

DALGARANGA GOLD PROJECT

SUPPORTING DOCUMENT FOR

CLEARING PERMIT (CPS 7240/3) AMENDMENT APPLICATION

Prepared for: Gascoyne Resources Limited

Prepared by: Chris McQuade
Gascoyne Resources

September 2021

Table of Contents

1.	INTRODUCTION	4
1.1.	BACKGROUND	4
1.2.	PURPOSE	4
1.3.	LOCATION	4
1.4.	OWNERSHIP AND LAND TENURE	5
2.	PROPOSED CLEARING	6
3.	BASELINE INFORMATION	7
3.1.	CLIMATE	7
3.2.	REGIONAL SETTING	7
3.3.	LAND SYSTEMS	8
3.4.	LANDFORM AND SOILS	8
3.5.	HYDROLOGY	9
3.6.	VEGETATION AND FLORA	9
	Survey work completed.....	9
	Vegetation	9
	Vegetation Condition.....	10
	Flora 10	
	Weeds 10	
3.7.	VERTEBRATE FAUNA	11
	Survey Work Completed	11
	Terrestrial Vertebrate Fauna	11
	Malleefowl.....	13
	Invertebrates and Short Range Endemic (SRE) Invertebrates	14
3.8.	THREATENED AND PRIORITY ECOLOGICAL COMMUNITIES	15
3.9.	CONSERVATION AREAS	15
4.	ASSESSMENT AGAINST THE 10 CLEARING PRINCIPLES	16
5.	FIGURES	19
6.	REFERENCES	31

Figures

Figure 1 Location of the Dalgaranga Project	19
Figure 2 Tenement layout of the Dalgaranga Project	20
Figure 3 Approved clearing envelope under CPS 7240/3.....	21
Figure 4 Native Vegetation Clearance – Proposed, Current and Historical	22
Figure 5 Land systems in Project area (from Mabbut et al. 1963)	23
Figure 6 Soil-landscape provinces of the Murchison Province	24
Figure 7 Local Catchment Delineation (from GRM 2020).....	25
Figure 8 Vegetation groups in Project area (from NVS 2016).....	26
Figure 9 Vegetation condition mapped in Project area (from NVS 2016).....	27
Figure 10 Broad vegetation types of the surveyed area (Ecotec, 2021)	28
Figure 11 Location of weeds recorded at the Project	29
Figure 12 Fauna Habitat and Assessment Sites (from Western Ecological 2021).....	30

APPENDICES

Appendix 1: Native Vegetation Solutions 2016 - Level 1 Flora report
Appendix 2: Native Vegetation Solutions 2017 - Targeted Threatened Flora Survey at Dalgaranga
Appendix 3: Earth Stewardship 2018 - Weed Survey
Appendix 4: Jenny Borger 2021 - Weed survey Dalgaranga
Appendix 5: MBContracting 2016 - Level 1 & Level 2 Fauna report
Appendix 6: MBContracting 2017 - Level 1 Fauna Report Part 2
Appendix 7: Western Ecological 2020 - Vertebrate Desktop Assessment
Appendix 8: Western Ecological 2020 - Malleefowl Survey
Appendix 9: Invertebrate Solutions 2020 - Desktop assessment
Appendix 10_ Western Ecological 2021 - Maleefowl Assessment Southern WRD
Appendix 11_ Ecotec 2021 - Targeted Flora and Habitat Survey

1. INTRODUCTION

1.1. BACKGROUND

Gascoyne Resources Limited ('Gascoyne') was listed on the ASX in December 2009 following the amalgamation of the gold assets of Helix Resources Limited and Giralia Resources NL in the Gascoyne Region of Western Australia.

On the 6 August 2012 Gascoyne acquired an 80% interest in the advanced Dalgaranga Gold Project ('Project') and surrounding exploration tenements from private tenement holders. In December 2016, Gascoyne acquired the remaining 20% interest in the tenements. Consequently, the Project tenements are now 100% owned by Gascoyne.

The Project is located in the Murchison Region of Western Australia and covers the majority of the Dalgaranga greenstone belt.

After discovery in the early 1990's, the Project was developed and from 1996 to 2000 produced 229,000oz's of gold from predominantly the Gilbeys deposit and previous mining of gold rich laterite in a shallow pit at Golden Wings deposit. Gilbeys deposit had previously been mined to a depth of approximately 120 metres. Mining was completed in 2001 and the processing plant and associated infrastructure subsequently relocated off site.

Gascoyne commenced mining activity at the Project in 2017 and mining of Gilbeys, Gilbeys South, Sly Fox and Golden Wings pits is well advanced.

Gascoyne currently has an active clearing permit (CPS 7240/3) for 585 ha of native vegetation clearing within an overall clearing area of 1,726 ha. Gascoyne is proposing to construct an additional waste rock dump (WRD) and extend an existing WRD, as well as additional minor infrastructure. This application is in support of the submitted Mining Proposal version 8, revision 3.

1.2. PURPOSE

This document provides supporting information for the application for amendment of CPS 7240/3 for the clearing of an additional 194 ha of native vegetation to allow the construction of additional mine infrastructure.

The ten clearing principles and background information has been provided in this document relating to the site location, ownership, hydrology, vegetation, fauna and land degradation issues.

To assist in the DMIRS's assessment of this clearing permit application, a summary of the relevant environmental information for the overall Project area has been included in this document in addition to the biological survey reports.

1.3. LOCATION

The Project is located approximately 70 km northeast of Mt Magnet within the Shire of Mt Magnet, in the Murchison Region of Western Australia (Figure 1).

The proposed clearing area is located within the Murrum Pastoral Lease.

1.4. OWNERSHIP AND LAND TENURE

The Project lies on Mining Lease 59/749 and Miscellaneous Licences L59/141, L59/142, L59/151, L53/152, L59/153 and L59/168 which are 100% owned by GNT Resources Pty Ltd, a wholly owned subsidiary of Gascoyne (Figure 2).

The approved and proposed areas of clearing are located on Mining Lease M59/749 and miscellaneous leases L59/152 and L59/168.

The Dalgarranga and Noongal Pastoral Leases owned by the Department of Biodiversity Conservation and Attractions (DBCA) are located adjacent to and within the overall Project area.

2. PROPOSED CLEARING

Gascoyne has an existing clearing permit (CPS 7240/3) for 585 ha of native vegetation within the nominated clearing area as shown in Figure 3. The areas approved for clearance and pre-Gascoyne Resources historic disturbance are presented in Figure 4.

This clearing permit amendment requests two variations:

- Additional clearing of up to 194 ha of native vegetation to:
 - Support the expansion of the West WRD to the west
 - Support the construction of a Southern WRD
 - Provide areas between the WRD's boundary and the tenement for the construction of the abandonment bund
 - Provide areas for the construction of additional minor infrastructure
 - Provide areas for the realignment of existing infrastructure.
- Extend the duration of the clearing permit for an additional 5 years, i.e. from December 2026 to December 2031 to provide for 7 years life of mine and three years of closure works.

The additional 194 ha of clearing will bring the total area approved for clearing of native vegetation to 779 ha (Figure 4).

Following completion of a targeted survey and assessment of the proposed area for clearing, Ecotec (2021, Appendix 11) found the proposed disturbance is not considered likely to impact any flora or fauna species of conservation significance.

3. BASELINE INFORMATION

3.1. CLIMATE

The climate of the region is arid with bimodal rainfall that usually falls in winter.

The Project is located approximately 270 km northeast of Geraldton and 65 km northwest of Mt Magnet. Mt Magnet Airport is the nearest official meteorological station and has ongoing records to the present day.

The following data is taken from the records from Mt Magnet Airport (Station Number 7600) (BOM 2020).

Mean annual maximum temperature is 28.7°C and mean annual minimum 15.2°C. Daily maxima above 30°C are common from October to March.

The mean annual rainfall is 251.2 mm and around 80% of the rainfall occurs between December and July. More than 1 mm is received on an average 34.5 days per year.

Wind direction is predominantly easterly in the mornings with an increase in westerly and north westerly winds in winter. Afternoon wind directions are more evenly distributed with monthly peaks varying between the centres. Northerly winds are least frequent throughout, especially for Cue and Yalgoo in the afternoons. At Mt Magnet airport the average wind speeds vary throughout the year from 14.5 – 21.1 km/h in the morning to 16.1 – 20.3 km/h in the afternoon.

There are no evaporation records for the Mt Magnet Airport recording station. There are evaporation rates recorded at the Meekatharra Airport station located 185 km north of Mt Magnet Airport. Meekatharra Airport has an average daily evaporation rate of 9.7 mm (approximately 3,541 mm/year).

Humidity levels vary both daily and yearly. The mean monthly 9 am relative humidity varies from a low of 34% in December to a high of 68% in July. The mean monthly 3.00 pm relative humidity varies from a low of 19% in November, December and January to a high of 43% in July.

3.2. REGIONAL SETTING

The Interim Biogeographic Regionalisation for Australia (IBRA) classifies the Australian continent into regions or bioregions on the basis of similar geology, landform, vegetation, fauna and climate characteristics. The project area is situated within the Murchison Region according to IBRA 7, which is further divided into two subregions: Eastern Murchison and Western Murchison (DAWE 2019). The study area is situated within the Western Murchison subregion (MUR2).

The West Murchison subregion is in the northern end of the Yilgarn Craton, which experiences an arid climate with bimodal rainfall that usually falls in the winter months. The Western Murchison subregion is characterised by Mulga low woodlands on outcrop and fine textured Quaternary alluvial and eluvial surfaces mantling granitic and greenstone strata. Quaternary plains contain hummock grasslands, saltbush shrublands on calcareous soils and Halosarcia low shrublands on saline alluvia (DAWE 2019).

The MUR2 subregion is described by Desmond et. al. (in DAWE 2019) as follows:

“Mulga low woodlands, often rich in ephemerals (usually with bunch grasses), on outcrop and fine textured Quaternary alluvial and eluvial surfaces (extensive hardpan wash plains that dominate and characterise the subregion) mantling granitic and greenstone strata of the northern part of the Yilgarn Craton. Surfaces associated with the occluded drainage occur throughout with hummock grasslands on Quaternary sandplains, saltbush shrublands on

calcareous soils and Halosarcia low shrublands on saline alluvia. Contains the headwaters of the Murchison and Wooramel Rivers, which drain the subregion westwards to the coast. Arid climate with bimodal rainfall that usually falls in winter. The subregional area is 7,847,996 ha.” (DAWE 2019).

3.3. LAND SYSTEMS

The Project area is broadly mapped as being contained within the Jundee, Violet, Yanganoo, Cunyu, Challenge and Kalli land systems according to Curry *et al.*, (1994) (Figure 5):

- Jundee land system is described as hardpan wash plains with minor sandy banks, supporting scattered mulga shrublands and is generally not susceptible to erosion.
- Violet land system is described as gently undulating gravelly plains, with low stony rises and minor saline plains, supporting mulga and bowgada-dominated shrublands, with dense mulga groves and patchy halophytic shrublands. The land surfaces are largely protected by stony mantles, however some land units may be susceptible to erosion if the soil surface is disturbed or vegetation cover is removed.
- Yanganoo land system consists of broad flat hardpan wash plains, supporting extensive mulga shrublands and minor grassy shrublands. This land system may be locally susceptible to erosion if disturbed.
- Cunyu land system consists of calcrete platforms, intervening drainage floors and channels and minor alluvial plains, supporting acacia shrublands, occasional casuarina woodlands and minor halophytic shrublands.
- Challenge land system comprises gently undulating gritty and sandy surfaced plains, occasional granite hills, tors and low breakaways, supporting acacia shrublands and occasional halophytic shrublands.
- Kalli land system consists of elevated gently undulating red sandplains edged by stripped surfaces on laterite and granite, supporting acacia tall shrublands with wanderrie grass understoreys.

3.4. LANDFORM AND SOILS

The Project is located within Yalgoo Plains soil-landscape zone of the Murchison Province (Figure 6).

The Yalgoo Plains zone is described as hardpan wash plains (with some sandplains, stony plains, mesas and granite outcrops) on granitic rocks (with some greenstone) of the Yilgarn Craton (Murchison Domain). Red loamy earths and red shallow loams with hardpans supporting Mulga shrublands with bowgada shrublands occur (Tille 2006).

The area is covered by a gently sloping Quaternary alluvium. The soils are thin (10-30 mm) and largely transported red/yellow sandy clay/loam with quartz and pisolitic scree overlying a mixed hardpan pisolitic laterite horizon which is between 2 and 5 m thick.

Sampling of topsoils from the proposed clearing areas has been undertaken. The sampling indicates that the surface soils are non-saline and low in nutrients. At some sites, gravels or pisolites make up to 30% of the soil fraction.

3.5. HYDROLOGY

In the Project area the topography is subdued. Broad stony hills with breakaways such as the ranges containing Dalgaranga Hill, Mt Charles and Mt Farmer rise to approximately 640 m elevation.

Drainage from the hills is along shallow sandy creeks and washes that disperse in alluvial fans, generally in a south, south-east direction. Outcrop is rare and cover comprises soil and colluvial/alluvial deposits. The regolith cover around the Golden Wings and Gilbey's pits ranges from 60-100 m thick.

The climate is semi-arid and combined with slow runoff characteristics leads to an influent regime. Limited effluent flow properties have possibly developed around clay pans and on some paleo river drainages where the potential for manifestation of surface flow is reduced by high rates of evaporation.

The drainage in the area is broad sheetwash with a low slope gradient (approximately 1:500, 0.5% or 0.005) with the principal direction of flow from northeast to southwest.

There are three catchment areas upstream of the Project (East, Southeast and South – Figure 7) and drainage from these catchments reports to several poorly defined soaks and smallplayas near Jim King Well and Chulcan Well about 12 km southeast of the Project (GRM 2020). These catchments do not comprise clearly defined watercourse channels.

There are no other rivers, lakes, defined watercourses or other areas of significant surface water bodies in the Project area, or, within five kilometres of the Project.

3.6. VEGETATION AND FLORA

Survey work completed

Ecotec completed a targeted Threatened and Priority flora and fauna habitat survey in August 2021 for the two major areas proposed for additional native vegetation clearance in this amendment application (Appendix 11).

Native Vegetation Solutions completed a Level 1 flora and vegetation assessment of the Dalgaranga Project area in accordance with the Environmental Protection Authority's (EPA) "Terrestrial Biological Surveys as an Element of Biodiversity Protection; Position Statement No 3" (EPA 2002) and Guidance Statement No. 51 "Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia" (EPA 2004a). The survey report is attached as Appendix 1.

A targeted Priority flora survey was completed by Native Vegetation Solutions (2017, Appendix 2) for the amendment of CPS 7240/2 that confirmed no Priority flora are located at the Project.

Vegetation

Six broad vegetation types were identified by Ecotec (2021, Appendix 11) across the area of proposed additional disturbance. Vegetation in the area is generally dominated by a variety of Acacia species with Eremophila understorey and is typical of the Murchison region. The proposed additional clearing encompasses all described vegetation groups.

The CPS 72040/3 approved clearing envelope has been broadly mapped as the following Beard vegetation associations

- 18: Low woodland; mulga (*Acacia aneura*).
- 395: Hummock grasslands, mixed sandplain; bowgada, mallee, heath and spinifex.

The 2016 survey recorded 11 vegetation groups within the approved and proposed clearing area as presented in Figure 8 (Native Vegetation Solutions 2016, Appendix 1):

- Rehabilitation vegetation.
- Open Mulga woodland.
- Mulga over *Acacia ramulosa* and *Eremophila forrestii* shrubland.
- Mulga over *Thryptomene costata* and *Eremophila glutinosa* shrubland.
- Open Mulga shrubland over stony plains.
- *Acacia aneura* and *Acacia craspedocarpa* over *Eremophila jucunda* open shrubland with herbaceous understorey.
- *Acacia burkittii* shrubland
- Mulga over *Chenopod* shrubland
- *Acacia grasbyi* shrubland over laterite breakaways
- Mulga woodland over *Acacia grasbyi* and *Acacia rhodophloia*
- *Acacia aneura* over *Eremophila exilifolia* and *Eremophila forrestii* shrubland on hill slopes
- Existing disturbance.

Vegetation Condition

Native Vegetation Solutions (2016, Appendix 1) considered that in accordance with Keighery (1994), the condition of the vegetation overall is “Good” to “Very Good” with some Rehabilitation Areas completely degraded where historic clearing has taken place (Figure 9).

The impact of long-term grazing, particularly by goats, is evident with minimal understorey and herbaceous species present throughout the area. It is though likely that vegetation types 2 and 6 were initially the same but have been altered by grazing and exploration disturbance over time (Figure 10).

Ecotec (2021, Appendix 11) noted that goats were abundant throughout the area during the survey. The area is also extensively disturbed by mineral exploration and other historic pastoral activity.

Flora

Within the two main areas proposed for clearing in this amendment, Ecotec (2021, Appendix 11) recorded 93 taxa of vascular flora from 27 families (Appendix 2 of the Ecotec report).

Previous work had identified a total of 27 Families, 49 Genera and 130 Species within the approved clearing envelope (Native Vegetation Solutions 2016 – Appendix 1).

No Priority or Threatened flora species were located during the most recent survey, nor during any previous surveys.

Weeds

Surveys for introduced flora species have been completed by Native Vegetation Solutions (2016, Appendix 1), Earth Stewardship (2018, Appendix 3) and Jenny Borger Botanical Consulting (2021, Appendix 4). Jenny Borger Botanical Consulting identified fourteen species of weeds (Table 1) of which Ruby dock (*Rumex vesicarius*) was the most common and widespread (Figure 11).

Ruby dock is abundant in the old plant area, mostly in disturbed sites. GNT have an active program

of weed control using a combination of external and internal resources.

Table 1 Weed Species Recorded by Jenny Borger Botanical Consulting

Scientific Name	Common Name	Notes
<i>Aloe vera</i>		Administration area; contained; not spreading
<i>Carthamus lanatus</i>	Saffron Thistle	Site Access Road
<i>Cenchrus ciliaris</i>	Buffel grass	Mostly around buildings
<i>Erigeron bonariensis</i>	Flaxleaf fleabane	Wet mess
<i>Erodium aureum</i>		Isolated occurrences
<i>Hypochaeris glabra</i>	Smooth cats-ear	Workshop area
<i>Latua serriola</i>	Prickly lettuce	Mostly around buildings
<i>Malva parviflora</i>	Marshmallow	Bore DPPB No. 3
<i>Raphanus raphanistrum</i>	Wild radish	Mostly around buildings
<i>Rumex vesicarius</i>	Ruby Dock	Widespread, some dense populations in the old plant area
<i>Salvia verbenaca</i>	Wild Sage	Site Access Road
<i>Solanum nigrum</i>	Black Berry Nightshade	Gilbeys Pit West
<i>Sonchus oleraceus</i>	Common Sow Thistle	Around buildings
<i>Taraxacum khatoonae</i>	Dandelion	Camp

3.7. VERTEBRATE FAUNA

Survey Work Completed

Ecotec completed a survey of the areas proposed for clearing in this application in August 2021 (Appendix 11).

Previously, a Level 1 fauna survey was undertaken by MBContracting and consisted of two site visits:

- 31 May - 1 June 2016 – M59/749, L59/151, L59/152 and L59/153
- 10 May – 12 May 2017 – additional areas on M59/749.

A copy of the survey reports are attached as Appendix 5 and Appendix 6 respectively.

Western Ecological completed a desktop survey on L59/168 (Appendix 7) and also completed a targeted Malleefowl survey of the Southern WRD in March 2021 (Appendix 10).

The results of the reports are summarised in the following sections.

Terrestrial Vertebrate Fauna

Ecotec (2021, Appendix 11) noted that:

Acacia Woodland/Shrubland is the dominant fauna habitat present within the surveyed area, with an area of rocky outcrop present on the western side (Vegetation Type 4). Both of these habitat types are widespread and common in the surrounding region. The Western spiny-tailed skink (Egernia stokesii subsp. badia, Vulnerable) has previously been recorded as a possible inhabitant of the area, however there is little fallen timber and few large old trees in the surveyed area. The potential for the species to be present is considered very low.

Rocky outcrops may provide habitat for the gilled slender blue-tongue (Cyclodomorphus branchialis, Vulnerable), however the small extent of this habitat within the surveyed area is considered unlikely to support a population of the species. The malleefowl (Leipoa ocellata, Vulnerable) is considered unlikely to be present in the vicinity of the surveyed area due to the proximity to the active mine site, intensive grazing and extensive prior disturbance.

The peregrine falcon and a number of Migratory bird species are potential visitors to the area, however no habitat necessary for the survival of any of these species is present.

The surveys undertaken by MBC (2017, Appendix 6) identified 131 species as potentially occurring in the approved clearing envelope, including two amphibians, 23 reptiles, 85 birds, 12 mammals and one invertebrate. The Peregrine Falcon (*Falcos peregrinus*) was also recorded during the survey.

A desktop assessment of L59/168 was completed by Western Ecological (2020, Appendix 7), which joins the approved clearing envelope on the western edge and contains habitat contiguous with the approved clearing area (including the proposed additional clearing). The desk top assessment identified 19 fauna species of conservation significance that could potentially occur, with evidence of two of these species, the Peregrine Falcon and an extinct Malleefowl mound, recorded during previous survey work (**Error! Reference source not found.**).

A list of these species and the likelihood of each species occurring in the clearing envelope, including the proposed additional clearing, is provided in Table 2 and further assessment outlined in Section 4.0.

MBC (2017) identified fauna habitat comprising rocky outcrops in the approved clearing envelope which could provide potential habitat for:

- *Egernia stokesii* spp. *badia* (Western Spiny-tailed Skink).
- *Cyclodomorphus branchialis* (Gilled Slender Blue-tongue).
- *Idiosoma nigrum* (Shield-backed Trapdoor Spider).
- *Petrogale lateralis lateralis* (Black-flanked Wallaby).

This rocky outcrop habitat is specifically excluded from the additional clearing part of this amendment (**Error! Reference source not found.**). Gascoyne does not intend to clear this area, however, if future development requires disturbance of this area, targeted Level 2 surveys will be undertaken to confirm the presence/absence of these species in this area and suitable management measures developed depending on the results of the survey.

Table 2 Conservation significant terrestrial fauna (vertebrates) listed from DBCA/EPBC databases as potentially occurring (Western Ecological 2020a)

Species	Common Name	EPBC Status	DBCA Status	Likelihood of occurrence*1
Reptiles				
<i>Egernia stokesii</i> spp. <i>badia</i>	Western Spiny-tailed Skink	Endangered	Vulnerable	Possible
<i>Lerista eupoda</i>	Meekatharra Slider		Priority 1	Unlikely (on ground assessment to confirm)
<i>Cyclodomorphus branchialis</i>	Gilled Slender Blue-tongue		Vulnerable	Possible – rocky outcrops
Mammals				
<i>Petrogale lateralis lateralis</i>	Black-flanked Rock Wallaby	Vulnerable	Endangered	Unlikely
Birds				
<i>Actis hypoleucos</i>	Common Sandpiper	Migratory	Migratory	Unlikely - no suitable habitat

<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Migratory	Migratory	Unlikely - no suitable habitat
<i>Calidris ferruginea</i>	Curlew Sandpiper	Migratory	Critically Endangered	Unlikely - no suitable habitat
<i>Calidris melanotos</i>	Pectoral Sandpiper	Migratory	Migratory	Unlikely - no suitable habitat
<i>Calidris ruficollis</i>	Red-necked Stint	Migratory	Migratory	Unlikely - no suitable habitat
<i>Chlidonias leucopterus</i>	White-winged Black Tern	Migratory	Migratory	Unlikely - no suitable habitat
<i>Geolchedlidon nilotica</i>	Gull-billed Tern	Migratory	Migratory	Unlikely - no suitable habitat
<i>Falco peregrinus</i>	Peregrine Falcon		Schedule 7	Confirmed
<i>Leipoa ocellata</i>	Malleefowl	Endangered	Vulnerable	Possible
<i>Limosa lapponica</i>	Bar-tailed Godwit	Migratory	Migratory	Unlikely - no suitable habitat
<i>Apus pacificus</i>	Fork-tailed swift	Migratory	Migratory	Possible
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered	Endangered	Unlikely - no suitable habitat
<i>Tringa glareola</i>	Wood Sandpiper	Migratory	Migratory	Unlikely - no suitable habitat
<i>Tringa nebularia</i>	Common Greenshank	Migratory	Migratory	Unlikely - no suitable habitat
<i>Pezoporus occidentalis</i>	Night parrot	Endangered	Critically Endangered	Unlikely – no suitable habitat

Malleefowl

Malleefowl assessments completed within the approved clearing envelope in 2016, 2017, 2020 and 2021 identified one extinct mound, which was originally recorded by botanist, Eren Reid (Native Vegetation Solutions), approximately 1.1 km south-southwest of the Gilbeys pit.

Dr Ron Firth (2021, Appendix 10) upon visiting the southern WRD area considered the area as unsuitable for Malleefowl. As a consequence, the approach of walking a series of transects was replaced by describing the broad habitats present, which were also visited on foot at several locations throughout the survey area (Figure 12).

One very old Malleefowl mound that was termed extinct, had been previously identified in the survey area (Plate 1). MB Contracting 2016 and 2017, Western Ecological 2020 and 2021 determined the likelihood of Malleefowl now occurring in the survey area and the Dalgara project area as highly unlikely. This extinct mound will be covered by the construction of the Southern WRD.

Western Ecological (2020) also noted the large number of goats in the overall Project area which are likely to be grazing on shrubs and contributing to habitat degradation.



Plate 1 Very Old Extinct Malleefowl Mound

Invertebrates and Short Range Endemic (SRE) Invertebrates

The MBC (2017) assessment identified fauna habitat comprising rocky outcrops in the approved clearing envelope which could provide potential habitat for one invertebrate of conservation significance - *Idiosoma clypeatum* (Priority 3).

This habitat comprising rocky outcrops was also identified by MBC (2017) as potential SRE habitat and could feasibly support SRE groups such as garypids (pseudoscorpians) and selenopids (wall crab spiders) (V. Framenau, Phoenix Environmental Sciences *pers. comm.*) (MBC 2017). The rocky outcrop habitat has been excluded from the proposed clearing area associated with this amendment.

A desktop assessment of L59/168 was completed by Invertebrate Solutions (2020), which joins the clearing envelope on the western edge, and contains habitat consistent with this area (including the proposed additional clearing). The desktop assessment report is attached as Appendix 9).

The Invertebrate Solutions (2020, Appendix 9) assessment determined:

- There are no SRE species likely to occur.
- Suitable habitat for the Priority 3 trapdoor spider (*Idiosoma clypeatum*) occurs, thus, the species is considered likely to occur.

While the proposed additional clearing may impact on individuals of *Idiosoma clypeatum*, if it is present, the vegetation is not restricted to the Project area and is widespread in the surrounds. Further, this species has a widespread distribution in the Yalgoo and Murchison bioregions (Invertebrate Solutions 2020).

3.8. THREATENED AND PRIORITY ECOLOGICAL COMMUNITIES

Based on DBCA database searches there are no Threatened Ecological Communities (TEC) or Priority Ecological Communities (PEC) within the Project area (NVS 2016; 2020).

3.9. CONSERVATION AREAS

There are no conservation reserves in the Project area.

The bore field located on L59/152 and L59/168, approved for clearing under CPS 7240/3, is located within the Noongal Pastoral Lease, which is owned by DBCA.

4. ASSESSMENT AGAINST THE 10 CLEARING PRINCIPLES

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

Surveys have identified a total of 130 vascular plant taxa from 27 families within the approved clearing envelope (NVS 2016, 2020 and Ecotec 2021), none of which are Threatened or Priority flora. Vegetation Associations within the Project area are extensive, with large, intact areas of similar, undisturbed vegetation in the surrounding region.

None of the plant communities present resemble PECs or TECs and DBCA database searches have not identified any in the vicinity.

The proposed additional clearing of native vegetation will not reduce the biodiversity of regional vegetation, with large intact areas of similar vegetation located outside the clearing footprint.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

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

Previous assessments within the approved clearing envelope by MBC (2016; 2017) and Ecotec (2021) did not consider the proposed area of disturbance to provide significant habitat necessary for the survival of any fauna species.

Rocky Outcrop Fauna Habitat (Fauna Habitat 9) and possibly its immediate surrounding area of rocky substrate may provide habitat suitable for SRE species (Western Ecological 2020). Gascoyne does not intend to clear the rocky outcrop habitat and has excluded this area with 50 m buffers around each outcrop. Should future development require disturbance of this area, Level 2 surveys will be undertaken to confirm the presence/absence of these species in this area and suitable management measures developed depending on the results of the survey.

Although several species of conservation-significant fauna have been recorded within the project area, and some may potentially utilise the area as part of a broader foraging habitat, the area is not considered to provide habitat necessary for the survival of these species. The fauna habitat to be impacted by the project is well represented in the surrounding area and accounts for a very small proportion of available habitat.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

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

The area does not coincide with any previously recorded Rare (or Priority) flora taxa, and no Rare (or Priority) flora species are listed as potentially occurring in the area. Accordingly, the area is not considered necessary for the continued existence of Rare (or Priority) flora.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

4. **Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of a Threatened Ecological Community (TEC).**

The project area does not coincide with any threatened ecological communities listed under the Environment Protection and Biodiversity Conservation Act 1999 (C'th). Accordingly, the area is not considered necessary for the maintenance of a threatened ecological community.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

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

The proposed clearing area comprises two Beard Vegetation Associations both of which have approximately 99% of their Pre-European extent remaining.

The approved clearing envelope is broadly mapped as Beard vegetation associations 18: Low woodland; mulga (*Acacia aneura*); and 395: Hummock grasslands, mixed sandplain; bowgada, mallee, heath and spinifex. Approximately 99% and 100% of the pre-European extent of these vegetation associations, respectively, remains uncleared at both the state and bioregional level.

Therefore, the vegetation proposed to be cleared cannot be considered significant remnant vegetation.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

6. Native vegetation should not be cleared if it is growing, in, or in association with, an environment associated with a watercourse or wetlands.

The project area does not contain native vegetation that is within or associated with any significant watercourse or wetland. The nearest significant surface water features are Twenty Seven Mile Creek and Gunnetharra Creek (tributaries of the Sanford River) which are located more than 12 km northwest and 32 km north of the Project area respectively. The proposed clearing will not impact these drainagelines.

There are no significant water courses, wetlands or large drainage channels within the Project area.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

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

The clearing envelope is broadly mapped as located within the Jundee, Violet, Yanganoo, Cunyu, Challenge and Kalli land systems according to Curry *et al.*, (1994). Appropriate surface water drainage and containment around cleared areas will minimise the potential for surface water erosion. Land degradation resulting from clearing of vegetation is considered unlikely.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

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

There are no conservation or nature reserves within the Project area.

The western area of the approved clearing envelope, associated with the borefield, is located within the Noongal Pastoral Lease, which is owned by DBCA. No additional disturbance is proposed within this area.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

9. 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.

Surface water in the approved clearing envelope is sourced from direct precipitation and surface runoff following rainfall events. The Murchison area often receives considerable rainfall from degenerating cyclonic depressions from the northern parts of the State. However, the mean annual rainfall is only 257.5 mm.

There is no surface water of significance, large drainage lines, lakes or swamps in, or in close proximity to the proposed clearing area.

Drainage and containment structures incorporated into the development areas will ensure surface water runoff is controlled and minimise the potential for contaminants and sediment to enter the periodic surface water flows.

Clearing of vegetation is not anticipated to have any impact on the groundwater system.

Clearing of native vegetation within the area is not considered to be at variance to this principle

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

The project area is surrounded by native vegetation. Average annual rainfall is 257.5 mm, with little surface flow during normal seasonal rains. Flooding of the area is considered unlikely.

Runoff from cleared areas will be directed toward appropriate drainage and containment structures.

Given that there are no water bodies within the area of proposed clearing, there is little surface water flow during normal rains, and surface water management measures will be implemented; the proposed additional clearing of 231 ha is not likely to cause or exacerbate the incidence or intensity of flooding.

Clearing of native vegetation within the area is not considered to be at variance to this principle.

5. FIGURES



Figure 1 Location of the Dalgaranga Project

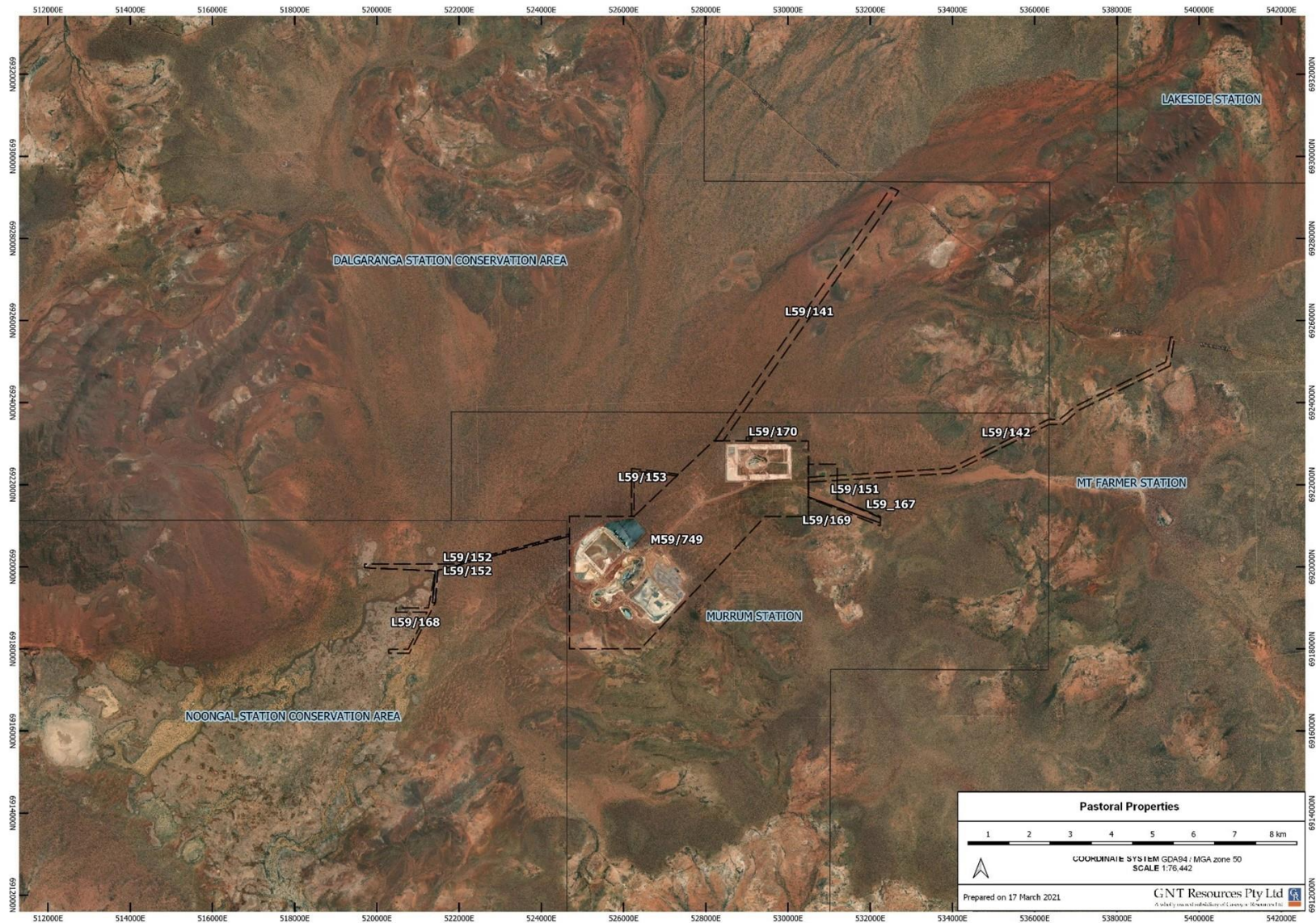


Figure 2 Tenement layout of the Dalgaranga Project

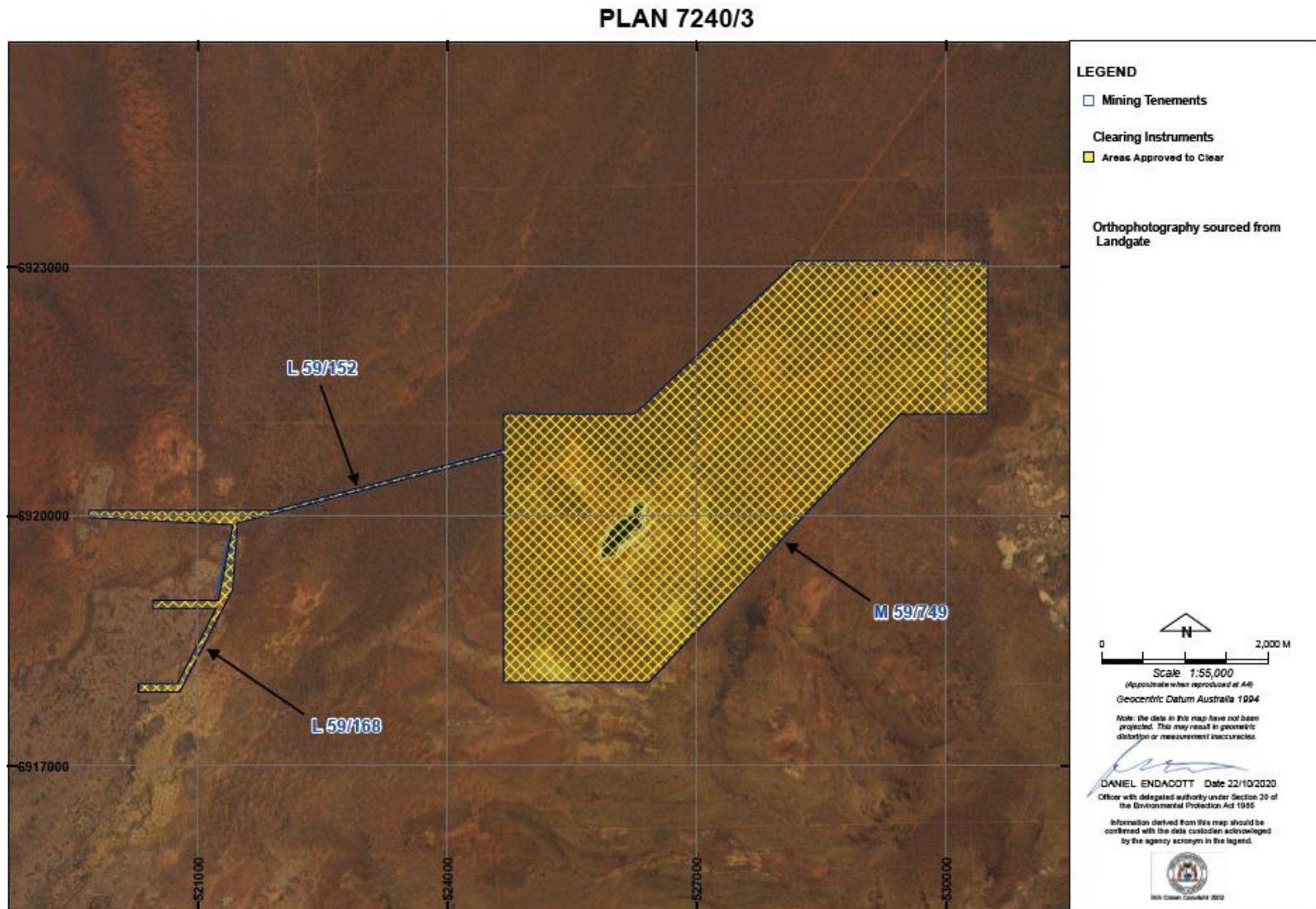


Figure 3 Approved clearing envelope under CPS 7240/3

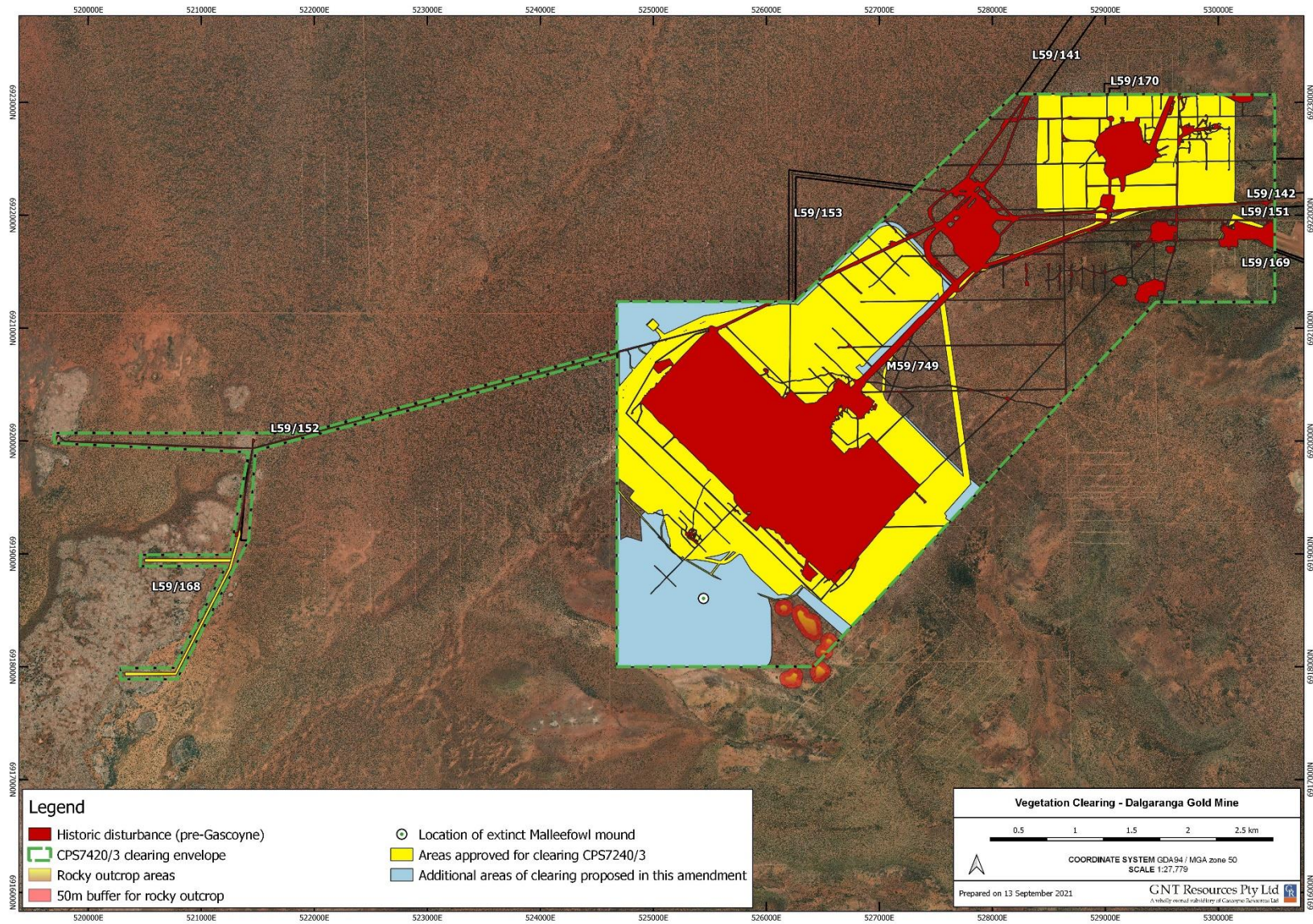


Figure 4 Native Vegetation Clearance – Proposed, Current and Historical

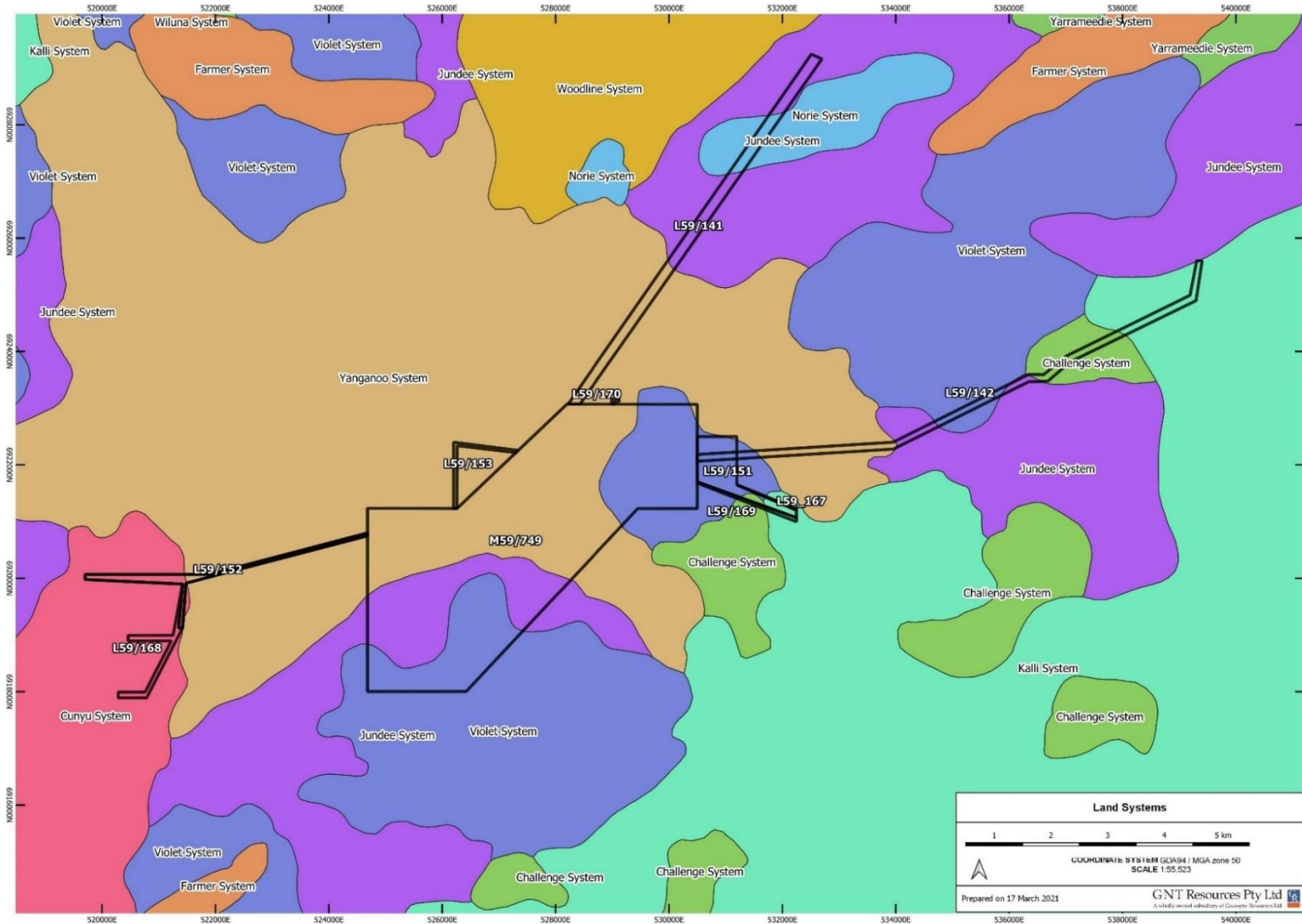


Figure 5 Land systems in Project area (from Mabbut et al. 1963)

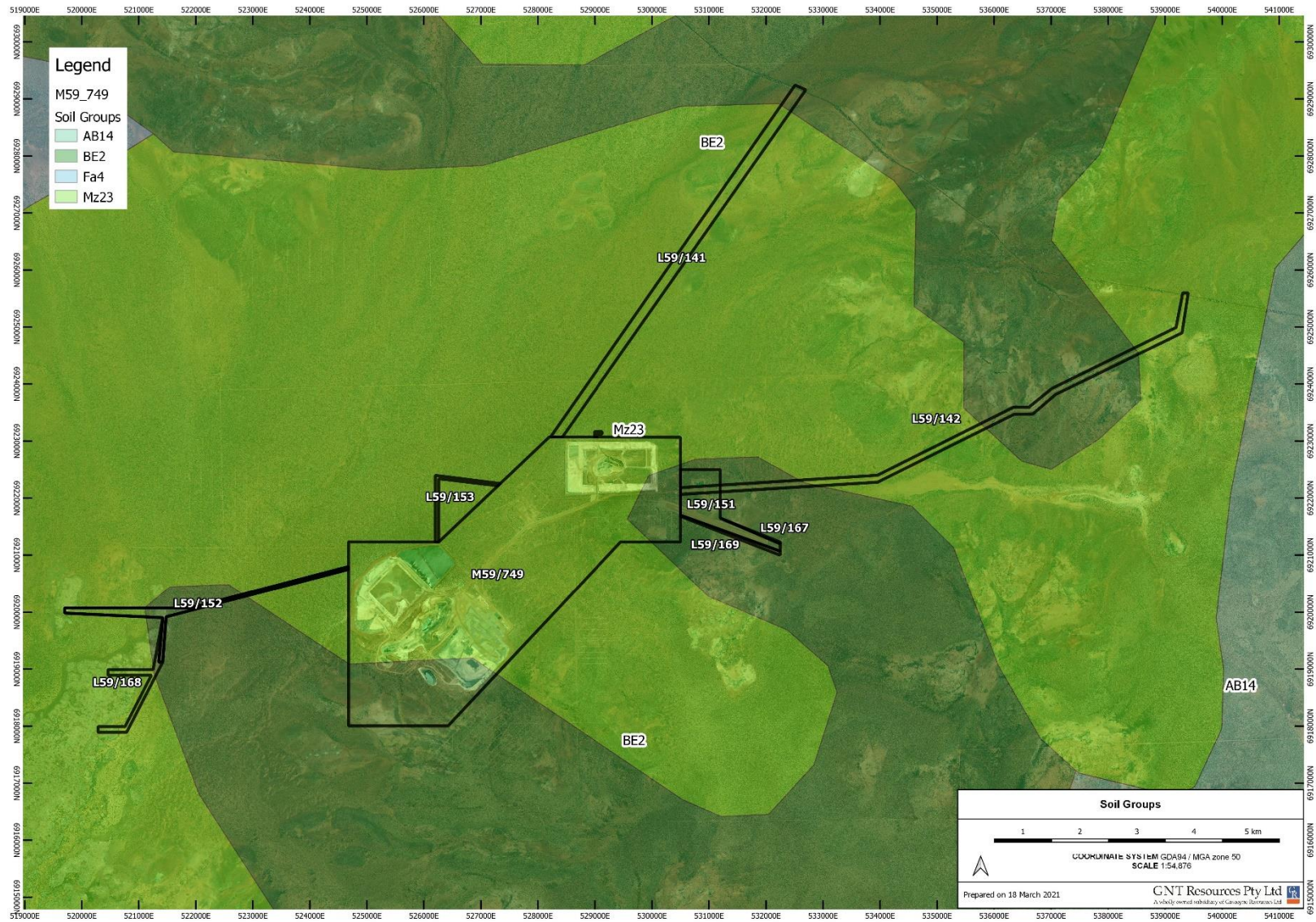


Figure 6 Soil-landscape provinces of the Murchison Province

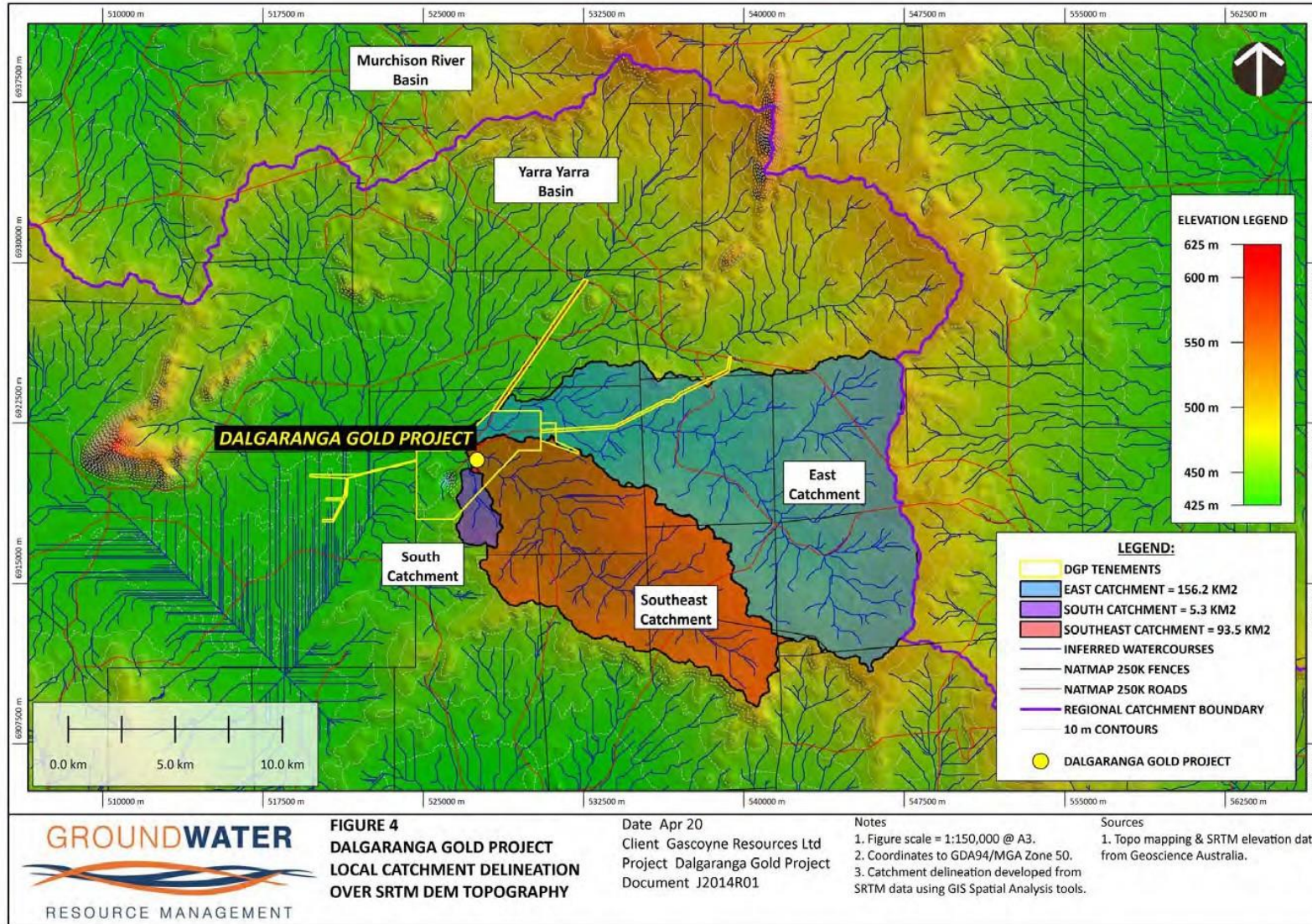


Figure 7 Local Catchment Delineation (from GRM 2020)

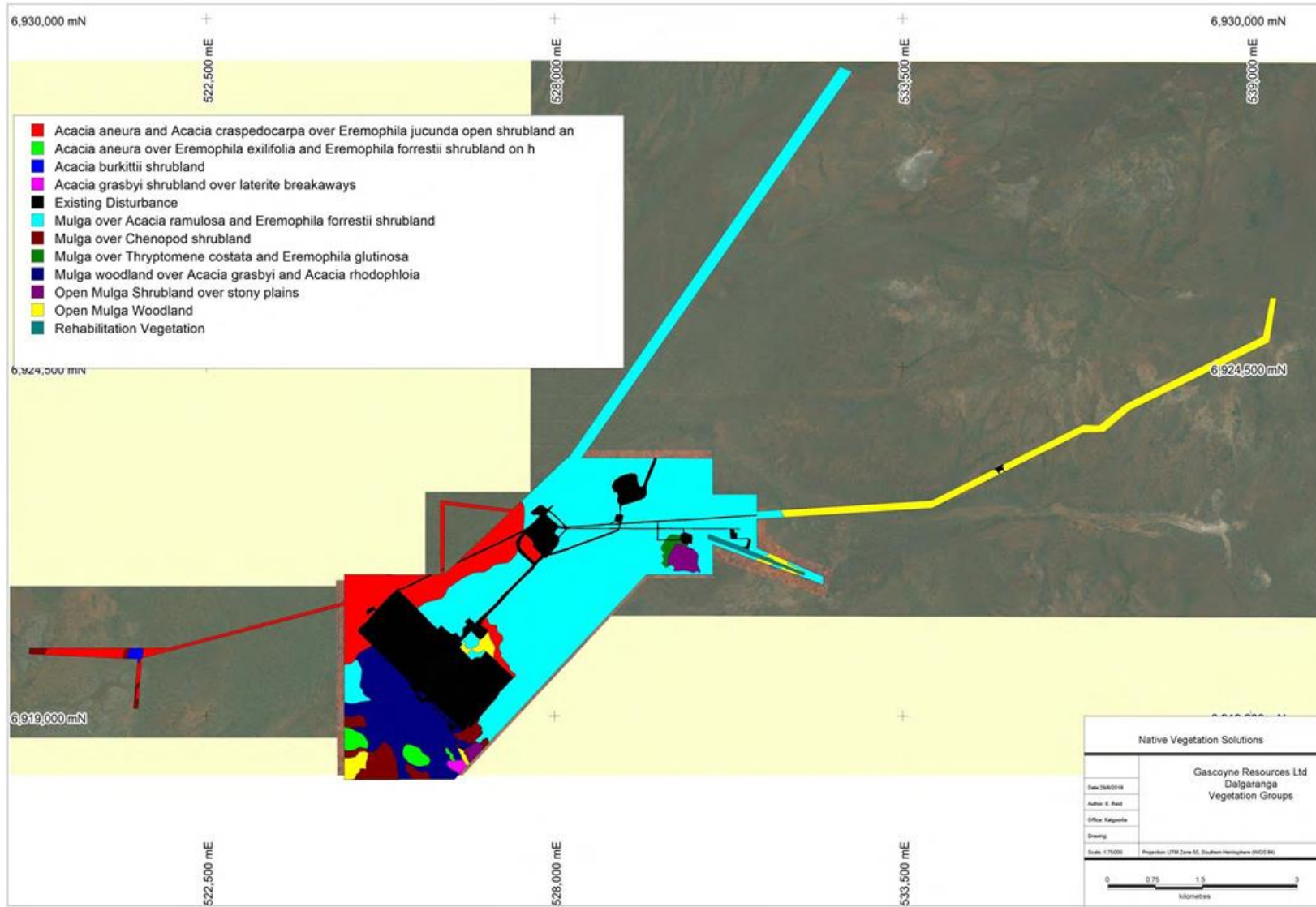


Figure 8 Vegetation groups in Project area (from NVS 2016)

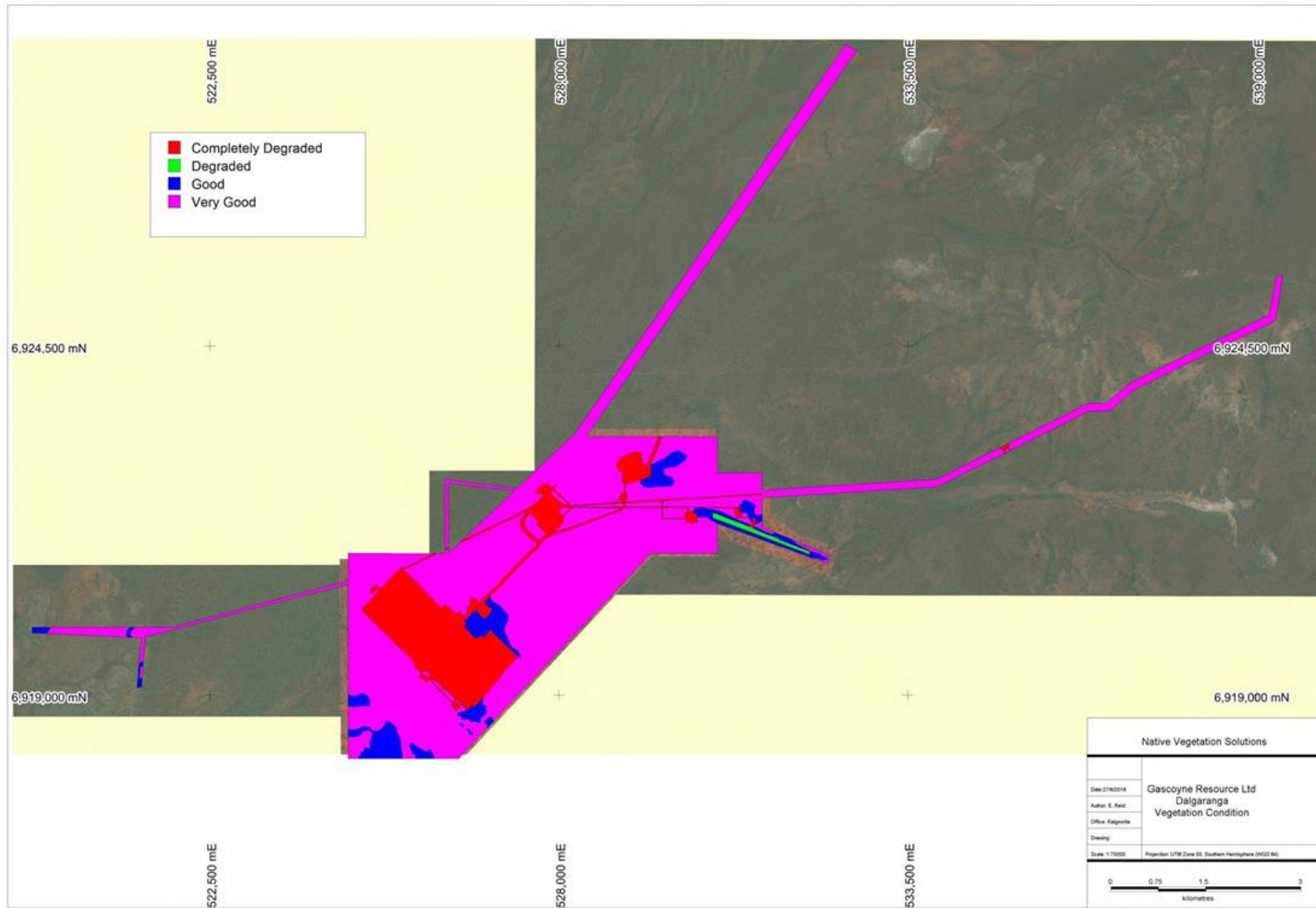


Figure 9 Vegetation condition mapped in Project area (from NVS 2016)

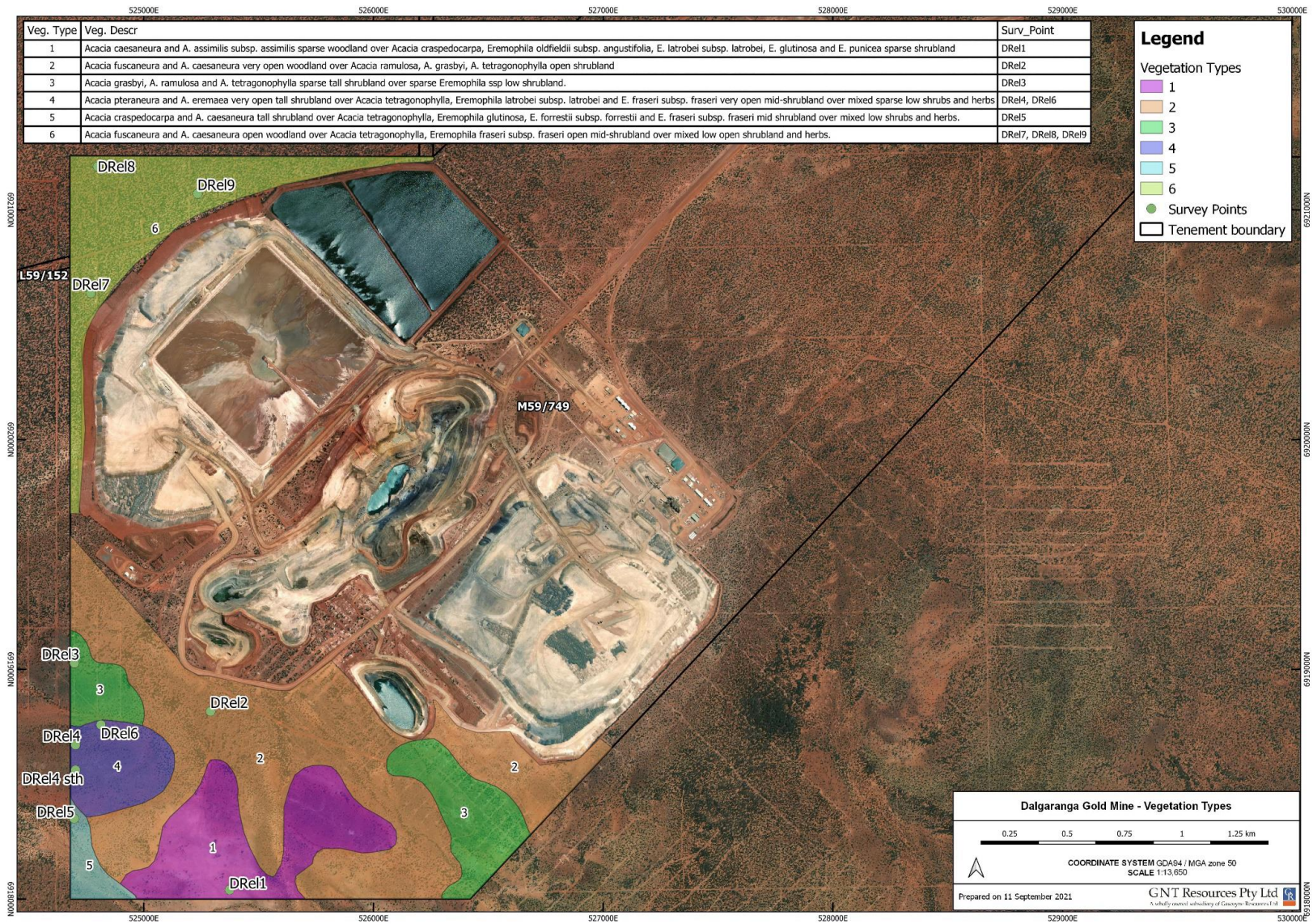


Figure 10 Broad vegetation types of the surveyed area (Ecotec, 2021)

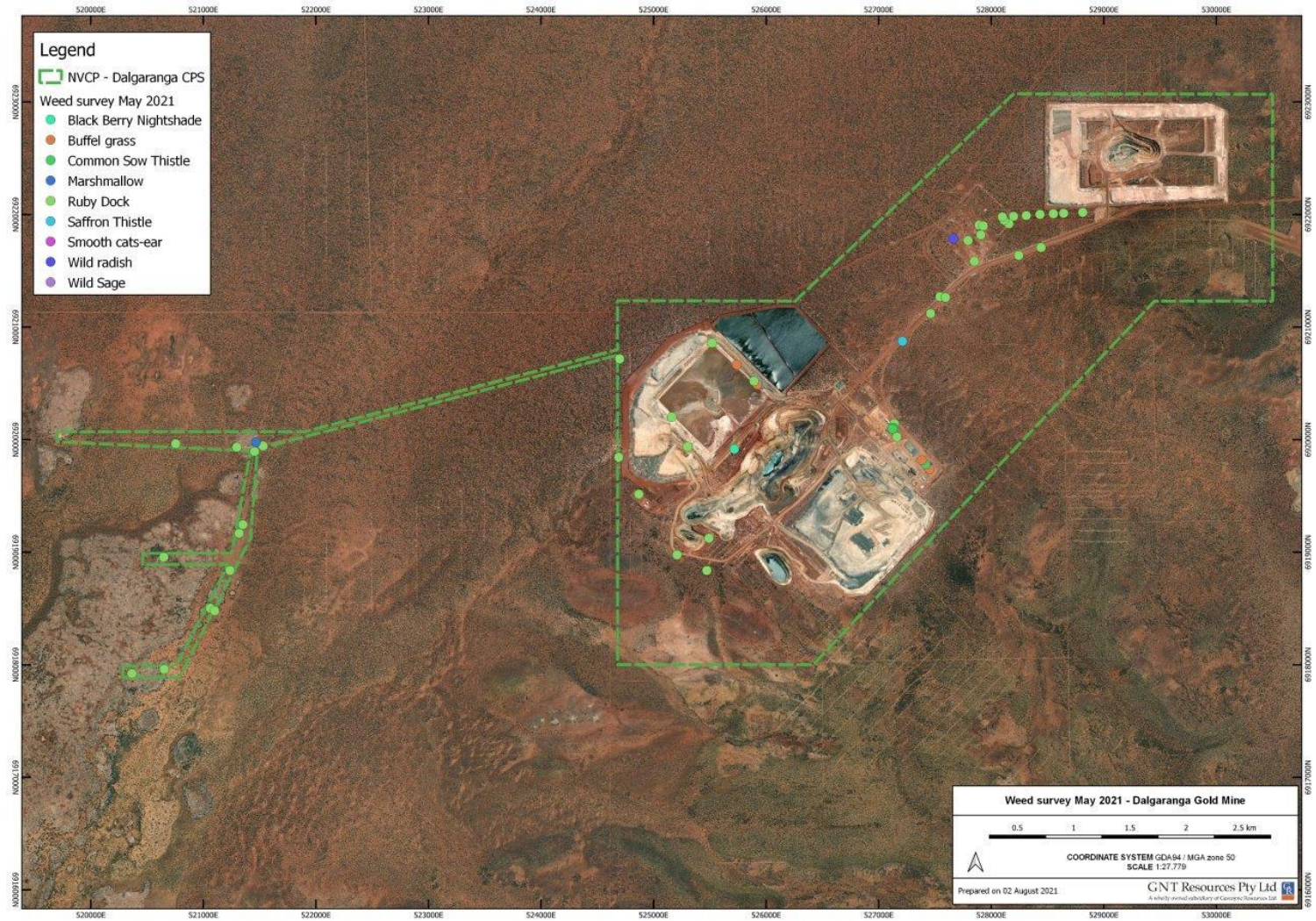


Figure 11 Location of weeds recorded at the Project



Figure 3: Fauna Habitat and Assessment Sites

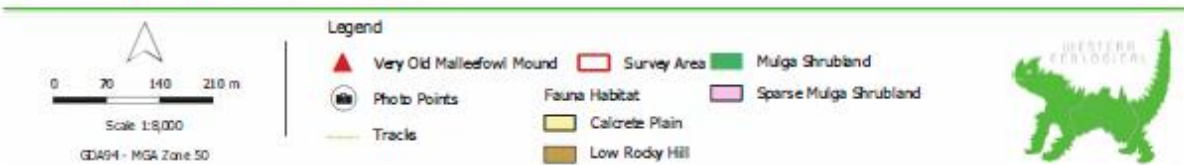


Figure 12 Fauna Habitat and Assessment Sites (from Western Ecological 2021)

6. REFERENCES

- Ashton, L.J. and McKenzie, N.J. (2001). Conversion of the Atlas of Australian Soils to the Australian Soil Classification, CSIRO Land and Water (unpublished).
- Bureau of Meteorology (BOM) (2016). Climatic Averages Webpage. Available online at: http://reg.bom.gov.au/climate/averages/tables/cw_013012.shtml (accessed June 2016).
- Beard, J.S. (1979). *Vegetation Survey of Western Australia*, Vegmap Publications, Perth.
- Beard, J.S. (1990). *Plant Life of Western Australia*. Kangaroo Press Pty Ltd, NSW.
- Curry, P J, Payne, A L, Leighton, K A, Hennig, P, and Blood, D A (1994) *An inventory and condition survey of the Murchison River catchment and surrounds, Western Australia*. Department of Agriculture, Western Australia. Technical Bulletin 84.
- Department of Agriculture, Water and Environment. (2019). Rangelands 2008 – Taking the Pulse; Murchison Bioregion. <https://www.environment.gov.au/system/files/resources/a8015c25-4aa2-4833-ad9ce98d09e2ab52/files/bioregion-murchison.pdf>
- Ecotec (WA) Pty Ltd. (2021). *MEMO REPORT Dalgara targeted Threatened and Priority flora and fauna habitat survey, August 2021*. Unpublished report prepared for Gascoyne Resources Limited.
- EPA (2004a). Guidance Statement No. 51 - "Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia". Document prepared by the EPA, June 2004.
- Environmental Protection Authority (2004b). Guidance Statement No. 56 – Terrestrial Fauna surveys for Environmental Impact Assessment in Western Australia. Document prepared by the EPA, June 2004.
- Environmental Protection Authority (2009). Guidance for the Assessment of Environmental Factors No 20. Sampling of Short Range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia. Environmental Protection Authority, Perth, WA.
- Environmental Protection Authority and Department of Environment and Conservation (2010). *Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*. (eds. B.M. Hyder, J. Dell and M.A. Cowan), Perth, Western Australia.
- Groundwater Resource Management (2020). *Surface Water Management – Gilbeys East and Gilbeys West Waste Rock Dump Extensions*. Report prepared for Gascoyne Resources Limited, J2014R01, April 2020.
- Invertebrate Solutions Pty Ltd (2020). Desktop assessment for Short Range Endemic invertebrates for the Dalgara Gold Project, Gascoyne Resources Ltd, Murchison, Western Australia. Report prepared for Western Ecological Pty Ltd on behalf of Gascoyne Resources Ltd, March 2020.
- Keighery, B.J. (1994). *Bushland Plant Survey; A guide to plant community survey for the Community*. Wildflower Society of Western Australia (Inc.), Nedlands.
- MB Contracting (2016). *Level 1 Fauna Assessment and Level 2 Targeted Malleefowl Survey*. Report prepared for Gascoyne Resources Ltd, June 2016.
- MB Contracting (2017). *Level 1 Fauna Assessment and Level 2 Targeted Malleefowl Survey*. Report prepared for Gascoyne Resources Ltd, June 2017.
- National Malleefowl Recovery Team (2016). National Malleefowl Monitoring Manual: Edition: 2016-1.
- Native Vegetation Solutions (2016). *Level 1 Flora and Vegetation Survey, Gascoyne Resources Dalgara Tenements*. Report prepared for Clark Lindbeck & Associates Pty Ltd, June 2016.
- Native Vegetation Solutions (2020). *Targeted Threatened Flora Survey at Dalgara*. Letterhead Report prepared for Clark Lindbeck & Associates Pty Ltd on behalf of Gascoyne Resources Ltd, 1 May 2020.
- Terratree Pty Ltd (2020). *Desktop Flora Assessment of the Dalgara Gold Project*. Report prepared

for Gascoyne Resources Limited, March 2020.

Tille, P. (2006). *Soil-landscapes of Western Australia's Rangelands and Arid Interior*. Resource Management Technical Report 313, Department of Agriculture and Food, December 2006.

Western Ecological (2020a). *Vertebrate Desktop Assessment for the Dalgaranga Gold Project*. Report prepared for Gascoyne Resources Limited, March 2020.

Western Ecological Pty Ltd (2020b). *Malleefowl Survey for the Dalgaranga Gold Project*. Report prepared for Gascoyne Resources Limited, May 2020.

Western Ecological Pty Ltd (2021). *Malleefowl Assessment – Proposed Southern Waste Rock Dump*. Report prepared for Gascoyne Resources Limited, March 2021