

ENVIRONMENTAL IMPACT ASSESSMENT CONDUCTED FOR THE LAKE MACKAY JV EXPLORATION PROJECT

This memo is to outline the Environmental Impact Assessment (EIA) process, that IGO Limited (hereafter IGO) have undertaken for the proposed exploration work program at the Lake Mackay JV Project. The Lake Mackay JV Project consists of Exploration tenements E80/5001, EL24915, EL25146, EL29747, EL30729, EL30730, EL30731, EL30732, EL30733, EL30739, EL30740, EL31234 and EL31794. The Lake Mackay JV Project EIA is compiled with specific reference to mitigating any impacts upon conservation significant flora and fauna. The Lake Mackay JV Exploration project continues to be a key part of IGO's exploration focus.

Historical Exploration Activities

There has been minimal historical exploration activities on the Lake Mackay project area. Exploration has focused on orthomagmatic nickel-copper, orogenic gold, and hydrothermal copper mineralisation.

In 1998, Aurora Gold Limited targeted gold and copper anomalism beneath shallow cover. 147 aircore and 409 vacuum drill holes identified minor gold anomalism, but this was never followed-up. In the 2000s, BHP conducted JV exploration with Southern Tanami Gold and Mithril Resources NL targeted orthomagmatic nickel-copper mineralisation. This work included a regional airborne electromagnetic (EM) survey, follow-up ground EM surveys, and reverse circulation drilling of prospective targets. Only minor sulfides were intersected during drilling. Between 2008 to 2012, a JV between Teck and Kajeena Mining Company explored for nickel and copper near Kintore but did not drill any targets. In 2012, Ashburton Minerals Limited drilled 9 aircore holes on current IGO tenure. This work was part of a wider regional exploration program targeting copper-gold mineralisation. No significant geochemical anomalism was reported.

IGO's involvement in the Lake Mackay project began in September 2013 with the granting of tenement EL24915 as a JV with ABM Resources NL (now Prodigy Gold NL). This occurred approximately one month after IGO entered into an option agreement covering ABM's Lake Mackay Project. All on-ground exploration on the project since the tenement was granted has been conducted by IGO. Between 2013 and 2019, IGO's exploration activities have included regional soil sampling and airborne EM surveys, follow-up ground EM surveys, field mapping, and drilling. After the discovery of the polymetallic Bumblebee prospect in 2015, IGO exercised its option to enter into a farm-in and JV agreement covering EL24915 and 12 adjoining tenement applications with Prodigy Gold and Castille Resources NL.

Significant EM, geochemical and mineralogical anomalies have been tested with 146 aircore, 109 Reverse Circulation (RC), and 10 diamond drill holes. This drilling led to the successful discovery of the Grapple prospect in 2016, the Scuba, Phreaker and Arcee prospects in 2019, and the Goldbug prospect in 2020.

IGO Social and Environmental Impact Assessment Requirements

The IGO Group Environment Standard 2, Social and Environmental Impact Assessment requires all proposed exploration work to have a Social and Environmental Impact Assessment (SEIA) completed before undertaking exploration activities. The potential level of impact from the proposed exploration programs detailed in MMP Authorisation Number 0815-01 is greater than 10 ha, which is categorised internally as a 'Medium' potential impact category (Table 1). This level of impact category requires a 'Limited Social and Environmental Review' to be conducted (Table 2). For the internal IGO SEIA process, a Limited Social & Environmental Review is prepared in-house by an IGO environmental professional.

Potential Impact Category	Types of impact
Low	< 10 hectares of land clearing or disturbance
Medium	any clearing or land disturbance that: <ul style="list-style-type: none"> > 10 hectares of land clearing or disturbance, or Results in disturbance of water ways, drainage channels, heritage sites, private infrastructure or is within 5km of a private dwelling.
High	any clearing or land disturbance that: <ul style="list-style-type: none"> impacts on ecosystems or species designated in law or international treaty as having any statutory conservation status, impacts on private property, public roads or infrastructure, or is within 10km of any gazetted residential area.

Table 1. Potential Level of Impact, from IGO GROUP ENVIRONMENT STANDARD 2, Social and Environmental Impact Assessment

Project Phases	Potential Level of Impact		
	Low	Medium	High
Exploration	Desktop Social & Environmental Review	Limited Social & Environmental Review	Detailed Social & Environmental Review
Mining Pre-feasibility	Limited Social & Environmental Review	Detailed Social & Environmental Review	SEIA Scoping Study
Mining feasibility	SEIA	SEIA	SEIA
Mining	Desktop Social & Environmental Review	Limited Social & Environmental Review	Detailed Social & Environmental Review
Care & Maintenance	Desktop Social & Environmental Review	Limited Social & Environmental Review	Detailed Social & Environmental Review
Closure.	Desktop Social & Environmental Review	Limited Social & Environmental Review	Detailed Social & Environmental Review

Table 2. Type of Impact Assessment required from IGO Group Environment Standard 2, Social and Environmental Impact Assessment.

LAKE MACKAY ENVIRONMENTAL IMPACT ASSESSMENT

Proposed Exploration

The proposed new exploration work program for 2021 on the Lake Mackay Project, outlined in the 2021 MMP Authorisation Number 0815-01, will consist of soil sampling and drilling (up to 102 diamond, reverse circulation and air core drill holes from March to November 2021). This work will also involve the construction of up to 42.4 km of access tracks, and clearing of up to 4.12 ha for drill pads and camp sites. The total new 2021 disturbance is calculated at up to 15.94 ha (Table 3). This total does not include some proposed 2021 drilling that had previously been approved in the 2020 MMP but was delayed due to restrictions relating to the COVID-19 pandemic.

Soil sampling on ATV's will be required from early March to August in some areas to help define geochemical anomalism and undercover mineralisation before drilling begins.

It is anticipated that aircore, reverse circulation (RC), and diamond drilling will be required to test several discrete geochemical and electromagnetic targets in the Lake Mackay Project tenure. The drilling will require the clearance of some temporary access tracks and drill pads, as well as sumps to catch/contain any water and drill cuttings. The nominal size of these drill pads is 35 m long and 25 m wide for diamond drilling, and 25 m x 15 m for RC and aircore drilling, with the drilling sumps wholly contained upon the drill pad. All of the access tracks required for the project, will be cleared with a raised blade clearing method, the width of the access tracks will be up to 3 m.

Temporary camps consisting of tents and caravans, will be established in clear areas, and will be deconstructed at the end of the exploration campaign.

Tenement ID	DDH holes	RC holes	AC holes	Pad Area (ha)	Track Length (km)	Track area (ha)	Camp Area (ha)	Total disturbance (ha)
EL31794	2	10	40	1.68	0	0	0.5	2.18
EL25146	2	8	0	0.42	4.6	1.38	0	1.8
EL31234	10	24	0	1.6	29.8	8.94	1	11.54
EL30733	2	2	0	0.24	0	0	0	0.24
EL30740	0	2	0	0.03	0	0	0	0.18

Table 3. Proposed maximum 2021 disturbance for the Lake Mackay Project, broken down by tenement and disturbance type.

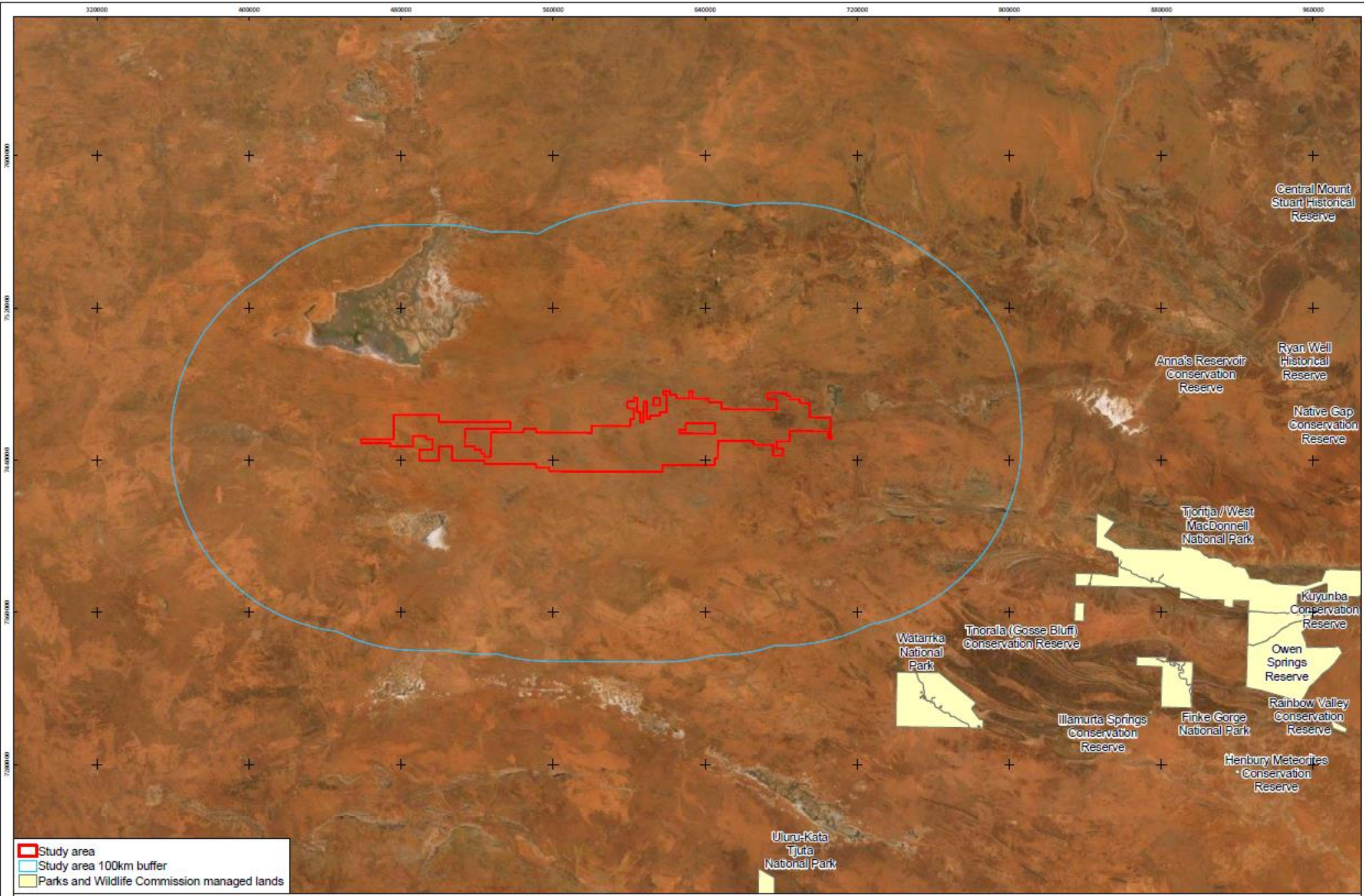
Lake Mackay Desktop Biological Assessment Objectives

Ecologia Environment conducted a desktop biological assessment for the Lake Mackay project on behalf of IGO in 2020. The primary objective of the desktop assessment was to provide sufficient information to assess the impact of the proposed exploration program on the flora and fauna of the project area.

The methodology used for the study accords with the relevant regulatory technical guidelines. Background environmental information for the study area was reviewed, including, but not limited to that listed in Table 4. All database searches were conducted with a 50 km buffer around the Lake Mackay tenement package. No conservation reserves or nationally important wetlands were identified within the buffered project area (Figure 1).

Database	Search details
EPBC Act Protected Matters database	Records of matters of national significance under the EPBC Act within 40 km of the study area
DBCA Threatened and Priority Ecological Communities Database	All TEC's and PEC's within 40 km of the study area.
DBCA Threatened and Priority Flora Database (TPFL) and Western Australian Herbarium Specimen Database (WAHERB)	Conservation significant plant species within 40 km of the study area.
DBCA NatureMap database	All flora and fauna species records within 40 km of the study area.
DBCA Threatened and Priority Fauna Database	All fauna records within 40 km of the study area.
TPWCA Flora Atlas NT and Fauna Atlas NT	All flora and fauna species records including significant taxa, within 50 km of the study area.
Birdlife Australia's Atlas and Birdata Datasets	All bird records within 50 km of the study area.

Table 4. Environmental Database searches utilised for the Lake Mackay Desktop Biological Assessment.



- Study area
- Study area 100km buffer
- Parks and Wildlife Commission managed lands

Figure 1: Conservation Reserves and nationally important wetlands.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Lake Mackay Project Biological Assessment Summary

Introduction

The study area lies within the Mackay and Lake Bennet subregions of the Great Sandy Desert bioregion (IBRA7). This area has a temperate-subtropical climate and consists primarily of red dune fields and sandplains. This environment supports *Triodia* hummock grasslands, *Acacia* shrublands, and open eucalypt or *Allocasuarina* woodlands (Figure 2).

Threatened and Priority Flora

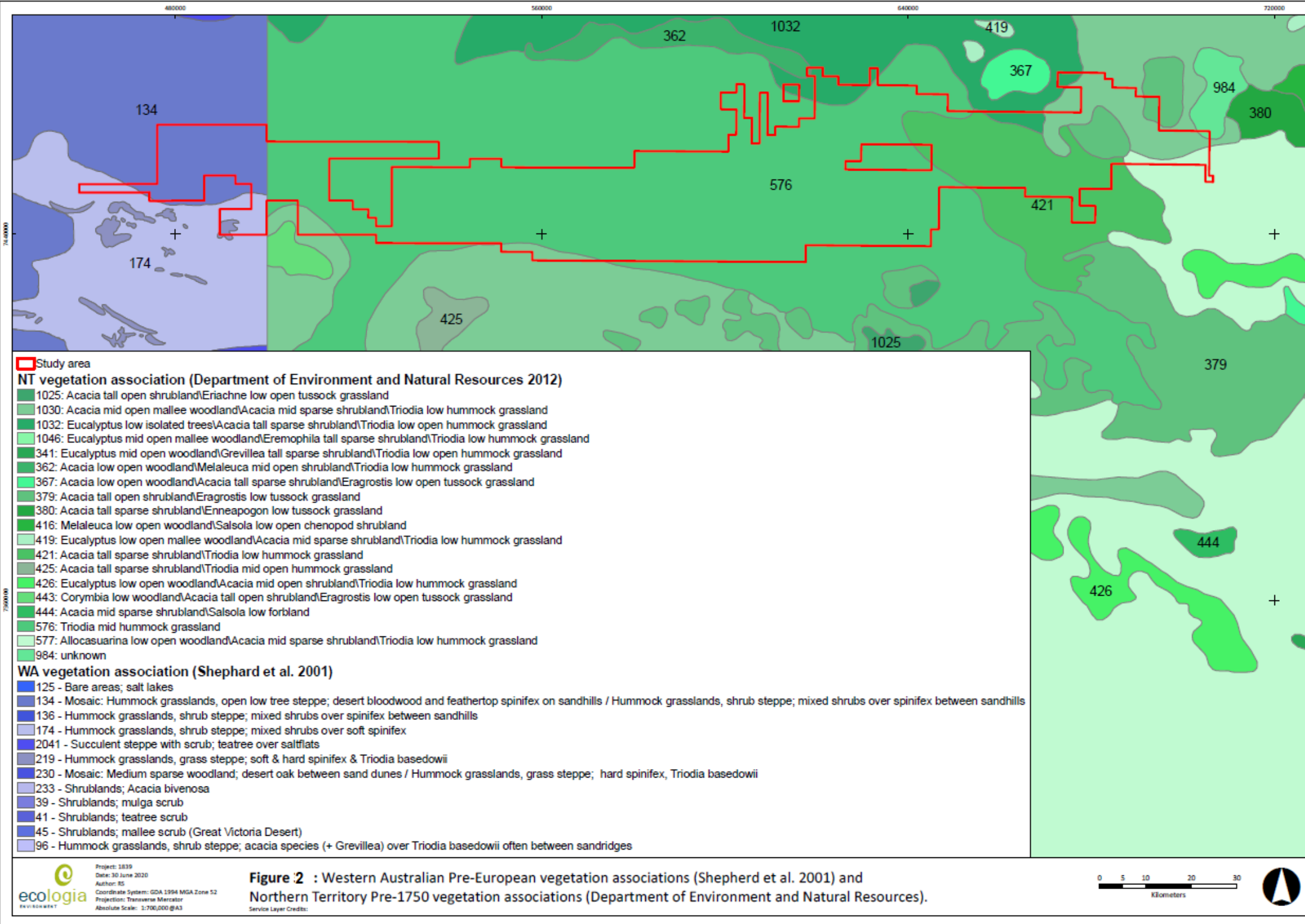
In total, 937 vascular plant taxa have been recorded within 40 km of the Lake Mackay study area, representing 82 families and 290 genera. These include 28 introduced (weed) species, including 4 Weeds of National Significance (WONS). The Flora Atlas (NT), NatureMap (WA), TPFL and WAHERB database searches (WA), and historical environmental surveys have identified 63 significant plant taxa within 40 km of the study area. This includes 20 Near Threatened species and 40 Data Deficient species (Flora Atlas NT), one Priority 1 species (DBCA), three Priority 2 taxa (DBCA) and five Priority 3 taxa (DBCA) (Figure 3). The EPBC Act Protected Matters Report did not identify any EPBC Act listed plant species potentially occurring within the study area.

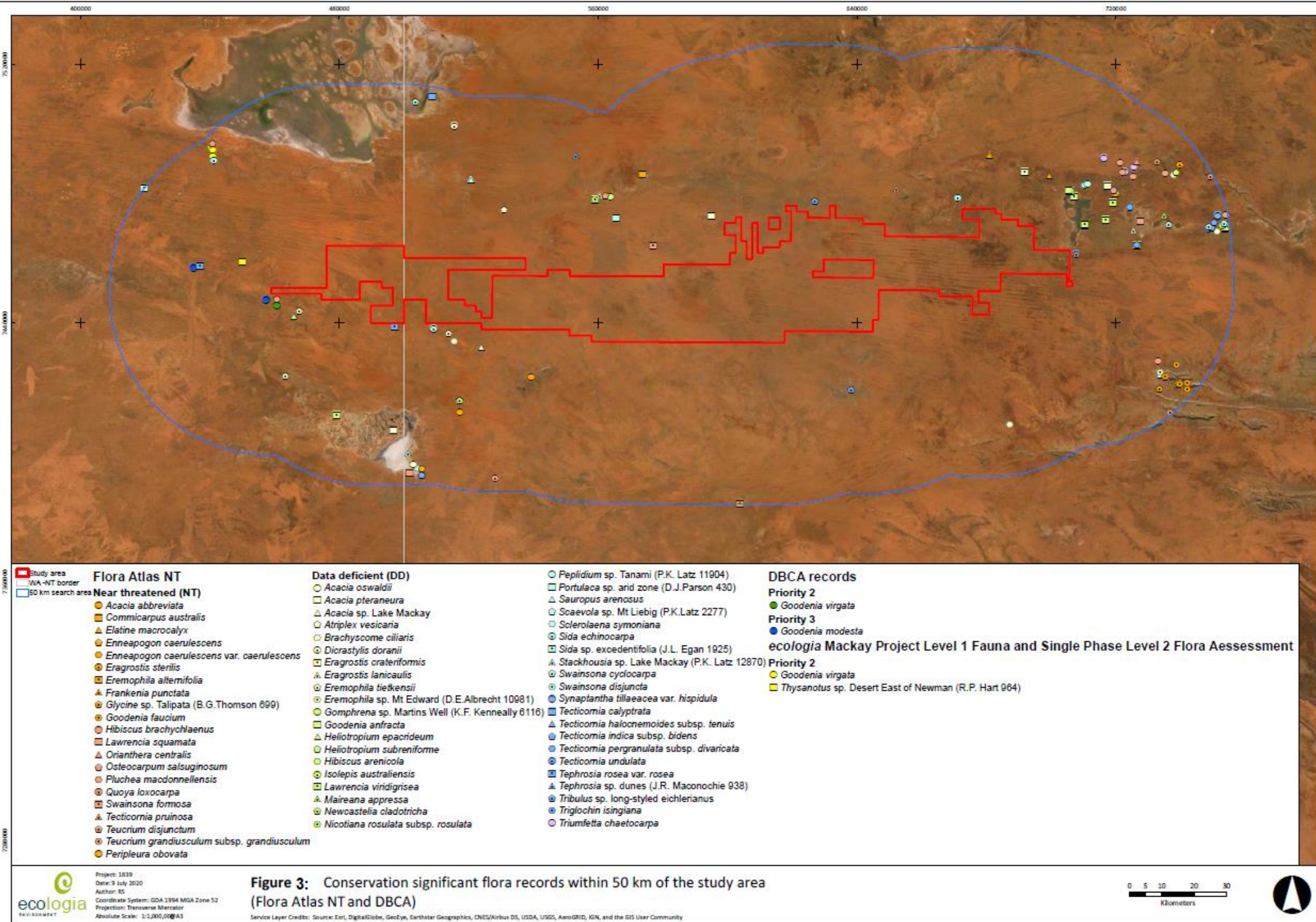
Based on the proximity of previous records and the potential presence of suitable habitat, 17 significant taxa are considered likely to occur within the study area and 42 taxa may possibly occur within the study area. Four taxa are considered unlikely to occur due to the probable absence of suitable habitat within the study area. Eleven vegetation associations are mapped within the study area, none of which are significant or otherwise restricted in a bioregional context. No state (BC Act., 2016) or Commonwealth (EPBC Act., 1999) listed Threatened Ecological Communities (TEC's) or state (WA) listed Priority Ecological Communities (PEC's) have been recorded in the vicinity of the study area. Two wetlands sites occurring near (but not within) the study area (Lake Mackay and Newhaven Lakes) are considered of conservation significance (Figure 1).

Threatened and Priority Fauna

A total of 358 fauna species have been recorded within 50 km of the study area. These include 54 mammals, 197 birds, 98 reptiles and 9 amphibians. Thirty-nine vertebrate fauna species of conservation significance were identified through DBCA Threatened and Priority Fauna (WA) and the Northern Territory Fauna Atlas database searches including 19 mammals, 1 reptile, 15 birds protected under international agreement and 4 non-migratory birds. Given the proximity of historical records and presence of potentially suitable habitat, 3 species have been recorded within the study area, 4 further species are considered likely to occur within the study area, and 21 species may possibly occur in the study area (Figure 4, Table 5).

Historical records indicate that 3 conservation significant species, the brush-tailed mulgara (Vulnerable NT Act., EPBC Act), the golden bandicoot (Endangered NT Act., EPBC Act) and the princess parrot (Vulnerable NT Act., EPBC Act) have been recorded within the study area. The golden bandicoot no longer occurs in central Australia, however. Based on proximity of previous records and the likely presence of suitable habitat, 3 further species are considered likely to occur within the study area, the greater bilby (Vulnerable NT Act., EPBC Act), the southern marsupial mole (Vulnerable NT Act) and the great desert skink (Vulnerable NT Act., EPBC Act)). Fourteen migratory bird species have been deemed possible to occur due to the presence of salt lakes within the study area. Two non-migratory bird species (grey falcon (VU BC Act & NT Act) and the peregrine falcon (OS BC Act)) can over-fly all habitat types within the study area. Eleven vertebrate fauna species of conservation significance were excluded from this study as they are either locally extinct, extinct in the wild, or extinct within the Northern Territory (Figure 4, Table 5).





- Flora Atlas NT**
- Near threatened (NT)**
- *Acacia abbreviata*
 - *Commicarpus australis*
 - ▲ *Elatine macrocalyx*
 - *Enneapogon caeruleus*
 - *Enneapogon caeruleus* var. *caeruleus*
 - *Eragrostis sterilis*
 - *Eremophila altemifolia*
 - ▲ *Frankenia punctata*
 - *Glycine* sp. *Talipata* (B.G.Thomson 699)
 - *Goodenia faucium*
 - *Hibiscus brachychlaenus*
 - *Lawrenia squamata*
 - ▲ *Orianthera centralis*
 - *Osteocarpum salsuginosum*
 - *Pluchea macdonnellensis*
 - *Quoya loxocarpa*
 - *Swainsona formosa*
 - ▲ *Tecticornia pruinosa*
 - *Teucrium disjunctum*
 - *Teucrium grandiusculum* subsp. *grandiusculum*
 - *Peripleura obovata*

- Data deficient (DD)**
- *Acacia oswaldii*
 - *Acacia pteraneura*
 - ▲ *Acacia* sp. *Lake Mackay*
 - *Atriplex vesicaria*
 - *Brachyscome ciliaris*
 - *Dicrastylis doranii*
 - *Eragrostis crateriformis*
 - ▲ *Eragrostis lanicaulis*
 - *Eremophila tietkensii*
 - *Eremophila* sp. *Mt Edward* (D.E.Albrecht 10981)
 - *Gomphrena* sp. *Martins Well* (K.F. Kenneally 6116)
 - *Goodenia anfracta*
 - ▲ *Heliotropium epacrideum*
 - *Heliotropium subreniforme*
 - *Hibiscus arenicola*
 - *Isolepis australiensis*
 - *Lawrenia viridigrisea*
 - ▲ *Maireana appressa*
 - *Newcastelia cladotricha*
 - *Nicotiana rosulata* subsp. *rosulata*

- *Peplidium* sp. *Tanami* (P.K. Latz 11904)
- *Portulaca* sp. *and zone* (D.J.Parson 430)
- ▲ *Sauropus arenosus*
- *Scaevola* sp. *Mt Liebig* (P.K.Latz 2277)
- *Sclerolaena symoniana*
- *Sida echinocarpa*
- *Sida* sp. *excedentifolia* (J.L. Egan 1925)
- ▲ *Stackhousia* sp. *Lake Mackay* (P.K. Latz 12870)
- *Swainsona cyclocarpa*
- *Swainsona disjuncta*
- *Synaptantha tillaeacea* var. *hispidula*
- *Tecticornia calyptata*
- ▲ *Tecticornia halocnemoides* subsp. *tenuis*
- *Tecticornia indica* subsp. *bidens*
- *Tecticornia pergranulata* subsp. *divaricata*
- *Tecticornia undulata*
- *Tephrosia rosea* var. *rosea*
- ▲ *Tephrosia* sp. *dunes* (J.R. Maconochie 938)
- *Tribulus* sp. *long-styled eichlerianus*
- *Triglochin isingiana*
- *Triumfetta chaetocarpa*

- DBCA records**
- Priority 2**
- *Goodenia virgata*
- Priority 3**
- *Goodenia modesta*
- ecologia Mackay Project Level 1 Fauna and Single Phase Level 2 Flora Assessment**
- Priority 2**
- *Goodenia virgata*
 - *Thysanotus* sp. *Desert East of Newman* (R.P. Hart 964)

Figure 3: Conservation significant flora records within 50 km of the study area (Flora Atlas NT and DBCA)

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

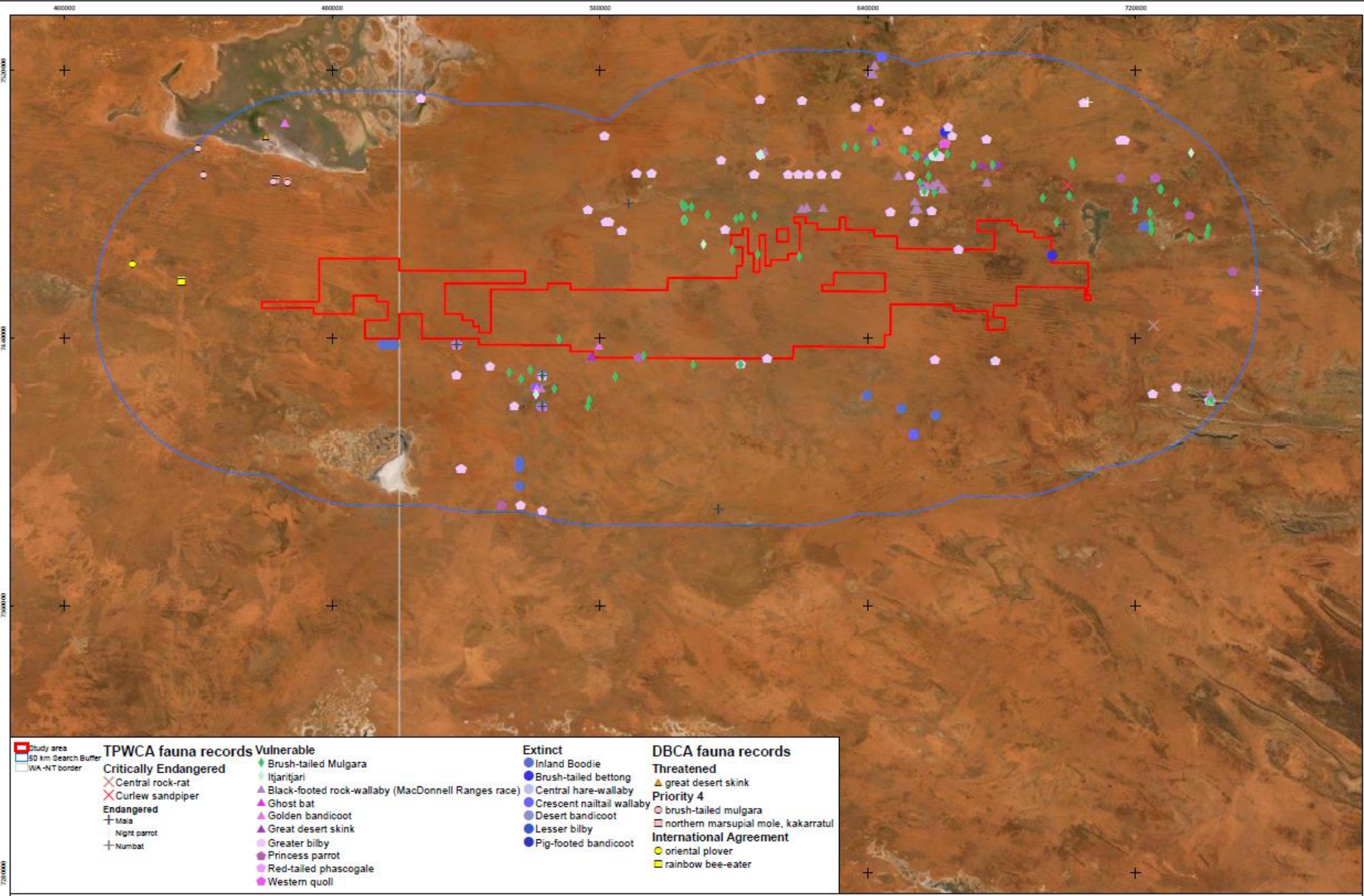


Figure 4: Conservation significant fauna records within 50 km of the survey area.

Common name	Scientific name	WA Status	EPBC status	NT status	No of records	Latest record	Preferred habitat type	Notes	Likelihood of occurrence
Mammals									
Black-footed rock-wallaby (Macdonnell Ranges race)	<i>Petrogale lateralis</i> MacDonnell Ranges race	VU	VU		53	2015	Rocky ridgelines and outcrops	Records in vicinity of study area, suitable habitat likely to be present	Possible
Brush-tailed mulgara	<i>Dasymercus blythi</i>	P4		VU	94	2016	Spinifex sandplain	Historical records within study area, suitable habitat present	Recorded
Central rock-rat	<i>Zyzomys pedunculatus</i>	CR	CR	EN	2	Historical	Rocky habitat	Records in vicinity of study area, limited suitable habitat may be present, species restricted to the West MacDonnell Ranges	Possible
Ghost bat	<i>Macroderma gigas</i>	VU	VU		3	1968	Rocky habitat for roosting, will forage in all habitat types	Records in vicinity of study area, limited suitable habitat may be present	Possible
Golden bandicoot	<i>Isodon auratus</i>	VU	VU	EN	9	1968	Dense vegetation	Historical record within study area, species no longer persists in central Australia. Highly unlikely to be found within study area.	Recorded
Greater bilby	<i>Macrotis lagotis</i>	VU	VU	VU	111	2003	Sandplain	Records in vicinity of study area, suitable habitat present	Likely
Southern marsupial mole, itjaritjari	<i>Notoryctes typhlops</i>	P4		VU	26	2008	Sand dunes and swales	Records in vicinity of study area, suitable habitat likely to be present	Likely
Northern marsupial mole, kakarratul	<i>Notoryctes caurinus</i>	P4			1	2012	Sand dunes and swales	Records in vicinity of study area, suitable habitat likely to be present	Likely
Birds									
Australian painted snipe	<i>Rostratula australis</i>	EN	EN	VU	1	2017	Salt lakes	Record in vicinity of study area, limited suitable habitat may be present	Possible
Common greenshank	<i>Tringa nebularia</i>	MI	MI		19	2015	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Common sandpiper	<i>Actitis hypoleucos</i>	MI	MI		4	2015	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Curlew sandpiper	<i>Calidris ferruginea</i>	CR	CR & MI	VU	1	Historical	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Fork-tailed swift	<i>Apus pacificus</i>	MI	MI		13	2016	Aerial specialist	Records in vicinity of study area, may overfly all habitat types	Possible
Glossy ibis	<i>Plegadis falcinellus</i>	MI	MI		6	2014	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Grey falcon	<i>Falco hypoleucos</i>	VU		VU	32	2001	All habitat types	Highly mobile species, has potential to overfly all habitat types	Possible
Grey wagtail	<i>Motacilla cinerea</i>	MI	MI		2	2015	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Gull-billed tern	<i>Gelochelidon nilotica</i>	MI	MI		61	2018	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Little curlew	<i>Numenius minutus</i>	MI	MI		1	Historical	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Marsh sandpiper	<i>Tringa stagnatilis</i>	MI	MI		12	2015	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Night parrot	<i>Pezoporus occidentalis</i>	CR	EN	CR	2	1999	All habitat types	Records in vicinity of study area, long unburnt spinifex near salt lakes may be present	Possible
Oriental plover	<i>Charadrius veredus</i>	MI	MI		9	2012	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Peregrine falcon	<i>Falco peregrinus</i>	OS			43	2017	All habitat types	Highly mobile species, has potential to overfly all habitat types	Possible
Princess parrot	<i>Polytelis alexandrae</i>	P4	VU	VU	21	2012	Sand dunes and sand plains	Historical record within study area, suitable habitat likely to be present	Recorded
Red-necked stint	<i>Calidris ruficollis</i>	MI	MI		4	2017	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Sharp-tailed sandpiper	<i>Calidris acuminata</i>	MI	MI		22	2015	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
White-winged black tern	<i>Chlidonias leucopterus</i>	MI	MI		1	2015	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Wood sandpiper	<i>Tringa glareola</i>	MI	MI		6	2015	Salt lakes	Records in vicinity of study area, limited suitable habitat may be present	Possible
Reptiles									
Great desert skink	<i>Liopholis kintorei</i>	VU	VU	VU	28	2014	Sand plains and sand ridges	Records within close proximity to study area, suitable habitat present	Likely

Table 5. Conservation significant Fauna and their likelihood of occurrence within the Lake Mackay Project

Environmental Risk Assessment

A risk assessment has been completed to identify environmental issues and their management during exploration programs at the Lake Mackay project. The assessment considered 3 main elements:

- Proposed exploration activities.
- Potential Environmental impacts from exploration activities.
- Known environmental values of the project area.

Potential impacts that may result from exploration activities are listed in Table 6. The risk assessment utilises the standardised framework provided in *Guidelines for Conservation Management Plans relating to mineral exploration on lands managed by the Department of Environment and Conservation* (DEC 2011). This helps determine the inherent relative risk associated with each phase of exploration (Table 6. Potential Impacts from Exploration Activities.

7). Management requirements are determined based on the level of risk, as defined in Table 8. Inherent and residual risks for each phase of exploration are presented in Table 9.

Potential Impact	Causes
Loss of native vegetation	Disturbance and where necessary removal of native vegetation for access and work areas.
Loss of conservation significant flora	Disturbance and where necessary removal of native vegetation for access and work areas.
Loss of fauna habitat	Disturbance and where necessary removal of native vegetation for access and work areas.
Fauna death or injury	Vehicle impact and entrapment in drill holes or sumps.
Soil disturbance, erosion, and compaction.	Vehicle movement, drilling.
Disturbance to surface water drainage patterns.	Creation of access routes, drill lines and drill sites along and across drainage lines.
Disturbance to surface water bodies.	Vehicle access to site. Exploration (geophysical or drilling) will not take place on surface water bodies.
Introduction and spread of weeds.	Via movement of vehicles and other equipment.
Noise disturbance to people and fauna.	Vehicle movement, drilling.
Dust disturbance to people and fauna.	Vehicle movement, drilling.
Disturbance to culturally significant sites.	Vehicle movement and any ground disturbance.
Increased risk of fire.	Introduction of potential sources of ignition (e.g. vehicles) into the Project Area during the drier months of the year. Note: the proposed operations do not involve high fire risk activities such as welding.
Contamination of soil and water.	Spill or leak of hydrocarbons or other chemicals during storage, handling, use or disposal.
	Spill or leak of sewage.
	Inappropriate disposal of waste, including food waste.

Table 6. Potential Impacts from Exploration Activities.

Activity	Relative Risk			
	1 – Low	2 – Low-Medium	3 – Medium-High	4 – High
Clearing	No direct clearing (with front-end loaders or bulldozers). No indirect clearing (by off road driving)	Off road light vehicle access with no blading or clearing Minimal blading and no access construction	Limited clearing of low-medium value assets Clearing on mainland outside southwest portion of Western Australia receiving rainfall <450 mm Clearing vegetation with uniform weed distribution Clearing on soils not highly susceptible to erosion	Large scale clearing of low-medium value assets. Any clearing of high – critical assets Clearing on islands or in southwest portion of Western Australia with rainfall ≥450 mm Clearing vegetation with patchy weed distribution Clearing on soils highly susceptible to erosion
Drilling	No drilling Soil sampling Hand augering Rock chip sampling	Drilling does not encounter groundwater Augering and / or vehicle mounted drilling.	Drilling encounters groundwater Small volumes of groundwater (e.g. 100s of L) Air core, reverse circulation and diamond drilling, where clearance for pads and sumps is required in a wide spaced exploration program.	Large volumes of groundwater Saline groundwater Cut and fill drilling pads Air core, reverse circulation and diamond drilling, where clearance for pads and sumps is required in a close spaced exploration program. Large clearing for deep drilling
Excavating				Costeaining Bulk sampling
Camping	No Camping Fuel and chemicals only retained on vehicles	Fly camp on mainland. Fuel and chemical largely retained on vehicles	Small permanent camp on mainland Small fuel and chemical stores	Large permanent camp on mainland and any camping on islands. Medium to large fuel and chemical stores.
Vehicle Movement	Vehicle access restricted to established roads and tracks (no off-road access) Helicopter-based Survey	Vehicle movements in dry soil conditions. Off-road access: Only short-term evidence of tracks (1-2 growing seasons) as shrubs and trees can generally be avoided by vehicles (little	Off road access: Medium-term visibility of tracks due to unavoidable vehicle contact with woody plants (some pushing over of vegetation / medium density vegetation),	Off-road access: Long-term visibility of tracks due to susceptibility of soils to erosion or unavoidable vehicle contact with woody vegetation (some pushing over of

Activity	Relative Risk			
	1 – Low	2 – Low-Medium	3 – Medium-High	4 – High
		pushing over of vegetation / sparse vegetation) Vehicles operating in vegetation of uniform weed distribution.	or areas with high percentage cover of spinifex. Vehicles operating in vegetation of varying weed distribution on mainland Vehicle movements in wet soil conditions outside southwest portion of Western Australia receiving (rainfall <450 mm), or highly dispersive soil types.	vegetation / medium density vegetation), or areas with high percentage cover of spinifex. Vehicles operating on any island or vehicles traversing pockets of serious environmental weed populations Vehicle movements in wet soil conditions in southwest portion of Western Australia (rainfall ≥450 mm), or highly dispersive soil types.

Table 7. Relative Risk of Exploration Activities

Based on the inherent risk posed in Table 6. Potential Impacts from Exploration Activities.

7, the management requirements described in Table 8 are applicable.

Risk Rank	Risk Ranking Instruction
Low	Standard Exploration management procedures measures to be applied.
Low-Medium	
Medium-High	Specific management procedures developed and implemented by senior management. Activities audited.
High	Specific mitigation measures and management procedures developed to address key risk items. All high-risk activities supervised by senior management and audited. Any deviation from the management procedures to result in immediate cessation of activity.

Table 8. Management Requirements as Determined by Risk Ranking

The proposed exploration work programs at the Lake Mackay project have been split into three stages to reflect the relative environmental risk of that stage:

- Stage 1 includes geophysical surveys and no ground disturbing work programs.
- Stage 2 includes the wide spaced slimline RC drilling program and related access tracks.
- Stage 3 includes the targeted diamond drill holes and associated access tracks.

Through this assessment process, several management and mitigation measures have been incorporated into the EIA to reduce the risk to environmental receptors and conservation values of the Lake Mackay project area. Following consideration of the implementation of standard management measures, a residual relative risk is determined in Table 9.

Table 9. Inherent and Residual Risk of Proposed Exploration Phases

Exploration Stage	Inherent Risk Rating					Residual Risk Rating				
	Clearing	Drilling	Excavating	Camping	Vehicle Movement	Clearing	Drilling	Excavating	Camping	Vehicle Movement
Stage 1 – Geophysical Surveys	2 – Indirect clearing from 4WD vehicle movement along survey lines.	2 – Vehicle mounted auguring.	1 – No excavating required	2 – Small temporary camp located in sparsely vegetated area	2 – off road access with short-term evidence of tracks and avoidance of shrubs and trees.	1 – Indirect clearing from 4WD vehicle movement along survey lines.	1 – Vehicle mounted auguring.	1 – No excavating required	2 – Small temporary camp located in sparsely vegetated area	2 – off road access with short-term evidence of tracks and avoidance of shrubs and trees.
Stage 2 – Slimline RC drilling	3 - Limited clearing of low-medium value assets.	3 – Wide spaced drilling with minimal pad clearance, groundwater unlikely to be encountered.	1 – No excavating required	2 – Small temporary camp located in sparsely vegetated area	2 – off road access with short-term evidence of tracks and avoidance of shrubs and trees.	2 – Limited clearing of low-medium value assets. Clearing kept to a minimum and management measures in place to minimize consequence to key fauna taxon	2 – Wide spaced drilling. Groundwater unlikely to be encountered. Management measures in place to minimize impacts.	1 – No excavating required	2 – Small temporary camp located in sparsely vegetated area	2 – off road access with short-term evidence of tracks and avoidance of shrubs and trees.
Stage 3 – Wide Spaced DDH drilling	3 - Limited clearing of low-medium value assets.	3 - Wide spaced drilling, groundwater unlikely to be encountered. Clearance for pads and sumps is required.	1 – No excavating required	2 – Small temporary camp located in sparsely vegetated area	2 – off road access with short-term evidence of tracks and avoidance of shrubs and trees.	3 – Limited clearing of low-medium value assets. Clearing kept to a minimum and management measures in place to minimize consequence to key fauna taxon	3 - Wide spaced drilling, groundwater unlikely to be encountered. Clearance for pads and sumps is required. Management measures in place to minimize impacts.	1 – No excavating required	2 – Small temporary camp located in sparsely vegetated area	2 – off road access with short-term evidence of tracks and avoidance of shrubs and trees.

From this assessment it can be determined that:

- Stage 1 activities, including geophysical surveying, pose relatively low risk to the environment at the Lake Mackay Project. Stage 1 activities will be managed in accordance with IGOs standard Environmental management measures (Table 9).
- Stage 2 activities range from low to medium-high risk. Medium-high risk activities include land clearing and wide spaced slim-line RC drilling. Specific mitigation measures and management procedures are required to address key risk items associated with medium-high risk activities. These are defined further in the Environmental Risk Management Section.
- Stage 3 activities range from low to medium-high risk. Medium-high activities include clearing to enable a wide-spaced diamond drill program, involving pad clearing and drill sump construction. Specific mitigation measures and management procedures are required to address key risk items associated with Stage 3 activities that pose a medium-high risk. These are further defined in the Environmental Risk Management Section.

Environmental Risk Management

IGO's Standard Environmental Management Measures

IGO are committed to mitigating against any potential negative environmental impact resulting from our exploration activities, through proper planning and understanding. For any exploration program, IGO will research the potential environmental impacts and allocate resources to sufficiently understand that environment, then put in place the necessary controlling measures to lessen our footprint.

The highest environmental risk activities involved in the proposed Lake Mackay Project exploration program result from the land clearing and drilling operations (Table 8). The IGO exploration environmental procedures can provide sufficient mitigation measures to alleviate low-medium environmental risk activities. The IGO exploration environmental procedures include:

- Exploration Clearing Procedure
- Exploration Rehabilitation Procedure
- Exploration Hydrocarbon and Spill Response Management Procedure
- Exploration Waste Management Procedure
- Exploration Weed and Vehicle Hygiene Management Procedure

Specific Mitigation Measures

Specific mitigation measures and management procedures are required to address key risk items associated with Stage 2 and Stage 3 activities (Table 9), namely the larger-scale clearing of access tracks and the clearing of drill pads with drill sumps, to enable diamond drilling. The specific measures that IGO will implement to reduce the environmental risk from these key risk items include:

- Field personnel will be aware of all conservation significant fauna considered likely, or recorded within the project area, including but not limited to the black footed rock wallaby, the brush-tailed mulgara, the greater bilby, the central rock rat, the southern marsupial mole, the ghost bat, the great desert skink, and the princess parrot.
 - Any identified fauna burrows will be avoided from clearing with a 50m buffer.
 - Photographic evidence and GPS coordinates of any evidence of conservation significant fauna, such as scats, tracks, scratchings, or burrows, are to be recorded by field personnel and sent to the Environmental and database teams for recording.
 - Vehicle speeds will be kept to a minimum. Driving during periods of peak fauna activity (e.g. sunrise/sunset, night-time) will be avoided where possible.

- Any land clearing activities will be carefully planned using satellite imagery and topographic data sets to avoid prime fauna habitat including creek lines, caves, drainage channel beds, sand dune systems, and any hilly rocky outcrop.
- Vehicle movements are restricted to cleared access tracks and nominated tracks. Cleared tracks will not traverse sand dunes.
- Mature trees and dense stands of vegetation will be avoided during clearing
- Vehicles and equipment entering the Lake Mackay project area from interstate will be washed down in Alice Springs to lower the probability of transporting small species of introduced animals (e.g. rodents, ants). If coming from another mine site in NT, they may be washed down at this site.

Conclusions

IGO Limited have undertaken an Environmental Impact Assessment (EIA) process for the proposed exploration work program at the Lake Mackay JV Project. This includes the exploration tenements EL24915, EL25146, EL29747, EL30729, EL30730, EL30731, EL30732, EL30733, EL30739, EL30740, EL31234 and EL31794. The assessment has identified a number of Environmental risks. These Environmental risks have been evaluated. Most Environmental risks can be adequately managed using the IGO's Exploration Environmental standard work procedures. A number of Environmental risks identified require the implementation of specific management measures. These have been evaluated, communicated, and deemed appropriate and acceptable by the project team.