	Tissue status	Fragility
63	-14.1592125	132.1116062	15	15	6	0		Hollow branch extruding from a stem	Dead	3
64	-14.1591907	132.1122638	10	10	3	0		Hollow intruding into the stem	Alive	1
65	-14.1590825	132.1125927	5	5	3	0		Hollow branch extruding from a stem	Alive	1
66	-14.1588522	132.1150424	20	5	4	10	NE	Hollow intruding into the stem	Alive	2
67	-14.1588719	132.1150993	5	5	4	45	N	Hollow intruding into the stem	Alive	3
68	-14.1589690	132.1154716	8	8	6	45	W	Hollow intruding into the stem	Alive	2
69	-14.1589904	132.1153791	10	3	4	45	W	Hollow intruding into the stem	Alive	1
70	-14.1584767	132.1161298	8	8	8	30	N	Hollow branch extruding from a stem	Dead	3
70	-14.1584651	132.1161709	10	10	8	20	NE	Hollow branch extruding from a stem	Dead	2
70	-14.1584888	132.1161079	8	8	3	10	NW	Hollow branch extruding from a stem	Dead	3
71	-14.1582251	132.1163860	15	15	4	0		Hollow branch extruding from a stem	Dead	2
72	-14.1579823	132.1163490	8	8	8	90	NE	Hollow intruding into the stem	Alive	2
73	-14.1579729	132.1161547	10	10	3	10	NW	Hollow intruding into the stem	Alive	1
74	-14.1576983	132.1163682	10	10	3	45	W	Hollow intruding into the stem	Dead	1
75	-14.1572087	132.1165692	10	10	7	90	N	Hollow branch extruding from a stem	Dead	3
75	-14.1572225	132.1165861	15	15	5	45	S	Hollow branch extruding from a stem	Dead	5
75	-14.1572410	132.1166032	15	15	5	20	SW	Hollow intruding into the stem	Alive	1
76	-14.1571897	132.1164970	10	10	0	90	N	Hollow branch extruding from a stem	Dead	4
77	-14.1328099	132.1403523	7	7	7	90	S	Hollow branch extruding from a stem	Dead	3
78	-14.1322569	132.1401902	8	8	3	45	SE	Hollow intruding into the stem	Dead	4
79	-14.1323361	132.1396897	7	7	8	45	W	Hollow branch extruding from a stem	Dead	4
79	-14.1323422	132.1396574	7	7	10	30	S	Hollow branch extruding from a stem	Dead	4

Tree ID	Latitude	Longitude	Hollow entrance height (cm)	Hollow entrance width (cm)	Height above ground (m)	Angle of entrance (°)	Compass bearing	Hollow type	Tissue status	Fragility
79	-14.1323638	132.1396833	7	7	7.5	30	S	Hollow branch extruding from a stem	Dead	4
80	-14.1323870	132.1397297	7	7	10	45	N	Hollow branch extruding from a stem	Dead	4
80	-14.1323799	132.1397241	7	7	6	20	N	Hollow branch extruding from a stem	Dead	4
81	-14.1324559	132.1397964	7	7	8	10	NE	Hollow branch extruding from a stem	Dead	4
82	-14.1319774	132.1396594	7	7	3	20	NE	Hollow branch extruding from a stem	Dead	2
83	-14.1315805	132.1395268	12	12	4	30	SE	Hollow intruding into the stem	Alive	1
83	-14.1315506	132.1394676	10	10	8	20	W	Hollow branch extruding from a stem	Dead	3
84	-14.1316651	132.1390493	10	10	9	90	W	Hollow branch extruding from a stem	Dead	4
84	-14.1316668	132.1390464	10	10	8	0		Hollow branch extruding from a stem	Dead	4
85	-14.1319205	132.1390741	7	7	4	0		Hollow intruding into the stem	Alive	2
85	-14.1319289	132.1390751	7	7	3	90	E	Hollow branch extruding from a stem	Dead	3
86	-14.1326948	132.1394554	7	7	7	20	S	Hollow intruding into the stem	Alive	2
87	-14.1334415	132.1401281	25	25	4	90	E	Hollow intruding into the stem	Alive	1
87	-14.1334251	132.1401170	15	15	8	45	NE	Hollow intruding into the stem	Dead	3
87	-14.1334245	132.1401261	10	10	8	30	NE	Hollow branch extruding from a stem	Dead	3
88	-14.1333339	132.1400912	10	10	6	30	NW	Hollow branch extruding from a stem	Dead	4
88	-14.1333227	132.1400973	15	15	10	30	NW	Hollow branch extruding from a stem	Alive	2

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