Wallbrook Project

CPS 3202/4 Native Vegetation Clearing Permit Amendment Supporting Document

July 2023

M31/172

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1 SUMMARY

This document has been prepared in support of an application to amend native vegetation clearing permit CPS 3202/4 under Section 51K of Part V of the *Environmental Protection Act 1986* (EP Act).

This supporting document outlines the key activities associated with the Project, the existing environment and an assessment of native vegetation clearing. This assessment provides an evaluation of the vegetation clearing impacts associated with the Project using the ten clearing principles and strategies used to manage vegetation clearing (DWER 2014).

Project Name: Wallbrook Project

Project Location: Mining Lease M53/172, located in the Shire of Menzies, approximately 120 km northeast of Kalgoorlie Boulder (Figure 1-1).

Project Purpose: Continuation of mining at Wallbrook Project following further mineral exploration.

Proposed changes to CPS 3202/4: refer to Table below.

CPS 3202/4 Condition	Approved CPS 3202/4	Revised conditions	Proposed Changes
Duration of Permit	10 October 2009 to 31 December 2024	10 October 2009 to 31 December 2027.	Extension of clearing permit duration by 3 years.
Condition 3 - Area of Clearing	The Permit Holder must not clear more than 90 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1	The Permit Holder must not clear more than 190 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1	Amend maximum area of clearing from 90 ha to 190 ha. No changes to the clearing permit boundary are proposed

While additional native vegetation clearing is proposed, the clearing permit area will not change and a recent vegetation, flora and fauna survey has confirmed the characteristics of the vegetation in the clearing permit area has not changed (Botanica 2023).

The proposed clearing will result in the removal of an additional 100 ha of well represented vegetation communities in Good condition. Resulting in a revised clearing area of up to 190 ha. However, vegetation clearing will be minimised as far as practicable during mine development.

A vegetation clearing impact assessment has been conducted for the revised clearing activities and determined the proposed clearing is not at variance, or not likely to be at variance, with 9 of the 10 clearing principles.

The vegetation clearing is **may to be at variance with principle f:** No permanent wetlands or watercourses occur within the clearing permit area. One minor ephemeral drainage intersects the clearing permit area. All vegetation within the clearing permit area, including vegetation associated with the watercourses is well represented in the region.

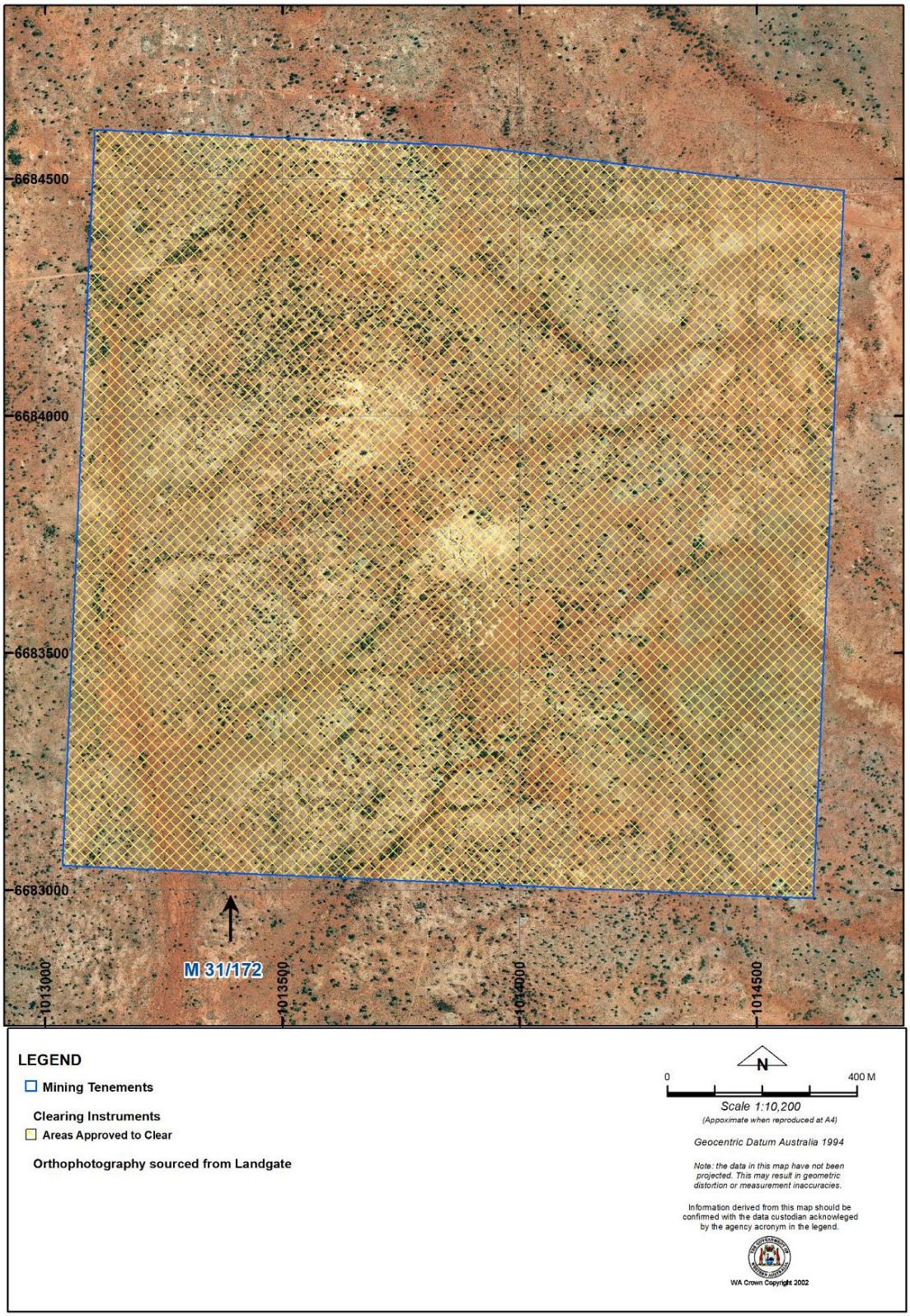

Figure 1-1: Clearing Permit Area

2 PROJECT DESCRIPTION

Wallbrook was originally mined in the early 2010s. Northern Star now plans to resume mining at Wallbrook. The next phase of mining involves expansion of the existing pits, waste rock landform and supporting infrastructure, including run-of-mine pad, Turkey's Nest, workshops and offices etc. (Figure 2-1).

Further development of the mine will require up to 100 ha of additional native vegetation clearing, resulting in a revised clearing area of up to 190 ha. However, vegetation clearing will be minimised as far as practicable during mine development.

No changes to the Project location or clearing permit boundary. The Wallbrook Project is located on Mining Lease M53/172, in the Shire of Menzies, approximately 120 km northeast of Kalgoorlie Boulder.

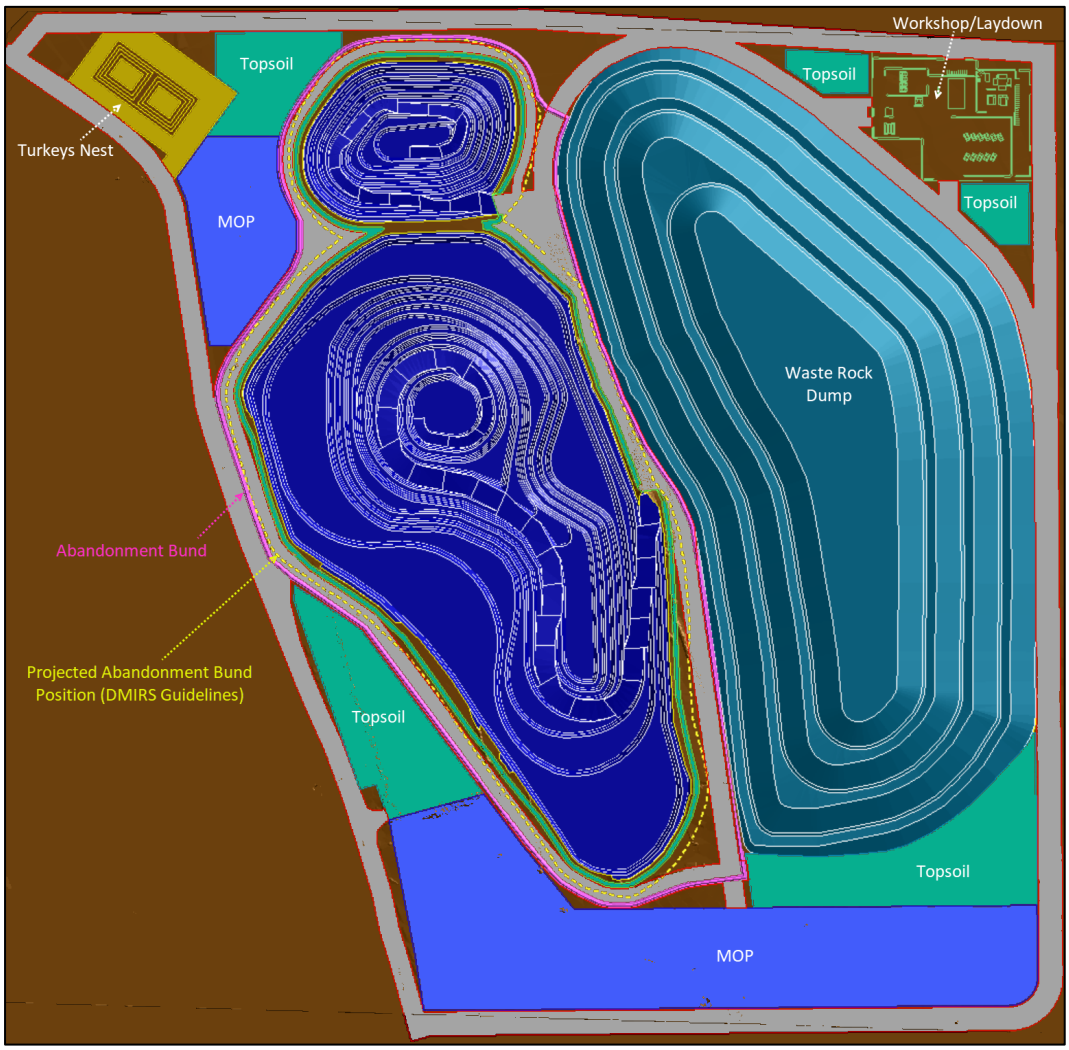

Figure 2-1: Indicative Mine Layout

3 CLEARING OF NATIVE VEGETATION

3.1 Measures to Avoid, Minimise and Mitigate Clearing Impacts

Northern Star Resources Ltd operates on a hierarchy of avoid, minimise, rehabilitate and offset. This hierarchy is achieved primarily through changes in design during mine planning and implementation. The following considerations were made during the mine planning process.

- **Avoid** – it will not be possible to avoid the additional clearing, as additional disturbance will be required to accommodate the expanded mining infrastructure (e.g. mining void, waste rock dump etc.).

- **Minimise** – additional clearing will be minimised as far as practicable using a design that minimises lateral expansion of infrastructure (e.g. waste rock dumps) as far as practicable. Clearing will take place progressively during implementation.

- **Rehabilitate** – native vegetation clearing will be rehabilitated in accordance with mine closure obligations under the *Mining Act 1978*. While some clearing such as that for mining voids will be permanent, other areas such as supporting infrastructure and waste rock dumps will be rehabilitated at closure.

- **Offset** – the proposed native vegetation clearing will not result in any significant residual impacts to the environment and therefore an offset is not required.

3.2 Vegetation Management

Clearing of Native Vegetation will be implemented in accordance with Northern Star Resources Ltd environmental management systems, which include:

- Land Disturbance permitting procedures.
- Hygiene protocols to prevent the introduction and spread of weeds.
- Harvesting and stockpiling topsoil for use in rehabilitation.
- Dust suppression to minimise erosion and loss of growth media.

4 SUMMARY OF BIOLOGICAL SURVEYS

4.1 Alexander Holms and Associates (2009)

Alexander Holms and Associates (2009) conducted a vegetation, flora and fauna survey to inform planning and approvals for the initial mining of Wallbrook, including the native vegetation clearing permit CPS 3202/1. A copy of this report was submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) with the original clearing permit application.

The field surveys were conducted in November 2006 and March 2009. Results of the survey included:

- Five vegetation communities were recorded in the clearing permit area:
  - BLSS: Bladder saltbush low shrublands
  - CPBS: Calcyphytic pearl bluebush shrublands
  - PSAS: Sago bush low shrublands
  - PXHS: Plain mixed halyphyte low shrublands
  - SGRS: Sandy granitic Acacia shrublands
- Vegetation was in Good to Fair condition.
- No Threatened Ecological Communities (TECs) were recorded in the clearing permit area.
- No significant flora species were recorded in the clearing permit area. A total of 135 flora species were recorded.
- There are no significant fauna habitats in the clearing permit area, and fauna habitats present are typical of the broad area of the Eastern Goldfields.

4.2 Botanica (2023)

Botanica Consulting (2023) conducted a reconnaissance vegetation and flora survey and basic fauna survey (Appendix A)

The field survey was conducted in May 2023. The results were similar to the findings of the original survey conducted by Alexander Holms and Associates (2009),and included:

- Five vegetation communities were mapped in the clearing permit area:
  - DD-AOW1: *Acacia* sparse woodland
  - QRP-AFW1: *Allocasuarina* woodland
  - QRP-AOW1: *Acacia* open woodland
  - CLP-CS1: Chenopod shrubland
  - RH-AOW1: *Acacia* open woodland
- Vegetation was in Good condition.
- No TECs or Priority Ecological Communities (PECs) were recorded in the clearing permit area.
- No significant flora species were recorded in the clearing permit area. A total of 82 flora species were recorded, including two weeds.
- Two weed species were recorded: **Mesembryanthemum nodiflorum* and **Salvia verbenaca*. Neither weed species are listed as Declared Pests under the *Biosecurity and Agriculture Management Act 2007* or as a Weed of National Significance.
- No significant fauna species or fauna habitats were recorded
- Four fauna habitat types were recorded:
  - Acacia open woodland on quartz rocky plain
  - Acacia open woodland in drainage depression
  - *Acacia* open woodland on rocky hillslope
  - Chenopod shrubland on clay-loam plain

5 VEGETATION DETAILS

The proposed clearing permit boundary will not change and therefore the characteristics of the affected vegetation will not change.

5.1 Vegetation Associations and Representation

The clearing permit area is characterised by one Pre-European vegetation association, vegetation association 400 - Succulent steppe with open low woodland; mulga over bluebush (Shepherd, 2007). The local and regional representation of this vegetation association is summarised in Table 1 below.

Table 1 Vegetation Representation (DBCA, 2018)

Scale	Pre-European Extent (ha)	Current Extent	%Remaining	% Remaining in DBCA Reserve
Statewide	190,823.50	189,665.40	99.39	unknown
IBRA Bioregion Murchison	190,823.50	189,665.42	99.39	unknown
IBRA Sub-region Eastern Murchison	190,823.50	189665.42	99.39	unknown
Local Government Authority Shire of Menzies	111,745.37	110,922.58	99.26	unknown

5.2 Vegetation Descriptions and Vegetation Community Mapping

Botanica (2023) mapped five vegetation communities in the clearing permit area (Figure 5-1 and Table 2). Further details of vegetation community mapping are provided in Appendix A.

5.3 Fauna Habitat Mapping

Botanica (2023) mapped four fauna habitat types in the clearing permit area (Table 3). Further details of fauna habitat mapping are provided in Appendix A.

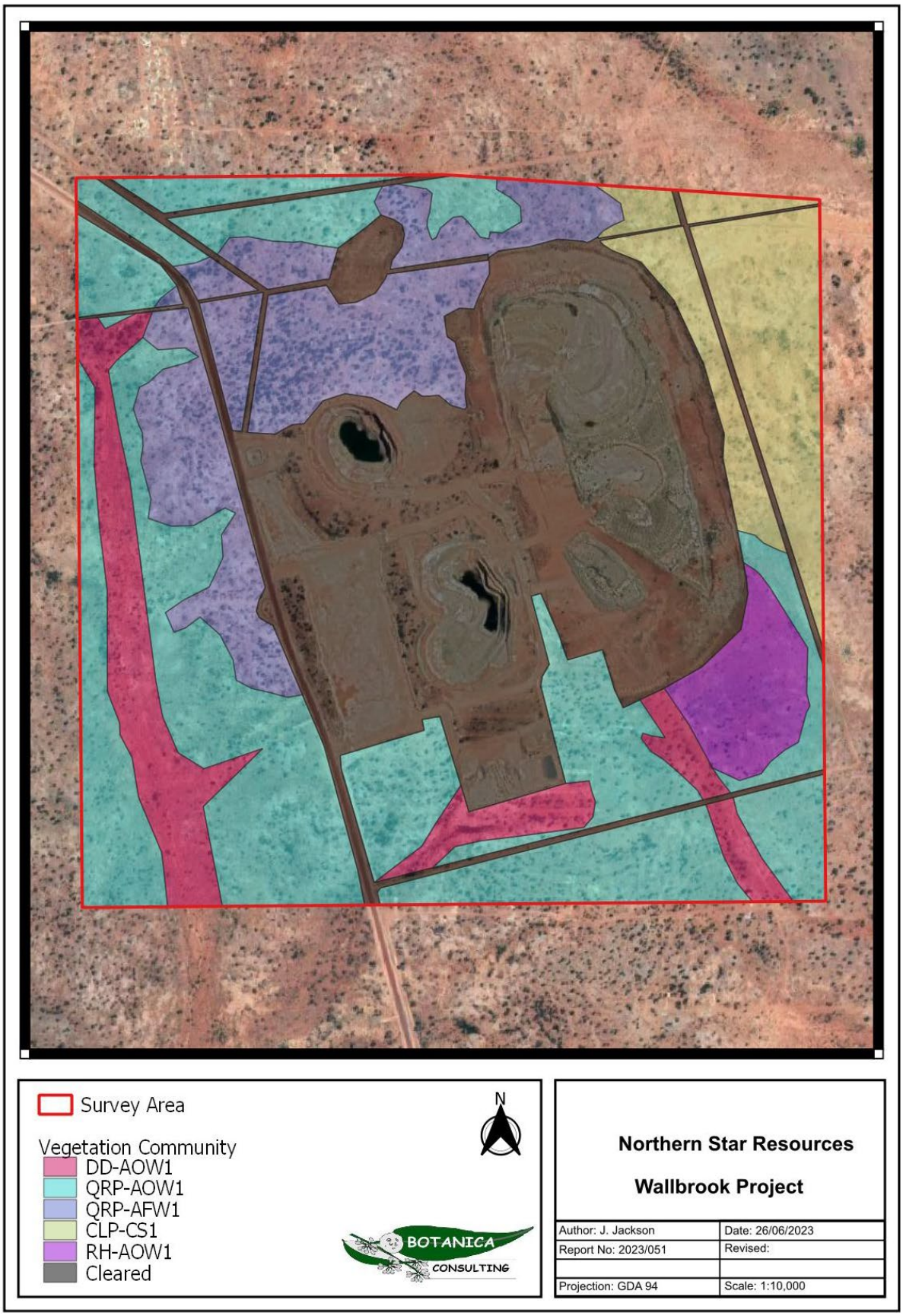

Figure 5-1: Vegetation Communities (Botanica, 2023)

Table 2 Vegetation Communities within CPS 3202/4 (Botanica, 2023)

Vegetation Code	NVIS Major Vegetation Group	Vegetation Type	Landform	Image
DD-AOW1 18.9 ha (7.8%)	Acacia sparse woodland	Acacia ramulosa var. linophylla low sparse woodland over Hakea preissii tall, isolated shrubs over Eremophila dempsteri, Exocarpos aphyllus sparse shrubland over Enchylaena lanata, E. tomentosa low sparse shrubland over Cephalipterum drummondii, Rhodanthe chlorocephala subsp. rosea and Lawrencella rosea sparse forbland	Drainage Depression	
QRP-AFW1 32.6 ha (13.5%)	Allocasuarina woodland	Casuarina pauper low sparse woodland over Melaleuca stereophloia tall, isolated shrubs over Acacia assimilis subsp. assimilis, Acacia hemiteles and Dodonaea inaequifolia sparse shrubland over Atriplex codonocarpa, Sclerolaena densiflora and Seringia cacaobrunnea low sparse shrubland	Quartz Rocky Plain	

Vegetation Code	NVIS Major Vegetation Group	Vegetation Type	Landform	Image
QRP-AOW1 71.1 ha (29.4%)	Acacia open woodland	Eucalyptus grossa, Allocasuarina campestris low open woodland over Santalum acuminatum, Hakea preissii and Eremophila oldfieldii subsp. angustifolia sparse shrubland over Dicrastylis parvifolia, Atriplex vesicaria and Abutilon cryptopetalum low sparse shrubland	Quartz Rocky Plain	
CLP-CS1 20.7 ha (8.5%)	Chenopod shrubland	Eucalyptus cylindriflora low isolated trees over Acacia eremophila, A. hemiteles and A. tetragonophylla tall sparse shrubland over Scaevola spinescens, Eremophila georgei sparse shrubland over Atriplex semilunaris, Maireana trichoptera and Sclerolaena drummondii low open shrubland	Clay-loam Plain	

Vegetation Code	NVIS Major Vegetation Group	Vegetation Type	Landform	Image
RH-AOW1 7.5 ha (3.1%)	Acacia open woodland	Eucalyptus loxophleba subsp. supralaevis, Allocasuarina campestris low isolated trees over Allocasuarina acutivalvis, Acacia blaxellii, Eremophila violacea sparse shrubland over Prostanthera grylloana, Westringia cephalantha low sparse shrubland	Rocky Hillslope	
Cleared 91.4 ha (37.7%)	N/A	N/A	N/A	N/A

Table 3 Fauna habitats within CPS 3202/4 (Botanica, 2023)

Fauna Habitat	Description	Representative Fauna Attributes	Possibly Occurring Conservation Significant Species	Example Image
Acacia open woodland on quartz rocky plain 103.7 ha (42.9%)	Acacia and Allocasuarina woodland over Eremophila shrubland	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata supporting avifauna assemblage. • Low vegetation density and low leaf litter.	Malleefowl (*Leipoa ocellata)* - marginal habitat Grey Falcon (*Falco hypoleucos) – marginal habitat*	
Acacia open woodland in drainage depression 18.9 ha (7.8%)	Acacia open woodland over mixed shrubs and herbs	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata supporting avifauna assemblage. • Low vegetation density and low leaf litter.	N/A	

Fauna Habitat	Description	Representative Fauna Attributes	Possibly Occurring Conservation Significant Species	Example Image
Acacia open woodland on rocky hillslope 7.5 ha (3.1%)	Acacia open woodland over Eremophila and Maireana shrubland	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata supporting avifauna assemblage. Moderate vegetation density and low leaf litter.	Malleefowl (*Leipoa ocellata)* - marginal habitat Grey Falcon (*Falco hypoleucos) – marginal habitat*	
Chenopod shrubland on clay-loam plain 20.7 ha (8.5%)	Mixed chenopod shrubland	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata. Low vegetation density and low leaf litter.	N/A	
Cleared 91.4 ha (37.7%)	N/A	N/A	N/A	N/A

6 ASSESSMENT AGAINST THE TEN CLEARING PRINCIPLES

An assessment of the revised clearing area has been conducted to inform the clearing permit amendment. The clearing assessment was informed by biological surveys conducted in 2009 and 2023 to inform project planning and approvals. A summary of the biological surveys is provided in Section 6. The Botanica survey reports is also provided in Appendix A.

The native vegetation clearing assessment included an assessment against the native vegetation clearing principles (EP Act 1986, Schedule 5). The assessment identified that native vegetation clearing is unlikely to be at variance with any of the 10 clearing principles.

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments	Outcome
Assessment	The clearing permit area is located within the Eastern Murchison (MUR1) subregion of the Murchison Interim Biogeographic Regionalisation of Australia (IBRA) bioregion. The Eastern Murchison subregion was described by CALM (2002) as vegetation dominated by Mulga woodlands often rich in ephemerals; hummock grasslands, saltbush shrublands and *Halosarcia* shrublands. Five vegetation communities were recorded in the clearing permit area: • DD-AOW1: Acacia sparse woodland • QRP-AFW1: Allocasuarina woodland • QRP-AOW1: Acacia open woodland • CLP-CS1: Chenopod shrubland • RH-AOW1: Acacia open woodland Vegetation within the clearing permit area was mapped in Good condition (Botanica, 2023). No TECs, PECs or otherwise significant vegetation occur within in the clearing permit area. The clearing permit area does not contain any significant flora species. Fauna habitats mapped in the area are common and widespread in the region. The proposed clearing is therefore not likely to require clearing of native vegetation that comprises a high level of biodiversity, and therefore is **not likely to be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments	Outcome
Assessment	Four fauna habitat types have been mapped within the clearing permit area: ▪ Acacia open woodland on quartz rocky plain ▪ Acacia open woodland in drainage depression ▪ *Acacia* open woodland on rocky hillslope ▪ Chenopod shrubland on clay-loam plain Fauna habitats mapped in the area are common and widespread in the region. No Priority or Threatened fauna species were recorded during the fauna survey (Botanica, 2023). The proposed clearing is therefore not likely to require clearing of native vegetation that comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia. The proposed clearing is therefore **not likely to be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments	Outcome
Assessment	No Threatened, Priority or otherwise significant flora species occur within clearing permit area. Vegetation communities and land systems within the clearing permit area are common and widespread in the region. The proposed clearing is therefore **not likely to be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments	Outcome
Assessment	No TECs listed under State or Federal legislation occur within clearing permit area. The nearest Threatened or Priority Ecological Community is mapped approximately 45 km south-west of the clearing permit area. Vegetation communities and land systems within the clearing permit area are common and widespread in the region. The proposed clearing is therefore **not likely to be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

<table>
<tr><th>Comments</th><th>Outcome</th></tr>
<tr><td>Assessment</td><td>
One pre-European vegetation association has been mapped within the clearing permit area, Vegetation Association 400. The local and regional representation of Vegetation Association 400 is summarised in the Table below.

National objectives and targets for biodiversity conservation in Australia have a target to prevent clearance of ecological communities with an extent 30% of that present pre-1750, below which species loss appears to accelerate exponentially at ecosystem level (EPA, 2000). The proposed clearing will not reduce the extent of Vegetation Association 400 below this threshold.

Although an unknown percentage of the vegetation types within the Murchison bioregion are protected within conservation reserves, the bioregion remains largely uncleared.

The proposed clearing is unlikely to impact on the conservation status for Beard Vegetation Association 400 within the Murchison bioregion, and the clearing permit area does not represent a significant remnant of vegetation in an area that has been extensively cleared.

<table>
<tr><th>Scale</th><th>Pre-European Extent (ha)</th><th>Current Extent</th><th>%Remaining</th><th>% Remaining in DBCA Reserve</th></tr>
<tr><td>Statewide</td><td>190,823.50</td><td>189,665.40</td><td>99.39</td><td>unknown</td></tr>
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Murchison</td><td>190,823.50</td><td>189,665.42</td><td>99.39</td><td>unknown</td></tr>
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<tr><td>Local Government Authority
Shire of Menzies</td><td>111,745.37</td><td>110,922.58</td><td>99.26</td><td>unknown</td></tr>
</table>

The proposed clearing is therefore not at variance with this principle.
</td></tr>
<tr><td>Methods</td><td>DBCA shapefiles
DPIRD Shapefiles
Alexander Holms and Associates (2009)
Botanica (2023)</td></tr>
</table>

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments	Outcome
Assessment	No permanent wetlands or watercourses occur within the clearing permit area. One minor ephemeral drainage occurs within the clearing permit area. Vegetation associated with this drainage is common in the region. Clearing of vegetation associated with ephemeral watercourses will be avoided as far as practicable, but some clearing of this vegetation may be unavoidable. The proposed clearing **may be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments	Outcome
Assessment	The clearing permit area overlies a pastoral lease and has been grazed over many years and vegetation is mostly in good condition. Soils within the clearing permit area are characterized by the within Gundockerta land system, which can be prone to soil erosion, particularly when soil surface are disturbed. Pringle et al. (1994) noted where not protected by stony mantle, saline plains and adjacent lower alluvial tracts are susceptible to water erosion, particularly in areas where perennial shrub cover is substantially reduced and / or the soil surface is disturbed. Soil erosion recorded in the clearing permit area in 2009 was mostly associated with minor sheeting (Alexander Holm and Associates, 2009). Since then, approximately 78 ha of clearing has been conducted within CPS 3202 to date, and there has been no evidence of clearing exacerbating erosion or land degradation. It is possible this is due to the soils being stabilised by post-clearing mining activities such as dust suppression and deposition of waste rock. Water table within the clearing permit area is saline (15,000 ppm) and at 30 -35 mbgl is well below the rooting depth of vegetation growing on this site. Clearing of vegetation will therefore have no impact on water tables and associated risk of secondary salinity. The proposed clearing is therefore **not likely to be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments	Outcome
Assessment	The closest conservation area is Goongarrie National Park, about 60 km west of the clearing permit area. The proposed clearing is therefore **not at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments	Outcome
Assessment	This landscape drains internally, principally via sheet flow into minor, ephemeral drainage tracts that discharge at Lake Rebecca 8 km south of the clearing permit area. Removal of vegetation along drainage tracts and associated alluvial and saline plains has potential to result in a minor increase the sediment load. However, given only a small proportion of the catchment will be cleared, soil from the impacted area will be harvested for future use, and there is a significant separation distance between Wallbrook and Lake Rebecca, it is unlikely any sediment load would be sufficient to impact the water quality of Lake Rebecca. There have been no reports of sedimentation in Lake Rebecca due to historic clearing at Wallbrook. The climate is arid to semi-arid with 230 mm of annual rainfall and annual evaporation rates are about 2800 mm. Recharge to groundwater is limited to years of extreme rainfall. The proposed clearing is therefore **not likely to be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Alexander Holms and Associates (2009) Botanica (2023)

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments	Outcome
Assessment	The climate is arid to semi-arid with about 230 mm of annual rainfall. Rain falls on an average of 43 days a year. Most rainfall events will cause little runoff, however extreme rainfall events such as those recorded in summers of 1984 and 1967 will result in significant runoff. Drainage is via overland flow to minor drainage tracts which discharge into Lake Rebecca, a large playa lake of 268 km2 with a catchment of 2,488 km2 (Aquaterra 2007). Saline lakes in the northern Goldfields are likely to flood to a depth of 2-5cm every year, to a depth of 10 cm roughly every 5 years and to a 'biologically significant' depth of 20 cm once every 10 years (Actis 2008). Clearing in this proposal will have negligible effect on the volume of discharge to Lake Rebecca. The proposed clearing is therefore **not likely to be at variance** with this principle.
Methods	DBCA shapefiles DPIRD Shapefiles Actis 2008 Aquaterra 2007

7 REFERENCES

Actis Environmental Services (2008). Discharge from the Porphyry Mine to Lake Rebecca: Modelled impact to Lake Rebecca. Report for Saracen Gold Mines

Aquaterra Consulting Pty Ltd. (2007) Porphyry Pit Development: Surface Water Management. Prepared for Saracen Gold Mines Pty Ltd, Perth, Western Australia.

Pringle, H.J.R., Van Vreeswyk, A.M.E. & Gilligan, S.A. (1994) An Inventory and Condition Survey of Rangelands in the North-eastern Goldfields, Western Australia. Department of Agriculture. Technical Bulletin 87. pp 323

8 APPENDICES

Appendix A: Botanica (2023)

WALLBROOK PROJECT

Reconnaissance Flora and Basic Fauna Assessment

Prepared for Northern Star Resources Ltd
June 2023

Prepared by
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Document Information

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Disclaimer

Quality Assurance

An internal quality review process has been implemented to each project task undertaken by BC. Each document and its content is carefully reviewed by core members of the Consultancy team and signed off at Director Level prior to issue to the client. Draft documents are submitted to the client for comment and acceptance prior to final production.

Cover Photo: Vegetation within the Wallbrook project area (11/05/2023)

Prepared by: Kelby Jennings
Senior Environmental Consultant
Botanica Consulting

Reviewed by: Andrea Williams
Director
Botanica Consulting

Approved by: Jim Williams
Director
Botanica Consulting

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EXECUTIVE SUMMARY

Botanica Consulting Pty Ltd (Botanica) was commissioned by Northern Star Resources Ltd. to undertake a reconnaissance flora and vegetation survey and basic fauna survey of the Wallbrook project (hereafter referred to as the 'survey area'). The survey area is 242 ha in extent and is located within the M31/172 mining tenement, approximately 240 km east of Menzies, Western Australia.

Prior to the field assessment a desktop assessment was conducted to identify potential vegetation, flora and fauna within the survey area. The desktop assessment comprised a literature review of previous flora and fauna assessments conducted within the local region, and searches of the public databases using a 40 km buffer.

The desktop assessment identified:

- No significant flora as likely to occur. One Priority species was identified as possibly occurring: *Eremophila arachnoides* subsp. *tenera* (Priority 3).
- No Threatened Ecological Communities or Priority Ecological Communities as likely or possibly occurring within the survey area.
- Three significant fauna species, consisting of two Vulnerable (VU) taxa and one Other Specially Protected taxa (OS), as potentially occurring in the survey area.

Botanica conducted a reconnaissance flora and vegetation and basic fauna survey on the 11th May 2023, with the survey undertaken by Jim Williams (Director/Principal Botanist, Diploma of Horticulture) and Kaitlyn Coyle (Field Technician). The survey area was traversed via 4WD and on foot, with a handheld GPS unit used to record the track log of the survey effort and significant flora, fauna and vegetation.

Results of the reconnaissance flora and vegetation survey and basic fauna survey included:

- The field survey identified 82 vascular flora taxa within the survey area, representing 45 genera across 24 families. The most diverse families were Chenopodiaceae (20 species), Fabaceae (10 species) and Myrtaceae (eight species). Dominant genera include *Acacia* and *Maireana* (seven species each) and *Eremophila* (six species).
- A total of five broad-scale vegetation communities were identified within the survey area. All the vegetation communities recorded in the survey area are well represented in the region.
- None of the vegetation communities were representative of Threatened Ecological Communities of Priority Ecological Communities listed under State of Commonwealth legislation.
- No Threatened, Priority or otherwise significant flora species were recorded within the survey area.

- Native vegetation condition within the survey area was categorized as 'good'. Disturbances within the survey area included mining pits, access tracks, low levels of grazing and cumulative historical impacts (changed fire regimes, pastoral use etc.).
- No significant weed presence was observed within the survey area. Two introduced (weed) species, were recorded within the survey area: **Mesembryanthemum nodiflorum* and **Salvia verbenaca*. Neither of these species are listed as a Declared Pest on the Western Australian Organism List (WAOL) under the *Biosecurity and Agriculture Management (BAM) Act 2007* or as a Weed of National Significance. Weeds represented 2.4% of floristic diversity.
- No Threatened, Priority or otherwise significant flora species were recorded within the survey area.
- Based on vegetation and associated landforms identified during the flora and vegetation assessment, four broad scale terrestrial fauna habitats were identified as occurring within the survey area.
- No evidence of significant fauna species were observed during the survey.

1 INTRODUCTION

Botanica Consulting Pty Ltd (Botanica) was commissioned by Northern Star Resources Ltd. to undertake a reconnaissance flora and vegetation survey and basic fauna survey of the Wallbrook project (hereafter referred to as the 'survey area'). The survey area is 242 ha in extent and is located within the M31/172 mining tenement, approximately 240 km east of Menzies, Western Australia (Figure 1-1). The survey in intended to support a clearing permit application associated with planned activities within the Wallbrook project area.

1.1 Objectives

1.1.1 Reconnaissance Flora Survey

The flora assessment was conducted in accordance with the requirements of a reconnaissance flora survey as defined in Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment – December 2016 (EPA, 2016a). The objectives of the assessment were to:

- Gather background information on flora and vegetation in the survey area (literature review, database and map-based searches);
- Identify significant flora, vegetation and ecological communities and Matters of National Environmental Significance (MNES);
- Conduct a field survey to verify / ground truth the desktop assessment findings;
- Undertake floristic community mapping to a scale appropriate for the bioregion and described according to the National Vegetation Information System (NVIS) structure and floristics; and
- Undertake vegetation condition mapping.

1.1.2 Basic Fauna Survey

The fauna assessment was conducted in accordance with the requirements of a basic terrestrial fauna survey as defined in Technical Guidance - Terrestrial Fauna Surveys for Environmental Impact Assessment – June 2020 (EPA, 2020). The objectives of the assessment were to:

- Undertake a literature review, including map-based information searches of all current and relevant literature sources and databases relating to the survey area;
- Undertake a desktop investigation to identify any previously recorded occurrences of or potentially occurring Threatened and Priority listed fauna within the survey area;
- Undertake searches on available databases for details relating to any Threatened and Priority listed fauna previously identified as occurring or potentially occurring within the survey area;
- Conduct fauna habitat mapping and identify habitat types which are suitable for each significant fauna considered likely or possible to occur, or fauna recorded in the survey area;
- Compile an inventory of fauna species occurrences within the survey area;
- Undertake opportunistic, low intensity sampling of fauna; and
- Report on the conservation status of species present using the Western Australian Museum and Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) databases for presence of Threatened and Priority listed fauna species within the survey area.

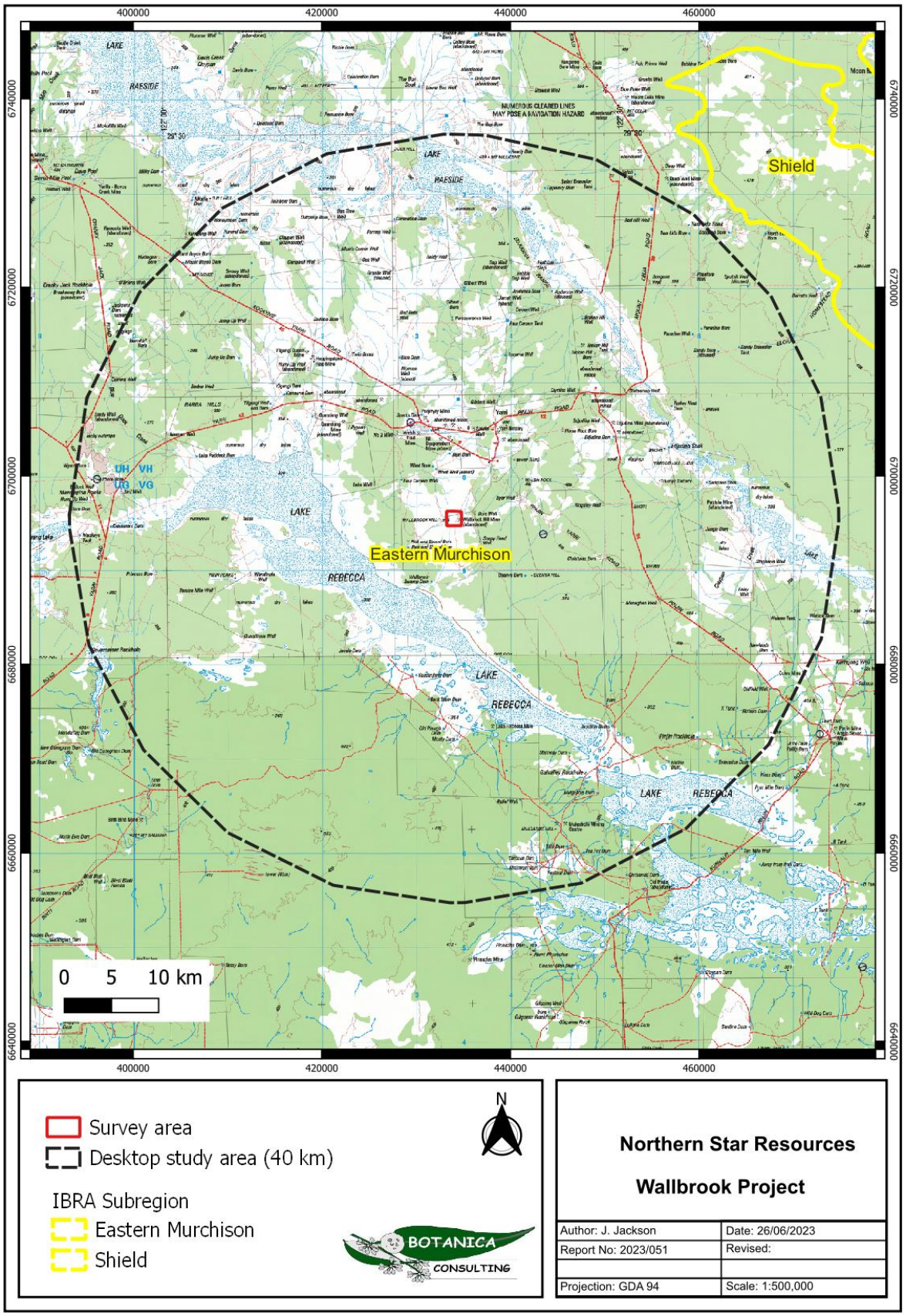

Figure 1-1: Regional map of the desktop survey area/ survey area

2 BIOPHYSICAL ENVIRONMENT

2.1 Regional Environment

The survey area lies within the Eastern Murchison (MUR1) subregion of the Murchison Bioregion, as defined by the Interim Biogeographic Regionalisation of Australia (IBRA). The Eastern Murchison comprises the northern parts of the craton's Southern Cross and Eastern Goldfields Terrains and is characterised by internal drainage and extensive areas of elevated red desert sandplains with minimal dune development. Salt Lake systems are associated with the occluded paleodrainage system. Broad plains of red-brown soils and breakaways complexes as well as red sandplains are widespread. Vegetation is dominated by Mulga woodlands and is often rich in ephemerals, hummock grasslands, saltbush shrublands and *Tecticornia* shrublands (Cowan, 2001).

In accordance with Beard (1990), the Murchison region is located in the Austin Botanical District within the Eremaean Province of WA. It is defined by the vegetational expression of geological boundaries of the Yilgarn Block, described as Archaean granite with infolded volcanics and meta-sediments (greenstones) of a like age. The topography is undulating, with occasional ranges of low hills and extensive sandplains in the eastern half. The principal soil type is shallow earthy loam overlying red-brown hardpan, with shallow stony loams on hills and red earthy sands on sandplains. The western half of the region more or less coincides with the basin of the Murchison River, the eastern half embraces the drainage of former rivers, now dry, draining towards the Eucla Basin. Vegetation is predominantly mulga low woodland *(Acacia aneura)* on plains, reduced to scrub on hills, with a tree steppe of *Eucalyptus* spp. and *Triodia basedowii* on sandplains. The climate is arid, with summer and winter rains and an average annual precipitation of 200 mm.

2.2 Land Use

The dominant land uses of the Eastern Murchison subregion include grazing native pastures (85.47%), unallocated crown reserves (11.34%), conservation (1.4%) and mining (1.79%) (Cowan, 2001). The survey area occurs in mining tenement M31/172 within the Edjudina pastoral station.

2.3 Soil Landscape Systems

The survey area lies within the Murchison Province, which consists of hardpan wash plains and sandplains (with some stony plains, hills, mesas and salt lakes) on the granitic rocks and greenstone of the Yilgarn Craton. The Murchison Province is located in the inland Mid-west and northern Goldfields between three Springs, the Gascoyne River, Wiluna, Cosmo Newberry and Menzies Soil types consist of red loamy earths, red sandy earths, red shallow loams, red deep sands and red-brown hardpan shallow loams with some red shallow sands and red shallow sandy duplexes present. Vegetation communities are predominately Mulga shrublands with spinifex grasslands, with areas of bowgada shrublands, Eucalypt woodlands and halophytic shrublands (Tille, 2006).

The Murchison Province is further divided into soil-landscape zones, with the survey area located within the Salinaland Plains Zone (279). The Salinaland Plains Zone comprises of sandplains (with hardpan wash plains and some mesas, stony plains and salt lakes) on granitic rocks (and some greenstone) of the Yilgarn Craton. Soils include red sandy earths, red deep sands, red shallow loams and red loamy earths with some red-brown hardpan shallow loams, salt lake soils and red shallow sandy duplexes. Vegetation consists of mulga shrublands with spinifex grasslands (and some halophytic shrublands and eucalypt woodlands). This zone is located in the northern Goldfields from Lakes Barlee and Ballard to Wiluna and Laverton (Tille, 2006).

In accordance with soil landscape system mapping data (Government of Western Australia, 2019), the survey area is located within the Gundockerta soil landscape system, as described in Table 2-1 and shown in Figure 2-1.

Table 2-1: Soil landscape systems within the survey area

Soil Landscape System	Description	Area (ha)	%
Gundockerta System	Extensive, gently undulating calcareous stony plains supporting bluebush shrublands.	242.2	100
Total		**242.2**	**100**

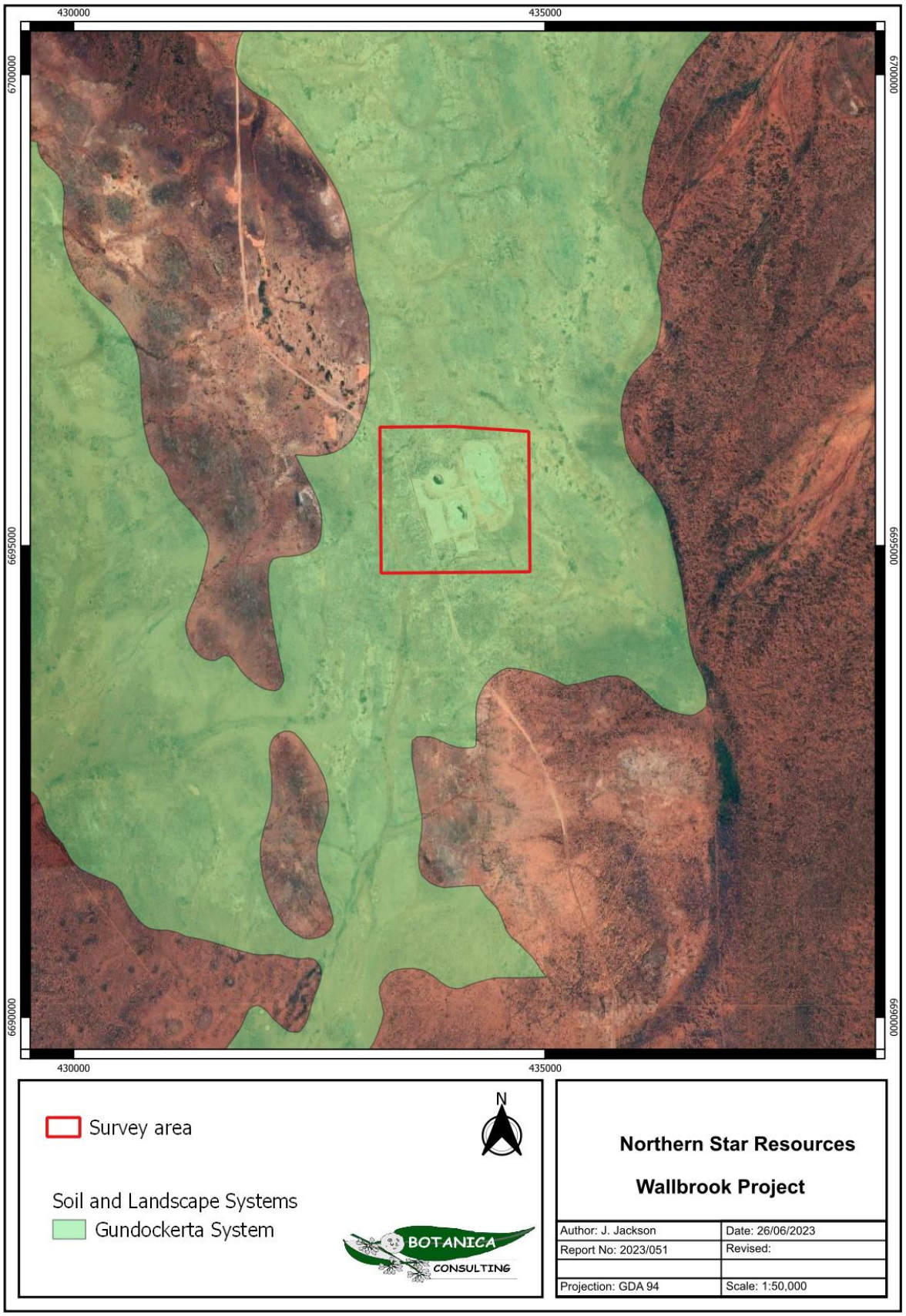

Figure 2-1: Map of soil landscape systems within the survey area

2.4 Regional Vegetation

The vegetation of the Murchison Bioregion is described by Tille (2006) as Mulga (*Acacia aneura*) shrublands and woodlands with gidgee (*A. pruinocarpa*), kurara (*A. tetragonophylla*), *A. linophylla,* bowgada (*A. ramulosa*), jam (*A. acuminata*), minniritchie (*A. grasbyi*), *Senna* spp. and *Eremophila* spp. which dominate the hardpan wash plains. Denser, taller mulga woodlands are found on groves while the sandy banks support mulga, bowgada and kurara shrublands with an understorey of wanderrie grasses (*Eragrostis* and *Eriachne* spp. and *Monachather paradoxa*). Snakewood (*A. xiphophylla*), bluebush (*Maireana* spp.) and saltbush (*Atriplex* spp.) grow on the saline drainage tracts.

The sandplains in the east support grasslands of hard spinifex (*Triodia basedowii*). These grasslands occur with an open tree and shrub steppe of mulga, marble gum (*Eucalyptus gongylocarpa*), mallees (*E. kingsmillii*, *E. longissima*, *E. brachycorys* and *E. youngiana*), bowgada and spinifex wattle (*A. coolgardiensis*). In places denser woodlands of mulga, spinifex wattle or mallee are found over the spinifex. On western sandplains shrublands are dominated by bowgada with cypress pine (*Callitris columellaris*), mallees (*e.g. E. leptopoda* and *E. kingsmillii*), mulga and *Grevillea* spp. On the yellow sandplains in the south-west are closed mixed shrublands with *Melaleuca*, *Hakea*, *Calothamnus*, *Baeckea*, *Banksia prionotes*, *Allocasuarina*. and *Acacia* spp. The mesas have bowgada, mulga and *A. linophylla* shrublands above the breakaways, while the footslopes support shrublands with saltbush (*Atriplex* spp.), *Frankenia* spp., *Ptilotus* spp. and *Eremophila pterocarpa*. The hilly terrain has shrublands of mulga, minniritchie, *Eremophila* spp. and cotton bush (*Ptilotus obovatus*). Hills in the far west have woodlands of York gum (*Eucalyptus loxophleba*), salmon gum (*E. salmonophloia*) and jam (*Acacia acuminata).* The stony plains support shrublands of mulga, gidgee, granite wattle (*Acacia quadrimarginea*), minniritchie, prickly wattle, snakewood, jam and *Eremophila* spp. in the valley floors there are shrublands of samphire (*Tecticornia* spp.), saltbush, sage (*Cratystylis subspinescens*) and *Frankenia* spp. surrounding salt lakes. Floodplains along the Murchison and its tributaries have shrublands of bluebush (*Maireana* spp.), saltbush and *Frankenia* spp., as well as mulga, prickly wattle and *Acacia distans* (Tille 2006).

2.5 Conservation Values

The Murchison Bioregion contains 41 vegetation associations (hummock grasslands, succulent steppe or low woodlands) that have at least 85 per cent of their total extent in the Bioregion. The Bioregion is rich and diverse in flora and fauna, but most species are wide ranging and usually occur in adjoining regions. A snake (*Pseudechis butleri*) is the only known regionally endemic vertebrate species.

There are six wetlands of national importance in the Bioregion, all of which are salt lakes: Lake Ballard, Lake Barlee, Lake Marmion, Lake Wooleen, Lake Breberle and Lake Anneen. There is one

wetland of regional importance within the Murchison Bioregion; the Mungawolagudgi Claypan on Muggon Station.

No ecosystems listed as Threatened under WA State legislation occur within the Murchison Bioregion, but 52 communities and vegetation associations are thought to be at risk for a variety of reasons. Grazing from livestock, goats and rabbits and changed fire regimes are the main threatening processes in the region, with clearing, impacts of mining, erosion and sedimentation also causing significant impacts.

2.6 Climate

The climate of the Eastern Murchison subregion is characterised as an arid climate with summer and winter rainfall of approximately 200 mm annually (Beard, 1990). Rainfall data for the Edjunda (#12027) and temperature data for Menzies (#12052), located approximately 6.5 km north-east and 240 km west of the surveyarea respectively, is shown in Graph 2-1. Mean monthly rainfall ranges from 28.6 mm in February to 9.4 mm in September, with a mean annual rainfall of 222.0 mm. The survey was conducted in May 2023, with the preceding month of April receiving above average rainfall. Climate conditions are unlikely to represent a survey constraint, with flowering material and ephemeral species likely to be present.

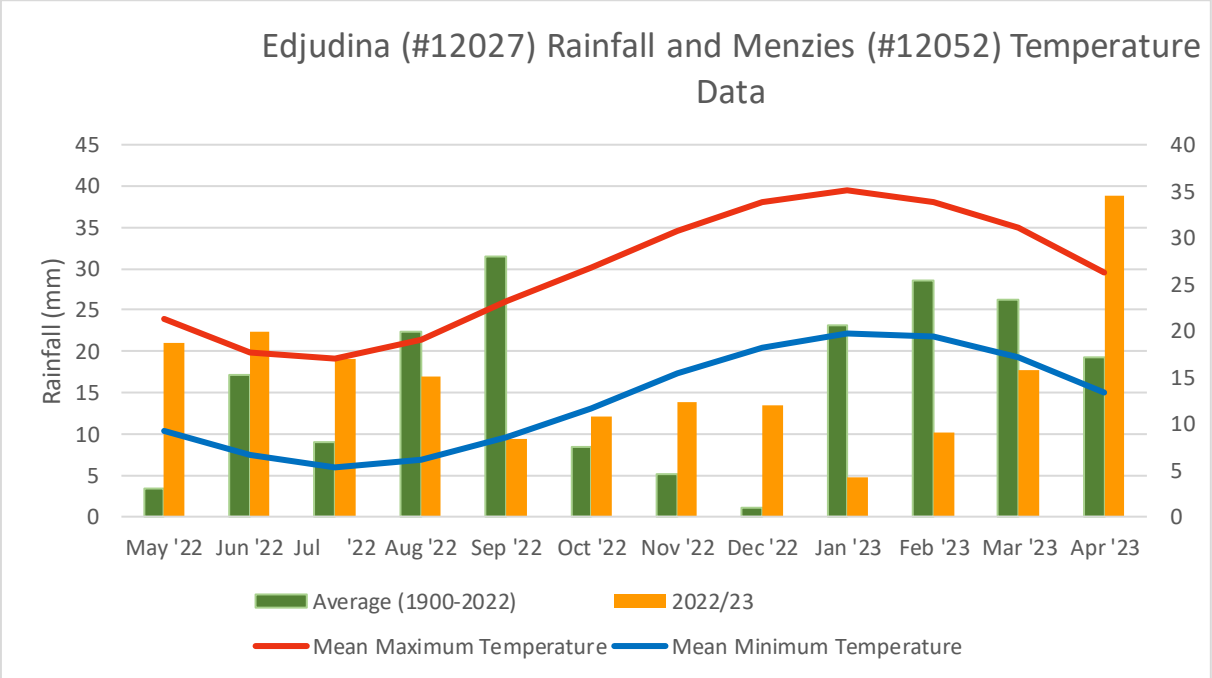

Figure 2-2: Rainfall data of Edjudina (#12027) and temperature data of Menzies (#12052)

2.7 Hydrology

According to the Geoscience Australia database (2015), there are no water bodies within the survey area. One ephemeral drainage line occurs along the western boundary of the survey area. (Figure 2-3).

Groundwater Dependent Ecosystems (GDE) includes biological assemblages of species such as wetlands or woodlands that use groundwater either opportunistically or as their primary water source. For the purposes of this report, a GDE is defined as any vegetation community that derives part of its water budget from groundwater and must be assumed to have some degree of groundwater dependency. In accordance with the BoM Atlas of Groundwater Dependent Ecosystems (BoM, 2020b) database, there are no potential GDE's within the survey area (Figure 2-3).

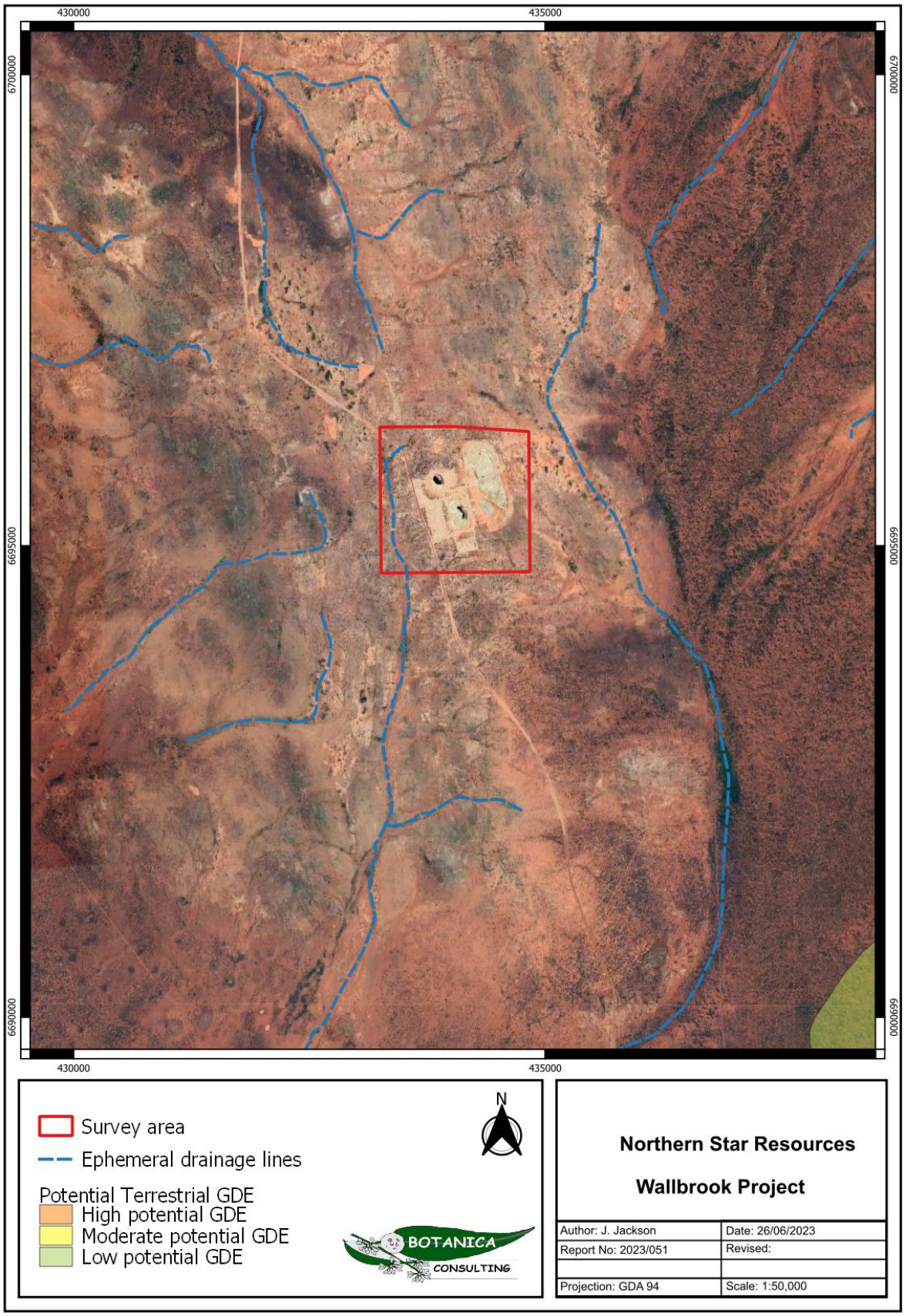

Figure 2-3: Regional hydrology of the survey area

3 SURVEY METHODOLOGY

3.1 Desktop Assessment

Prior to the field assessment a literature review was undertaken of previous flora and fauna assessments conducted within the local region. Documents reviewed included:

- Botanica (2021). *Reconnaissance Flora and Basic Fauna Survey of the Emu Lake West Project.* Prepared for Western Areas Ltd., May 2021.
- Alexander Holm and Associates (2009). *Environmental Assessment: Proposed Wallbrook Mine Sites and Surrounds*. Unpublished report prepared for Saracen Gold Mines Pty Ltd. July, 2009.
- Western Australian Museum (1992). *The Biological Survey of the Eastern Goldfields of Western Australia, Part 8: Kurnalpi – Kalgoorlie Study Area.* Records of the Western Australian Museum, Supplement No. 41.

In addition to the literature review, searches of the following databases were undertaken to aid in the compilation of a list of significant flora within the survey area:

- DBCA Threatened/ Priority Flora spatial data (historical) (DBCA, 2022a);
- Atlas of Living Australia (ALA) database (ALA, 2022); and
- EPBC Protected Matters search tool (DCCEEW, 2023).

The DBCA database searches, ALA spatial portal search and EPBC Protected Matters search were conducted with a 40 km buffer from the survey area.

Significant flora species identified by the desktop review were assessed with regards to their population extent and distribution and preferred habitat to determine their likelihood of occurrence within the survey area.

The assessment categorised flora species as follows:

- Unlikely- Suitable habitat is not expected to occur and/or the survey area is outside the known range of the species.
- Possible- Suitable habitat may be present, and the area is within the known range of the species. This option is also used when there is insufficient information to determine the preferred habitat of a species.
- Likely- Suitable habitat is expected to occur and there are records within 10 km of the survey area.
- Previously Recorded- A record for this species is located within the survey area. Field survey will ground-truth currently occurring individuals and populations.

It should be noted that these lists are based on observations from a broader area than the assessment area (40 km radius) and therefore may include taxa not present. The databases also often include very old records that may be incorrect or in some cases the taxa in question have become locally or regionally extinct. Information from these sources should therefore be taken as indicative only and local knowledge and information also needs to be taken into consideration when determining what actual species may be present within the specific area being investigated.

The conservation significance of flora taxa was assessed using data from the following sources:

- *Environment Protection and Biodiversity and Conservation* (EPBC) *Act 1999*. Administered by the Australian Government (DCCEEW);
- *Biodiversity Conservation* (BC) *Act 2016*. Administered by the WA Government (DBCA);
- Red List produced by the Species Survival Commission (SSC) of the World Conservation Union (also known as the IUCN Red List – the acronym derived from its former name of the International Union for Conservation of Nature and Natural Resources). The Red List has no legislative power in Australia but is used as a framework for State and Commonwealth categories and criteria; and
- Priority Flora list. A non-legislative list maintained by DBCA for management purposes (released October 2022).

Descriptions of conservation significant species and communities are provided in Appendix A.

3.2 Flora and Vegetation Field Assessment

Botanica conducted a reconnaissance flora and vegetation survey on the 11th May 2023, with the survey undertaken by Jim Williams (Director/Principal Botanist, Diploma of Horticulture) and Kaitlyn Coyle (Field Technician). The survey area was traversed via 4WD and on foot, with a handheld GPS unit used to record the track log of the survey effort and significant flora, fauna and vegetation. The GPS track log of the survey effort is shown in Figure 3-1.

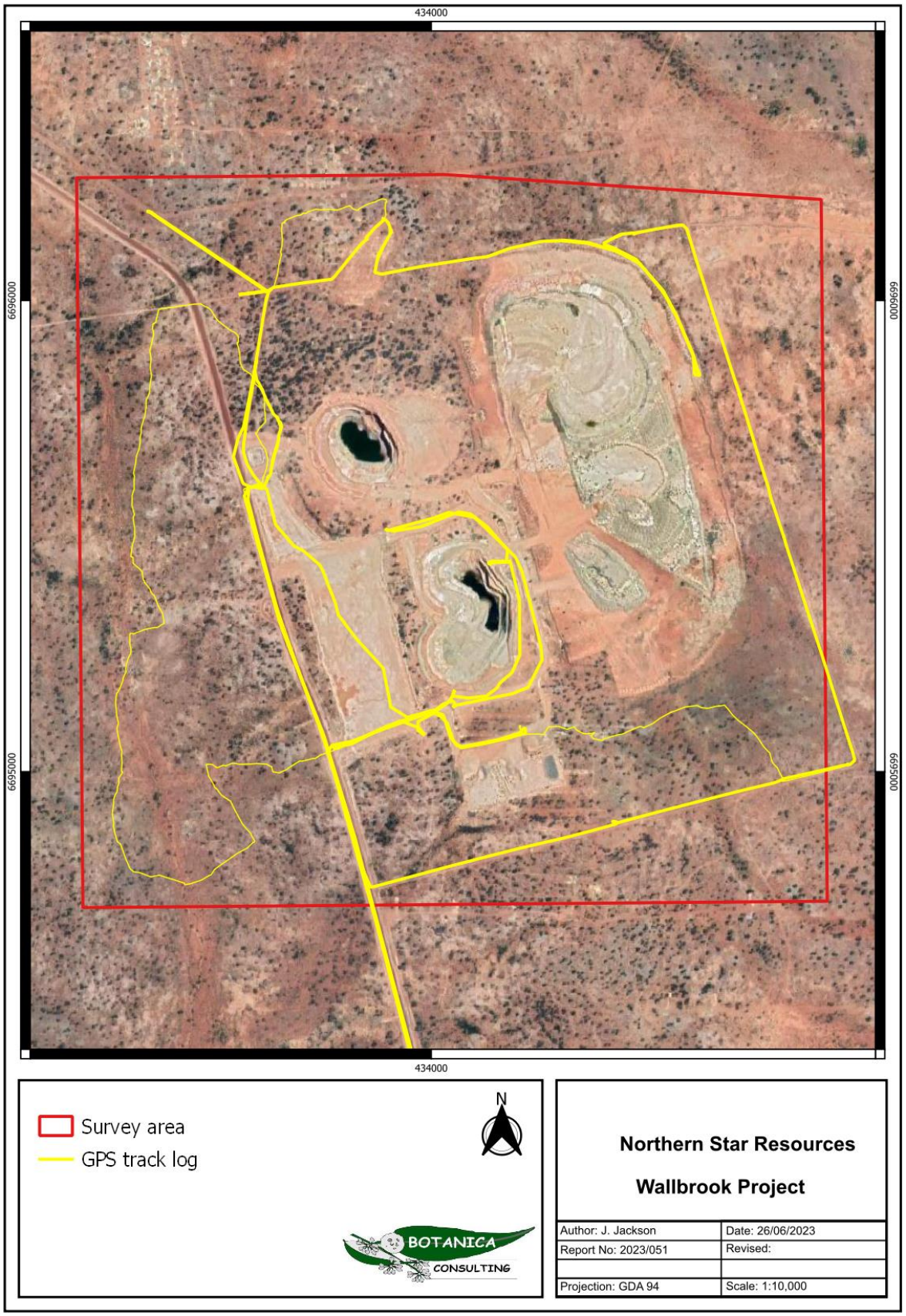

Figure 3-1: GPS track log of the survey effort

3.2.1 Flora Assessment

Prior to the commencement of field work, aerial photography was inspected and obvious differences in the vegetation assemblages were identified. The different vegetation communities identified were then inspected during the field survey to assess their validity. A handheld GPS unit was used to record the coordinates of the boundaries between existing vegetation communities. At each sample point, the following information was recorded:

- GPS location;
- Photograph of vegetation;
- Dominant taxa for each stratum;
- All vascular taxa (including annual taxa);
- Landform classification;
- Vegetation condition rating;
- Collection and documentation of unknown plant specimens; and
- GPS location, photograph and collection of flora of conservation significance if encountered.

Unknown specimens collected during the survey were identified with the aid of samples housed at the Botanica Herbarium and Western Australian Herbarium. Vegetation was classified in accordance with NVIS classifications.

3.2.2 Data Analysis Tools

Following field assessments, vegetation types and condition were mapped using the GIS program QGIS, and the hectare area/ percentage area of each vegetation type and condition within the survey area was calculated. Spatial maps illustrating the location of vegetation types and any significant flora/ vegetation and fauna were generated using QGIS.

3.3 Terrestrial Fauna Field Assessment

Fauna habitat types were identified across the survey area based on broad major vegetation groups and associated landform. A handheld GPS unit was used to record the coordinates of the boundaries between fauna habitats and each habitat was photographed.

The main aim of the fauna habitat assessment was to determine the likelihood of a species of conservation significance utilising habitat within the survey area. The habitat information obtained was also used to aid in finalising the overall potential fauna list.

Available information on the habitat requirements of the species of conservation significance listed as possibly occurring in the area (determined from the desktop assessment) was researched. During the field survey, the habitats within the survey area were assessed and specific elements identified,

if present, to determine the likelihood of listed Threatened and Priority species utilising habitat within the survey area.

Opportunistic observations of fauna species were made during all field survey work.

Fauna of conservation significance identified during the literature review and database searches as previously being recorded in the general area were assessed and ranked for their likelihood of occurrence within the survey area. The rankings and criteria used were:

- Would Not Occur: There is no suitable habitat for the species in the survey area and/or there is no documented record of the species in the general area since records have been kept and/or the species is generally accepted as being locally/regionally extinct (supported by a lack of recent records).
- Locally Extinct: Populations no longer occur within a small part of the species natural range, in this case within 10 or 20 km of the survey area. Populations do however persist outside of this area.
- Regionally Extinct: Populations no longer occur in a large part of the species natural range, in this case within the Eastern Murchison subregion. Populations do however persist outside of this area.
- Unlikely to Occur: The survey area is outside of the currently documented distribution for the species in question, or no suitable habitat (type, quality and extent) was identified as being present during the field assessment. Individuals of some species may occur occasionally as vagrants/transients especially if suitable habitat is located nearby but the site itself would not support a population or part population of the species.
- Possibly Occurs: Survey area is within the known distribution of the species in question and habitat of at least marginal quality was identified as likely to be present during the field survey and literature review, supported in some cases by recent records being documented in literature from within or near the survey area. In some cases, while a species may be classified as possibly being present at times, habitat may be marginal (e.g. poor quality, fragmented, limited in extent) and therefore the frequency of occurrence and/or population levels may be low.
- Known to Occur: The species in question has been positively identified as being present (for sedentary species) or as using the survey area as habitat for some other purpose (for non-sedentary/mobile species) during field surveys within or near the survey area. This information may have been obtained by direct observation of individuals or by way of secondary evidence (e.g. tracks, foraging debris, scats). In some cases, while a species may be classified as known to occur, habitat may be marginal (e.g. poor quality, fragmented, limited in extent) and therefore the frequency of occurrence and/or population levels may be low.

3.4 Scientific Licences

Table 3-1: Scientific Licenses of Botanica Staff coordinating the survey

Licensed Staff	Permit Number	Date of Expiry
Jim Williams	FB62000457(licence to take flora for scientific purposes)	04/08/2025

3.5 Survey Limitations and Constraints

It is important to note that flora surveys will entail limitations notwithstanding careful planning and design. Potential limitations are listed in Table 3-2.

The conclusions presented in this report are based upon field data and environmental assessments and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. Also, it should be recognised that site conditions can change with time. Information not available at the time of this assessment which may subsequently become available may alter the conclusions presented.

Some species are reported as potentially occurring based on there being suitable habitat (quality and extent) within the survey area or immediately adjacent. The habitat requirements and ecology of many of the species known to occur in the wider area are however often not well understood or documented. It can therefore be difficult to exclude species from the potential list based on a lack of a specific habitats or microhabitats within the survey area. As a consequence of this limitation, the potential species list produced is most likely an overestimation of those species that actually utilise the survey area for some purpose.

In recognition of survey limitations, a precautionary approach has been adopted for this assessment. Any flora species that would possibly occur within the survey area (or immediately adjacent), as identified through ecological databases, publications, discussions with local experts/residents and the habitat knowledge of the author, has been listed as having the potential to occur.

Table 3-2: Limitations and constraints associated with the flora/ vegetation and fauna survey

Variable	Potential Impact on Survey	Details
Access problems	Not a constraint	The survey was conducted via 4WD and on foot. Numerous access tracks were present within the survey area providing ease of access.
Competency/ Experience	Not a constraint	The Botanica personnel that conducted the survey were regarded as suitably qualified and experienced. **Coordinating Staff**: Jim Williams (Botanist) **Data Interpretation**: Jim Williams (Botanist), Kelby Jennings (Senior Environmental Consultant).
Timing of survey, weather & season	Not a constraint	Fieldwork was undertaken outside the EPA's recommended primary survey time period for the Eremaean Province (i.e., 6-8 weeks following winter rainfall). However, significant rainfall was recorded in

Variable	Potential Impact on Survey	Details
		March and April prior to the survey, and ephemeral species and flowering material were widely present within the survey area.
Area disturbance	Not a constraint	Although significant clearing associated with historical mining activity is present within the survey area, areas outside of these cleared areas was comprised of native vegetation in good condition.
Survey Effort/ Extent	Not a constraint	Survey intensity was appropriate for the size/significance of the area with a reconnaissance flora survey and basic fauna survey completed to identify vegetation types/ fauna habitats and significant flora, fauna and vegetation.
Availability of contextual information at a regional and local scale	Not a constraint	BoM, DWER, DPIRD, DBCA and DCCEEW databases were reviewed to obtain appropriate regional desktop information on the biophysical environment of the local region. Botanica has conducted a number of surveys within the Murchison bioregion and was also able to obtain information about the area from previous research conducted within the area. Results of previous assessments in the local area were reviewed to provide context on the local environment.
Completeness	Not a constraint	In the opinion of Botanica, the survey area was covered sufficiently in order to identify vegetation assemblages. All observed flora individuals were able to be identified to species level. The vegetation associations for this study were based on visual descriptions of locations in the field. The distribution of these vegetation associations outside the survey area is not known, however vegetation associations identified were categorised via comparison to vegetation distributions throughout WA given on NVIS (DotEE, 2017).

4 RESULTS

4.1 Desktop Assessment

4.1.1 Flora

The ALA desktop search identified 216 vascular flora species as occurring within 40 km of the survey area, representing 102 genera from 36 families. The most diverse families were Fabaceae (38 species), Myrtaceae (35 species) and Chenopodiaceae (28 species). The most dominant genera were *Acacia* (27 species), *Eucalyptus* (22 species) and *Eremophila* (20 species).

4.1.1.1 Introduced Flora

The desktop review identified three introduced flora (weed) species as potentially occurring in the vicinity of the survey area. None of these species are listed as a Declared Pest on the Western Australian Organism List (WAOL) under the *Biosecurity and Agriculture Management (BAM) Act 2007* and/or as a Weed of National Significance.

The full list of potential weed species is contained in Appendix B.

4.1.1.2 Significant Flora

The assessment of the DBCA Priority/ Threatened flora database records (DBCA, 2022), ALA (ALA, 2022) and Protected Matters searches (DCCEEW, 2023), and previous relevant literature identified seven flora species of conservation significance recorded within a 40 km radius of the survey area. These consist of one Priority 1, one Priority 2, three Priority 3 and one Priority 4 taxa (Appendix C).

These taxa were assessed for distribution and known habitat to determine their likelihood of occurrence within the survey area. The assessment did not identify any significant flora as likely to occur. One species was identified as possibly occurring: *Eremophila arachnoides* subsp. *tenera* (Priority 3) (Table 4-1). The full flora likelihood assessment is listed in Appendix C. The locations of the DBCA database records are illustrated spatially in Figure 4-1.

Table 4-1: Significant flora potentially occurring within the survey area

Taxon	Status	Habitat	Assessment	Likelihood
Eremophila arachnoides subsp. tenera	P3	Calcareous sandy loam soils, semi-saline. Plains, undulating hills.	At extreme of known range, habitat may be present.	Possible

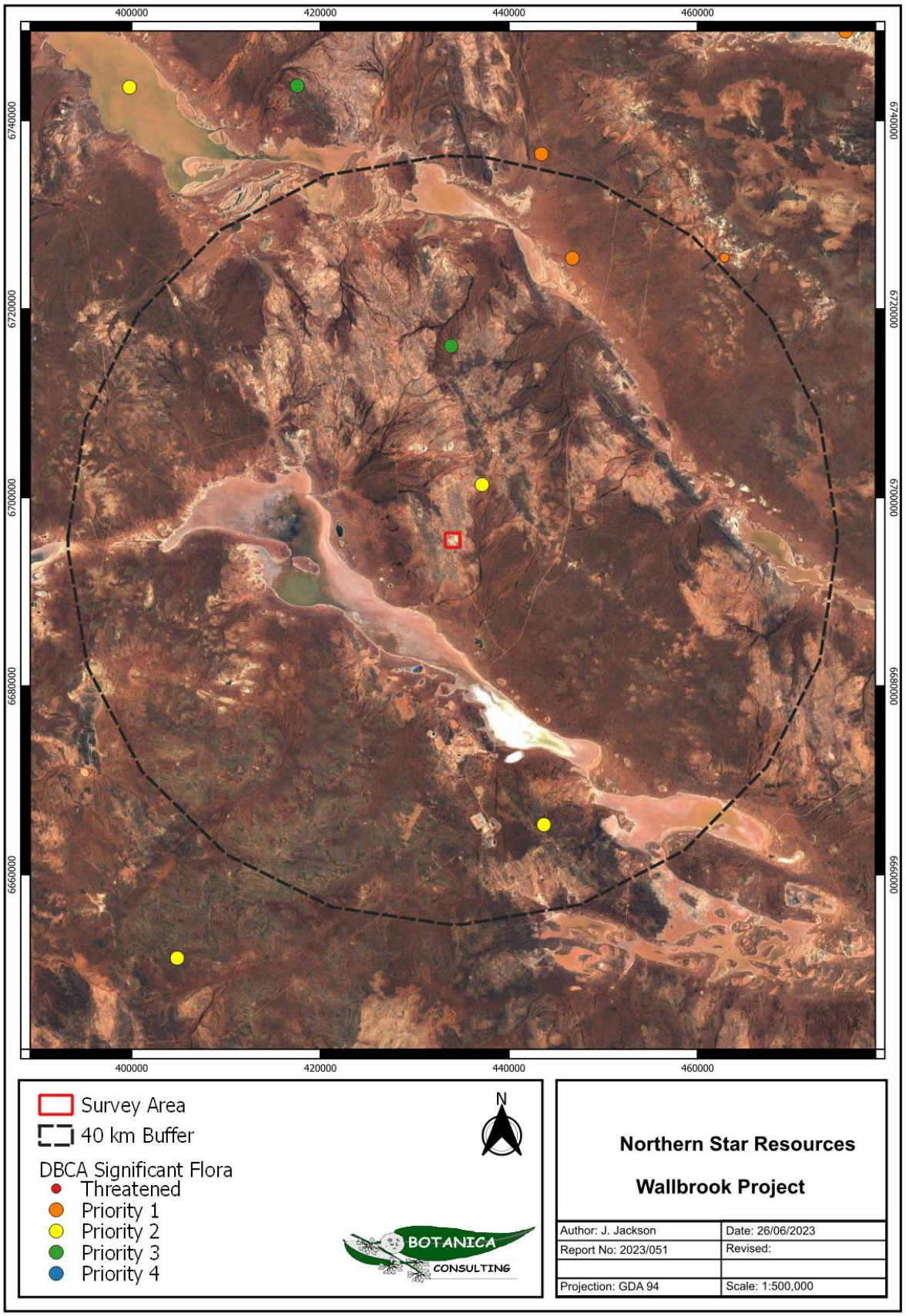

Figure 4-1: Significant flora within the desktop search area

4.1.2 Vegetation Associations

The Pre-European vegetation association spatial mapping dataset (DPIRD, 2018) identified the Barlee 400 vegetation association as occurring within the survey area (Figure 4-2). The association description and its remaining extent, as specified in the 2018 Statewide Vegetation Statistics (DBCA, 2019b) are provided in Table 4-2. Areas retaining less than 30% of their pre-European vegetation extent generally experience exponentially accelerated species loss, while areas with less than 10% are considered "endangered" (EPA, 2000). The Barlee 400 vegetation association retains >99% of its pre-European extent, and development within the survey area will not significantly reduce the current extent of this vegetation associations.

Table 4-2: Pre-European vegetation associations within the survey area

Vegetation Association	Current Extent (ha)	Pre-European extent remaining	% Protected for Conservation	Floristic Description	Extent within Survey Area
Barlee 400	149,007.0	99.45	-	Succulent steppe with open low woodland; mulga over bluebush	242.2 ha (100%)
Total					**242.2 ha (100%)**

4.1.3 Significant Ecological Communities

The Protected Matters search (DCCEEW, 2023) did not identify any Threatened ecological communities occurring within the desktop study area.

Analysis of the Priority Ecological Communities within Western Australia (DBCA, 2022) did not identify any additional significant vegetation assemblages as likely or possibly occurring within the survey area.

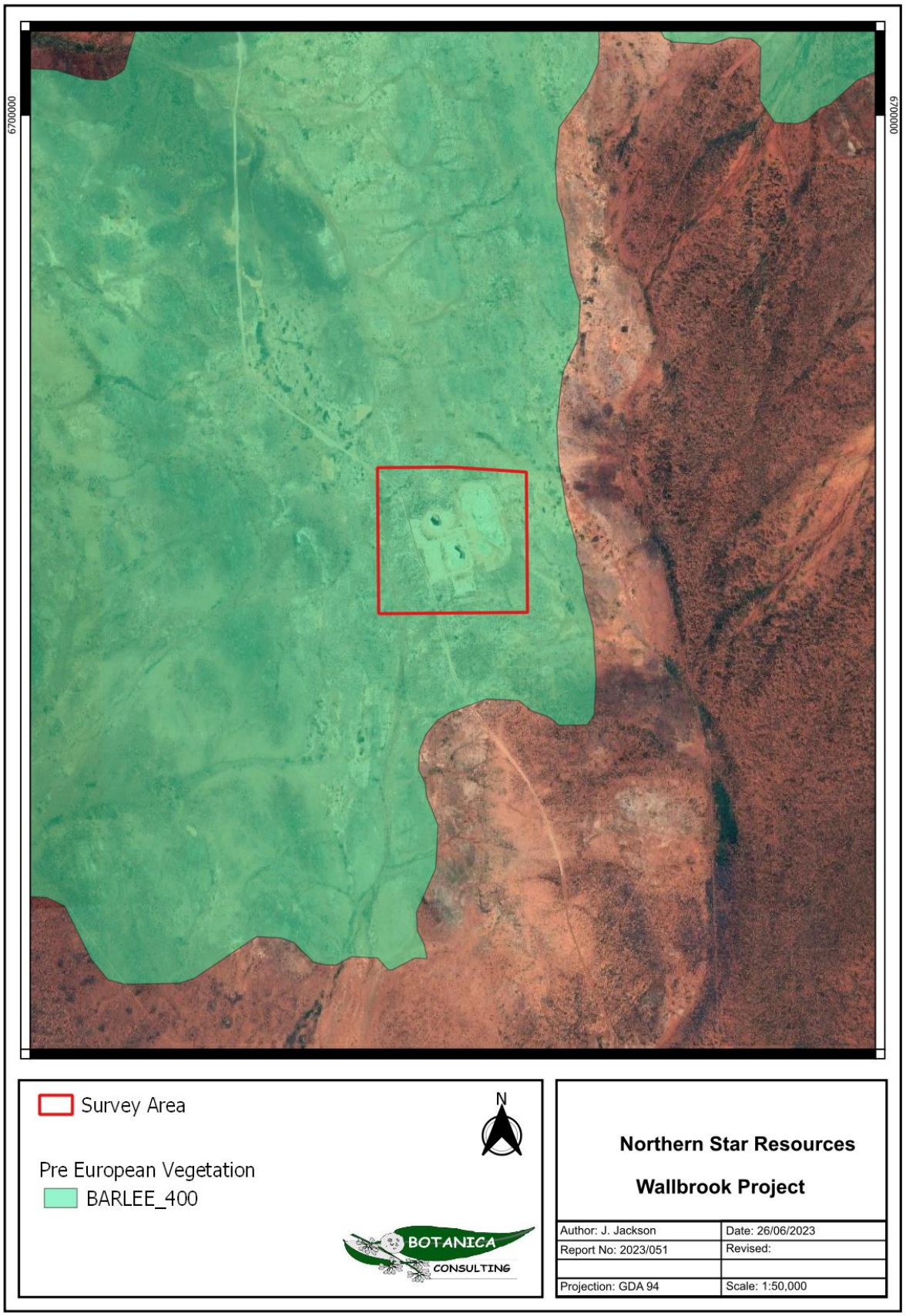

Figure 4-2: Pre-European vegetation systems within the survey area

4.1.4 Fauna

According to the results of the ALA database search (ALA, 2022), a total of 84 terrestrial vertebrate fauna taxa have been recorded within 40 km of the survey area, consisting of 51 bird, eight mammal, 23 reptile and two amphibian taxa. Of these, two species, representing 2.4% of faunal diversity, are introduced (non-native) species.

4.1.4.1 Conservation Significant Fauna

The desktop review identified 12 terrestrial vertebrate fauna species of conservation significance as previously being recorded in the regional area, consisting of nine Threatened, two Migratory and one Otherwise Protected species. The full fauna likelihood assessment is listed in Appendix D.

Habitat and distribution data was used to determine the likelihood of occurrence within the survey area. The assessment identified three significant fauna species, consisting of two Vulnerable (VU) taxa and one Otherwise Protected taxa, as potentially occurring in the survey area (Table 4-3).

Table 4-3: Potentially occurring significant fauna

Species	Conservation Status			Habitat Description	Assessment	Likelihood
	EPBC Act	BC Act	DBCA Priority			
Grey Falcon *Falco hypoleucos*	VU	VU	-	Occurs at low densities across inland Australia. Frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. Has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter. While breeding Grey Falcons feed almost exclusively on birds. Prey species include doves, pigeons, small parrots and cockatoos and finches, but a variety of other bird prey species has been recorded. Nonavian prey include small mammals and lizards.	Survey area may form part of larger home range.	Possible
Malleefowl *Leipoa ocellata*	VU	VU	-	Scrublands and woodlands dominated by mallee and wattle species (DAWE, 2020b).	Habitat likely marginal and unsuitable for breeding. Occasional transients only.	Possible
Peregrine Falcon *Falco peregrinus*	-	-	-	The Peregrine Falcon is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water, and may even be found nesting on high city buildings (Birdlife Australia, 2018).	Survey area may form part of larger home range but unlikely to breed in area.	Possible

4.2 Field Assessment

4.2.1 Flora

The field survey identified 82 vascular flora taxa within the survey area, represented 45 genera across 24 families. The most diverse families were Chenopodiaceae (20 species), Fabaceae (10 species) and Myrtaceae (eight species). Dominant genera include *Acacia* and *Maireana* (seven species each) and *Eremophila* (six species). Of these, two species were introduced (weed) species. The full field species inventory is listed in Appendix E.

4.2.1.1 Introduced Flora

Two introduced (weed) species, representing 2.4% of floristic diversity, were recorded within the survey area: **Mesembryanthemum nodiflorum* and **Salvia verbenaca*. Neither of these species are listed as a Declared Pest on the Western Australian Organism List (WAOL) under the *Biosecurity and Agriculture Management* (BAM) *Act 2007* or as a Weed of National Significance.

4.2.1.2 Significant Flora

According to the EPA Environmental Factor Guideline for Flora and Vegetation (EPA, 2016b) significant flora includes:

- Flora being identified as threatened or priority species;
- Locally endemic flora or flora associated with a restricted habitat type (e.g. surface water or groundwater dependent ecosystems);
- New species or anomalous features that indicate a potential new species;
- Flora representative of the range of a species (particularly, at the extremes of range, recently discovered range extensions, or isolated outliers of the main range);
- Unusual species, including restricted subspecies, varieties or naturally occurring hybrids; and
- Flora with relictual status, being representative of taxonomic groups that no longer occur widely in the broader landscape.

No Threatened, Priority or otherwise significant flora species were recorded within the survey area.

4.2.2 Vegetation Communities

A total of five broad-scale vegetation communities were identified within the survey area. Vegetation community descriptions and extent are listed below in Table 4-4 and illustrated spatially in Figure 4-3. Vegetation community descriptions and extents were determined from field survey results, aerial imagery interpretation and extrapolation of the communities. All the vegetation communities recorded within the survey area are well represented in the region.

The survey found QRP-AOW1 was the most widespread community in the survey area, occupying 71.1 ha (29.4%), while RH-AOW1 was the most restricted with 7.5 ha (3.1%). The most diverse vegetation type was QRP-AFW1 with 36 species (43.9%), while the least diverse was RH-AOW1 with 18 species (22.0%).

Table 4-4: Summary of vegetation types within the survey area

Vegetation Code	NVIS Major Vegetation Group	Vegetation Type	Landform	Image
DD-AOW1 18.9 ha (7.8%)	*Acacia* sparse woodland	*Acacia ramulosa* var. *linophylla* low sparse woodland over *Hakea preissii* tall, isolated shrubs over *Eremophila dempsteri, Exocarpos aphyllus* sparse shrubland over *Enchylaena lanata, E. tomentosa* low sparse shrubland over *Cephalipterum drummondii, Rhodanthe chlorocephala subsp. rosea* and *Lawrencella rosea* sparse forbland	Drainage Depression	
QRP-AFW1 32.6 ha (13.5%)	*Allocasuarina* woodland	*Casuarina pauper* low sparse woodland over *Melaleuca stereophloia* tall, isolated shrubs over *Acacia assimilis* subsp. *assimilis, Acacia hemiteles* and *Dodonaea inaequifolia* sparse shrubland over *Atriplex codonocarpa, Sclerolaena densiflora* and *Seringia cacaobrunnea* low sparse shrubland	Quartz Rocky Plain	

Vegetation Code	NVIS Major Vegetation Group	Vegetation Type	Landform	Image
QRP-AOW1 71.1 ha (29.4%)	*Acacia* open woodland	*Eucalyptus grossa, Allocasuarina campestris* low open woodland over *Santalum acuminatum, Hakea preissii* and *Eremophila oldfieldii* subsp*. angustifolia* sparse shrubland over *Dicrastylis parvifolia, Atriplex vesicaria* and *Abutilon cryptopetalum* low sparse shrubland	Quartz Rocky Plain	
CLP-CS1 20.7 ha (8.5%)	Chenopod shrubland	*Eucalyptus cylindriflora* low isolated trees over *Acacia eremophila, A. hemiteles* and *A. tetragonophylla* tall sparse shrubland over *Scaevola spinescens, Eremophila georgei* sparse shrubland over *Atriplex semilunaris, Maireana trichoptera* and *Sclerolaena drummondii* low open shrubland	Clay-loam Plain	

Vegetation Code	NVIS Major Vegetation Group	Vegetation Type	Landform	Image
RH-AOW1 7.5 ha (3.1%)	*Acacia* open woodland	*Eucalyptus loxophleba* subsp. *supralaevis, Allocasuarina campestris* low isolated trees over *Allocasuarina acutivalvis, Acacia blaxellii, Eremophila violacea* sparse shrubland over *Prostanthera grylloana, Westringia cephalantha* low sparse shrubland	Rocky Hillslope	
Cleared 91.4 ha (37.7%)	N/A	N/A	N/A	N/A

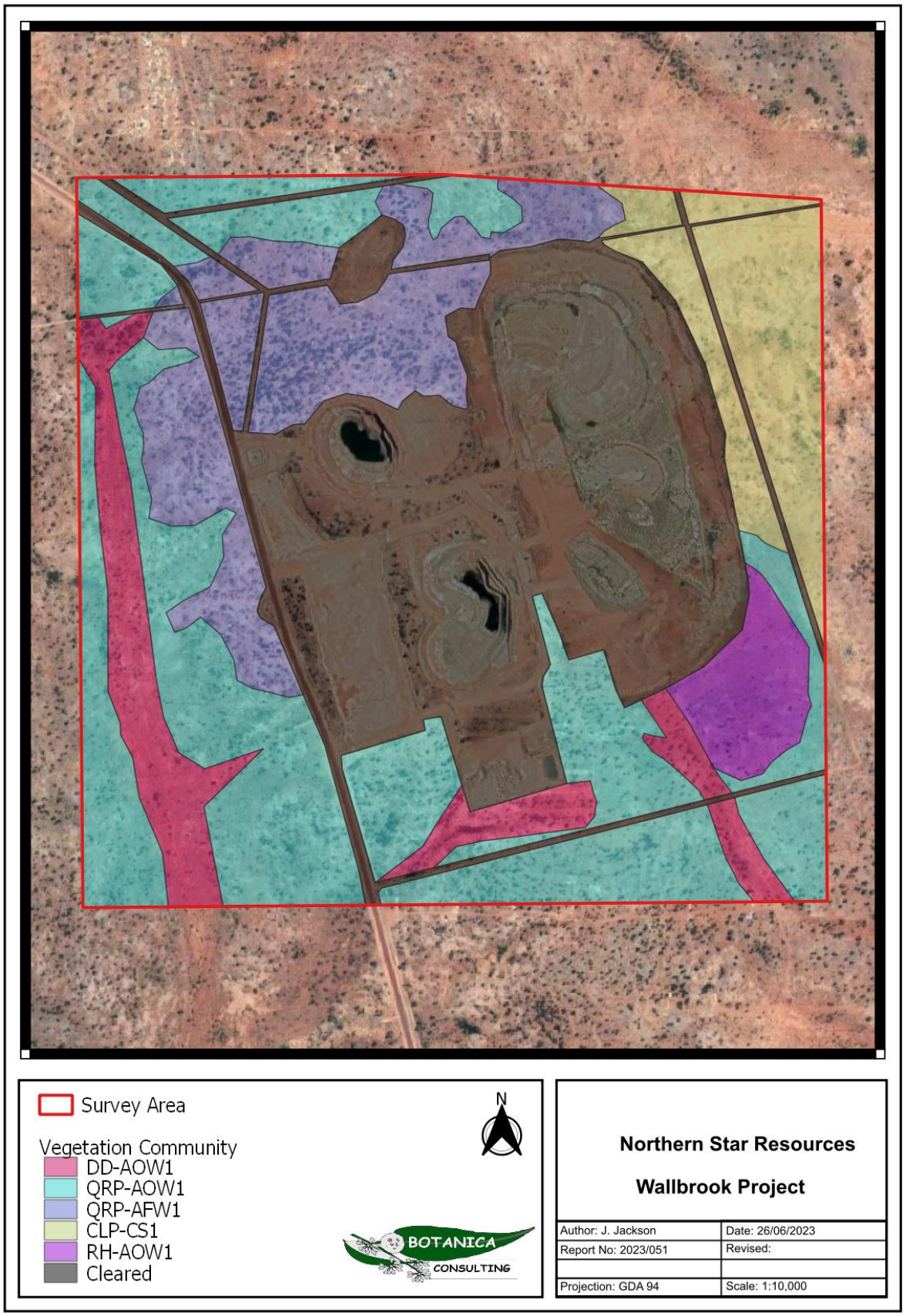

Figure 4-3: Vegetation communities within the survey area

4.2.3 Vegetation Condition

Based on the vegetation condition rating scale adapted from Keighery (1994) and Trudgen, (1988), native vegetation within the survey area was categorized as 'good' (Table 4-5, Figure 4-4). Vegetation condition rating descriptions are listed in Appendix F. Disturbances within the survey area included mining pits, access tracks, low levels of grazing and cumulative historical impacts (changed fire regimes, pastoral use etc.). No significant weed presence was observed within the survey area.

Table 4-5: Vegetation condition rating within the survey area

Condition rating	Description	Area (ha)	Area (%)
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.	150.8	62.3
Cleared	No native vegetation, cleared for development.	91.4	37.7
TOTAL		**242.2**	**100**

Figure 4-4: Vegetation condition within the survey area

4.2.4 Significant Vegetation

According to the EPA Environmental Factor Guideline for Flora and Vegetation (EPA, 2016b) significant vegetation includes:

- Vegetation being identified as Threatened or Priority Ecological Communities;
- Vegetation with restricted distribution;
- Vegetation subject to a high degree of historical impact from threatening processes;
- Vegetation which provides a role as a refuge; and
- Vegetation providing an important function required to maintain ecological integrity of a significant ecosystem.

No Threatened, Priority or otherwise significant vegetation was identified within the survey area.

4.2.5 Fauna Habitat

Based on vegetation and associated landforms identified during the flora and vegetation assessment, four broad scale terrestrial fauna habitats were identified as occurring within the survey area. Table 4-7 provides the area and a visual representation of fauna habitat types, and the extent of fauna habitats is shown spatially in Figure 4-5.

The most abundant fauna habitat was '*Acacia* open woodland on quartz rocky plain', occupying 103.7 ha (42.9%) of the survey area, while the most restricted was '*Acacia* open woodland on rocky hillslope', which occurred over 7.5 ha (3.1%) of the survey area.

Table 4-6: Main terrestrial fauna habitats within the survey area

Fauna Habitat	Description	Representative Fauna Attributes	Possibly Occurring Conservation Significant Species	Example Image
Acacia open woodland on quartz rocky plain 103.7 ha (42.9%)	*Acacia* and *Allocasuarina* woodland over *Eremophila* shrubland	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata supporting avifauna assemblage. • Low vegetation density and low leaf litter.	Malleefowl *Leipoa ocellata* Grey Falcon *Falco hypoleucos*	
Acacia open woodland in drainage depression 18.9 ha (7.8%)	*Acacia* open woodland over mixed shrubs and herbs	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata supporting avifauna assemblage. • Low vegetation density and low leaf litter.	N/A	

Fauna Habitat	Description	Representative Fauna Attributes	Possibly Occurring Conservation Significant Species	Example Image
Acacia open woodland on rocky hillslope 7.5 ha (3.1%)	*Acacia* open woodland over *Eremophila* and *Maireana* shrubland	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata supporting avifauna assemblage. • Moderate vegetation density and low leaf litter.	Malleefowl *Leipoa ocellata* Grey Falcon *Falco hypoleucos*	
Chenopod shrubland on clay-loam plain 20.7 ha (8.5%)	Mixed chenopod shrubland	• Ground not particularly suited to burrowing species. • Low diversity vegetation strata. • Low vegetation density and low leaf litter.	N/A	

Fauna Habitat	Description	Representative Fauna Attributes	Possibly Occurring Conservation Significant Species	Example Image
Cleared 91.4 ha (37.7%)	N/A	N/A	N/A	N/A

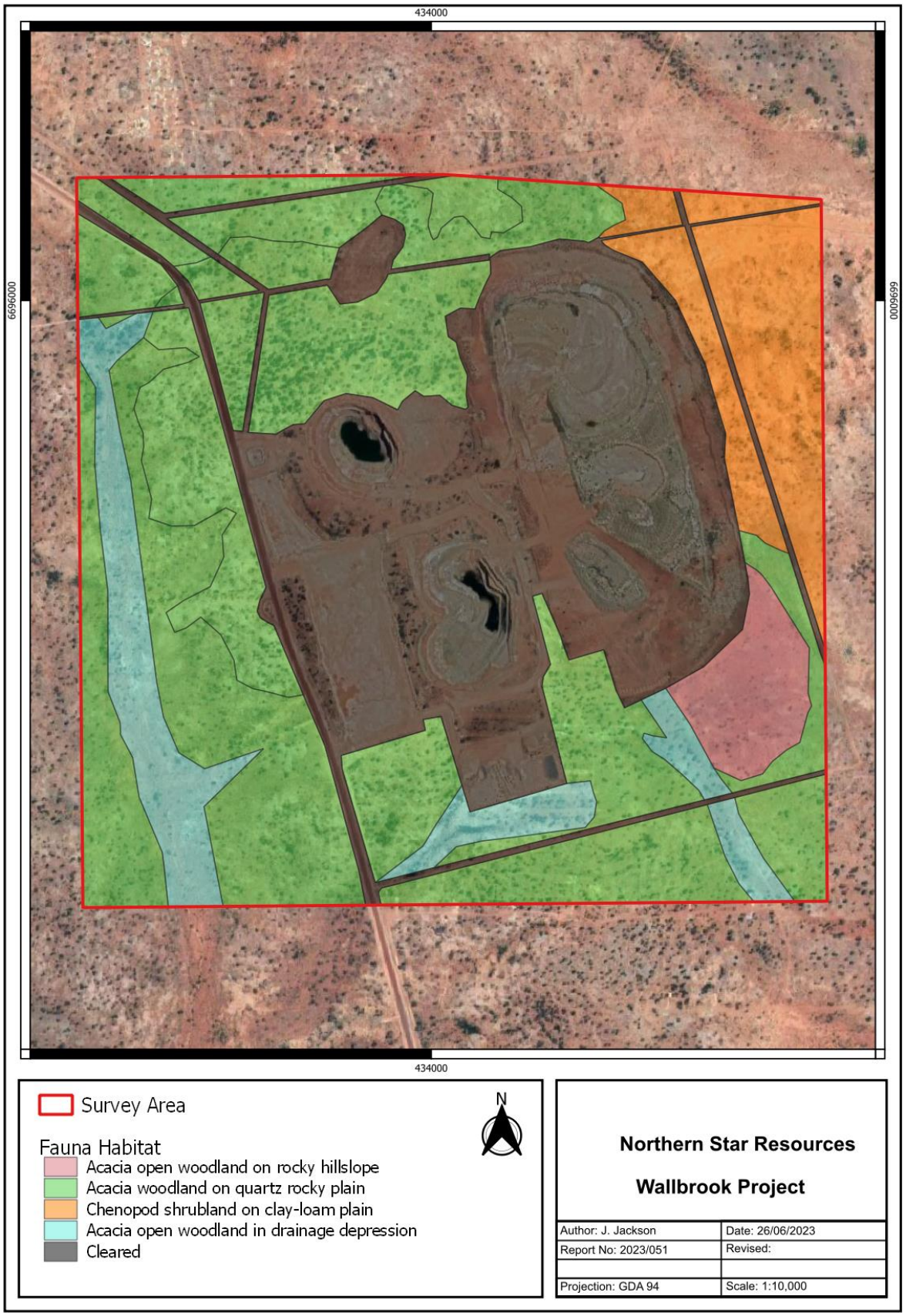

Figure 4-5: Fauna habitats within the survey area

4.2.6 Significant Fauna

According to the EPA Environmental Factor Guideline for Terrestrial Fauna (EPA, 2016c) significant fauna includes:

- Fauna being identified as a Threatened or Priority species;
- Fauna species with restricted distribution;
- Fauna subject to a high degree of historical impact from threatening processes; and
- Fauna providing an important function required to maintain the ecological integrity of a significant ecosystem.

No evidence of significant fauna species was observed during the survey, including no evidence of Malleefowl nesting mounds or other activity. The current status of some species on site and/or in the general area is difficult to determine, however, based on the habitats present and, in some cases, direct observations or recent nearby records, the following species of conservation significance can be regarded as possibly utilising the survey area for some purpose at times, these being:

- **Malleefowl (*Leipoa ocellata)* - Vulnerable (EPBC Act and BC Act)**
  This species is occasionally recorded in the Eastern Murchison subregion. Habitat appears marginal, with low vegetation density and leaf litter observed within the survey area, and is unlikely to support breeding activity, although occasional transients may occur. No evidence of recent malleefowl activity (active mounds, tracks, feathers or bird observations etc.) were observed within the survey area.
- **Grey Falcon (*Falco hypoleucos)* - Vulnerable (EPBC Act and BC Act)**
  This species is sparsely recorded throughout inland Australia. Suitable habitat may be present but is unlikely to represent critical habitat. No suitable nesting sites were observed during the field survey. The species may inhabit the area as part of its larger home range.
- **Peregrine Falcon (*Falco peregrinus)* - Vulnerable (EPBC Act and BC Act)**
  This species is sparsely recorded throughout Australia. Suitable habitat was not recorded during the field survey, and no suitable nesting sites were observed. The species may inhabit the area as part of its larger home range but is unlikely to significantly utilize the area.

It should be noted that while habitats onsite for one or more of the species listed above are considered possibly suitable, some or all may be marginal in extent/quality and therefore the fauna species considered as possibly occurring may in fact only visit the area for short periods as infrequent vagrants.

4.3 Matters of National Environmental Significance

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act protects matters of national environmental significance and is used by the Commonwealth DCCEEW to list threatened taxa and ecological communities into categories based on the criteria set out in the Act (www.environment.gov.au/epbc/index.html). The Act provides a national environmental assessment and approval system for proposed developments and enforces strict penalties for unauthorised actions that may affect matters of national environmental significance. Matters of national environmental significance as defined by the Commonwealth EPBC Act include:

- Nationally threatened flora and fauna species;
- World heritage properties;
- National heritage places;
- Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed);
- Nationally threatened ecological communities;
- Commonwealth marine area;
- The Great Barrier Reef Marine Park; and
- Nuclear actions (including uranium mining) a water resource, in relation to coal seam gas development and large coal mining development.

No Matters of National Environmental Significance were identified within the survey area.

4.4 Matters of State Environmental Significance.

4.4.1 Environmental Protection Act WA 1986

The EP Act provides for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment. The Act is administered by The Department of Water and Environment Regulation (DWER), which is the State Government's environmental regulatory agency.

Under Section 51C of the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations (Regulations) WA 2004* any clearing of native vegetation in Western Australia that is not eligible for exemption under Schedule 6 of the EP Act 1986 or under the Regulations 2004 requires a clearing permit from the DWER or DMIRS. Under Section 51A of the EP Act 1986 native vegetation includes aquatic and terrestrial vegetation indigenous to Western Australia, and intentionally planted vegetation declared by regulation to be native vegetation, but not vegetation planted in a plantation or planted with commercial intent. Section 51A of the EP Act 1986 defines clearing as "the killing or

destruction of; the removal of; the severing or ringbarking of trunks or stems of; or the doing of substantial damage to some or all of the native vegetation in an area, including the flooding of land, the burning of vegetation, the grazing of stock or an act or activity that results in the above". Exemptions under Schedule 6 of the EP Act and the EP Regulations do not apply in ESAs as declared under Section 51B of the EP Act or TEC listed under State and Commonwealth legislation.

No Matters of State Environmental Significance were identified within the survey area.

4.4.2 Biodiversity Conservation Act 2016

This Act is used by the Western Australian DBCA for the conservation and protection of biodiversity and biodiversity components in Western Australia and to promote the ecologically sustainable use of biodiversity components in the State. Taxa are classified as 'Threatened" when their populations are geographically restricted or are threatened by local processes (see following sections for Threatened definitions). Under this Act all native flora and fauna are protected throughout the State. Financial penalties are enforced under this Act if threatened species are collected without an appropriate license.

Under Section 54(1) of the BC Act, habitat is eligible for listing as critical habitat if:

a) It is critical to the survival of a threatened species or a threatened ecological community; and
b) Its listing is otherwise in accordance with the ministerial guidelines.

No threatened species or critical habitat listed under the BC Act were recorded within the survey area.

4.5 Other Areas of Conservation Significance

There are no Environmentally Sensitive Areas located within the survey area.

There are no Nationally Important or RAMSAR wetlands located within the survey area.

There are no vested Conservation Reserve located within the survey area.

There are no DBCA managed or interest lands located within the survey area. The nearest conservation area is the Goongarrie National Park which is located approximately 56 km west of the survey area. Activities within the survey area are unlikely to impact this conservation area.

Both proposed and gazetted conservation reserves are managed by DBCA, with gazetted conservation reserves vested with the Conservation and Parks Commission of Western Australia. The Conservation and Parks Commission is an independent statutory authority that was established under the Conservation and Land Management (CALM) Act 1984 in November 2000 and is the controlling body in which the State's conservation estate, including national parks, conservation

parks, nature reserves, state forests and timber reserves, are vested. The Conservation and Parks Commission develops policies and provides independent advice to the Minister for Environment with respect to conservation, the management of ecological biodiversity and the application of ecologically sustainable forest management. The DBCA manages land on behalf of the Conservation and Parks Commission.

The location of proposed and gazetted conservation reserves, ESA's and Nationally Important Wetlands in relation to the survey area is provided in Figure 4 3.

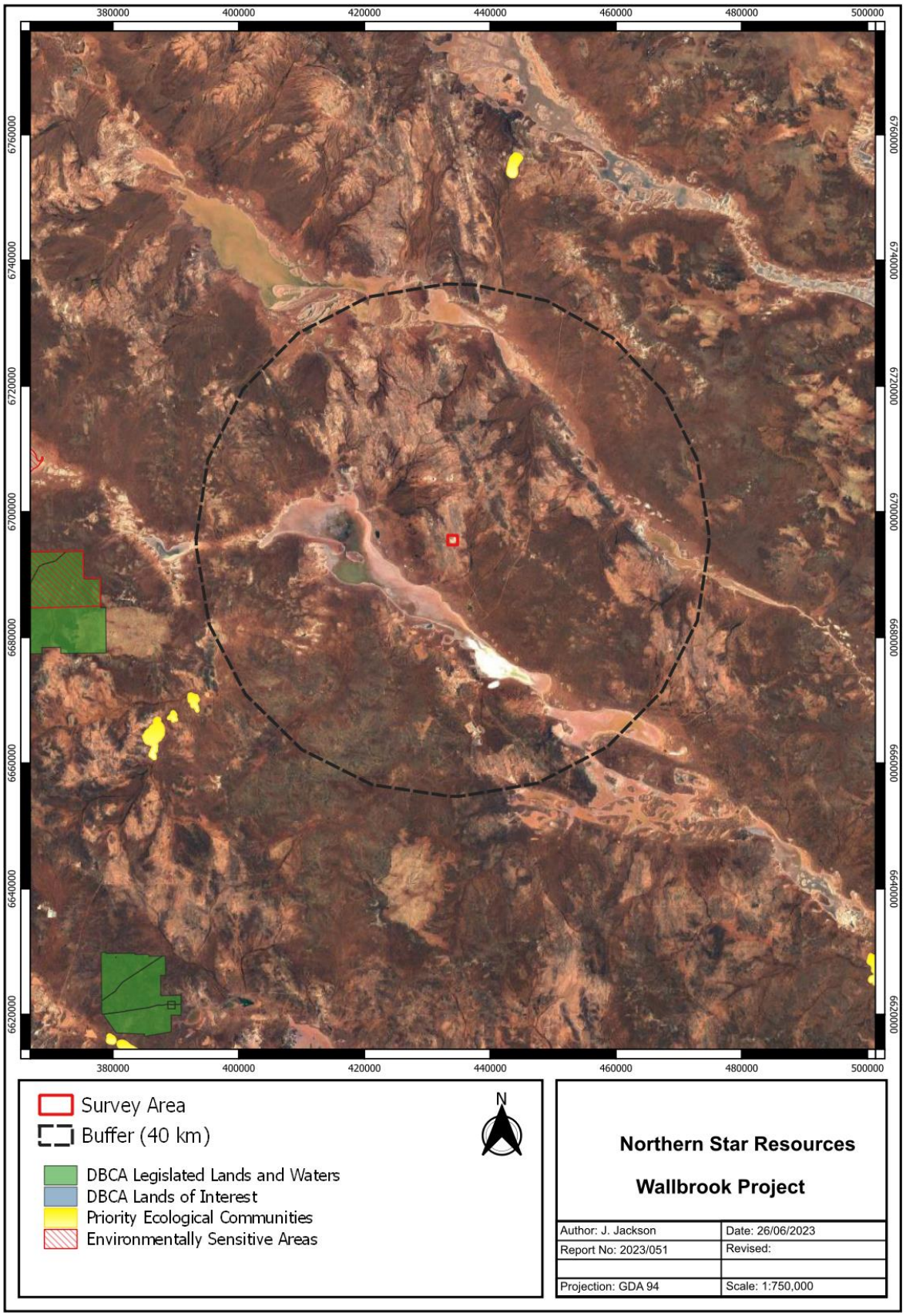

Figure 4-6: Areas of conservation significance

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APPENDIX A:
CONSERVATION RATINGS BC ACT AND EPBC ACT

Definitions of Conservation Significant Species

Code	Category
State categories of Threatened and Priority species	
Threatened Species (T) Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as Threatened species under section 26(2) of the Biodiversity Conservation Act 2016 (BC Act).	
CR	**Critically Endangered** Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.
EN	**Endangered** Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.
VU	**Vulnerable** Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.
Extinct species Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.	
EX	**Extinct** Species where "*there is no reasonable doubt that the last member of the species has died*", and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act). Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.
EW	**Extinct in the Wild** Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form*", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no Threatened fauna or Threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.
Specially protected species Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection. Species that are listed as Threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.	

Code	Category
IA	**International Agreement/ Migratory** Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
CD	**Species of special conservation interest** Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as Threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
OS	**Other specially protected species** Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.
Priority species Possibly Threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of Priority for survey and evaluation of conservation status so that consideration can be given to their declaration as Threatened Fauna or Flora. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.	
P1	**Priority 1: Poorly-known species** Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
P2	**Priority 2: Poorly-known species** Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
P3	**Priority 3: Poorly-known species** Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
P4	**Priority 4: Rare, Near Threatened and other species in need of monitoring** (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.

Code	Category
	(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.
Commonwealth categories of Threatened species	
EX	**Extinct** Taxa where there is no reasonable doubt that the last member of the species has died.
EW	**Extinct in the Wild** Taxa where it is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CR	**Critically Endangered** Taxa that are facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
EN	**Endangered** Taxa which are not critically endangered and is facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
VU	**Vulnerable** Taxa which are not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	**Conservation Dependent** Taxa which are the focus of a specific conservation program the cessation of which would result in the species becoming vulnerable, endangered or critically endangered; or (b) the following subparagraphs are satisfied: (i) the species is a species of fish; (ii) the species is the focus of a plan of management that provides for actions necessary to stop the decline of, and support the recovery of, the species so that its chances of long term survival in nature are maximised; (iii) the plan of management is in force under a law of the Commonwealth or of a State or Territory; (iv) cessation of the plan of management would adversely affect the conservation status of the species.

Definitions of conservation significant communities

Category Code	Category
State categories of Threatened Ecological Communities (TEC)	
PD	**Presumed Totally Destroyed**
	An ecological community will be listed as Presumed Totally Destroyed if there are no recent records of the community being extant and either of the following applies:
	• records within the last 50 years have not been confirmed despite thorough searches or known likely habitats or;
	• all occurrences recorded within the last 50 years have since been destroyed.
CR	**Critically Endangered**
	An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future, meeting any one of the following criteria:
	The estimated geographic range and distribution has been reduced by at least 90% and is either continuing to decline with total destruction imminent, or is unlikely to be substantially rehabilitated in the immediate future due to modification;
	The current distribution is limited i.e. highly restricted, having very few small or isolated occurrences, or covering a small area;
	The ecological community is highly modified with potential of being rehabilitated in the immediate future.
EN	**Endangered**

Category Code	Category
	An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. The ecological community must meet any one of the following criteria:
	The estimated geographic range and distribution has been reduced by at least 70% and is either continuing to decline with total destruction imminent in the short-term future, or is unlikely to be substantially rehabilitated in the short-term future due to modification;
	The current distribution is limited i.e. highly restricted, having very few small or isolated occurrences, or covering a small area;
	The ecological community is highly modified with potential of being rehabilitated in the short-term future.
VU	**Vulnerable**
	An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing high risk of total destruction in the medium to long term future. The ecological community must meet any one of the following criteria:
	The ecological community exists largely as modified occurrences that are likely to be able to be substantially restored or rehabilitated;
	The ecological community may already be modified and would be vulnerable to threatening process, and restricted in range or distribution;
	The ecological community may be widespread but has potential to move to a higher threat category due to existing or impending threatening processes.
Commonwealth categories of Threatened Ecological Communities (TEC)	
CE	**Critically Endangered** If, at that time, an ecological community is facing an extremely high risk of extinction in the wild in the immediate future (indicative timeframe being the next 10 years).
EN	**Endangered** If, at that time, an ecological community is not critically endangered but is facing a very high risk of extinction in the wild in the near future (indicative timeframe being the next 20 years).
VU	**Vulnerable** If, at that time, an ecological community is not critically endangered or endangered, but is facing a high risk of extinction in the wild in the medium–term future (indicative timeframe being the next 50 years).
Priority Ecological Communities	
P1	**Poorly-known ecological communities**
	Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist.
P2	**Poorly-known ecological communities**
	Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, un-allocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation.
P3	**Poorly known ecological communities**
	Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:
	Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;
	Communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing and inappropriate fire regimes.
P4	**Ecological communities that are adequately known, rare but not threatened** or meet criteria for near threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.
P5	**Conservation Dependent ecological communities**
	Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.

APPENDIX B:
POTENTIALLY OCCURRING INTRODUCED (WEED) FLORA SPECIES

Family	Taxon	Common Name	WAOL Status	Control Category	WONS
Primulaceae	*Lysimachia arvensis*	Pimpernel	Permitted - s11	No Control Category	No
Brassicaceae	*Carrichtera annua*	Ward's Weed	Permitted - s11	No Control Category	No
Poaceae	*Cenchrus ciliaris*	Black Buffel-grass	Permitted - s11	No Control Category	No

APPENDIX C:
SIGNIFICANT FLORA LIKELIHOOD ASSESSMENT

Taxon	Status			Habitat	Assessment	Likelihood
	EPBC Act	BC Act	DBCA			
Thryptomene eremaea	-	-	P2	Red or yellow sand. Sandplains.	Within known range, habitat unlikely to be present.	Unlikely
Eucalyptus pimpiniana	-	-	P3	Red sand. Sand dunes, plains.	Outside known range of species.	Unlikely
Hysterobaeckea ochropetala subsp. *cometes*	-	-	P3	Slightly undulating sand plain, red loamy sand.	Outside known range of species.	Unlikely
Placynthium nigrum	-	-	P3	Rock pools.	Outside known range of species.	Unlikely
Eremophila arachnoides subsp. *tenera*	-	-	P3	Calcareous sandy loam soils, semi-saline. Plains, undulating hills.	At extreme of known range, habitat may be present.	Possible
Eucalyptus jutsonii subsp. *jutsonii*	-	-	P4	Red to pale orange deep sands. Undulating areas and on dunes.	Outside known range of species.	Unlikely
Tecticornia mellarium	-	-	P1	-	Outside known range of species.	Unlikely

APPENDIX D:
SIGNIFICANT FAUNA LIKELIHOOD ASSESSMENT

Species	Conservation Status			Habitat Description	Assessment	Likelihood
	EPBC Act	BC Act	DBCA Priority			
Night Parrot *Pezoporus occidentalis*	EN	CR	-	Most habitat records are of Triodia (Spinifex) grasslands and/or chenopod shrublands in the arid and semi-arid zones, or *Astrebla* spp. (Mitchell grass), shrubby samphire and chenopod associations, scattered trees and shrubs, *Acacia aneura* (Mulga) woodland, treeless areas and bare gibber are associated with sightings of the species. Roosting and nesting sites are consistently reported as within clumps of dense vegetation, primarily old and large Spinifex (*Triodia*) clumps, but sometimes other vegetation types (DAWE, 2020b).	Outside known range, no suitable habitat.	Would Not Occur
Grey Falcon *Falco hypoleucos*	VU	VU	-	The Grey Falcon occurs at low densities across inland Australia. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter. While breeding Grey Falcons feed almost exclusively on birds. Prey species include doves, pigeons, small parrots and cockatoos and finches, but a variety of other bird prey species has been recorded. Nonavian prey recorded by direct observation include small mammals and lizards.	Survey area may form part of larger home range.	Possible
Princess Parrot *Polytelis alexandrae*	VU	-	P4	Confined to arid regions of Western Australia, the Northern Territory, and South Australia. In Western Australia, it is sparsely distributed from near Coolgardie in the west and the Murchison River to the east, and north to near the Fitzroy River in Western Australia and to Howell Ponds in the Northern Territory. It is believed that the population is mainly concentrated in the Great Sandy, Gibson, Tanami and Great Victoria Deserts, and in the central ranges. It inhabits sand dunes and sand flats in the arid zone of western and central Australia, in open savanna woodlands and shrublands that usually consist of scattered stands of Eucalyptus (including *E. gongylocarpa*, *E. chippendalei* and mallee species), Casuarina or Allocasuarina trees; an understorey of shrubs such as *Acacia* (especially *A. aneura*), *Cassia*, *Eremophila*, *Grevillea*, *Hakea* and *Senna*; and a ground cover dominated by *Triodia* species (DAWE, 2020b).	Rarely recorded this far south and no recent records nearby.	Unlikely
Malleefowl *Leipoa ocellata*	VU	VU	-	Scrublands and woodlands dominated by mallee and wattle species (DAWE, 2020b).	Habitat likely marginal and unsuitable for breeding. Occasional transients only.	Possible
Curlew Sandpiper *Calidris ferruginea*	CR & MI		-	Prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland (DAWE, 2020b).	Habitat would not be present.	Would Not Occur
Peregrine Falcon *Falco peregrinus*	OS	-	-	The Peregrine Falcon is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings (Birdlife Australia, 2018).	Survey area may form part of larger home range but unlikely to breed in area.	Possible
Fork-tailed Swift *Apus pacificus*	MI	-	-	Low to very high airspace over varied habitat from rainforest to semi desert (Birdlife Australia, 2019).	Very occasional transients only.	Unlikely
Grey Wagtail *Motacilla cinerea*	MI	-	-	Running water in disused quarries, sandy, rocky streams in escarpments and rainforest, sewerage ponds, ploughed fields and airfields (Morecombe 2004).	No suitable habitat.	Would Not Occur

Species	Conservation Status			Habitat Description	Assessment	Likelihood
	EPBC Act	BC Act	DBCA Priority			
Chuditch *Dasyurus geoffroii*	VU	VU	-	Previously occurred throughout arid and semi-arid Australia but is now restricted to south-west Western Australia. (DAWE, 2020b).	Considered to be locally extinct.	Unlikely
Southern Whiteface *Aphelocephala leucopsis*	VU		-	Occurs across most of mainland Australia south of the tropics, from the north-eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range. Lives in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains. Habitat critical to the survival of the Southern Whiteface includes areas of: • relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both; • habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat; • living and dead trees with hollows and crevices which are essential for roosting and nesting.	Suitable habitat unlikely to be present.	Unlikely
Sandhill Dunnart *Sminthopsis psammophila*	EN	EN	-	The species is currently known from five widely-separated localities in the Great Victoria Desert (South Australia and Western Australia), and on the Eyre Peninsula. Occupy sandy, semi-arid and arid areas of southern central Australia, especially where sand dunes occur and when the vegetation is dominated by spinifex hummock grassland (Triodia spp.). Overstorey vegetation is variable, with groves of desert oak (Allocasuarina decaisneana), or low, open Eucalyptus and Callitris woodlands.	Outside current known range of species.	Unlikely
Great Desert Skink *Liopholis kintorei*	VU		-	Endemic to the Australian arid zone in the western deserts regions. Key populations of the great desert skink are in the north-western Tanami Desert, Kiwirrkurra Indigenous Protected Area, Southern Tanami Indigenous Protected Area, Uluru-Kata Tjuta National Park and adjoining Yulara freehold land, Newhaven Wildlife Sanctuary (managed by the Australian Wildlife Conservancy), at Watarru on Anangu Pitjantjatjara Yankunytjatjara Lands in SA, Karlamilyi National Park and Ngaanyatjarra Indigenous Protected Area.	Outside current known range of species.	Unlikely

APPENDIX E:
LIST OF SPECIES IDENTIFIED WITHIN THE SURVEY AREA

(W) denotes introduced (weed) species; (A) denotes ephemeral (annual) species; (P) denotes Priority species

Family	Taxon	CLP-CS1	DD-AOW1	QRP-AOW1	QRP-AFW1	RH-AOW1
Aizoaceae	*Mesembryanthemum nodiflorum (W)*	*				
Amaranthaceae	*Ptilotus exaltatus (A)*			*	*	
Amaranthaceae	*Ptilotus gaudichaudii*			*	*	
Amaranthaceae	*Ptilotus obovatus*	*	*	*	*	
Asteraceae	*Angianthus tomentosus (A)*	*	*			
Asteraceae	*Cephalipterum drummondii (A)*		*			
Asteraceae	*Lawrencella rosea (A)*		*	*		
Asteraceae	*Podolepis aristata* subsp. *aristata (A)*		*			
Asteraceae	*Rhodanthe chlorocephala* subsp. *rosea (A)*		*			
Asteraceae	*Waitzia acuminata (A)*		*	*		*
Casuarinaceae	*Allocasuarina acutivalvis*					*
Casuarinaceae	*Allocasuarina campestris*		*	*		*
Casuarinaceae	*Casuarina pauper*		*	*	*	
Chenopodiaceae	*Atriplex bunburyana*		*	*		
Chenopodiaceae	*Atriplex codonocarpa*				*	
Chenopodiaceae	*Atriplex nummularia*	*			*	
Chenopodiaceae	*Atriplex semilunaris*	*				
Chenopodiaceae	*Atriplex vesicaria*		*	*		
Chenopodiaceae	*Enchylaena lanata*		*			
Chenopodiaceae	*Enchylaena tomentosa*		*	*		
Chenopodiaceae	*Maireana carnosa*	*			*	
Chenopodiaceae	*Maireana georgei*	*			*	
Chenopodiaceae	*Maireana pyramidata*	*	*	*	*	
Chenopodiaceae	*Maireana sedifolia*	*			*	
Chenopodiaceae	*Maireana tomentosa*			*	*	
Chenopodiaceae	*Maireana trichoptera*	*				
Chenopodiaceae	*Maireana triptera*	*				*
Chenopodiaceae	*Rhagodia eremaea*				*	*
Chenopodiaceae	*Sclerolaena cuneata*			*	*	*
Chenopodiaceae	*Sclerolaena densiflora*				*	
Chenopodiaceae	*Sclerolaena diacantha*	*			*	
Chenopodiaceae	*Sclerolaena drummondii*	*				
Chenopodiaceae	*Sclerolaena eurotioides*	*				
Cyperaceae	*Schoenus brevisetis*		*			
Euphorbiaceae	*Bertya dimerostigma*			*		
Fabaceae	*Acacia acuminata*		*	*	*	
Fabaceae	*Acacia assimilis* subsp. *assimilis*				*	

Family	Taxon	CLP-CS1	DD-AOW1	QRP-AOW1	QRP-AFW1	RH-AOW1
Fabaceae	*Acacia blaxellii*					*
Fabaceae	*Acacia burkittii*				*	*
Fabaceae	*Acacia eremophila*	*			*	
Fabaceae	*Acacia erinacea*	*				*
Fabaceae	*Acacia hemiteles*	*			*	
Fabaceae	*Acacia ramulosa* var. *linophylla*		*			
Fabaceae	*Acacia tetragonophylla*	*			*	
Fabaceae	*Senna artemisioides* subsp. *filifolia*	*	*	*	*	
Goodeniaceae	*Coopernookia strophiolata*				*	*
Goodeniaceae	*Scaevola spinescens*	*			*	
Haloragaceae	*Glischrocaryon aureum*			*		
Hemerocallidaceae	*Dianella revoluta*	*				
Lamiaceae	*Dicrastylis parvifolia*			*		
Lamiaceae	*Prostanthera grylloana*					*
Lamiaceae	*Salvia verbenaca (W)*	*	*	*	*	
Lamiaceae	*Westringia cephalantha*			*		*
Malvaceae	*Abutilon cryptopetalum*			*		
Malvaceae	*Seringia cacaobrunnea*				*	
Myrtaceae	*Eucalyptus cylindriflora*	*				
Myrtaceae	*Eucalyptus grossa*			*		
Myrtaceae	*Eucalyptus loxophleba* subsp. *supralaevis*					*
Myrtaceae	*Eucalyptus urna*					*
Myrtaceae	*Leptospermum subtenue*			*		
Myrtaceae	*Melaleuca eleuterostachya*	*			*	
Myrtaceae	*Melaleuca lateriflora*			*		
Myrtaceae	*Melaleuca stereophloia*				*	
Poaceae	*Austrostipa elegantissima*	*		*		
Poaceae	*Austrostipa nitida*	*				
Proteaceae	*Hakea preissii*		*	*		
Proteaceae	*Hakea recurva*			*		*
Rhamnaceae	*Cryptandra minutifolia*				*	
Santalaceae	*Exocarpos aphyllus*		*	*		
Santalaceae	*Santalum acuminatum*			*		
Santalaceae	*Santalum spicatum*	*			*	
Sapindaceae	*Dodonaea inaequifolia*				*	
Sapindaceae	*Dodonaea lobulata*	*	*	*	*	
Scrophulariaceae	*Eremophila dempsteri*		*			
Scrophulariaceae	*Eremophila georgei*	*				
Scrophulariaceae	*Eremophila latrobei* subsp. *latrobei*	*			*	*
Scrophulariaceae	*Eremophila oldfieldii*	*			*	
Scrophulariaceae	*Eremophila oldfieldii* subsp. *angustifolia*			*		*
Scrophulariaceae	*Eremophila violacea*					*
Solanaceae	*Solanum lasiophyllum*	*			*	
Stylidiaceae	*Stylidium limbatum (A)*			*		
Zygophyllaceae	*Roepera eremaea*				*	

APPENDIX F:
VEGETATION CONDITION RATING

Vegetation Condition Rating	South West and Interzone Botanical Provinces	Eremaean and Northern Botanical Provinces
Pristine	Pristine or nearly so, no obvious signs of disturbance or damage caused by human activities since European settlement.	
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species. Damage to trees caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor		Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds at high density, partial clearing, dieback and grazing.	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees and shrubs.	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e., areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

APPENDIX G:
ATLAS OF LIVING AUSTRALIA DESKTOP SEARCH (40KM)

VASCULAR FLORA

Family	Taxon
Aizoaceae	*Disphyma crassifolium* subsp. *clavellatum*
Aizoaceae	*Gunniopsis quadrifida*
Aizoaceae	*Gunniopsis rubra*
Aizoaceae	*Gunniopsis septifraga*
Amaranthaceae	*Ptilotus drummondii*
Amaranthaceae	*Ptilotus obovatus*
Amaranthaceae	*Surreya diandra*
Apocynaceae	*Vincetoxicum lineare*
Asparagaceae	*Thysanotus manglesianus*
Asteraceae	*Asteridea chaetopoda*
Asteraceae	*Brachyscome iberidifolia*
Asteraceae	*Cephalipterum drummondii*
Asteraceae	*Chrysocephalum puteale*
Asteraceae	*Erodiophyllum acanthocephalum*
Asteraceae	*Erymophyllum ramosum* subsp. *ramosum*
Asteraceae	*Gnephosis tenuissima*
Asteraceae	*Helipterum craspedioides*
Asteraceae	*Lawrencella davenportii*
Asteraceae	*Minuria cunninghamii*
Asteraceae	*Olearia decurrens*
Asteraceae	*Olearia incana*
Asteraceae	*Olearia stuartii*
Asteraceae	*Olearia subspicata*
Asteraceae	*Podolepis aristata* subsp. *auriculata*
Asteraceae	*Pogonolepis stricta*
Asteraceae	*Rhodanthe chlorocephala* subsp. *splendida*
Asteraceae	*Rhodanthe floribunda*
Asteraceae	*Rhodanthe spicata*
Asteraceae	*Schoenia ayersii*
Asteraceae	*Waitzia acuminata*
Boraginaceae	*Halgania cyanea* var. Charleville (R.W.Purdie+ 111)
Brassicaceae	*Stenopetalum salicola*
Casuarinaceae	*Allocasuarina helmsii*
Casuarinaceae	*Casuarina cristata*
Casuarinaceae	*Casuarina obesa*
Chenopodiaceae	*Atriplex holocarpa*
Chenopodiaceae	*Atriplex lindleyi*

Family	Taxon
Chenopodiaceae	*Atriplex vesicaria*
Chenopodiaceae	*Dysphania melanocarpa*
Chenopodiaceae	*Einadia nutans*
Chenopodiaceae	*Eriochiton sclerolaenoides*
Chenopodiaceae	*Maireana appressa*
Chenopodiaceae	*Maireana atkinsiana*
Chenopodiaceae	*Maireana eriosphaera*
Chenopodiaceae	*Maireana glomerifolia*
Chenopodiaceae	*Maireana pyramidata*
Chenopodiaceae	*Maireana sedifolia*
Chenopodiaceae	*Maireana trichoptera*
Chenopodiaceae	*Rhagodia drummondii*
Chenopodiaceae	*Rhagodia spinescens*
Chenopodiaceae	*Sclerolaena cuneata*
Chenopodiaceae	*Sclerolaena decurrens*
Chenopodiaceae	*Sclerolaena eurotioides*
Chenopodiaceae	*Tecticornia arbuscula*
Chenopodiaceae	*Tecticornia chartacea*
Chenopodiaceae	*Tecticornia halocnemoides*
Chenopodiaceae	*Tecticornia indica* subsp. *bidens*
Chenopodiaceae	*Tecticornia indica* subsp. *leiostachya*
Chenopodiaceae	*Tecticornia peltata*
Chenopodiaceae	*Tecticornia pergranulata*
Chenopodiaceae	*Tecticornia pergranulata* subsp. *elongata*
Chenopodiaceae	*Tecticornia pruinosa*
Chenopodiaceae	*Tecticornia* sp. Lake Way (P.Armstrong 05/961)
Colchicaceae	*Wurmbea* sp. Great Victoria Desert (G.J.Keighery 7501)
Convolvulaceae	*Convolvulus remotus*
Cupressaceae	*Callitris verrucosa*
Euphorbiaceae	*Bertya dimerostigma*
Fabaceae	*Acacia aneura*
Fabaceae	*Acacia aptaneura*
Fabaceae	*Acacia ayersiana*
Fabaceae	*Acacia brachystachya*
Fabaceae	*Acacia burkittii*
Fabaceae	*Acacia caesaneura*
Fabaceae	*Acacia craspedocarpa*
Fabaceae	*Acacia effusifolia*
Fabaceae	*Acacia eremophila*
Fabaceae	*Acacia eremophila* var. *eremophila*
Fabaceae	*Acacia hemiteles*
Fabaceae	*Acacia heteroneura* var. *prolixa*
Fabaceae	*Acacia inceana* subsp. *inceana*
Fabaceae	*Acacia kalgoorliensis*
Fabaceae	*Acacia ligulata*
Fabaceae	*Acacia mulganeura*
Fabaceae	*Acacia nigricans*

Family	Taxon
Fabaceae	*Acacia oswaldii*
Fabaceae	*Acacia pteraneura*
Fabaceae	*Acacia quadrimarginea*
Fabaceae	*Acacia ramulosa*
Fabaceae	*Acacia ramulosa* var. *ramulosa*
Fabaceae	*Acacia rigens*
Fabaceae	*Acacia sibirica*
Fabaceae	*Acacia* sp. (NEQ)
Fabaceae	*Acacia tetragonophylla*
Fabaceae	*Acacia warramaba*
Fabaceae	*Daviesia benthamii* subsp. *acanthoclona*
Fabaceae	*Eutaxia microphylla*
Fabaceae	*Glycine canescens*
Fabaceae	*Indigofera occidentalis*
Fabaceae	*Mirbelia microphylla*
Fabaceae	*Mirbelia seorsifolia*
Fabaceae	*Senna artemisioides*
Fabaceae	*Senna cardiosperma*
Fabaceae	*Senna* sp. Meekatharra (E.Bailey 1-26)
Fabaceae	*Swainsona beasleyana*
Fabaceae	*Templetonia incrassata*
Frankeniaceae	*Frankenia pauciflora*
Goodeniaceae	*Coopernookia strophiolata*
Goodeniaceae	*Dampiera roycei*
Goodeniaceae	*Goodenia havilandii*
Goodeniaceae	*Goodenia rosea*
Goodeniaceae	*Lechenaultia striata*
Goodeniaceae	*Velleia rosea*
Lamiaceae	*Prostanthera grylloana*
Lamiaceae	*Teucrium disjunctum*
Lamiaceae	*Teucrium teucriiflorum*
Lamiaceae	*Westringia cephalantha*
Loranthaceae	*Amyema fitzgeraldii*
Malvaceae	*Androcalva luteiflora*
Malvaceae	*Brachychiton gregorii*
Malvaceae	*Lawrencia chrysoderma*
Malvaceae	*Lawrencia squamata*
Malvaceae	*Seringia velutina*
Malvaceae	*Sida calyxhymenia*
Malvaceae	*Sida* sp. dark green fruits (S.van Leeuwen 2260)
Marsileaceae	*Marsilea drummondii*
Myrtaceae	*Aluta aspera* subsp. *aspera*
Myrtaceae	*Baeckea* sp. Comet Vale (A.S.George 8078)
Myrtaceae	*Calytrix birdii*
Myrtaceae	*Calytrix depressa*
Myrtaceae	*Enekbatus cryptandroides*
Myrtaceae	*Eucalyptus burracoppinensis*

Family	Taxon
Myrtaceae	*Eucalyptus ceratocorys*
Myrtaceae	*Eucalyptus cometae-vallis*
Myrtaceae	*Eucalyptus concinna*
Myrtaceae	*Eucalyptus cylindrocarpa*
Myrtaceae	*Eucalyptus ebbanoensis* subsp. *ebbanoensis*
Myrtaceae	*Eucalyptus ebbanoensis* subsp. *glauciramula*
Myrtaceae	*Eucalyptus ewartiana*
Myrtaceae	*Eucalyptus horistes*
Myrtaceae	*Eucalyptus hypolaena*
Myrtaceae	*Eucalyptus longissima*
Myrtaceae	*Eucalyptus loxophleba* subsp. *lissophloia*
Myrtaceae	*Eucalyptus lucasii*
Myrtaceae	*Eucalyptus moderata*
Myrtaceae	*Eucalyptus oleosa*
Myrtaceae	*Eucalyptus oleosa* subsp. *oleosa*
Myrtaceae	*Eucalyptus orbifolia*
Myrtaceae	*Eucalyptus ovularis*
Myrtaceae	*Eucalyptus petraea*
Myrtaceae	*Eucalyptus salubris*
Myrtaceae	*Eucalyptus yilgarnensis*
Myrtaceae	*Eucalyptus youngiana*
Myrtaceae	*Homalocalyx thryptomenoides*
Myrtaceae	*Hysterobaeckea ochropetala*
Myrtaceae	*Leptospermum roei*
Myrtaceae	*Melaleuca sheathiana*
Myrtaceae	*Melaleuca uncinata*
Myrtaceae	*Thryptomene eremaea*
Myrtaceae	*Thryptomene urceolaris*
Myrtaceae	*Verticordia helmsii*
Orchidaceae	*Pterostylis recurva*
Phyllanthaceae	*Poranthera leiosperma*
Pittosporaceae	*Bursaria spinosa*
Pittosporaceae	*Marianthus bicolor*
Pittosporaceae	*Pittosporum phillyreoides*
Poaceae	*Amphipogon caricinus* var. *caricinus*
Poaceae	*Aristida contorta*
Poaceae	*Aristida holathera* var. *holathera*
Poaceae	*Austrostipa nitida*
Poaceae	*Austrostipa trichophylla*
Poaceae	*Digitaria brownii*
Poaceae	*Eragrostis lanipes*
Poaceae	*Panicum effusum*
Poaceae	*Thyridolepis mitchelliana*
Poaceae	*Triodia irritans*
Poaceae	*Triodia scariosa*
Polygalaceae	*Comesperma viscidulum*
Portulacaceae	*Calandrinia polyandra*

Family	Taxon
Proteaceae	*Grevillea acacioides*
Proteaceae	*Grevillea juncifolia* subsp. *temulenta*
Proteaceae	*Grevillea nematophylla* subsp. *nematophylla*
Proteaceae	*Grevillea oligomera*
Proteaceae	*Hakea preissii*
Proteaceae	*Persoonia leucopogon*
Rhamnaceae	*Cryptandra aridicola*
Rhamnaceae	*Cryptandra connata*
Rutaceae	*Phebalium canaliculatum*
Rutaceae	*Phebalium tuberculosum*
Rutaceae	*Philotheca tomentella*
Santalaceae	*Santalum spicatum*
Sapindaceae	*Alectryon oleifolius*
Sapindaceae	*Dodonaea lobulata*
Scrophulariaceae	*Eremophila alternifolia*
Scrophulariaceae	*Eremophila arachnoides* subsp. *tenera*
Scrophulariaceae	*Eremophila caperata*
Scrophulariaceae	*Eremophila clarkei*
Scrophulariaceae	*Eremophila compacta*
Scrophulariaceae	*Eremophila drummondii*
Scrophulariaceae	*Eremophila forrestii*
Scrophulariaceae	*Eremophila forrestii* subsp. *forrestii*
Scrophulariaceae	*Eremophila forrestii* subsp. *hastieana*
Scrophulariaceae	*Eremophila georgei*
Scrophulariaceae	*Eremophila glandulifera*
Scrophulariaceae	*Eremophila granitica*
Scrophulariaceae	*Eremophila homoplastica*
Scrophulariaceae	*Eremophila ionantha*
Scrophulariaceae	*Eremophila latrobei* subsp. *glabra*
Scrophulariaceae	*Eremophila margarethae*
Scrophulariaceae	*Eremophila metallicorum*
Scrophulariaceae	*Eremophila parvifolia*
Scrophulariaceae	*Eremophila platythamnos* subsp. *platythamnos*
Scrophulariaceae	*Eremophila youngii* subsp. *youngii*
Solanaceae	*Solanum cleistogamum*
Solanaceae	*Solanum terraneum*
Thymelaeaceae	*Pimelea spiculigera* var. *thesioides*
Zygophyllaceae	*Roepera ovata*

TERRESTRIAL VERTEBRATE FAUNA

Class	Family	Taxon	Vernacular Name
Amphibia	Myobatrachidae	*Crinia georgiana*	Tschudi's Froglet
Amphibia	Hylidae	*Litoria moorei*	Motorbike Frog
Aves	Meliphagidae	*Gavicalis virescens*	Singing Honeyeater
Aves	Meliphagidae	*Manorina (Myzantha) flavigula*	Yellow-throated Miner
Aves	Corvidae	*Corvus bennetti*	Little Crow
Aves	Oreoicidae	*Oreoica gutturalis*	Crested Bellbird
Aves	Meliphagidae	*Acanthagenys rufogularis*	Spiny-cheeked Honeyeater
Aves	Artamidae	*Artamus (Angroyan) cinereus*	Black-faced Woodswallow
Aves	Campephagidae	*Coracina (Coracina) novaehollandiae*	Black-faced Cuckoo-shrike
Aves	Petroicidae	*Petroica (Petroica) goodenovii*	Red-capped Robin
Aves	Motacillidae	*Anthus (Anthus) novaeseelandiae*	Australian Pipit
Aves	Psittacidae	*Barnardius zonarius*	Australian Ringneck
Aves	Columbidae	*Ocyphaps lophotes*	Crested Pigeon
Aves	Accipitridae	*Aquila (Uroaetus) audax*	Wedge-tailed Eagle
Aves	Artamidae	*Cracticus nigrogularis*	Pied Butcherbird
Aves	Cacatuidae	*Eolophus roseicapilla*	Galah
Aves	Falconidae	*Falco (Tinnunculus) cenchroides*	Wala
Aves	Acanthizidae	*Acanthiza (Acanthiza) apicalis*	Red-rumped Tit
Aves	Rhipiduridae	*Rhipidura (Sauloprocta) leucophrys*	Willie Wagtail
Aves	Pachycephalidae	*Colluricincla (Colluricincla) harmonica*	Grey Shrike-thrush
Aves	Casuariidae	*Dromaius novaehollandiae*	Emu
Aves	Estrildidae	*Taeniopygia guttata*	Zebra Finch
Aves	Acanthizidae	*Acanthiza (Milligania) robustirostris*	Robust Thornbill
Aves	Acanthizidae	*Aphelocephala leucopsis*	Western Whiteface
Aves	Artamidae	*Cracticus torquatus*	Grey Butcherbird
Aves	Monarchidae	*Grallina cyanoleuca*	Magpie-lark
Aves	Acanthizidae	*Acanthiza (Geobasileus) chrysorrhoa*	Yellow-tail
Aves	Acanthizidae	*Acanthiza (Geobasileus) uropygialis*	Chestnut-rumped Tit
Aves	Climacteridae	*Climacteris (Climacterobates) affinis*	White-browed Treecreeper
Aves	Artamidae	*Gymnorhina tibicen*	Australian Magpie
Aves	Hirundinidae	*Hirundo (Hirundo) neoxena*	Welcome Swallow
Aves	Meliphagidae	*Lichmera (Lichmera) indistincta*	Brown Honeyeater
Aves	Psittacidae	*Psephotus (Psephotellus) varius*	Mulga Parrot
Aves	Meliphagidae	*Purnella albifrons*	White-fronted Honeyeater
Aves	Artamidae	*Strepera (Neostrepera) versicolor*	Grey Currawong
Aves	Meliphagidae	*Epthianura (Parepthianura) tricolor*	Crimson Chat
Aves	Petroicidae	*Melanodryas (Melanodryas) cucullata*	Hooded Robin
Aves	Petroicidae	*Microeca (Microeca) fascinans*	Jacky Winter
Aves	Acanthizidae	*Pyrrholaemus brunneus*	Redthroat
Aves	Acanthizidae	*Smicrornis brevirostris*	Brown Weebill
Aves	Accipitridae	*Accipiter (Leucospiza) fasciatus*	Grey-headed Goshawk
Aves	Otididae	*Ardeotis australis*	Plain Turkey
Aves	Artamidae	*Artamus (Campbellornis) personatus*	Masked Woodswallow
Aves	Corvidae	*Corvus coronoides*	Australian Raven
Aves	Cacatuidae	*Eolophus roseicapilla roseicapilla*	
Aves	Falconidae	*Falco (Ieracidea) berigora*	Chicken Hawk

Class	Family	Taxon	Vernacular Name
Aves	Maluridae	*Malurus (Musciparus) leucopterus*	White-winged Fairy-wren
Aves	Psittacidae	*Melopsittacus undulatus*	Budgerigar
Aves	Psittacidae	*Neopsephotus bourkii*	Bourke's Parrot
Aves	Cacatuidae	*Nymphicus hollandicus*	Cockatiel
Aves	Pachycephalidae	*Pachycephala (Alisterornis) rufiventris*	Rufous Whistler
Aves	Columbidae	*Phaps (Phaps) chalcoptera*	Common Bronzewing
Aves	Anatidae	*Tadorna (Casarca) tadornoides*	Chestnut Sheldrake
Mammalia	Macropodidae	*Macropus fuliginosus*	Western Grey Kangaroo
Mammalia	Canidae	*Canis familiaris*	Common Dog
Mammalia	Macropodidae	*Osphranter rufus*	Red Kangaroo
Mammalia	Vombatidae	*Lasiorhinus latifrons*	Southern Hairy-nosed Wombat
Mammalia	Muridae	*Mus musculus*	House Mouse
Mammalia	Macropodidae	*Osphranter robustus erubescens*	
Mammalia	Peramelidae	*Perameles bougainville*	Shark Bay Bandicoot
Mammalia	Muridae	*Pseudomys hermannsburgensis*	Sandy Inland Mouse
Reptilia	Scincidae	*Egernia formosa*	Goldfields Crevice-skink
Reptilia	Gekkonidae	*Heteronotia binoei*	Bynoe's Gecko
Reptilia	Elapidae	*Acanthophis pyrrhus*	Desert Death Adder
Reptilia	Diplodactylidae	*Diplodactylus pulcher*	Fine-faced Gecko
Reptilia	Elapidae	*Simoselaps bertholdi*	Jan's Banded Snake
Reptilia	Typhlopidae	*Anilios bituberculatus*	Prong-snouted Blind Snake
Reptilia	Agamidae	*Ctenophorus cristatus*	Crested Dragon
Reptilia	Agamidae	*Ctenophorus ornatus*	Ornate Dragon
Reptilia	Agamidae	*Ctenophorus pictus*	Painted Dragon
Reptilia	Agamidae	*Ctenophorus scutulatus*	Lozenge-marked Dragon
Reptilia	Scincidae	*Ctenotus inornatus*	Bar-shouldered Ctenotus
Reptilia	Scincidae	*Egernia napoleonis*	South-western Crevice-skink
Reptilia	Elapidae	*Elapognathus coronatus*	Western Crowned Snake
Reptilia	Scincidae	*Lerista picturata*	Southern Robust Slider
Reptilia	Elapidae	*Notechis scutatus*	Tiger Snake
Reptilia	Elapidae	*Pseudechis australis*	King Brown Snake
Reptilia	Pygopodidae	*Pygopus nigriceps*	Western Hooded Scaly-foot
Reptilia	Scincidae	*Saiphos equalis*	Three-toed Skink
Reptilia	Elapidae	*Suta monachus*	Monk Snake
Reptilia	Scincidae	*Tiliqua rugosa rugosa*	
Reptilia	Scincidae	*Tiliqua rugosa*	Boggi
Reptilia	Varanidae	*Varanus caudolineatus*	Stripe-tailed Monitor
Reptilia	Varanidae	*Varanus gouldii*	Gould's Goanna

APPENDIX H:
EPBC PROTECTED MATTERS SEARCH (40KM BUFFER)

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: 04-Jun-2023

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:	9
Listed Migratory Species:	7

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	10
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:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	4
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
BIRD		
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Sminthopsis psammophila Sandhill Dunnart [291]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
REPTILE		
Liopholis kintorei		
Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Thinornis cucullatus as Thinornis rubricollis Hooded Plover, Hooded Dotterel [87735]		Species or species habitat may occur within area overfly marine area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Northern Star Resources - Carosue Dam TSF Cell 4	2021/9026		Post-Approval
Not controlled action			
Construction of a bypass road, haulage contractor workshop & laydown yard	2012/6639	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Saracen Gold-Carosue Dam Aerodrome, WA	2017/7925	Not Controlled Action	Completed

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

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

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

Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111


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Wallbrook Disturbance

CPS 3202

Wallbrook_Disturbance

NSR_TenementsWA

ate: 7/07/2023 | Author: creeves | Coordinate System: GCS GDA 1994 | Scale: 1:9,417 |

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NORTHERN STA
RESOURCES LIMITE

Government of Western Australia
Department of Mines, Industry Regulation and Safety

Our Ref: A1242/200901 / CPS 3202/4
Enquiries: Karen Rodriguez Tel: (08) 9222 3153
Email: karen.rodriguez@dmirs.wa.gov.au

Campbell Reeves
Environmental Advisor
Northern Star Resources (Carosue Dam)
Sent via email: CDOEnviro@nsrltd.com

Dear Campbell Reeves

AMENDMENT OF CLEARING PERMIT CPS 3202/3 UNDER THE *ENVIRONMENTAL PROTECTION ACT 1986* – AMENDED PERMIT GRANTED (CPS 3202/4)

I refer to the application from Northern Star (Carosue Dam) Pty Ltd to amend clearing permit CPS 3202/3 under section 51KA(1) of the *Environmental Protection Act 1986* (the EP Act), which was received by the Department of Mines, Industry Regulation and Safety (the department) on 3 January 2022.

A letter was sent to you on 5 August 2022 enclosing a draft amended permit, giving you 28 calendar days' notice to provide comment on the amendment. Thank you for your advice of 6 August 2022 that Northern Star (Carosue Dam) Pty Ltd waive the 28 calendar day notification period.

Please find enclosed clearing permit CPS 3202/4 amended under section 51KA(1) of the EP Act. This amended permit replaces clearing permit CPS 3202/3 and gives the permit holder approval to clear, subject to conditions.

A copy of the amended permit and the associated decision report is available for the public to view on the department's website at: View notifications of Clearing Permit Applications and Decisions (dmp.wa.gov.au) as required under section 51Q of the EP Act and regulation 8 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

Please read the conditions of the permit carefully and note that there are penalties for non-compliance with those conditions. If you wish to discuss the permit and/or its conditions, please contact the department.

Please note, as your permit requires the submission of an annual report, this should be provided electronically via email to nvab@dmirs.wa.gov.au prior to the due date.

If Northern Star (Carosue Dam) Pty Ltd are aggrieved by this amendment, an appeal may be lodged with the Minister for Environment. If lodging an appeal, it must be in writing, setting out the grounds of the appeal, and be received by the Minister within 21 calendar days of being notified of the amendment. More information on lodging an appeal is available from the Office of the Appeals Convenor. Completed appeals must be posted or delivered to:

Office of the Appeals Convenor
Level 22 Forrest Centre
221 St George's Terrace, PERTH WA 6000
Tel: (08) 6364 7990 Fax: (08) 6364 7999
Email: admin@appealsconvenor.wa.gov.au
Website: www.appealsconvenor.wa.gov.au

Please note that while an appeal lodged by the Permit Holder is under consideration, then under section 101A(7) of the EP Act:

- if the amendment being appealed reduced or otherwise restricted the extent or method of clearing, that condition continues to have effect and activity (including clearing) that would contravene the amended permit may not occur until the appeal is determined; and
- if the amendment was for any other matter, the amendment is deemed to have not been made, until the appeal is determined.

In addition, third parties may also appeal against this amendment. Please note that in accordance with section 101A(8) of the EP Act, pending the determination of an appeal lodged by a third party, the amendment continues to have effect.

Please also note that in undertaking the clearing authorised under this permit, the permit holder must have regard to avoiding clearing, minimising clearing, and reducing the impacts of clearing on any environmental value.

Compliance with the terms, conditions or restrictions of this permit does not absolve the permit holder from responsibility for compliance with the requirements of all Commonwealth, State, and local government legislation.

For more information about complying with the amended permit, please refer to *Fact Sheet 4: Complying with your clearing permit* on the Department of Water and Environmental Regulations' website at: https://dwer.wa.gov.au/regulatory-documents.

I declare that I have no conflict of interest that prevents me from making a decision in relation to this proposal (in accordance with the Department of Mines, Industry Regulation and Safety (DMIRS) Conflict of Interest Policy).

If you have any queries regarding this notice, please do not hesitate to contact Karen Rodriguez, Environmental Officer on (08) 9222 3153 or email karen.rodriguez@dmirs.wa.gov.au.

Yours sincerely

_____

Travis Inman
General Manager Mine Closure and Environmental Services
Resource and Environmental Compliance Division
11 August 2022

Officer with delegated authority under Section 20
of the *Environmental Protection Act 1986*

GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	3202/4
Duration of Permit:	From 10 October 2009 to 31 December 2024
Permit Holder:	Northern Star (Carosue Dam) Pty Ltd

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I - CLEARING AUTHORISED

1. Land on which clearing is to be done
Mining Lease 31/172

2. Clearing authorised (purpose)
The Permit Holder is authorised to clear native vegetation for the purpose of mineral production and associated works.

3. Area of Clearing
The Permit Holder must not clear more than 90 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Type of Clearing Authorised
The Permit Holder shall not clear native vegetation unless the purpose for which the clearing is authorised is enacted within 3 months of the authorised clearing being undertaken.

PART II - MANAGEMENT CONDITIONS

5. Avoid, minimise and reduce the impacts and extent of clearing
In determining the amount of native vegetation to be cleared under this Permit, the Permit Holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of native vegetation;
(b) minimise the amount of native vegetation to be cleared; and
(c) reduce the impact of clearing on any environmental value.

6. Weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
(b) ensure that no known *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

7. Retain vegetative material and topsoil

The Permit Holder shall retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.

PART III - RECORD KEEPING AND REPORTING

8. Records to be kept

The Permit Holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; (b) the date that the area was cleared; (c) the size of the area cleared (in hectares); (d) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with Condition 5; and (e) actions taken to minimise the risk of the introduction and spread of *weeds* in accordance with Condition 6.

9. Reporting

(a) The Permit Holder shall provide a report to the *CEO* by 31 July each year for the life of this Permit, demonstrating adherence to all conditions of this Permit, and setting out the records required under Condition 8 of this Permit in relation to clearing carried out between 1 July and 30 June of the previous financial year.

(b) If no clearing authorised under this Permit was undertaken between 1 July and 30 June of the previous financial year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* by 31 July of each year.

(c) Prior to 31 December 2024, the Permit Holder must provide to the *CEO* a written report of records required under Condition 8 of this Permit where these records have not already been provided under Condition 9(a) or 9(b) of this Permit.

DEFINITIONS

In this Permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	the Chief Executive Officer of the Department responsible for administering the clearing provisions contained within the *Environmental Protection Act 1986* or an Officer with delegated authority under Section 20 of the *Environmental Protection Act 1986;*
clearing	has the meaning given under section 3(1) of the EP Act.
condition/s	a condition to which this clearing permit is subject under section 51H of the EP Act.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weed/s	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

Travis Inman
General Manager Mine Closure and Environmental Services
Resource and Environmental Compliance Division
11 August 2022

Officer with delegated authority under Section 20
of the *Environmental Protection Act 1986*

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

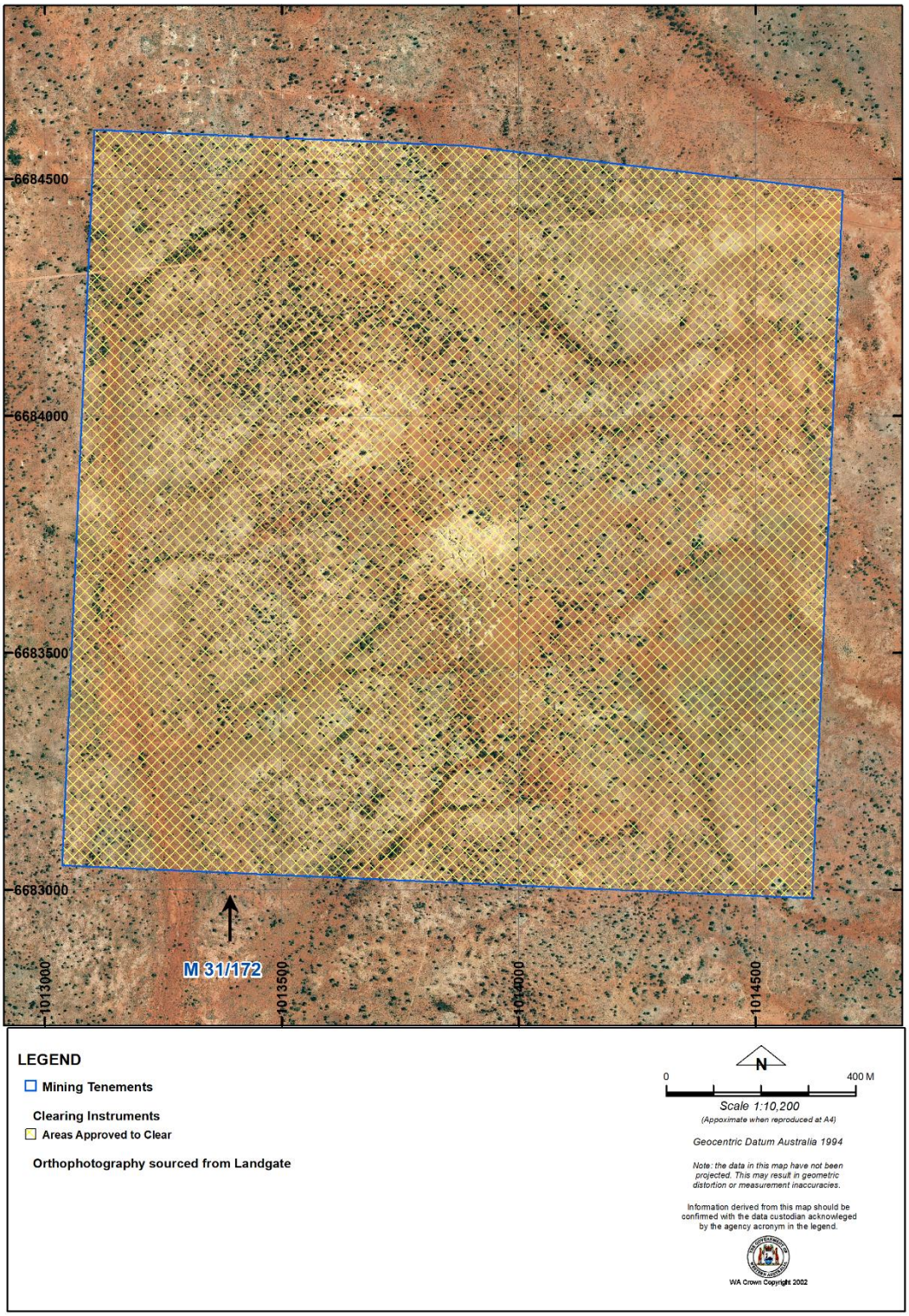

Figure 1: Map of the boundary of the area within which clearing may occur

Saracen

Saracen Gold Mines Pty Ltd

CLEARING PERMIT REPORT 2010-2011

3202/1 (Wallbrook)

July 2011

CONTENTS

FIGURES

TABLES

APPENDICES

1 INTRODUCTION

Saracen Gold Mines Pty Ltd (Saracen) own and operate the Carosue Dam Operations located approximately 110km northeast of Kalgoorlie-Boulder (Figure 1.1). The Carosue Dam Operations includes the Wallbrook project in the Shire of Menzies on the Edjudina pastoral lease. The site is accessed via the Kalgoorlie-Yarri Road and a private access road.

Carosue Dam was previously operated between November 2000 and June 2005. Saracen purchased the Carosue Dam Operations in 2006. After an extensive recommissioning program of the processing plant, TSF and accommodation village, the site recommenced operation in December 2009. Mining at Wallbrook has not yet commenced.

This report has been prepared to fulfil requirements under section 51E of the *Environmental Protection Act 1986* and satisfies the conditions of Clearing Permit 3202/1 for reporting of clearing completed for the reporting year 1 July 2010 to 30 June 2011.

1.1 OTHER APPROVALS

In April 2011 a Mining Proposal was approved by the DMP (Reg Id 26121) for the development of Wallbrook Open Pit operation. This approval includes the construction of three open pits (Redbrook, Red Flag and Eleven Bells), a single waste rock dump, two ROM pads, offices, crib hut and dewatering pipeline. The operation makes use of the existing haul road, turkey's nest and landfill and bioremediation facilities at the Porphyry Gold Mine to reduce disturbance and costs.

On 6 May 2010 an application for a Works Approval to allow for mine dewatering was approved for the Wallbrook project (W4649/2010/1).

1.2 ACTIVITIES

Saracen commenced clearing at Wallbrook in May 2011 under Purpose Permit 3202/1/1. This permit was approved by the DMP in September 2009 and authorises clearing of up to 90Ha for the purposes of mineral production and associated works on M31/172 and M31/231.

The permit expires on 31 December 2014 (Table 1.1).

Details of ground disturbance for Clearing Permit 2996/1 are provided in Section 2.

Table 1.1 Wallbrook Clearing Permits

Tenement	Permit	Purpose	Area (Ha)	Clearing period
M31/172 and M31/231	Purpose permit 3202/1	Clearing for the purposes of mineral production and associated activities.	90	10October 2009 to 31December 2014

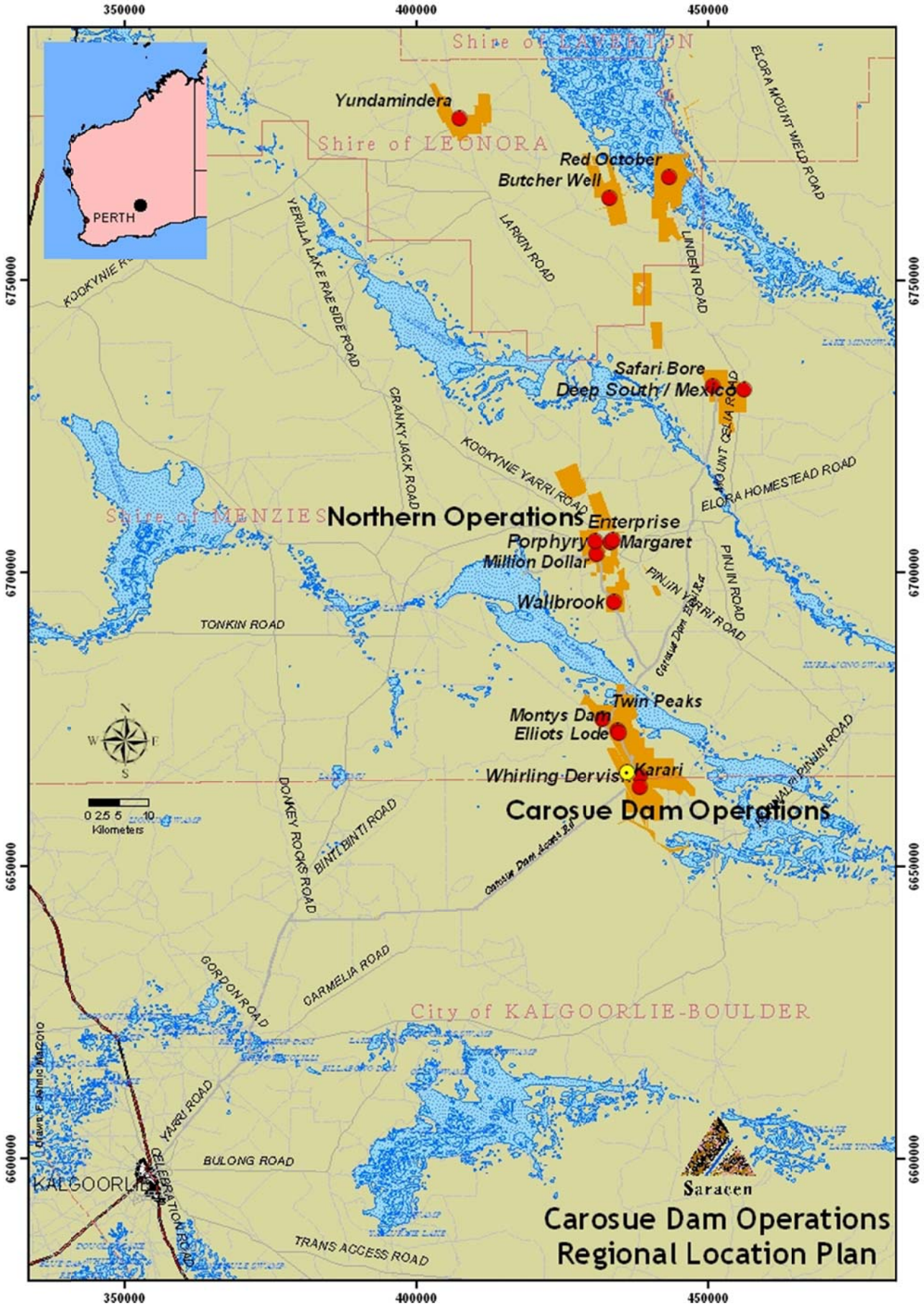

Figure 1.1 Regional Location Plan

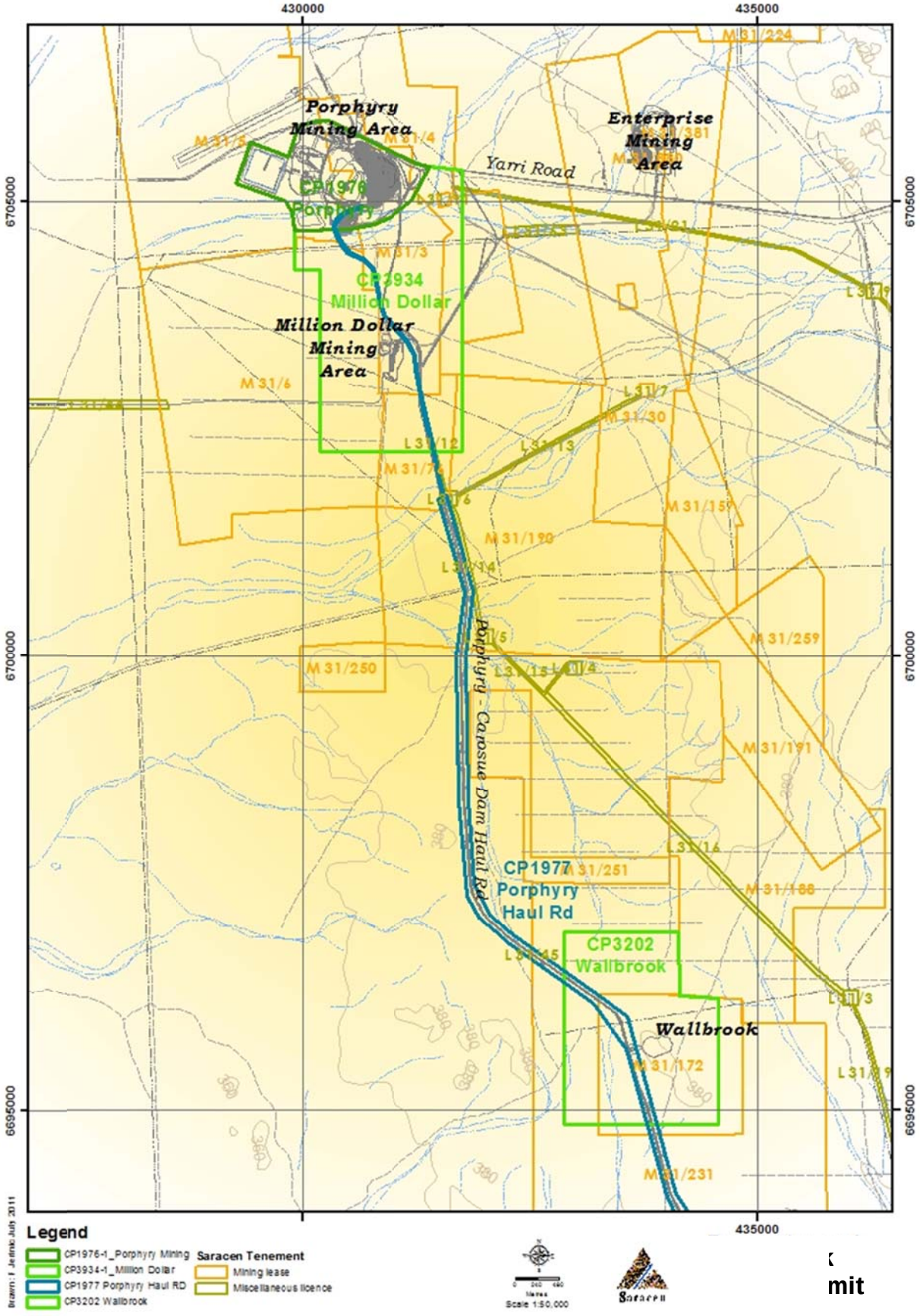

Figure 1.2 Location of Clearing Permit Area (CP 3202/1)

2 COMPLIANCE WITH CONDITIONS

2.1 Area Cleared

Clearing commenced in May 2011 for the purposes of mineral production and includes an area cleared for grade control drilling for open pit development.

A total of 5.96Ha was cleared under Clearing Permit 3202/1 (Table 2.1) and DMP Registration Id 26121. Drilling for open pit planning and development commenced within three months of the clearing being completed as required by Condition 2 of the clearing permit.

A discussion of activities conducted under Clearing Permit 3202/1 is provided below.

Table 2.1 Clearing Permit 3202/1 – Clearing 1 July 2010 to 30 June 2011

Date Cleared	Purpose of Clearing	Clearing Method	Tenements	Area (Ha)
April 2011	Grade control drilling of pit area	Dozer	M31/172	5.96
			Total	**5.96**
			Limit	**90.00**
			Balance	**84.04**

2.1.1 Details of Clearing

Details of clearing activities approved under Clearing Permit 3202/1 completed at Wallbrook for the reporting period 1 July 2010 to 30 June 2011 are described below.

All areas cleared are shown in Figure 2.1.

Clearing records are summarized by purpose below.

2.1.1.1 Grade Control Drilling for open pit development

A total of 5.96Ha was cleared for the purposes of grade control drilling in the proposed pit area. Clearing was undertaken using a dozer.

2.2 GUIDING PRINCIPLES

2.2.1 Clearing Management

All clearing activities were completed under the Saracen Environmental Management System (EMS). Components of the EMS include the Saracen Gold Environmental Policy (Appendix A), the Saracen Environmental Manual, Environmental Management Plans and supporting documents including registers, standards, procedures and forms.

Specific management activities relating to clearing conditions are provided in the relevant Environmental Management Plan (EMP) in Appendix A. More detailed responsibilities for specific tasks are described in the relevant Environmental Procedure.

All employees and contractors are required to complete a general induction and other environmental training sessions are being developed.

2.2.2 Regard for Principles

Saracen has developed a Control of Clearing Management Plan (Appendix A) to be implemented during all clearing on site. Objectives of the plan are to:

- Minimise vegetation disturbance;
- Prevent disturbance of vegetation adjacent to areas of activity;
- Prevent disturbance of vegetation in unapproved areas;
- Prevent the spread of weeds;

- Control erosion and sedimentation within disturbed regions;
- Rehabilitate areas which are not required to remain permanently cleared.

All personnel arriving on site completed an environmental induction. The requirement to minimise the disturbance of vegetation, including the requirement for all vehicles and machinery to use designated tracks and roads, and park only in designated locations is emphasised in the general environmental induction.

To control and minimise clearing, prior to all clearing, a Clearing Activity Permit (Appendix A) is required to be authorised by the Environmental Officer and Operations Manager. All areas to be cleared were surveyed and suitably marked to ensure only the approved area is cleared. This allows areas to be cleared only when required and prevents over-clearing of native vegetation.

The impact of clearing was minimised by restricting clearing to that which is required for safe and efficient operations and existing disturbance, tracks and roads were used wherever possible.

Although internal permits were obtained for the clearing, it was not conducted in accordance with the Saracen Clearing Management Plan, which resulted in the contamination of topsoil and vegetative materials with plastic sample bags from exploration in the area.

Clean up of the contaminated topsoil and vegetation is underway, with non-contaminated material being salvaged and stockpiled correctly for future use.

The impact of clearing on environmental values is summarised in Table 2.2.

Table 2.2 Assessment of Impacts Against EPA Clearing Principles

Clearing Principle	Outcome
Native vegetation should not be cleared if:	
(a) it comprises a high level of biological diversity;	The site is within the Eastern Murchison (MUR 1) biogeographic subregion. Vegetation within the permit area is not unusually diverse, ie biological diversity is low.
(b) it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia	The Wallbrook survey found one small breakaway, granite outcrops and drainage tracts which may provide fauna refuge. Disturbance to these areas will be kept to a minimum.
(c) it includes, or is necessary for the continued existence of, rare flora;	No rare flora or priority flora located on site.
(d) it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community	No threatened ecological communities present.
(e) it is significant as a remnant of native vegetation in an area that has been extensively cleared;	Approximately 90% of the project area consists of Beard Vegetation Association 400: Succulent steppe with open low woodland. The remainder is occupied by Vegetation Association 18: Low woodland; mulga (*Acacia aneura*). These vegetation associations are extensive and most remain uncleared and intact.
(f) it is growing in, or in association with, an environment associated with a watercourse or wetland;	No permanent water bodies are located within the permit area. Lake Rebecca is located 8km to the south.
(g) the clearing of the vegetation is likely to cause appreciable land degradation;	Part of a pastoral lease which has been grazed over many years. Area may be vulnerable to soil erosion when surfaces area disturbed. Areas will be rehabilitated progressively to minimise erosion.
(h) the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area;	No adjacent conservation areas are located within the permit area. The closest conservation area is Goongarrie National Park, about 60 km north west of the project area.
(i) if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water;	Disturbance to drainage tracts and associated alluvial plains may increase sediment load to Lake Rebecca. Disturbance to these areas will be minimised however clearing is unlikely to impact groundwater or reduce the quality of surface water.

Clearing Principle	Outcome
(j) if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	The climate in the permit area is arid to semi-arid with most rainfall events causing little runoff. Clearing in this area will have negligible effects on the volume of discharge to Lake Rebecca.

2.3 Weed Control

During all clearing under Clearing Permits 3202/1, the Saracen Weed Management Plan (Appendix A) was implemented. Objectives of the plan are to:

- Prevent the introduction of weed species to weed free areas;
- Prevent the transfer of known weed species into weed-free areas;
- Restore disturbed areas to minimise weed colonisation;
- Control populations of known weeds to prevent transfer into weed-free areas.

Prior to mobilisation of machinery, earthmoving contractors were required to ensure all earthmoving machinery arriving at the Carosue Gold Operations was in a clean condition, free of soil and organic matter. All machinery was inspected for soil and organic matter upon arrival on site and a Weed Certificate (Appendix A) completed and forwarded to the Environmental Officer. In addition, machinery moving to the Wallbrook project area from other Carosue Dam sites or which were operating off road in Weed Risk areas was also required to comply with this procedure.

No soil or other potentially weed-affected material was transferred to cleared areas at the Wallbrook.

2.3.1 Retention of Vegetative Material and Topsoil

A requirement of the Saracen Clearing Management Plan is that all topsoil and vegetative material be stockpiled and retained for future use in rehabilitation of the area. Clearing at Wallbrook did not satisfy this requirement. Prior to clearing sample bags were not removed from the area and resulted in the contamination of topsoil and vegetative material. Topsoil was not cleared and stockpiled correctly.

Vegetative stockpiles are located in cleared areas.

Non-contaminated materials salvaged during clean-up efforts will be stockpiled and used during rehabilitation.

2.3.2 Records to Be Kept

Details of all activities completed under Clearing Permit 3202/1 including date cleared, purpose of clearing, methods of clearing, tenements and area cleared in hectares are summarised in Table 2.1.

2.3.3 Reporting

This report satisfies the reporting conditions of Clearing Permit 3202/1.

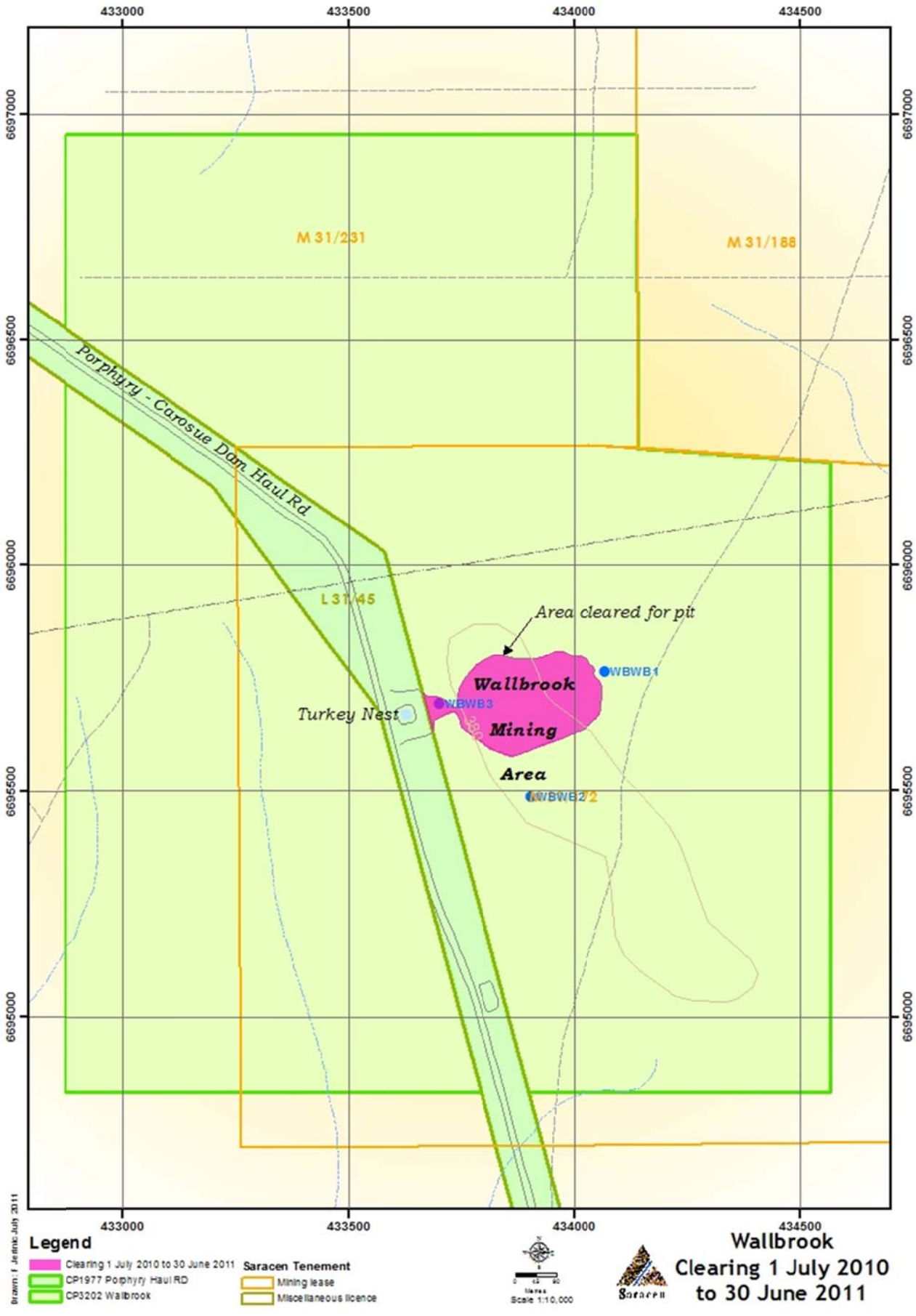

Figure 2.1 Wallbrook Clearing – Permit 3202/1

Appendix A Saracen EMS Documents

Saracen

ENVIRONMENTAL MANAGEMENT POLICY

Saracen Gold Mines' objective for environmental management is to minimise impact on the environment and community by achieving and maintaining high environmental standards through compliance with all statutory legislation, regulations and proactive leadership.

Saracen Gold Mines principles are to:

- Integrate environmental considerations into all aspects of the Company's business including exploration, planning, development, operation, rehabilitation and decommissioning-closure;
- Identify environmental risks associated with the Company's activities and develop appropriate strategies to monitor and manage potential impact on the environment;
- Ensure that employees, suppliers, contractors and customers are aware of and comply with the Company's Environmental Management Policy and procedures and are accountable for their individual and corporate environmental responsibilities;
- Promote environmental awareness by providing appropriate education, training and resources to employees and contractors and acknowledgement and recognition of responsible environmental management;
- Establish monitoring and auditing strategies and transparent reporting of environmental performance;
- Minimise disturbance to the environment through appropriate controls;
- Prevent pollution through implementing appropriate engineering, methods and strategies to prevent pollution and minimize wastes;
- Rehabilitate disturbed areas to be safe, stable and non-polluting and compatible with the surrounding environment;
- Seek continuous improvement in environmental performance, production processes, waste management and rehabilitation by implementation and review of environmental performance objectives and incidents; and
- Communicate openly with all stakeholders, including government authorities, the community and shareholders the Company's environmental performance.

Executive Chairman

13.10.09
Date

Document No: [SGM-PO-QU-0002]

CONTROL OF CLEARING

1 Objective

To ensure that the relevant statutory and regulatory requirements associated with clearing of vegetation for project development are met and to minimise the impact of clearing on the environment in line with Saracens Environmental Policy.

Specific objectives are to:

- Minimise vegetation disturbance.
- Prevent disturbance of vegetation adjacent to areas of activity.
- Prevent disturbance of vegetation in unapproved areas.
- Prevent the spread of weeds.
- Ensure clearing done in accordance with statutory requirements.
- Ensure supply of materials for future rehabilitation.

It will apply to all employees and contractors undertaking activities as part of the Carosue Dam Gold Operations that may change or disturb the ground surface.

2 SCOPE

This EMP applies to all projects requiring clearing, including but not limited to:

- New projects
- Expansion of existing projects;
- Near mine Exploration (including grade control and sterilisation drilling).
- Rehabilitation and closure projects where clearing required.

Exploration activities carried out away from mining areas (active or on care and maintenance) approved under a POW are exempt.

3 Performance Indicators

For mining activity:

- Site Clearing Activity permits completed for all clearing.
- Clearing is in accordance with site approved plans.
- Minimise vegetation disturbance to area necessary for safe mining.
- Cleared vegetation stockpiles for rehabilitation and protected from potential contamination.
- Records of clearing are updated monthly (survey).

CONTROL OF CLEARING

For exploration (near mine) activity:

- Site Clearing Activity permits completed for all clearing.
- Clearing is in accordance with PoW or Mining Proposal approval.
- Records of clearing are updated monthly (survey).
- Minimise vegetation disturbance to area necessary for safe operation

4 Management Activity

4.1 Approvals Required

Clearing of Native Vegetation in Western Australia is regulated under the *Environmental Protection Act 1986* and *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. The Department of Environment (DEC) has delegated authority to the Department of Mines and Petroleum (DMP) to approve clearing activities on Mining Tenements. All clearing (mining or exploration) on Saracen tenements must be approved by DMP see CDO-BS-EN-PR0001.2 Preparation of Approvals for details of approvals required.

In addition Saracen has an internal Clearing Activity Permit (CDO-FO-EN-001) which must be completed and approved prior to any clearing commencing. This form ensures appropriate approvals are in place prior to clearing and allows the Environment Division to track clearing as required under statutory obligations. Further details on this form can be found under Clearing Activity Permit Procedure (CDO-BS-EN-PR-2.1).

4.2 Site Requirements – Prior to Clearing

All personnel are to complete an environmental induction. The requirement to minimise the disturbance of vegetation will be emphasised in the general environmental induction, including the requirement for all vehicles and machinery to use designated tracks and roads, and park only in designated locations.

All Saracen Managers and Supervisors (staff and contract) are required to complete an additional Environmental Induction, which provides details of and requirements of the Saracen Environment Manual and supporting documentation including the requirements for Clearing Activity Permit (CDO-BS-EN-FO-0001.2) to be completed prior to any clearing.

4.3 Clearing for Mining, Infrastructure and near mine Exploration

Clearing should only be undertaken by suitable trained staff or approved contractors, contractor should be supervised to ensure site policy and procedures are adhered to.

The area to be cleared should be free of weeds and rubbish (including Exploration drill bags, flagging tape pegs and PVC collars) before clearing commences. Any Aboriginal Heritage sites, Rare flora or previous workings (Shafts/costeans) are to be flagged prior to commencement of clearing. Area

should be inspected by Environmental Officer and Project Manager prior to commencement of clearing.

The impact of clearing will be minimised by restricting clearing to that which is absolutely necessary for project development. Each area to be cleared will be surveyed and suitably marked with flagging tape/pegs prior to commencement of clearing to ensure only the approved area is cleared.

Site Supervisors are responsible for ensuring that all vehicles are cleaned prior to arrival on site (refer to the Weed Control EMP). The number of access tracks into the project areas will be minimised and all vehicles, workers and equipment will be restricted to cleared areas and access tracks.

All cleared vegetation is to be stockpiled for use in rehabilitation and protected from contamination.

Cleared areas are to be pickup by survey at the completion of clearing.

Active earthworks will be subject to inspections by the Environmental Officer.

4.4 Clearing for Exploration Activity (away from mine sites)

Clearing should only be undertaken by suitable trained staff or approved contractors, contractor should be supervised to ensure site policy and procedures are adhered to.

Clearing should be conducted in accordance with the Guideline for Mineral Exploration / Rehabilitation Activities Guideline's (2007) available on the DMP website unless otherwise approved the PoW.

4.5 Records and Reporting

The Environmental Department maintains a digital database of spatial data relating to clearing (in Arc GIS).

Data will be included in the annual environmental report and reported to comply with Clearing Permit requirements.

4.6 Unauthorised Clearing

In the event of any unauthorised removal or damage to vegetated areas or other breach of requirements an Incident Report shall be completed and reported. Should clearing be outside an approved area or amount, the DMP will be notified by the Environmental Manager. Advice on remediation procedures will be obtained from the relevant authorities if required.

5 Responsibilities

Position	Responsibility
Environmental Manager	• Ensure approvals are in place in line with LOMP so clearing can be conducted as required. • Ensure Environmental and Management personnel are suitable trained to manage clearing in line with approvals, and Saracen Policies and procedures. • Notify the DMP of any breach of clearing condition.
Environmental Personnel	• Be aware of approvals and studies (Flora, Fauna, surface water, Aboriginal Heritage) prior to clearing. • Consult with relevant mangers and attend daily meetings to determine status of projects that may require clearing. • Communicate status of clearing related approvals to Operations Manager, Managers, Superintendents and Supervisors. • Authorise Clearing Activity Permit. • Inspect Clearing areas before and after clearing. • Collect clearing data. • Prepare and submit statutory reports with regard to clearing. • Assist in preparation of incident report in the event of a breach of condition.
Operations Manager	• To ensure this EMP is implemented on site. • Give final authority to proceed by authorising and signing the Clearing Activity Permit.
Managers	• Ensure that construction is in accordance with the relevant approval, supporting documentation, standards and guidelines. • Awareness of relevant approvals, licences and permits and their conditions and requirements. • Ensure clearing areas are survey and suitably mark with flagging tape/pegs the area to be cleared, prior to commencement of clearing. • Inspect Clearing areas before and after clearing and notify environmental personnel of any breeches.
Superintendants and Supervisors	• Awareness of relevant approvals, licences and permits and their conditions and requirements. • Ensure clearing areas are survey and suitably mark with flagging

	tape/pegs the area to be cleared, prior to commencement of clearing. • Inspect Clearing areas before and after clearing and notify environmental personnel of any breeches. • Communicate this EMP to Project Personnel and Contractors.
Project Personnel and Contractors	• Comply with this EMP. • Minimise the disturbance of vegetation. • Follow instructions from Superintendants and Supervisors.

7 Related Documents

Filename	Name
CDO-BS-EN-PR-0002.1	Clearing Activity Permit Procedure
CDO-BS-EN-FO-0001.2	Clearing Activity Permit
CDO-BS-EN-PR-0002.2	Vegetation Clearing Procedure
CDO-BS-EN-PL-0003	Topsoil Management
CDO-BS-EN-PL-0004	Protection of Vegetation and Fauna
CDO-BS-EN-PL-0006	Weed Management Plan
CDO-BS-EN-FO-0002.2	Weed Certificate

Saracen Gold Pty Ltd
Carosue Dam Gold Operations

CLEARING ACTIVITY PERMIT

No:_____

1. SITE DETAILS – APPLICANT TO COMPLETE			
Project:	Applicable Tenements:		
Location of area to be cleared:			
Department responsible for clearing:			
Proposed date of clearing:	Area to be cleared (Ha):		
Reason for clearing:			
Method of clearing:			
Plan attached?			
2. CHECKS – ENVIRONMENTAL ONLY			
Applicable Clearing Permit No:	Area Authorised (Ha):		
Please tick:		**Yes**	**No**
Area to be cleared within Clearing Permit approved limit.			
Area to be cleared within hatched area on Clearing Permit Plan.			
Area to be cleared is within applicable tenements.			
Bonds paid and approval from DME received.			
Notifications to pastoral holders is complete.			
All other notifications complete.			
All other approvals in place.			
Can the 10Ha exception apply?			
If yes, provide details:			
Regard for Guiding Principles: i. Avoid the clearing of native vegetation; ii. Minimise the amount of native vegetation to be cleared; and iii. Reduce the impact of clearing on any environmental value.			
Weed control completed.			
Topsoil to be removed and stockpiled.			
Vegetation to be removed and stockpiled.			
Is vegetation is present which must be avoided?			
If yes, provide details:			
Is significant sandalwood present within area to be cleared?			
If yes, Forest Products Commission has been contacted to arrange removal.			
Cleared area greater than 50m from riparian vegetation or any watercourse or wetland.			
Are Aboriginal Archaeological sites are present within the area to be cleared?			
If yes provide details of management:			
Any other special management conditions?			
If yes, provide details:			

CLEARING ACTIVITY PERMIT

3. SURVEY CONTROL - ENVRIONMENTAL & APPLICANT TO COMPLETE		
Pegs required for cleared area?	Tape Colour:	Distance apart (m) :
Lease boundary pegs required?	Tape Colour:	Distance apart (m) :
Special notes:		

4. APPROVAL TO PROCEED		
Note: Only with these signatures is authorisation to proceed granted.		
Environmental Assistant Signature:		Date:
Relevant Department Manager Signature:		Date:

5. CHECK - OPERATIONS MANAGER ONLY	
Checked:	Date:
Additional comments if required:	

6. SUMMARY (TO BE COMPLETED AFTER CLEARING) – ENVIRONMENTAL ONLY		
Actual date cleared:	Actual area cleared (Ha):	
Please tick:	**Yes**	**No**
Clearing conducted according to plans?		
Vegetation removed and stockpiled?		
Topsoil removed and stockpiled?		
Location information available for annual report?		
Provide details as required:		

WEED CONTROL

1 Objective

To minimise the spread of weeds during the development and operation of the Carosue Dam Gold Operations. Specific objectives for weed control are to:

- Prevent the introduction of weed species to weed free areas;
- Prevent the transfer of known weed species into weed-free areas;
- Restore disturbed areas to minimise weed colonisation;
- Control populations of known weeds to prevent transfer into weed-free areas.

2 Performance Indicators

- A weed inventory for the Carosue Dam Gold Operations updated regularly.
- Weed compliance in contractor agreements.
- Weed Hygiene Certificates completed.
- Existing weed infestations within disturbed and operational areas are contained, eradicated or managed.
- No new weed infestations identified during routine inspections of disturbance areas.
- Weed status reviewed and reported on annually as part of the Annual Environmental Report.

3 Management Activity

The clearing of land and construction activities increases the likelihood of weed invasion and increases the risk of degradation of adjacent vegetation. Weeds can be spread due to soil disturbance and vehicle movement and can also be introduced or spread from contaminated earthmoving equipment, topsoil, fill material or surface water.

This Weed Management Plan is to be implemented prior to any clearing activities.

A weed inventory for the Carosue Dam Gold Operations will be compiled which includes known locations of weed species within the project tenements. This will include an assessment of the weed status within areas to be cleared. Areas of known infestation will be shown as Weed Risk areas on appropriate maps. The classification status of weed species, State and Commonwealth weed strategies and Department of Agriculture of the Carosue Dam site will be regularly reviewed.

Prior to mobilisation of machinery, earthmoving contractors will be made aware of the requirement that all earthmoving machinery is to arrive at the Carosue Gold Project Area in a clean condition, free of soil and organic matter. All machinery, vehicles or tools (particularly earthmoving machinery) entering the site for the first time or between Carosue Dam sites or have been operating off road in Weed Risk areas will be inspected for soil and organic matter and a Weed Certificate **CDO-FN-EN-0002** completed.

WEED CONTROL

Vehicles and machinery are to be cleaned down in designated areas by hosing with high pressure water to remove all soil and plant material. Any machinery, vehicles or tools not arriving clean may be prevented from entering the site. Vehicles and machinery which remain on designated roads or cleared/disturbed/infrastructure areas will not require cleaning. Inspections will be conducted by the Environmental Officer as required.

All personnel and contractors will be required to undertake an induction prior to commencement of clearing or other activities within uncleared areas. This will be used to promote awareness of weed management, including known weed risk areas and requirements to restrict all earthworks and vehicles to within any marked clearing boundary. Vehicle and machinery movement will be minimised beyond the immediate construction site to prevent excessive disturbance and dispersal of weeds.

Topsoil removed from Weed Risk areas is to be stockpiled separately and the location recorded in a database. These soils are to be treated prior to use during rehabilitation.

Routine inspections of disturbance and operational areas are to be conducted by the Environmental Officer. Observations, including weed status, species, location and new infestations are to be recorded on inspection sheets and status of management actions are to be recorded in the Environmental Action Plan. The Environmental Officer is to provide guidance on weed management strategies.

The effectiveness of weed control measures will be monitored and contingency actions will be initiated if monitoring indicates that significant weed infestations have established in previously weed-free areas. In the event of a significant new weed infestation, an Environmental Incident Report will be completed. Should weed problems be excessive in disturbed areas, chemical control will be undertaken as required.

Saracen will notify and consult the relevant authorities in the event that inappropriate management of weeds causes a potentially significant environmental deterioration, and seek advice on remediation procedures.

WEED CONTROL

4 Responsibilities

Position	Responsibility
Environmental Personnel	• Ensure the weed inventory and weed risk maps for the Carosue Dam Gold Operations are maintained. • Regularly review the classification status of weed species, State and Commonwealth weed strategies and Department of Agriculture. • Ensure details of known weeds and weed risk areas are provided to Managers, Superintendants and Supervisors, Project Personnel and Contractors. • Notify the *Department of Agriculture* of any areas with Declared Weeds within the Carosue Dam Gold Operations. • Communicate requirements of this EMP to Managers, Superintendants and Supervisors, Project Personnel and Contractors. • Inspect vehicles and machinery as required. • Conduct routine inspections of disturbance and operational areas. • Provide weed identification kits as required to site personnel/notice boards.
Operations Manager	• To ensure this EMP is implemented on site.
Managers	• Ensure the requirements of this plan are implemented. • Communicate requirements of this EMP to Superintendants and Supervisors, Project Personnel and Contractors.
Superintendants and Supervisors	• Ensure the requirements of this plan are implemented. • Communicate this EMP to Project Personnel and Contractors. • Ensure that prior to mobilisation of machinery, earthmoving contractors are made aware of the requirement that all earthmoving machinery is to arrive at the Carosue Gold Project Area in a clean condition, free of soil and organic matter. • Inspect vehicles and machinery as required. • Complete Weed Hygiene Certificates as required and forward to the Environmental Department.
Project Personnel and Contractors	• Comply with this EMP. • Follow instructions from Superintendants and Supervisors. • Clear within marked areas only during construction.

WEED CONTROL

	• Report weed infestation to Environmental personnel.

5 Related Documents

Filename	Name
CDO-FN-EN-0002	Weed Certificate
CDO-FO-EN-0001	Clearing Activity Permit
TBA	Clearing Procedure

Saracen Gold Mines Pty Ltd
Carosue Dam Operations

MOBILISATION WEED HYGIENE CERTIFICATE

To be completed for any equipment before arrival onsite. Includes equipment transferred between infested sites. Please forward completed form to Environmental.

Date		**Contractor**					
Contract #		**Address**					
Purchase Order #		**Phone**		**Facsimile**		**Site Contact**	
Location of Equipment Usage							

Unit No.	Description of Equipment (Please complete as comprehensively as possible for each unit)	Registration No.	Location of Last Works	Date Cleaned

Contractor Certification		Carosue Dam Arrival Inspection	
Name		**Name**	
Signature		**Signature**	
Position		**Position**	
Date		**Date**	

Saracen

Saracen Gold Mines Pty Ltd

CLEARING PERMIT REPORT 2012-2013

3202/1 (Wallbrook)

July 2013

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APPENDICES

1 INTRODUCTION

Saracen Gold Mines Pty Ltd (Saracen) own and operate the Carosue Dam Operations located approximately 110km northeast of Kalgoorlie-Boulder (Figure 1.1). The Carosue Dam Operations includes the Wallbrook project in the Shire of Menzies on the Edjudina pastoral lease. The site is accessed via the Kalgoorlie-Yarri Road and a private access road.

Carosue Dam was previously operated between November 2000 and June 2005. Saracen purchased the Carosue Dam Operations in 2006. The Wallbrook tenements were acquired from Jackson Gold in 2007. After an extensive recommissioning program of the processing plant, TSF and accommodation village, Carosue Dam recommenced operation in December 2009. Mining operations at Wallbrook commenced in November 2011 with the development of Eleven Bells open pit. Redbrook pit commenced soon after in December 2011 and continued to be mined until May 2012. Mining continued at Eleven Bells until July 2012, at which time mining operations ceased in the area. No disturbance occurred under CPS3202/1 post April 2012. A review of the disturbance categories and areas under CPS3202/1 commenced in March 2013 during the Annual Environmental Reporting process and continued in June 2013 to improve the accuracy of disturbance reporting. The changes made during this process are included in this report. This report has been prepared to fulfil requirements under section 51E of the *Environmental Protection Act 1986* and satisfies the conditions of Clearing Permit 3202/1 for reporting of clearing completed for the reporting year 1 July 2012 to 30 June 2013.

1.1 OTHER APPROVALS

In April 2011 a Mining Proposal was approved by the DMP (Reg Id 26121) for the development of Wallbrook Open Pit operation. This approval includes the construction of three open pits (Redbrook, Red Flag and Eleven Bells), a single waste rock dump, two ROM pads, offices, crib hut and dewatering pipeline. The operation makes use of the existing haul road, turkey's nest, and landfill and bioremediation facilities at the Porphyry Gold Mine to reduce disturbance and costs.

An amendment to the Mining Proposal to expand the waste dump outside of Clearing Permit 3202/1 under the 10Ha exemption was approved on 13 March 2012 (Reg Id 33901).

On 6 May 2010 an application for a Works Approval to allow for mine dewatering was approved for the Wallbrook project (W4649/2010/1).

1.2 ACTIVITIES

Saracen commenced clearing at Wallbrook in May 2011 under Purpose Permit 3202/1. Clearing for mining purposes continued until April 2012 with extensions being added to the Redbrook and Redflag open pit footprints. No further clearing was carried out as a result of mining activities in the area after this time.

This permit was approved by the DMP in September 2009 and authorises clearing of up to 90Ha for the purposes of mineral production and associated works on M31/172 and M31/231.

The permit expires on 31 December 2014 (Table 1.1).

Details of ground disturbance for Clearing Permit 3202/1 are provided in Section 2.

Table 1.1 Wallbrook Clearing Permits

Tenement	Permit	Purpose	Area (Ha)	Clearing period
M31/172 and M31/231	Purpose permit 3202/1	Clearing for the purposes of mineral production and associated activities.	90	10 October 2009 to 31 December 2014

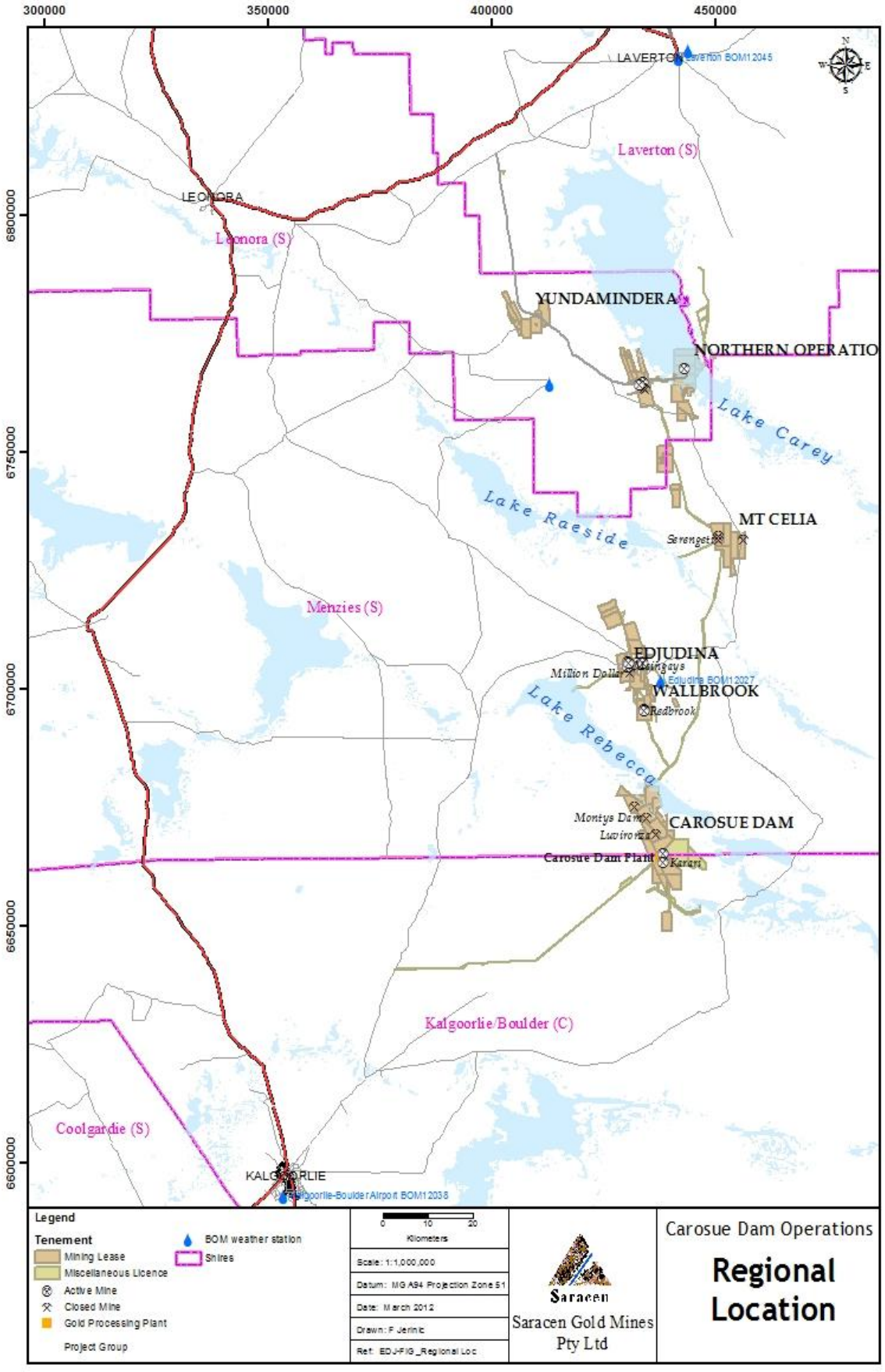

Figure 1.1 Regional Location Plan

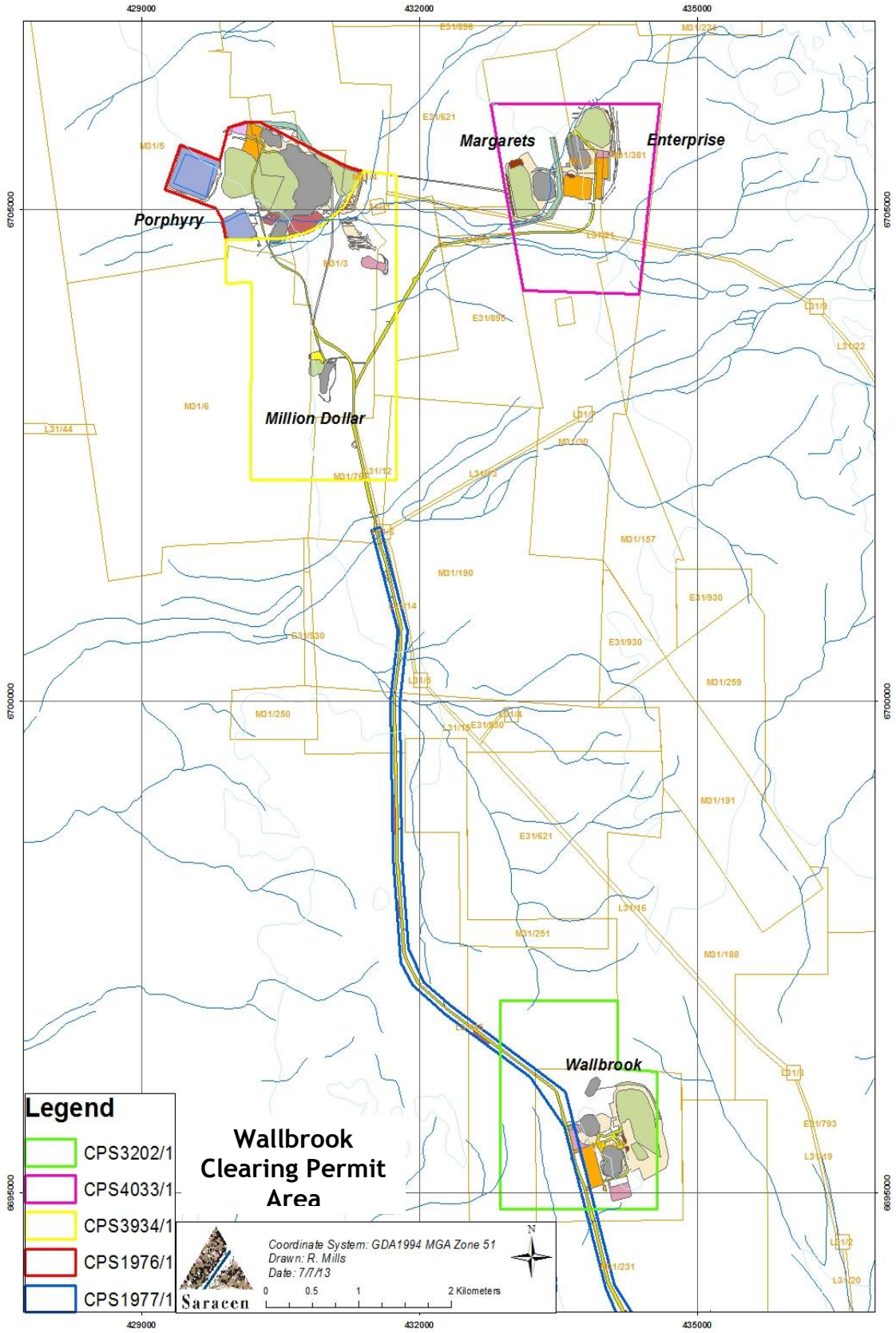

Figure 1.2 Location of Clearing Permit Area CPS 3202/1

2 COMPLIANCE WITH CONDITIONS

2.1 Area Cleared

Clearing under CPS3202/1 commenced in May 2011 for the purposes of mineral production and ceased in April 2012. During the 2012/2013 reporting period, no new areas were cleared.

A review of disturbance categories and areas was initially carried out in March 2013 during the Annual Environmental Reporting process for Edjudina (including Wallbrook) operations. This process was continued and disturbance areas were further analysed in June 2013. These reviews highlighted several changes which needed to be made to increase the accuracy of reporting. Improved aerial photography and on ground survey was used to refine the existing disturbance polygons and categories to more accurately reflect what disturbance areas and categories exist. Table 2.1 below shows disturbance under CPS3202/1 prior to the review being conducted, adjustments made during the review and total disturbance as at the 30th June 2013. The clearing outlined in Table 2.1 below occurred during previous reporting periods. No clearing occurred between 1st July 2012 and the 30th June 2013.

Table 2.1 Clearing Permit 3202/1 June 2013 Review Summary

Tenement	Disturbance Type	Total Previous Disturbance As at 30th June 2012 (Ha)	Review Adjustments June 2013 (Ha)	Total Disturbance 30th June 2013 (Ha)
M31/172	Roads	2.90	+13.08	15.98
M31/172	Eleven Bells Pit	3.75	+1.69	5.44
M31/172	Exploration / GradeControl	2.10	+5.17	7.27
M31/172	Haul Roads	3.44	+0.54	3.98
M31/172	Redbrook Pit	4.50	-0.92	3.58
M31/172	Redflag Pit	1.48	-1.48	0.00
M31/172	ROM	8.10	-0.82	7.28
M31/172	Topsoil	4.50	-3.98	0.52
M31/172	Waste Dump	31.06	-9.81	21.25
M31/172	Laydown	3.00	+2.61	5.61
M31/172	Abandonment Bund	0.00	+0.49	0.49
M31/172	Mining infrastructure	0.20	-0.01	0.19
M31/231	Exploration / Grade Control	0.00	+1.21	1.21
	Totals	**65.03**	**+7.76**	**72.79**
			Limit CPS3202/1	**90**
			Balance	**17.21**
Clearing outside clearing permit area under 10Ha exemption (Ha) (Reg Id 33901)				
Waste Dump		2.6	-2.07	0.53
Topsoil		0.5	-0.5	0
Roads		0	+4.4	4.4
Totals		**3.1**	**+1.81**	**4.93**

All negative figures above indicate a reduction in the area of disturbance as a result of the review process. Negative figures do not signify areas of rehabilitation. The review process highlighted various areas where disturbance polygons had been over or understated and thus encapsulated areas which were not actually disturbed and/or were classified incorrectly (Figure 2.1). For example,

the current Wallbrook waste dump footprint is only 21.78Ha in area (0.53Ha is outside of CPS3202/1), however this was previously reported as 33.66Ha (2.60Ha outside of CPS3202/1). The 11.88Ha difference was added to the 'Roads' category, as this is what these areas actually are (No waste dump infrastructure exists on that 11.88Ha).

Topsoil dumps had previously been overstated and thus this area has been corrected, this is also true for the ROM and the mining infrastructure (dewatering dam). Exploration areas had been understated in the past and with updated aerial photography, this was able to be more accurately captured. Redflag pit disturbance has been reclassified as Exploration/Grade control, as this area was only cleared and resource drilled before operations in the area ceased, therefore the pit has not yet been excavated. The abandonment bund around Redbrook Pit was previously reported incorrectly as cleared areas/exploration (Figure 2.2).

A summary of total disturbance under CPS3202/1 to the 30th June 2013 is provided below. A total of 72.79Ha was cleared under the clearing permit between May 2011 and April 2012. No clearing occurred during the 1st of July 2012 and the 30th June 2013. 17.21Ha remain available under CPS3202/1.

Table 2.2 Wallbrook CPS3202/1 Clearing Summary

Reporting Period	Disturbance (Ha)	Comments
2012-2013	0.00	No clearing completed
2011-2012	66.83	Adjusted from 59.07Ha during review
2010-2011	5.96	
Total	72.79	
Limit	90	
Balance	***17.21***	

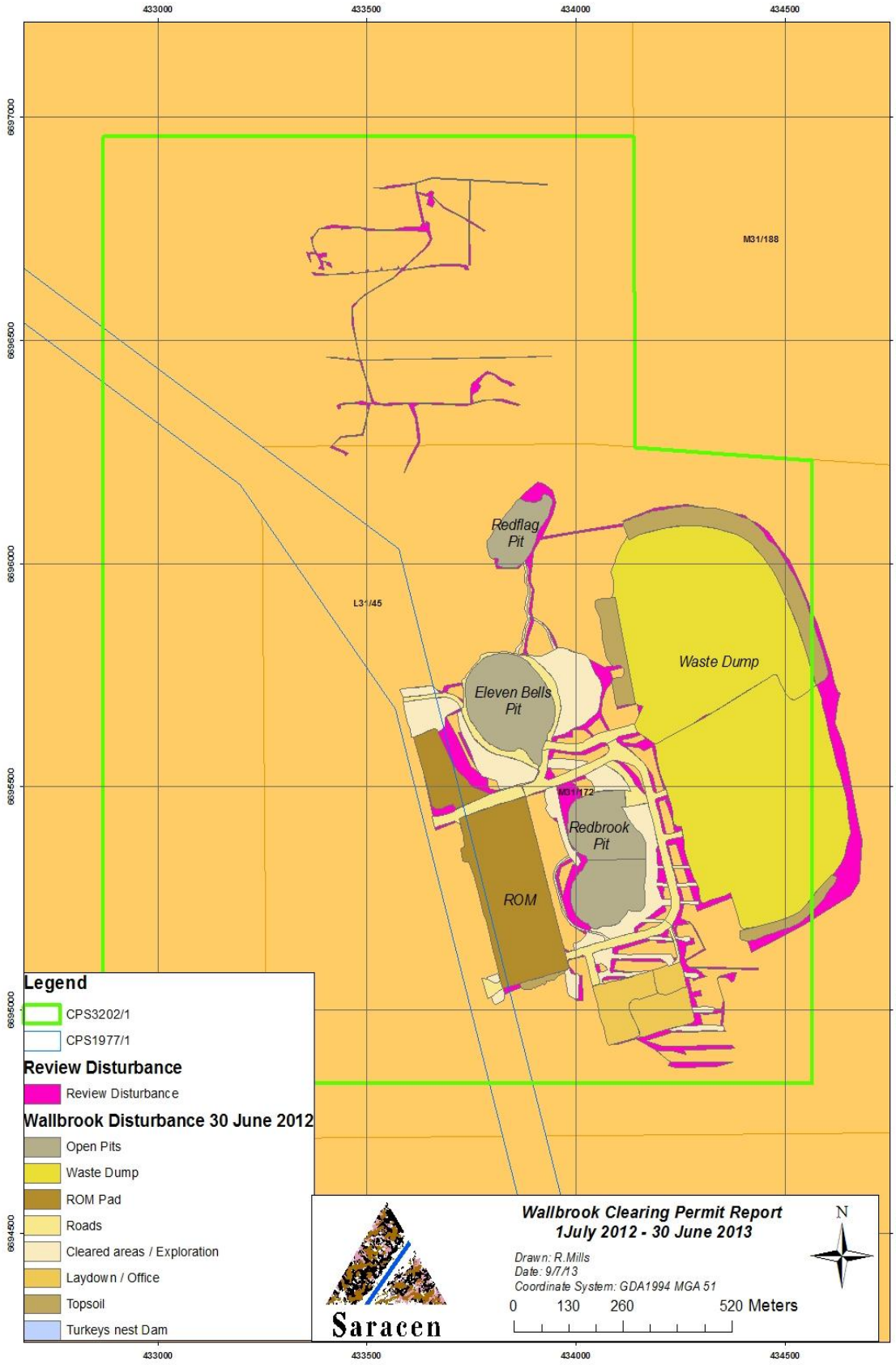

Figure 2.1 Modified Disturbance at Wallbrook during Review June 2013

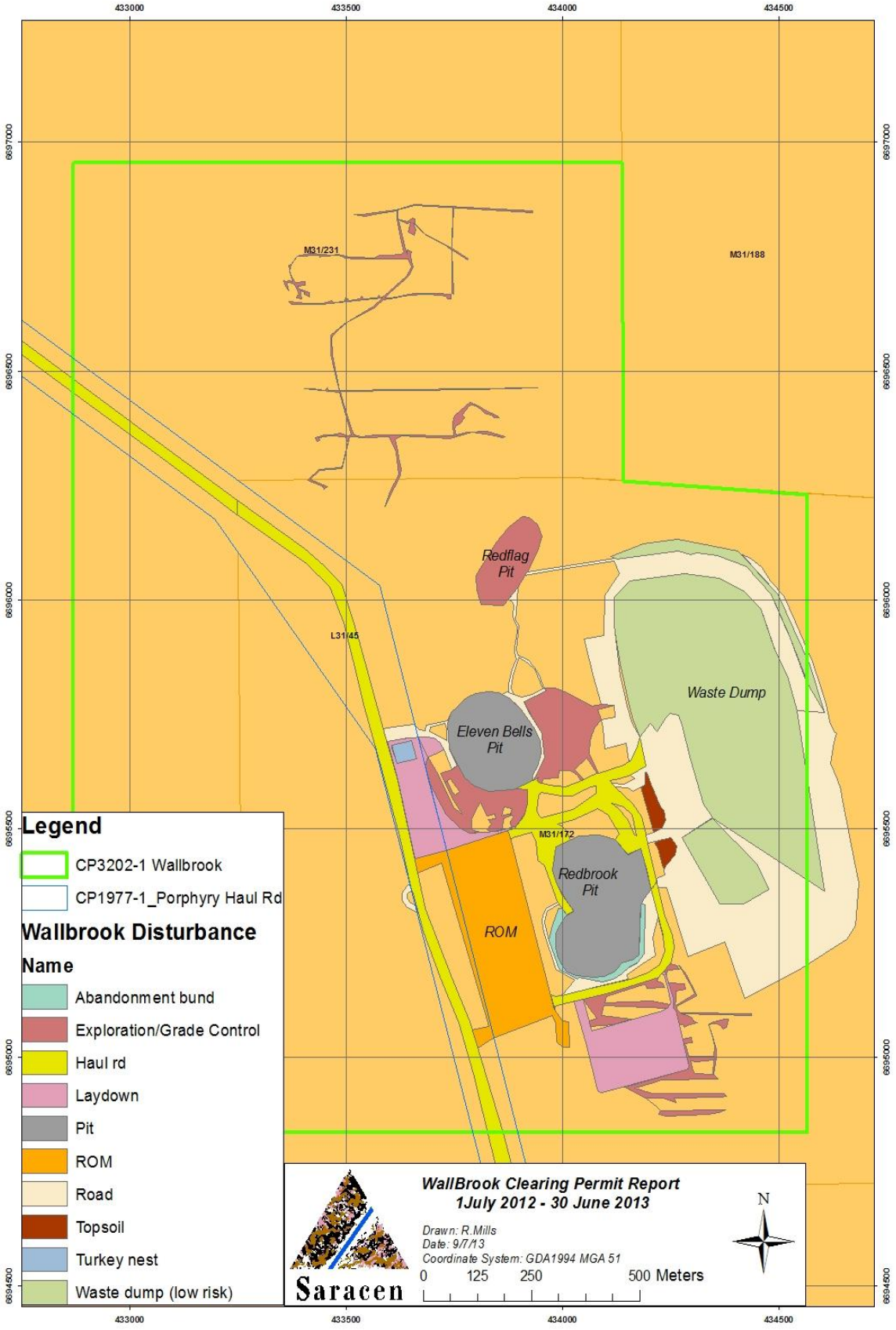

Figure 2.2 Wallbrook Current Disturbance 30th June 2013 – CPS3202/1

2.2 DETAILS OF CLEARING

No clearing occurred under Clearing Permit 3202/1 at the Wallbrook project for the reporting period 1st July 2012 to 30th June 2013. Figure 2.2 shows the current disturbance at the Wallbrook project to date. Table 2.2 clearly explains disturbance under this permit to date.

2.3 GUIDING PRINCIPLES

2.3.1 Clearing Management

All clearing activities are completed under the Saracen Environmental Management System (EMS). Components of the EMS include the Saracen Gold Environmental Policy (Appendix A), the Saracen Environmental Manual, Environmental Management Plans and supporting documents including registers, standards, procedures and forms.

Specific management activities relating to clearing conditions are provided in the relevant Environmental Management Plan (EMP) in Appendix B. More detailed responsibilities for specific tasks are described in the relevant Environmental Procedure.

All employees and contractors are required to complete a general induction which includes environmental information and emphasises correct clearing procedures.

2.3.2 Regard for Principles

Saracen has developed a Control of Clearing Management Plan (Appendix B) to be implemented during all clearing on site. Objectives of the plan are to:

- Minimise vegetation disturbance;
- Prevent disturbance of vegetation adjacent to areas of activity;
- Prevent disturbance of vegetation in unapproved areas;
- Prevent the spread of weeds;
- Control erosion and sedimentation within disturbed regions;
- Rehabilitate areas which are not required to remain permanently cleared.

All personnel arriving on site completed an environmental induction. The requirement to minimise the disturbance of vegetation, including the requirement for all vehicles and machinery to use designated tracks and roads, and park only in designated locations is emphasised in the general environmental induction.

To control and minimise clearing, prior to all clearing, a Clearing Activity Permit (Appendix B) is required to be authorised by the Environmental Officer and Operations Manager. All areas to be cleared are surveyed and suitably marked to ensure only the approved area is cleared. This allows areas to be cleared only when required and prevents over-clearing of native vegetation.

The impact of clearing is minimised by restricting clearing to that which is required for safe and efficient operations and existing disturbance, tracks and roads are used wherever possible.

The impact of clearing on environmental values is summarised in Table 2.2.

Table 2.3 Assessment of Impacts Against EPA Clearing Principles

Clearing Principle	Outcome
Native vegetation should not be cleared if:	
(a) it comprises a high level of biological diversity;	The site is within the Eastern Murchison (MUR 1) biogeographic subregion. Vegetation within the permit area is not unusually diverse, i.e. biological diversity is low.
(b) it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia	The Wallbrook survey found one small breakaway, granite outcrops and drainage tracts which may provide fauna refuge. Disturbance to these areas will be kept to a minimum.
(c) it includes, or is necessary for the continued existence of, rare flora;	No rare flora or priority flora located on site.
(d) it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community	No threatened ecological communities present.
(e) it is significant as a remnant of native vegetation in an area that has been extensively cleared;	Approximately 90% of the project area consists of Beard Vegetation Association 400: Succulent steppe with open low woodland. The remainder is occupied by Vegetation Association 18: Low woodland; mulga (*Acacia aneura*). These vegetation associations are extensive and most remain uncleared and intact.
(f) it is growing in, or in association with, an environment associated with a watercourse or wetland;	No permanent water bodies are located within the permit area. Lake Rebecca is located 8km to the south.
(g) the clearing of the vegetation is likely to cause appreciable land degradation;	Part of a pastoral lease which has been grazed over many years. Area may be vulnerable to soil erosion when surfaces are disturbed. Areas will be rehabilitated progressively to minimise erosion.
(h) the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area;	No adjacent conservation areas are located within the permit area. The closest conservation area is Goongarrie National Park, about 60km north west of the project area.
(i) if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water;	Disturbance to drainage tracts and associated alluvial plains may increase sediment load to Lake Rebecca. Disturbance to these areas will be minimised however clearing is unlikely to impact groundwater or reduce the quality of surface water.
(j) if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.	The climate in the permit area is arid to semi-arid with most rainfall events causing little runoff. Clearing in this area will have negligible effects on the volume of discharge to Lake Rebecca.

2.3.3 Weed Control

During all clearing under Clearing Permit 3202/1 and mining related activities, the Saracen Weed Management Plan (Appendix C) was implemented. Objectives of the plan are to:

- Prevent the introduction of weed species to weed free areas;
- Prevent the transfer of known weed species into weed-free areas;
- Restore disturbed areas to minimise weed colonisation;
- Control populations of known weeds to prevent transfer into weed-free areas.

Prior to mobilisation of machinery, earthmoving contractors are required to ensure all earthmoving machinery arriving at the Carosue Gold Operations is in clean condition, free of soil and organic matter. All machinery is inspected for soil and organic matter upon arrival on site and a Weed Certificate completed and forwarded to the Environmental Officer. In addition, machinery moving to the Wallbrook project area from other Carosue Dam sites or from operating off road in Weed Risk areas, is also required to comply with this procedure.

No soil or other potentially weed-affected material was transferred to cleared areas at the Wallbrook project.

2.3.4 Retention of Vegetative Material and Topsoil

A requirement of the Saracen Clearing Management Plan is that all topsoil and vegetative material be stockpiled and retained for future use in rehabilitation of the area. As no clearing occurred during this reporting period, vegetation and topsoil has not been disturbed.

Topsoil and vegetation stockpiles are located in cleared areas.

2.3.5 Records to Be Kept

No clearing occurred under CPS3202/1 during the reporting period. Details of all activities completed under Clearing Permit 3202/1 to date including date cleared, purpose of clearing, methods of clearing, tenements and area cleared in hectares have been reported during past reporting periods. Details of adjustments during the June 2013 review are provided in Tables 2.1 and 2.2.

2.3.6 Reporting

This report satisfies the reporting conditions of Clearing Permit 3202/1.

Appendix A Saracen Environmental Policy

Appendix B Clearing Management Plan

Appendix C Weed Management Plan