

2018

June

Exploration Management Plan

LITCHFIELD TENEMENTS – NORTH



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Appendices

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Acronyms

Acronym	Full name
AAPA	Aboriginal Areas Protection Authority
BART	Batchelor Adelaide River Tortilla Flats Voluntary Bushfire Brigade
BoM	Bureau of Meteorology
CR	Critically Endangered
DD	Data Deficient
DoEE	Department of Environment and Energy (Federal)
DPIR	Department of Primary Industry and Resources (formerly DME)
DTC	Department of Tourism and Culture
EMMP	Exploration Mining Management Plan
EMP	Environmental Management Plans (issues based management plans)
EMS	Environmental Management System
EN	Endangered
EPBC	Environment Protection and Biodiversity Conservation
GDA	Geocentric Datum of Australia
MGA94	Map Grid of Australia 1994
MLN	Mining Lease Northern
MMA	Mining Management Act (NT)
MMP	Mining Management Plan
NLC	Northern Land Council
NT	Northern Territory
NT	Near Threatened
NTR	Northern Territories Resources Pty Ltd
NT EPA	Northern Territory Environment Protection Authority
Public amenity	An intangible feature that enhances the area or community it is located in such as the view, landscape, clean air etc.
TPWCA	Territory Parks and Wildlife Conservation Act
VU	Vulnerable

1. Operator Details

1.1 Northern Territories Resources Pty Ltd (NTR)

In January 2017 NTR acquired the full control of the Browns Site and the Litchfield Tenements which were previously held by Compass Resources. From September 2015-January 2017, NTR and Compass were in a joint-venture whereby NTR was fully funding the care and maintenance operations undertaken by Compass in relation to the Browns Project.

The only shareholder of NTR is Cove House (Cove). Cove House is an Irish domiciled investment vehicle which is independently managed and controlled by Cove House Investment Limited.

Contact details for NTR in the Northern Territory are provided in Table 1-1. Organisational structures are detailed below in Map 1-1 and Map 1-2

Table 1-1 - Contact Details

LOCATION	ADDRESS	CONTACT
Darwin Office	Northern Territories Resources Pty Ltd Browns Oxide Project Old Rum Jungle Rd Batchelor NT 0845	Environmental Compliance Manager Natasha Rodwell Mobile: 0421 541 299 Site: (08) 8979 7531
Mine Site Office	Northern Territories Resources Pty Ltd Suite 1, Level 1 3 Whitfield Street Darwin NT 0800 Mailing Address: PO Box 37446 Winnellie NT 0821	Director Dr Andrew Tong Phone: 0438 675 333

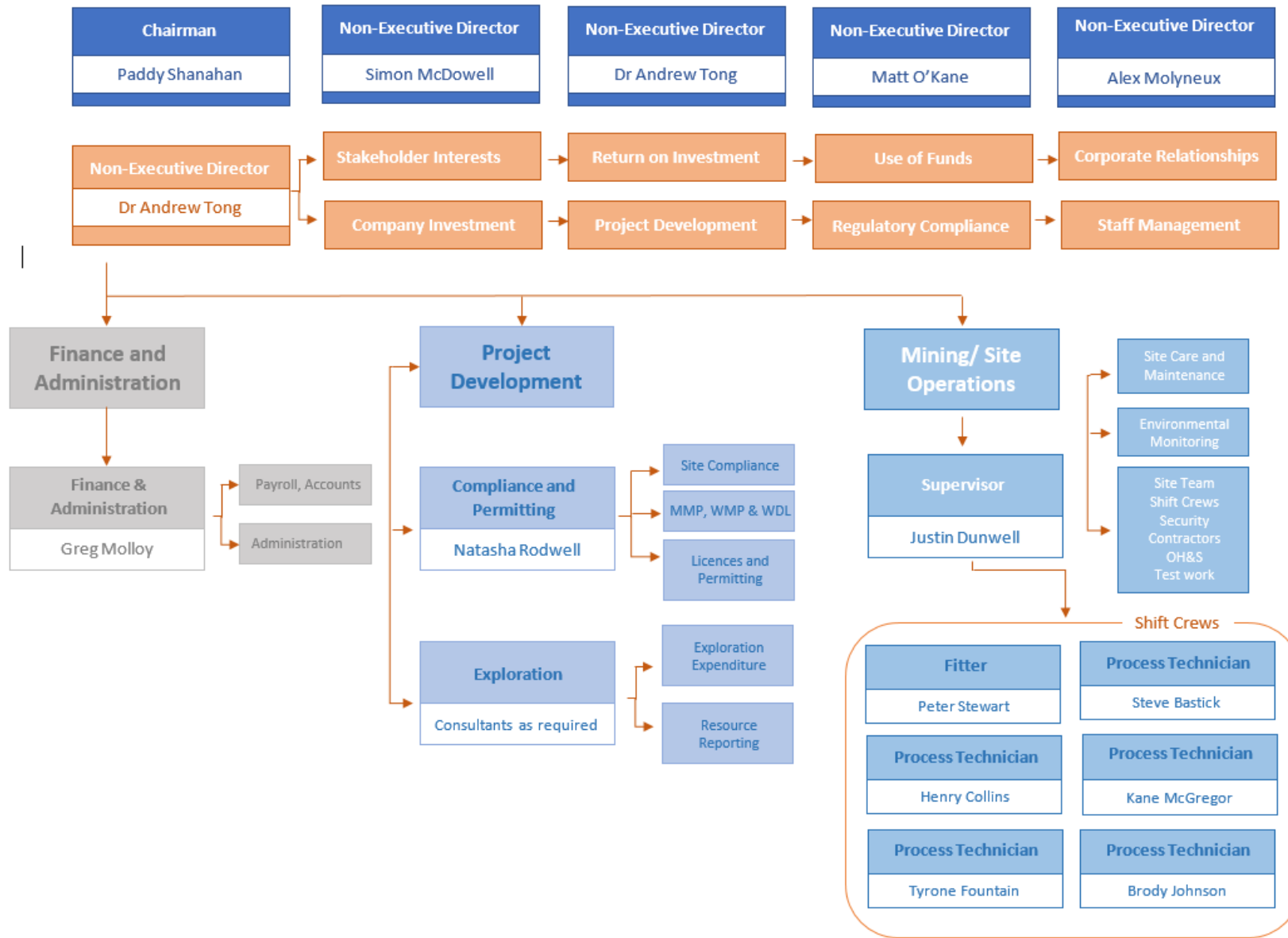


Figure 1-1 - Corporate Structure of Northern Territory Resources and its Operations

1.2 Organisational Structure

The organisational structure for the drill program will consist of the following. NTR are the operators of the tenements, and Doe Run Australia (DRA) is funding and managing the drill program.

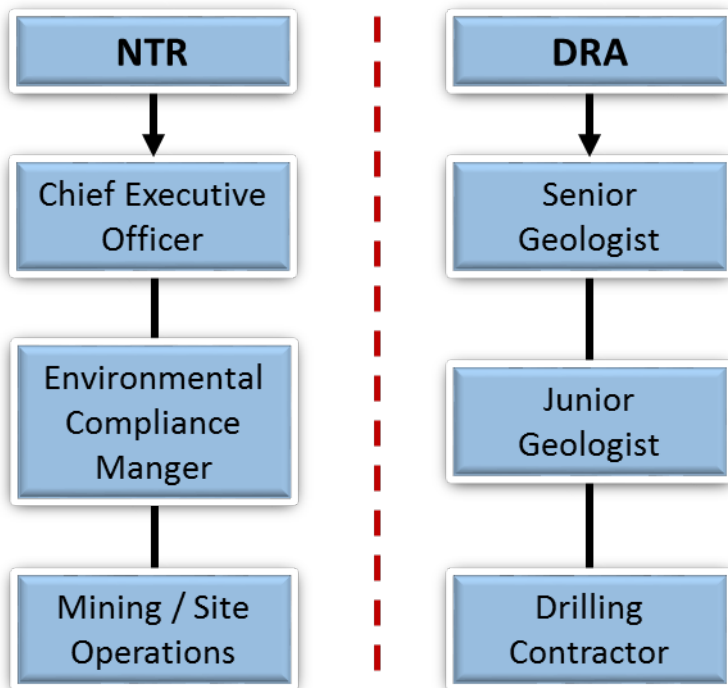


Figure 1-2– Drilling Organisational Chart

1.3 Workforce

This drill program will be conducted on the existing NTR Tenements. The Browns site has one Site Supervisor and six process technicians who maintain the site in its current care and maintenance status. The Browns Site will be used for secure storage of drill contractor’s equipment and supplies, and geology offices. The workforce required for this drill program will include an Environmental Compliance Manager, Senior Geologist and Junior Geologist. A drill contractor has not yet been selected for this program.

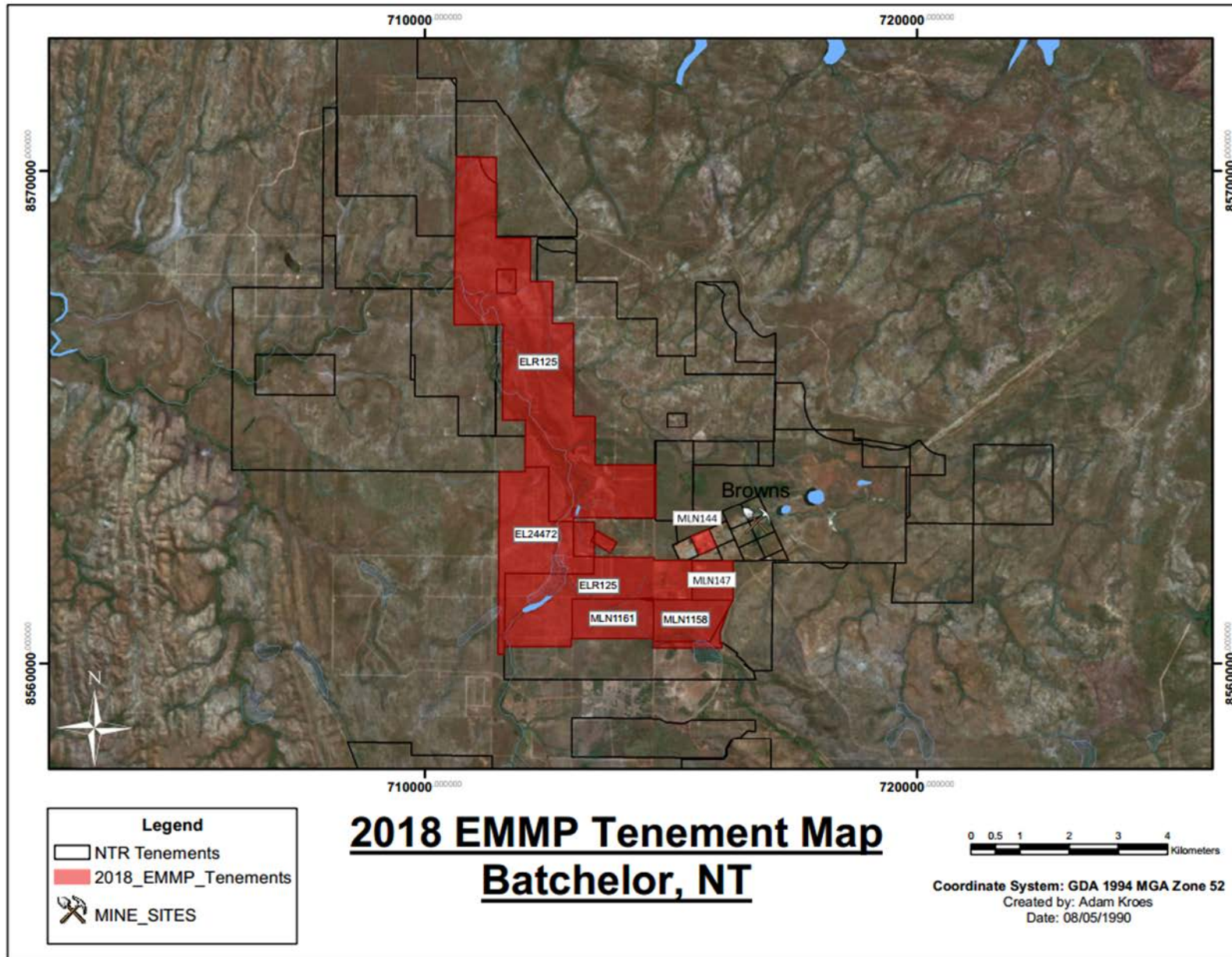
1.4 Title Details

This Exploration Mining Management Plan (EMMP) proposed to conduct drilling within the existing NTR tenements. The tenements lie entirely within NTR's 100% granted land package consisting of ML's, MLN's, EL's and ELR's. Only minimal disturbance is proposed as part of this EMMP. The table below lists the tenement included in the authorisation.

Table 1-2 – NTR Tenements Included in the 2018 Drilling Program

Tenement	Tenement Type	Registered Ownership	Status	Grant Date	Expiry Date
MLN144	Mineral Lease	100%	Granted	10-Jul-56	31-Dec-22
MLN1157	Mineral Lease	100%	Granted	03-Oct-06	08-Oct-31
MLN1158	Mineral Lease	100%	Granted	03-Oct-06	08-Oct-31
MLN1161	Mineral Lease	100%	Granted	14-Nov-06	13-Nov-31
EL24472	Exploration Licence	100%	Granted	10-Nov-05	09-Nov-19
ELR125	Exploration Licence in Retention	100%	Granted	23-Aug-93	22-Aug-18

NB: The Registered Holder for all the above tenements is Northern Territories Resources Pty Ltd



Map 1-1 – Tenements Included in the 2018 Exploration Drilling Program

2. Identified Stakeholders and Consultation

The proposed drilling program is very small and all but two of the holes are located on land either owned or leased by NTR. Presented below are the stakeholders identified as being relevant to this drilling program and a summary of the consultations that have taken place to date.

2.1 Land Owners

Below is a table which summaries the land ownership of each drill location.

Table 2-1 – Land Tenure of Each Proposed Drill Location

Tenement	Land Tenure	Drill Hole Reference	Details
MLN144	Freehold	2018_EXP 10	Mineral Title grandfathers the Land Title.
MLN1157	Crown Lease	2018_EXP 8 & 9	Section 1097 – Leased by NTR located south of the Browns Mining Project.
MLN1158	Crown Lease	2018_EXP 7	Sections 3011 & 3012 – Leased by NTR
MLN1161	Freehold	2018_EXP 6	Section 2102 – Owned by NTR
EL24472	Freehold	2018_EXP 4 & 5	This EL overlaps eight separate freehold properties. Drilling is proposed for Sections 993 and 998. These properties belong to one land owner being Margaret Kerle and her two sons, Errol and Matt.
ELR125	Freehold	2018_EXP 1, 2 & 3	This EL overlaps ten freehold properties and one perpetual crown lease. Drilling is proposed for Section 2881 which is a freehold property owned by NTR. No other properties will need to be accessed for this program.

EXP4 and EXP5 are located on property privately owned by the Kerle Family. The Kerle family have been contacted by email and telephone on several occasions. At the time of writing this, NTR has not gained access to their property as the Kerle family expressed that they wished to be present the first time NTR visited the proposed locations. Evidence of contact is attached in Appendix 1.

2.2 Neighbours and Community

NTR have a mining interest in the vicinity and as such have a good working relationship with their neighbours. Neighbouring land owners have contact details for relevant site personnel should they have any concerns or questions. The front gate of the mine also has a contact phone number signposted and a radio for direct contact with the mine.

Due to the small scope of the proposed program NTR do not consider it necessary to inform members of the wider public community that are not directly affected by the planned activities.

2.3 Aboriginal Areas Protection Authority (AAPA)

NTR have made contact with AAPA for an Abstract of Records of the location of sacred sites and restricted work areas on and around the proposed drill sites. This is discussed further in Section 4.9.

2.4 Department of Tourism and Culture – Heritage Branch

The Heritage Branch web portal was used to search the Heritage Register to ascertain if there were any heritage sites in the area that may be impacted by the proposed drill program. NTR also made direct contact with the Heritage Branch regarding the location of declared heritage places that may be located close to the proposed drill sites. This is discussed further in Section 4.9.

2.5 Department of Environment and Natural Resources

The web portal and other public available data was accessed to assess additional details on land management within the proposed project area. The results are presented in Section 4.

2.6 Department of Environment and Energy (DoEE)

The departments web portal has been used to conduct a Protected Matters Search of the project area, the results of which are reported in Section 4.

2.7 Department of Primary Industry and Resources (DPIR)

NTR intend to submit an Application for Authorisation with this EMMP as supporting information to assist the DPIR in the review of the application.

2.8 Drilling Company

This program was put out for tender to encourage local companies and opportunity to bid for this contract. These tender submissions are currently being reviewed with no decision having been made at the time of writing this document.

2.9 Bushfires NT and Batchelor and Adelaide River Tortilla Flats (BART) Volunteer Fire Brigade

The program is scheduled for the dry season. Where possible drilling will not commence until after the controlled burning has been completed on these areas. NTR engage the services of BART annually to assist with controlled burning activities on their freehold and leased properties.

NTR will maintain daily checks to keep abreast of any first risks in the area. In addition, the Browns Project Site has access to the Bushfires NT radio channel.

2.10 NT Worksafe

NTR are dedicated to a safe work environment and will continue to adhere to the *National Health & Safety (National Uniform Legislation) Act*.

2.11 NT Browns Project

This site is currently in care and maintenance and has a small group of employees operating on a 24/7 roster. The site will serve as the main hub for communication and emergency response. Radio contact will be maintained at all times between the drill site and the site Control Room.

The Site equipment will be utilised for parts of the project such as land clearing and rehabilitation. Where equipment is not available, a local earthmoving contractor will be contracted.

The Site will also be used as storage location for drilling consumables.

3. Project Details

3.1 Location

The Diamond Drilling Project will be conducted on the Litchfield Tenements located 7km northwest of Batchelor, approximately 105 km by road (Stuart Highway, Batchelor Road and Rum Jungle Road) south of Darwin in the Northern Territory. It is located to the north-east of Litchfield National Park and within the upper catchment of the Finnis River (Map 3-1 -).

3.2 Browns Project - Site Overview

NTR own and operate a mine site which has been managed under a care and maintenance program since 2009. Only one hole will be drilled on the mine site and all other drilling will occur on exploration tenements in the surrounding area. The Mine will serve as a central hub during the course of the drill program.

3.3 Previous Activities and Current Status

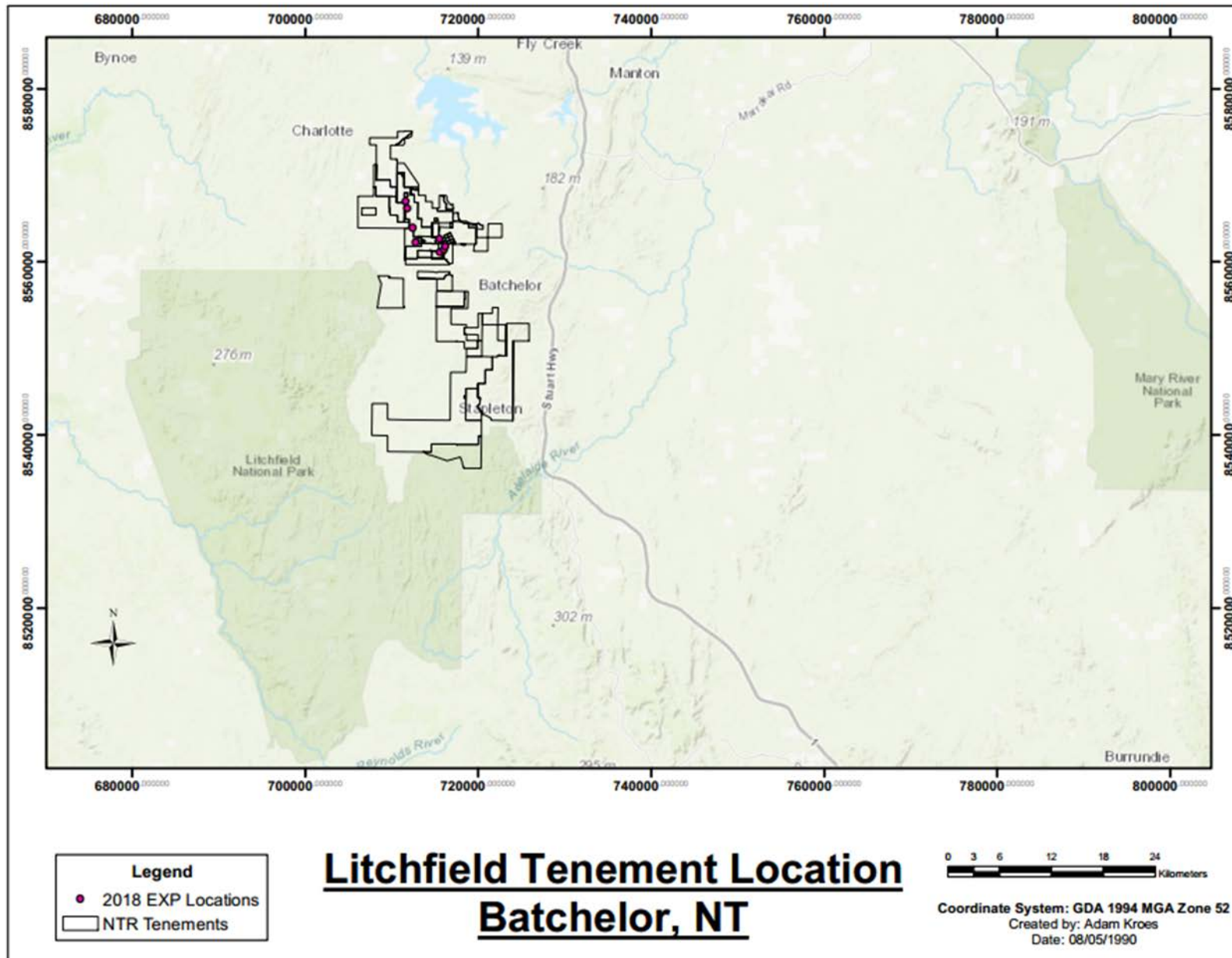
Evaluation of the Browns Site was part of an extensive mineral exploration program undertaken in the Batchelor region by Rio Tinto and other mining companies during the mid-twentieth century. The base-metal potential of the project was recognized in the 1950s, with the Browns copper-lead-cobalt deposit being evaluated by Rio Tinto in the mid-1960s.

Tenements surrounding the Browns Site were part of the regional exploration program by Rio Tinto and several other companies including Territory Enterprises Pty Ltd (TEP), Uranerz and CEGBEA. These exploration efforts resulted in numerous uranium and base metal discoveries including Mt. Fitch, Mt. Burton, Area 55, and Blueys Magnesite Prospect.

During the late 1950's to early 1970's, TEP recognized copper and uranium mineralization with analogous zonation to the Browns-Rum Jungle area at the Mt. Fitch prospect. During this time major drill programs were conducted as well as the trial mining of 920 tonnes of dolomite ore and 5 tonnes of shale ore.

Mineralization analogous to Browns was also recognized at Area 55 during the same time-frame as Mt. Fitch. TEP conducted several drilling exploration programs in the area during the 1950's. Compass Resources conducted major infill and exploration drilling at Area 55 during 2007 – 2009 in effort to provide oxide ore feed to the Browns Mine site processing plant.

Now that NTR has taken over as owner operator of the Site and Litchfield Tenements, the Browns site will remain in care and maintenance while further feasibility studies are conducted and exploration occurs on the surrounding oxide and sulphide ore targets. This drill program is one part of those studies.



Map 3-1 - Project Area

3.4 Proposed Drilling Activities

This EMMP proposes to conduct exploration drilling within the Litchfield Tenements (Figure 3-3). Table 3-1 – 2018 Drill Program Details list details of the proposed 10 drill locations. It should be noted that minimal clearing will be undertaken for this program as drill locations are close to existing roads and dirt tracks.

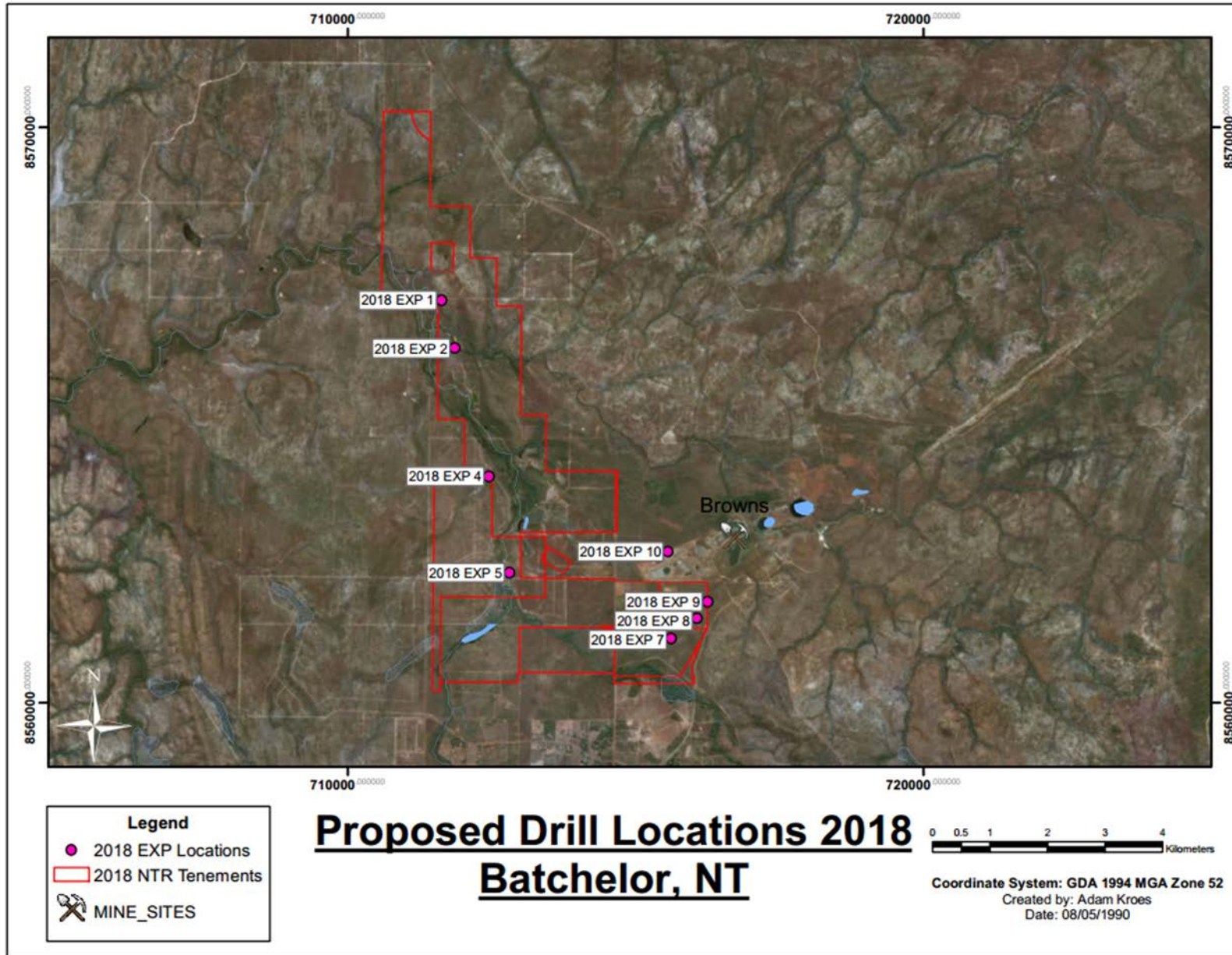
The locations listed in Table 3-1 are only proposed and may need to be relocated as some stage prior to drilling. The final drill locations will be within 250m of the proposed locations (below). NTR will confirm the drill locations as part of the Application for Closure. The program is targeted to start in late August 2018 and will last for approximately 2 months.

Drill pads will be cut in or levelled out to make them stable. Soils will be stockpiled and redistributed on the drill pad during reclamation. Erosion and sediment controls will be installed where required. Sumps will be used to capture drill cuttings and water. This will then be re-circulated through the drilling process. These sumps are estimated to be approximately L6 x W3 x D2m. All drill holes will be completed using diamond core.

Rehabilitation will involve setting Van Ruth plugs above the sulphide intervals and cementing the hole to the surface. Drill collars will be removed and sumps will be backfilled. The land surface will be re-contoured back to its pre-drilling state. Mounding will be used as the method to prevent slumping of sumps. These areas will then be inspected the following dry season and remedial works conducted if/when required.

Table 3-1 – 2018 Drill Program Details

Label	Easting	Northing	Azimuth	Angle	Total Depth (m)
2018 EXP 1	711634	8566998	60	-70	300
2018 EXP 2	711864	8566164	80	-65	250
2018 EXP 3	712486	8565455	cancelled		0
2018 EXP 4	712457	8563937	70	-70	250
2018 EXP 5	712813	8562266	90	-85	300
2018 EXP 6	713750	8561262	cancelled		0
2018 EXP 7	715627	8561122	330	-60	300
2018 EXP 8	716075	8561463	320	-60	250
2018 EXP 9	716252	8561759	320	-70	200
2018 EXP 10	715569	8562628	170	-80	250
TOTAL					2,100



Map 3-2 - Proposed Drill Locations 2018 – Litchfield Tenements

4. Current Project Site Conditions

4.1 Geology

The project area is in the north-western part of the Pine Creek Geosyncline where lower Proterozoic sedimentary rocks were deposited over the Achaean Rum Jungle and Waterhouse granitic complexes. The area has been geologically stable since Precambrian time. Sedimentation and erosion during the Tertiary and Quaternary periods have been major factors influencing the topographic form of the area.

The project area lies in the Northern Lateritic Plains Geomorphological Unit marked by lateritic soils formed on rocks of the Brocks Creek land system. Although the area has high rainfall, erosion has generally been retarded by the relative lack of relief and the high permeability of the soils. Figure 4-1 illustrates the geology of the region.

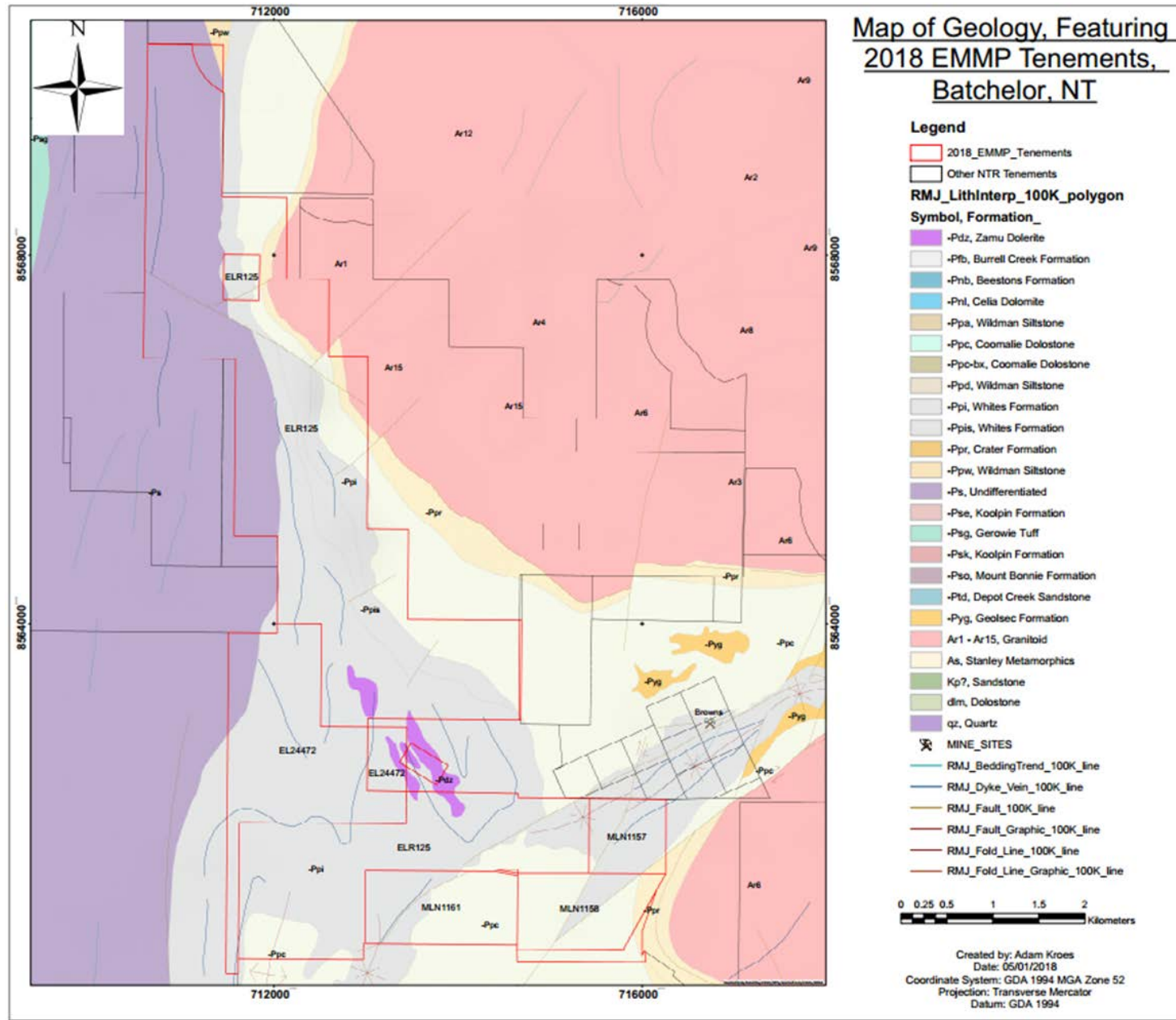
4.2 Topography

The general area around Batchelor is on the north slope of the Pine Creek Geosyncline and can be described primarily as a peneplain of gently undulating land interspaced by plains. Small hills are usually less than 150 m above the surrounding plains. Land systems (or elements thereof) that occur in the region are Batchelor, Cullen, Finniss and Brocks Creek Ridge land systems, the main characteristics of which are described in Table 4-1.

Table 4-1 - Characteristics of Land Systems in the Region

Land System	Extent within Region	Geology	Geomorphology	Main Soils	Main Plant Communities ¹
Batchelor	Large	Strongly folded slates, quartzites	Mostly hills, some undulating and flat country	Mostly stony soils, yellow podsollic soils, lateritic soils and acid alluvial soils	Tall mixed open forest, patches of grassland on flats
Brocks Creek Ridge	Small	Strongly folded slates, quartzites	Sharp north–south ridges and hills	Rock outcrops and skeletal soils	Deciduous open forest and mixed open forest
Cullen	Large	Granite	Mixed and undulating hills	Rocky skeletal soils, granitic yellow podsollic soils, granitic lateritic podsol	Deciduous open forest, mixed open forest or scrubby open forests
Finniss	Small	Quaternary flood plain alluvia with considerable areas of metamorphics	Flats liable to flooding intermixed with hills and undulating country	Acidic alluvial soils, gravelly yellow podsollic soils and skeletal soils	Grassland on flats, mixed open forest on remainder

¹ Along drainage lines, parts of the mixed open forest may be classed as riparian rain forest



Map 4-1– Map of the Local Geology within the Exploration Tenements

4.3 Hydrology

The project area is approximately 70km inland from Fog Bay in the Timor Sea and is mostly drained by the South Branch of the Finniss River. The tenements are within the Finniss River Catchment which flow is a north-westerly direction through the project area. The Finniss River system has a catchment area of 9,532 km² which is one of the smaller catchments in the northwest of the NT. Peak flows usually occur in January, February, or March. No appreciable flow is observed during the Dry Season due to minimal rainfall. Some of the areas are not accessible during the wet season due to inundation and therefore drilling is planned for the middle to the end of the dry season to ensure that the areas can be assessed safely with minimal disturbance to land and waterways.

Aquifers occur in fractured and weathered rocks with local scale aquifers of the Whites Formation and Coomalie Dolostone. Groundwater levels typically fluctuate by 5 to 10 m. The lowest groundwater levels occur during the late Dry Season and the highest groundwater levels occur in March or April during the Wet Season. Rainfall is the main source of recharge to groundwater. Groundwater flow directions usually follow surface topography, meaning groundwater flows from higher elevation areas towards the Finniss River and its tributaries.

4.4 Land Use

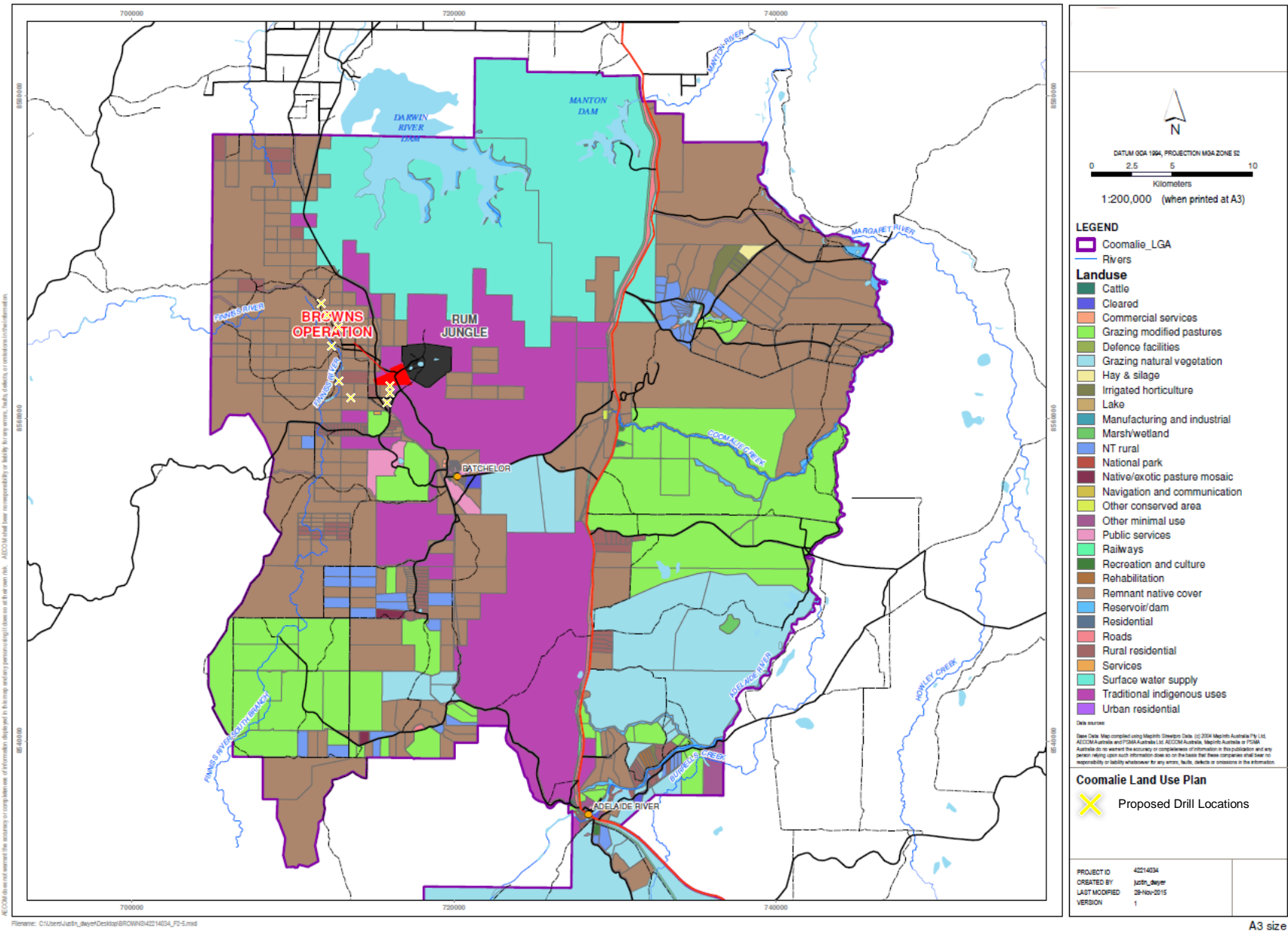
The project area falls within the governance of the Coomalie Community Government Council. Land use for the Coomalie district is summarised in Map 4-2. Residential development in Coomalie is either urban, as occurs at Adelaide River and Batchelor, or rural.

Commercial and retail activity is primarily focused in Adelaide River and Batchelor, with some additional services along the Litchfield Park Road. Three zones within the Batchelor Town Plan are allocated for business use. The main industrial precinct within Coomalie is located at Batchelor and a second industrial area of 30 lots is located near Batchelor, approximately 2.5km southwest of the project site.

Horticulture and agriculture is considered to be a major and more sustainable contributor to the local economy. There is a strong and growing interest in horticulture with an increasing number of landowners entering the industry, particularly in the areas with high groundwater potential around Batchelor and along the fertile levees of the Adelaide and Finniss rivers. Cattle grazing occurs mainly in the south-eastern and south-western parts of Coomalie, although there is property to the south of the project site that is also used for cattle grazing.

Litchfield National Park is located approximately 30km west of Batchelor and provides reserved and recreational land use. The 1,800km² park is a large wildlife reserve that protects extensive examples of 'Top End' habitat and is capable of supporting viable populations of most species that live there. The park also includes numerous waterfalls, historical sites and landscape features of geomorphologic interest.

Map 4-2 shows the proposed drill locations are in areas classified as 'Grazing Natural Vegetation' and 'Remnant Native Cover'. The area also has a long history of mineral exploration that pre-dates extensive cattle grazing.



Map 4-2 – Coomalie Land Use Plan

4.5 Vegetation

The National Vegetation Information System (NVIS) 2007 was accessed via NR Maps to ascertain the vegetation types within the project area. A majority of the project area falls within Eucalyptus Woodland. The vegetation is described as 'Eucalyptus mid woodland\ Livistona unknown palm\Sorghum mid tussock grassland' which is defined by well drained rises and low hills, gently sloping plateaux or plains with well drained sandy and some lateritic red earth soils.

Due to the location of drilling on private freehold land which run cattle, there are parts of the project area which is classified as 'Disturbed areas containing pastoral, horticultural and roads'.

The areas to be cleared are pre-disturbed and/or impacted by weed populations. This drill program has some flexibility and allows for a degree of selective clearing as we can move the holes location small distances to ensure no mature trees or *Cycas armstrongii* are cleared.

4.6 Flora

General Flora

NR Maps identifies 254 native flora species occurring within a 5km radius from the centre of the project area.

Threatened Species

A search of three biodiversity databases was conducted to identify any threatened or significant species within a 5km radius of the project area. These included NR Maps, Infonet and Protected Matters Search Tool. These reports can be located in Appendix 2. In addition, a flora and fauna survey was completed by GHD in 2009 as part for the Brown Project. This survey includes some of the leases in this proposal. As such flora identified in this survey has also been included in the table below.

Below is a list of the seven threatened flora species have either been recorded in the area or have been identified as species or species habitat likely to occur within the area. Additional information on each species was sourced via the Northern Territory Flora NT online database.

Table 4-2 – Flora Species of Conservation Significance Recorded in a 5km search area around the Project Area

Scientific Name	EPBC Act	TPWC Act	Potential Habitat	Known Distribution	Likelihood of Occurrence within project area
<i>Cycas armstrongii</i>		VU	Occurs mainly in open grassy woodland on yellow and red earths, limited in the area by drainage	Endemic to the NT. It is known from Gunn Point to Hayes Creek, west to within 50 km of the coast and east to the Wildman River catchment. Recorded in the PDA (GHD, 2009).	Possible – preferred habitat likely to occur.
<i>Habenaria hymenophylla</i>		DD	Eucalyptus woodland.	Native to the NT. Found in the Rum Jungle Haematite area.	Possible – has been recorded in the near vicinity and habitat is present in the project area.
<i>Indigofera schultziiana</i>		DD	Data Deficient	Endemic to the NT. Found in the Rum Jungle Mine Lease and surrounds.	Possible – has been recorded in the near vicinity.
<i>Gomphrena atrorubra</i>		DD	Grows in open woodland.	Endemic to the NT. Found on Batchelor and Litchfield Park Road.	Possible – has been recorded in the near vicinity and habitat is present in the project area.
<i>Grevillea longicuspis</i>		NT	Found on gravelly soils in open woodland.	Native to the NT. Recorded from Acacia Hills, Darwin River Dam, Manton River, Blackmore River and Litchfield National Park. Recorded in the project area survey (GHD, 2009)	Possible – has been recorded in the project area.
<i>Pittosporum moluccanum</i>		NT	Grows on stabilised coastal sand dunes in semi- deciduous vine thicket or on laterite ledges.	Recorded in the project area survey (GHD, 2009)	Possible – has been recorded in the near vicinity.
<i>Stylidium ensatum</i>	EN	EN	Poorly drained grassy flats which stay wet well into the dry season. With <i>Eriachne burkitii</i> , <i>Pandanus</i> , <i>Osbeckia</i> and <i>Fimbristylis furva</i> .	Known from three localities close to Darwin	Unlikely – no previous records in the area and preferred habitat not present.

EPBC = Environmental Protection and Biodiversity Conservation Act
 TPWC = Territory Parks and Wildlife Conservation Act

4.7 Weeds

Infonet and NR Maps biodiversity searches were used to identify weeds that have potentially occur in the area. There were 25 weed species declared under the *Weeds Management Act* and five species classified as Weeds of National Significance (WoNS). These are listed below.

Table 4-3 – Weed Species Identified in biodiversity Search Databases

Scientific Name	Common Name	NT Status	National Status
<i>Andropogon gayanus</i>	Gamba Grass	A, C	WoNS
<i>Calotropis procera</i>	Rubber Bush	B, C	
<i>Cenchrus echinatus</i>	Mossman River Grass	B, C	
<i>Cenchrus polystachios</i>	Mission Grass (perennial)	B, C	
<i>Cenchrus setosus</i>	Mission Grass (perennial)	B, C	
<i>Datura ferox</i>	Fierce Thornapple	A, C	
<i>Hyptis suaveolens</i>	Hyptis	B, C	
<i>Jatropha gossypifolia</i>	Bellyache Bush	B, C	WoNS
<i>Lantana camara</i>	Lantana	B, C	WoNS
<i>Leonotis nepetifolia</i>	Lions Tail	B, C	
<i>Mimosa pigra</i>	Mimosa	A, B, C	WoNS
<i>Mimosa pudica</i>	Common Sensitive Plant	C	
<i>Pistia stratiotes</i>	Water Lettuce	B, C	
<i>Salvinia molesta</i>	Salvinia	B, C	WoNS
<i>Senna obtusifolia</i>	Sicklepod	B, C	
<i>Senna occidentalis</i>	Coffee Senna	B, C	
<i>Sida acuta</i>	Spiny-head Sida	B, C	
<i>Sida cordifolia</i>	Flannel Weed	B, C	
<i>Sida rhombifolia</i>	Paddy's Lucerne	B, C	
<i>Stachytarpheta australis</i>	Branched Porterweed	B, C	
<i>Stachytarpheta cayennensis</i>	Cayenne Snakeweed	B, C	
<i>Stachytarpheta jamaicensis</i>	Jamaican Snakeweed	B, C	
<i>Themeda quadrivalvis</i>	Grader Grass	B, C	
<i>Tribulus terrestris</i>	Caltrop	B, C	
<i>Ziziphus mauritiana</i>	Chinee Apple	A, C	

Key to weed classes

A: To be eradicated

Reasonable effort must be made to eradicate the plant within the Northern Territory

B: Growth and spread to be controlled

Reasonable attempts must be made to contain the growth and prevent the movement of the plant

C: Not to be introduced to the Northern Territory

All Class A & Class B weeds are also considered to be Class C weeds

WoNS. – Weeds of National Significance.

4.8 Fauna

General Fauna

NR Maps lists 190 native fauna species as being recorded within a 5km radius from the centre of the project area.

Threatened Species

A search of three biodiversity databases was conducted to identify any threatened or significant species within a 5km radius of the project area. These included NR Maps, Infonet and Protected Matters Search Tool. These reports can be located in Appendix 2. In addition, a flora and fauna survey was completed by GHD in 2009 as part for the Brown Project. This survey includes some of the leases in this proposal. As such fauna identified in this survey has also been included in the table below.

Table 4-4 – Fauna Species of Conservation Significance Recorded in a 5km search area around the Project Area

Scientific Name	Common Name	EPBC Status *	TPWC Status +	Preferred Habitat	Likelihood of occurrence in the Project Area
Bird					
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR	VU	Migratory - coastal areas and these are important nonbreeding and stop-over areas.	Unlikely – due to lack of habitat within the project area.
<i>Erythrotrorchis radiatus</i>	Red goshawk	VU	VU	Tall open eucalypt forest and riparian areas (including paperbark forest and gallery forests).	Possible - has been recorded in the project area.
<i>Erythrura gouldiae</i>	Gouldian Finch	EN	VU	Dry Season – hollow of snappy and salmon gums in wooded hills Wet Season – move to lowland drainages to feed on perennial grasses.	Possible - has been recorded in the project area.
<i>Geophaps smithii</i>	Partridge pidgeon (eastern)	VU	VU	Occur principally in lowland eucalypt open forests and woodlands, with grassy understoreys	Possible – has been recorded within 2km of the project area.
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	CR	VU	Rarely far from the coast. They are most common in mangrove areas, but will also forage on intertidal flats and saltmarshes.	Unlikely - due to lack of habitat within the project area
<i>Rostratula australis</i>	Australian Painted Snipe	CR	VU	Occur on any shallow ephemeral wetlands in central or southern Northern Territory.	Unlikely - due to lack of habitat within the project area.
<i>Tyto novaehollandiae kimberli</i>	Northern masked owl	VU	VU	Occurs mainly in eucalypt tall open forests (especially those dominated by Darwin woollybutt, <i>Eucalyptus miniata</i> and Darwin stringybark <i>E. tetradonta</i>), but also roosts in monsoon rainforests, and forages in more open vegetation types, including grasslands.	Possible - has been recorded in the project area.

Scientific Name	Common Name	EPBC Status *	TPWC Status †	Preferred Habitat	Likelihood of occurrence in the Project Area
Mammal					
<i>Antechinus bellus</i>	Fawn Antechinus	VU	EN	Found in the savannah woodland and tall open forest of the Top End.	Possible - has been recorded in the 3.5km of project area.
<i>Conilurus penicillatus</i>	Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma	VU	EN	Eucalypt tall open forest	Possible
<i>Dasyrus hallucatus</i>	Northern quoll	EN	CR	Occurs in a wide range of habitats. The most suitable habitat is rocky areas. Historically found in eucalypt open forests.	Possible – has been recorded near Batchelor and surrounding areas. However, numbers have declined with the arrival of Cane Toad.
<i>Macroderma gigas</i>	Ghost Bat	VU	NT	Tropical savanna woodlands and rainforests.	Possible – habitat occurs in the project area.
<i>Mesembriomys gouldii gouldii</i>	Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul	EN	VU	Found in the Top End of the Northern Territory in tropical woodlands and open forests in coastal areas.	Possible – has been recorded in the project area.
<i>Petrogale concinna canescens</i>	Nabarlek (Top End)	EN	VU	Restricted to rocky areas (sandstone or granite), especially on steep slopes, with large boulders, caves and crevices.	Possible – has been recorded in Litchfield National Park.
<i>Phascogale pirata</i>	Northern Brush-tailed Phascogale	VU	EN	Tall open forests dominated by <i>Eucalyptus miniata</i> (Darwin woollybutt) and <i>E. tetradonta</i> (Darwin stringybark).	Possible – preferred habitat exists and has been recorded in Litchfield National Park.

Scientific Name	Common Name	EPBC Status *	TPWC Status +	Preferred Habitat	Likelihood of occurrence in the Project Area
<i>Saccolaimus saccolaimus nudicluniatus</i>	Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat	VU	DD	Pandanus woodland fringing the sedgelands of the South Alligator River in Kakadu National Park and has been recorded in eucalypt tall open forests.	Unlikely – data deficient
Reptiles					
<i>Acanthophis hawkei</i>	Plains Death Adder	VU	VU	Cracking black soil plains habitat.	Unlikely – preferred habitat not in the project area.
<i>Varanus mertensi</i>	Merten's Water Monitor	n/a	VU	Coastal and inland waters across the far north of Australia	Possible – has been recorded in the project area.
<i>Varanus Mitchellii</i>	Michell's Water Monitor		VU	Catchments of all rivers flowing to the Timor Sea, Arafura Sea and the Gulf of Carpentaria.	Possible – has been recorded in the project area.

* Environmental Protection and Biodiversity Conservation Act
+ Territory Parks and Wildlife Conservation Act

Introduced Species

Within the regional context, project-related clearing has resulted in a minor habitat loss and has occurred in an area already heavily disturbed. It is expected that the recent arrival of the cane toad has had an adverse impact on native fauna species in the area, particularly the northern quoll, brush-tailed phascogale, goannas, snakes and frogs.

Known introduced species include the following;

- Domestic Cattle
- Water Buffalo
- Domestic dog
- Cat
- House Mouse
- Black Rat
- Pig
- Cane Toad.

4.9 Cultural Heritage

Archaeological and Heritage Sites

No heritage sites were identified on either the National or Commonwealth Heritage List (DoEE, 2018). Two heritage sites were identified on the NT Heritage Register but are not located within the project area. These sites were Flynn's Farm and the WWII Gould Airfield and Camp which are located approximately 3km and 9km respectively from the closest proposed drill location. No impacts to these sites are expected as a result of this drilling program.

The Heritage Branch were contacted to confirm no additional archaeological sites were located in the vicinity of the proposed drill holes. The Branch advised that as long as there was no major disturbance via vegetation or ground clearing they did not recommend an archaeological survey. No major disturbance will be required for this program.

Sacred Sites

There are currently no valid Aboriginal Areas Protection Authority (AAPA) certificates. An 'Abstract of Records' was conducted for all the proposed tenements. Restricted work Areas were identified over two of the proposed hole locations (EXP3 and EXP6). As such these have been removed from the program. All other proposed holes are well away from any recorded or registered sites.

4.10 Site Conditions – Ground truth

Each location was inspected by the Senior Geologist and the Environmental Compliance Manager to assess the actual condition of the site and to assess the disturbance and impact of the proposed drill locations. A brief summary of each location is below with photos of each site.

Drill Hole ID = 2018_EXP1

This proposed hole is located in an open woodland heavily impacted by Gamba Grass, as can be seen in the photo below. The flagging tape represents the proposed location of the hole. Prescribed burning will be undertaken prior to any clearing/drilling activities take place. This will enable selective clearing whererby large trees or other important vegetation can be protected.



The photo below the are to be cleared for a road access. This will be approximately 4 – 5m wide and is located approximately 30m from the fire break. The road will be constructed to avoid mature trees. The photo below illustrates the vegetation that the track will pass through.



Drill Hole ID = 2018_EXP2

This proposed hole is located within a pre-disturbed area with covered predominantly by weed species. The flagging tape represents the proposed location of the hole. The pandanus and tree will not require clearing. This area is adjacent to an access road and will not require the construction of another road.



Aerial view below.



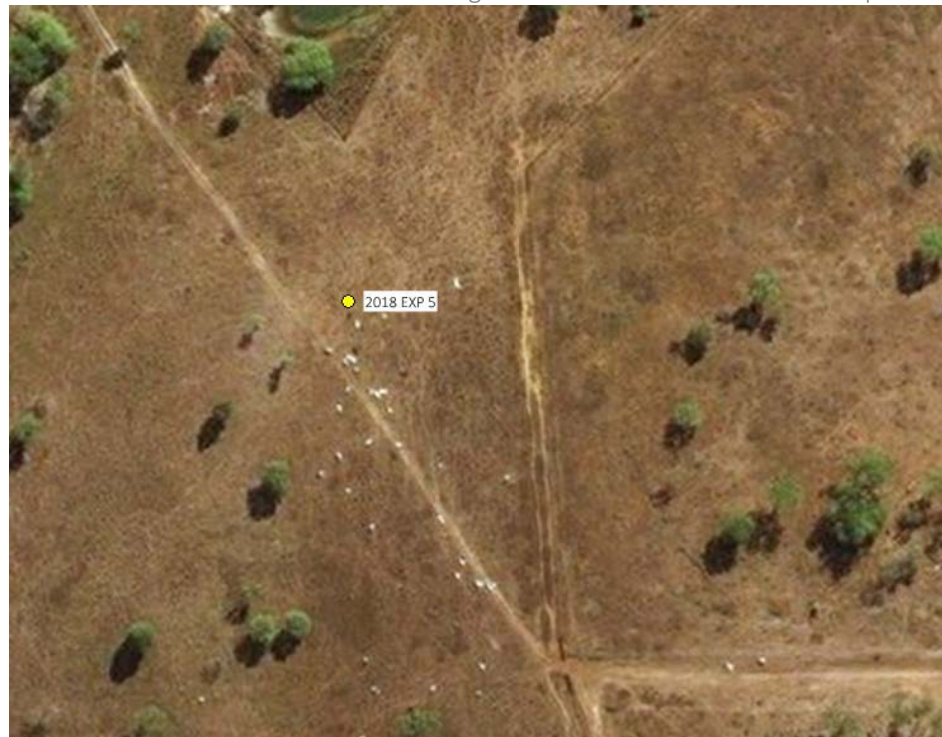
Drill Hole ID = 2018_EXP4

No photo was available at the time of submission as NTR were still awaiting access to be granted. The land owner has stated that they want to be present when NTR initially enters the site to conduct the drilling program. The land owners stated that this area is on the end of a small patch of open woodland which is heavily impacted by Gamba Grass. Prescribed burning will be conducted prior to any clearing/drilling activities. Approximately 70 – 80 metres of track will need to be cleared to facilitate access to this drill pad.



Drill Hole ID = 2018_EXP5

No photo was available at the time of submission as NTR were still awaiting access to be granted. The land owner has stated that they want to be present when NTR initially enters the site to conduct the drilling program. This area in a paddock set back a few meters from an existing track. No additional tracks will require construction.



Drill Hole ID = 2018_EXP7

The drill hole is located in an open area within an open woodland greatly impacted by gamba grass.



A track will be constructed from Bevan Road to the drill pad and will be approximately 150m in length. Mature trees will be avoided where ever possible. The photo below illustrates the vegetation that the track will pass through.



Drill Hole ID = 2018_EXP8

This drill location is in a *Corymbia foelscheana* Low Open Woodland (GHD, 2009) which is impacted by Gamba Grass. A prescribed burn will take place prior to any clearing or drilling activities.



Approximately 150m of track will be required to access the drill pad. The photo below illustrates the vegetation that the track will pass through.

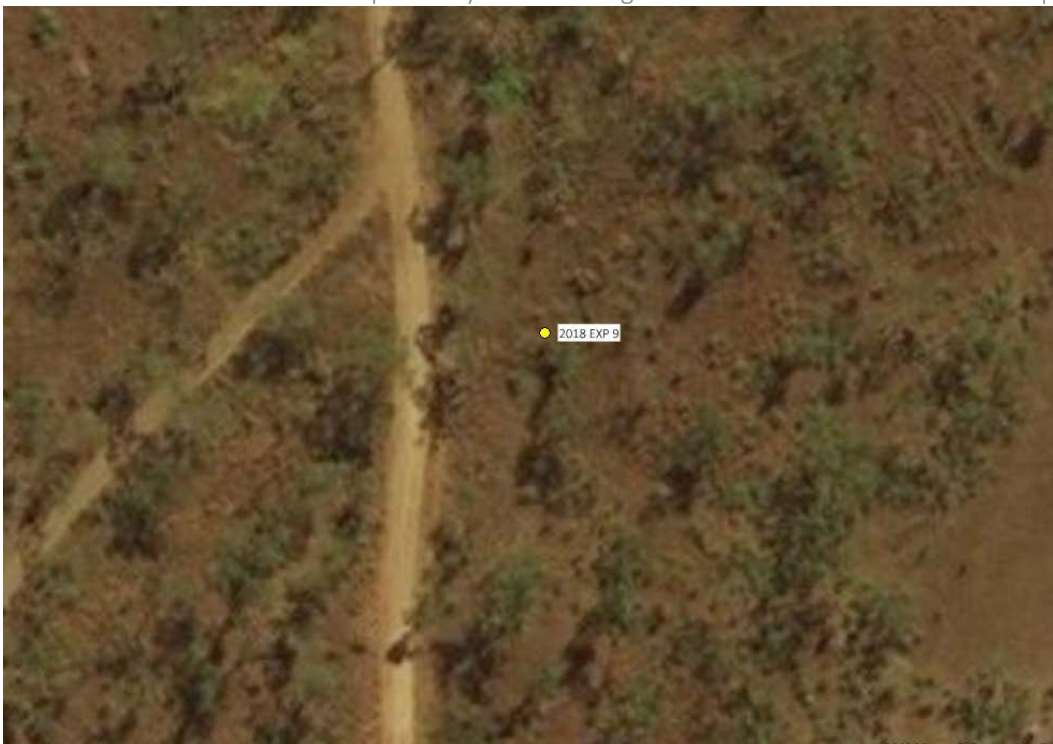


Drill Hole ID = 2018_EXP9

This drill hole is located within the lease boundary in an open clearing within a *Corymbia foelscheana* Low Open Woodland (GHD, 2009). Prescribed burning will be undertaken prior to clearing activities.



The photo below illustrates open nature of the proposed disturbance area. Only weeds and grasses will require clearing for this location. Due to the close proximity to an existing track no additional tracks will be required.



Drill Hole ID = 2018_EXP10

This location is located within a cleared area within the existing mine site.



No clearing will be required for this location.



5. ENVIRONMENTAL MANAGEMENT SYSTEM

5.1 Environmental Management Structure

The Director has overall responsibility for site-specific implementation of the approved EMMP including: environment policy, compliance, the Environmental Management System (EMS), associated Environmental Management Plans (EMP's) and liaison with stakeholders and government regulators. The Environmental Compliance Manager has responsibility for the implementation of all management plans, compliance with all permits and licencing and ensuring all employees are aware of their roles and responsibilities. All personnel are responsible for ensuring that their work complies with environmental obligations and procedures.

NTR will use the existing management plans approved under Authorisation 0919-01 as the guiding principles of the environmental management during the drilling program.

5.2 Environmental Policy and Responsibilities

Company Policies

NTR has implemented a number of policies, the key elements of which are outlined below. The full policies are included in Appendix 5.

Policy	Description
Environment	Commitment to achieving compatibility between economic development, environmental sustainability and compliance with all legislation and codes as a minimum condition.
Safety and Occupational Health	Commitment to achieving best practices in safety and occupational health.
Duty of Care	Ensuring that all employees, contractors and visitors are aware of their personal responsibility for safety.
Drug and Alcohol	Commitment to protect the health, safety and welfare of all employees from injuries and disabilities resulting from the use of alcohol or other drugs
Equal Opportunity and Affirmative Action	Promotion of an organisational culture that provides all employees with equal opportunities in their employment.
Community Relations -	Commitment to fostering long term partnerships with communities, including employment, to create a climate of mutual understanding, cooperation and respect.

Roles and Responsibilities

The following table lists the key responsibilities of NTR employees and their contractors related to environmental management and compliance.

Table 5-1 - Roles and Responsibilities

Role	Responsibilities
Director	<ul style="list-style-type: none"> Ensure the MMP is implemented and is effective. Assist the HSEC Manager with regulator and/or community consultation (i.e. complaints). Manage disaster response and business continuity planning along with providing necessary resources for Emergency Response at the Project.
Environmental Compliance Manager	<ul style="list-style-type: none"> Establish, implement and maintain the MMP. Confirm the Project environmental objectives and targets are being met. Review and evaluate contractor's EMP to ensure consistent with the EMMP. Liaise with regulators and other agencies as required. Assist in emergency response procedures. Ensure that the requirements of the EMMP and Issue-based Management Plans have been addressed in all contractor environmental management documentation. Undertake regular inspections of exploration work sites and assess compliance with this MMP.
Senior Geologist	<ul style="list-style-type: none"> Comply with the MMP and legislative requirements. Ensure all drilling contractors are inducted and aware of their roles and responsibilities related to compliance with the Exploration MMP. Ensure rehabilitation of all drilling programs is carried out as per this MMP
Field Assistant	<ul style="list-style-type: none"> Comply with site induction and/or additional procedures relevant to works through Issue-based Management Plans.
Contractors	<ul style="list-style-type: none"> Comply with the MMP and legislative requirements. Obtain any additional permits from statutory authorities other than the applicable approvals. Implement a project environmental management system in accordance with this MMP and Issue-based Management Plans.

5.3 Statutory and Non- Statutory Requirements

Commonwealth Legislation

The site will be constructed, operated and decommissioned in accordance with Territory and Commonwealth legislation. A summary of Commonwealth and Northern Territory legislation is provided in Table 5-2 and Table 5-3.

A summary of Commonwealth Legislation relevant to the project is provided in the table below.

Table 5-2 - Commonwealth Legislation

Title	Details
<p><i>Environment Protection and Biodiversity Conservation Act 1999</i></p>	<p>Under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act), any development requires assessment if it has the potential to affect one or more of eight Matters of National Environmental Significance (MNES). The MNES include:</p> <ul style="list-style-type: none"> • World Heritage properties; • National Heritage places; • Wetlands of international importance (listed under the Ramsar Convention); • Listed threatened species and ecological communities; • Migratory species protected under international agreements; • Commonwealth marine areas; • The Great Barrier Reef Marine Park; and • Nuclear actions (including uranium mines). <p>The environment under the <i>EPBC Act</i> includes:</p> <ul style="list-style-type: none"> • Ecosystems and their constituents; • Natural and physical resources; • Qualities and characteristics of locations, places and areas; • Heritage values of places; and • Social, economic and cultural aspects.
<p><i>Native Title Act 1993</i></p>	<p>This Act recognises native title in lands over which Native Title is not extinguished and where persons able to establish Native Title are able to prove continuous use, occupation or other classes of behaviour and actions consistent with a traditional cultural possession of those lands. The objectives of the <i>Native Title Act 1993</i> are to:</p> <ul style="list-style-type: none"> • Provide for the recognition and protection of native title; • Establish ways in which future dealings affecting native title may proceed and to set standards for those dealings; • Establish a mechanism for determining claims to native title; and • Provide for, or permit, the validation of past acts, and intermediate period acts, invalidated because of the existence of native title.
<p><i>Aboriginal and Torres Strait Islander Heritage Protection Act</i></p>	<p>This Act makes provision for the preservation and protection from injury or desecration of areas and objects in Australia and in Australian waters, being areas and objects that are of particular significance to Aboriginal people in accordance with Aboriginal tradition.</p>
<p><i>National Environment Protection Council Act (NEPC Act)</i></p>	<p>The National Environment Protection Council (NEPC) comprises environment ministers from the Australian Government and each State and Territory and was established under the NEPC Act and corresponding legislation in the other jurisdictions (e.g. National Environment Protection Council (Northern Territory) Act). The purpose of NEPC is to ensure that:</p> <ul style="list-style-type: none"> • Australians enjoy the benefit of equivalent protection from air, water or soil pollution and from noise wherever they live; and • Business decisions are not distorted and markets are not fragmented by variations in major environment protection initiatives between member governments.

Title	Details
	<p>NEPC has powers to make National Environment Protection Measures (NEPMs) on:</p> <ul style="list-style-type: none"> • Ambient air quality; • Ambient marine, estuarine and fresh water quality; • The protection of amenity in relation to noise (but only if differences in environmental requirements relating to noise would have an adverse effect on national markets for goods and services); • General guidelines for the assessment of site contamination; • Environmental impacts associated with hazardous wastes; • The re-use and recycling of used materials; and • Motor vehicle noise and emissions (in consultation with the National Transport Commission). <p>The Air NEPM sets national standards for the six key air pollutants to which most Australians are exposed: carbon monoxide, ozone, sulfur dioxide, nitrogen dioxide, lead and particles.</p>

Northern Territory Legislation

A summary of Northern Territory legislation and relevance to the Project is provided in the Table 5-3 below.

Table 5-3 - Northern Territory Legislation

Title	Summary
<p><i>Environmental Assessment Act 1982</i></p> <p>and</p> <p><i>Environmental Assessment Administrative Procedures Act 1984</i></p>	<p>The <i>Environmental Assessment Act 1982</i> and the <i>Environmental Assessment Administrative Procedures Act 1984</i> ensure each matter affecting the environment is fully examined and taken into account in, and in relation to:</p> <ul style="list-style-type: none"> • Formulation of proposals; • Carrying out of works and other projects; • Negotiation, operation and enforcement of agreements and arrangements (including agreements and arrangements with authorities of the Commonwealth, the States and other Territories); • Making of, or the participation in the making of, decisions and recommendations; and • Incurring of expenditure.

Title	Summary
<i>Mining Management Act 2012</i>	<p>The objectives of the <i>Mining Management Act (MM Act)</i> are to ensure that the development of mineral resources in the Northern Territory is in accordance with best practice health, safety and environmental standards and to protect the environment and health and safety of all persons on mining sites.</p> <p>Under the <i>MM Act</i>, an application for an authorisation to carry out mining activities must be accompanied by a MMP. A MMP includes information relating to the description of mining activities, the management system to be implemented for the management of health, safety and environmental aspects, costing of closure activities and particulars of organisational structure. Plans of any existing or proposed mine workings and infrastructure must also be included.</p> <p>Under Section 29 of the <i>MM Act</i> the Operator must report an environmental incident or serious environmental incident as soon as reasonable practicable.</p> <p>Under Section 43 of the <i>MM Act</i> a financial security may be required by the Minister for the purpose of securing costs and expenses in relation to the Minister causing an action to be taken to prevent, minimise or rectify environmental harm. Mine operators are expected to calculate rehabilitation costs and present these as part of the MMP. Costs are verified and reassessed when revised MMPs are submitted.</p>
<i>Mineral Titles Act 2010</i>	<p>The objectives of the <i>Mineral Titles Act (MT Act)</i> is to establish a framework for granting and regulating mineral titles that authorise exploration for, and extraction and processing of, minerals and extractive minerals. The act also aims to facilitate the commercialisation of activities conducted under mineral titles by authorising the creation and transfer of interests in the titles, and to authorise other activities relating to minerals or extractive minerals to be conducted without mineral titles.</p>
<i>Northern Territory Environmental Protection Authority Act 2012</i>	<p>The <i>Northern Territory Environment Protection Authority Act 2012</i> commenced on 1 January 2013. The Act establishes the new Northern Territory Environment Protection Authority (NT EPA) as an independent regulatory authority and makes consequential amendments to the <i>Waste Management and Pollution Control Act</i> and the <i>Environmental Assessment Act</i>.</p> <p>Amendments to the <i>Waste Management and Pollution Control Act</i> identify the NT EPA as the entity responsible for administration of the regulatory functions of that Act.</p> <p>Amendments to the <i>Environmental Assessment Act</i> identify the NT EPA as the entity responsible for administration of the assessment functions and impose additional transparency and reporting responsibilities of the Environment Minister and the responsible Minister for specific projects.</p>

Title	Summary
<i>Northern Territory Aboriginal Sacred Sites Act 1989</i>	The Northern Territory <i>Aboriginal Sacred Sites Act 1989</i> is administered by the Aboriginal Areas Protection Authority (AAPA). The Act provides for the location, recognition, description and protection of sacred sites under Aboriginal tradition. All sacred sites (even if not registered) are protected under the Act and it is an offence to enter or carry out work on a sacred site without permission or a certificate issued by the AAPA. The certificate sets out conditions under which the work may be carried out.
<i>Waste Management and Pollution Control Act 1998</i>	The purpose of the <i>Waste Management and Pollution Control Act 1998</i> is to protect the environment through objectives and approvals, encouraging effective and responsible waste management and reduction and response to pollution. This Act facilitates the implementation of national environment protection measures made under the <i>National Environment Protection Council (Northern Territory) Act 1999</i> , and incorporates environmental compliance plans and audits. Section 14 of the Act establishes a process for notifying the NT EPA (the administering agency for the Act) about incidents causing, or threatening to cause pollution. Schedule 2 of the Act requires environment protection / licensing for certain activities.
<i>Waste Management and Pollution Control (Administration) Regulations 2012</i>	These regulations deal with administrative issues such as fees for licensing and approvals and payment of "on the spot fines".

Other Legislation includes the following;

- *National Environment Protection Council (Northern Territory) Act 1994.*
- *Heritage Act 2011.*
- *Territory Parks and Wildlife Conservation Act 2006.*
- *Soil Conservation and Land Utilisation Act 1980.*
- *Weeds Management Act 2001.*
- *Bushfires Act 2009.*
- *Fire and Emergency Act 1996.*
- *Dangerous Goods Act 1998.*
- *Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Act 2011.*
- *Crown Lands Act NT 1992.*
- *Dangerous Goods Act 1998.*
- *Litter Act 1972.*
- *Local Government Act 2008.*
- *Mineral Titles Act 2010.*
- *Water Act 1992; and*
- *Work Health and Safety (National Uniform Legislation) Act 2011.*

There are currently no non-statutory agreements in place.

5.4 Environmental Induction and Training

A site environmental and safety induction will be given to all employees and contractors prior to works commencing. The contractor will also have an induction requirement for the drill site which will include safety and environmental management.

Daily shift meetings will be conducted and relevant environmental topics discussed.

5.5 Identification of Environmental Aspects and Impacts

NTR have conducted a risk assessment on the proposed exploration program. This program is small and consists of 8 holes in mostly pre-disturbed areas. This qualitative risk analysis was based on the method outlined in Standards Australia HB 203-2004 (Standards Australia, 2004), and took into account both the likelihood and consequence of the various risks. Four levels of risk were identified:

- Extreme—the development of strategies to reduce or mitigate the level of risk is of the highest priority.
- High—high priority; management attention to develop strategies is still required.
- Medium—moderate priority; management responsibility must be specified.
- Low—these risks fall within the bounds of normal project parameters that can be managed by routine procedures and processes.

5.6 Aspects and Impacts Register

NTR used the risk assessment process to determine those aspects that represented the greatest risk of significant impact to the environment from drilling activities. The site risk register is summarised below (Table 5-4) in the Aspects and Impacts Register. The detailed risk assessment is located in Appendix 7.

Table 5-4 – Aspects and Impacts Register

Aspect	Description	Impact	Inherent Risk	Residual Risk
Emissions to Air	Dust, odour, vapour, fire, greenhouse gases and radiation	<ul style="list-style-type: none"> - Degradation in air quality - Visual amenity - Degradation to vegetation communities through dust deposition - Impact to fauna health - Impact to sensitive receptors (including neighbouring farms and motorists) - Increased contribution to GHG emissions - Potential radiation exposure 	Low 8	Low 3
Noise and Vibration	Nuisance noise or vibration	<ul style="list-style-type: none"> - Public amenity - Fauna Disturbance 	Low 6	Low 3
Releases to Land and Water	Wastewater, hydrocarbon, Chemicals and hazardous materials	<ul style="list-style-type: none"> - Overflow of contaminated drilling mud - Erosion and sediment control issues impacting surrounding environment 	Medium 9	Low 5

Aspect	Description	Impact	Inherent Risk	Residual Risk
		- Spill or leak to the environment with potential to contaminate land resources		
Biological and Land Management	Native flora and fauna including biting insects, and soils	- Fauna injury or death due to entrapment in sumps or boreholes - Direct fauna mortality from vehicle collision - Increase in biting insect populations	Medium 14	Low 2
Cultural and Heritage Management	All known and unknown natural and cultural heritage sites	- Destruction of known sites - Destruction of previously unregistered / unknown sites	Medium 13	Low 4
Biosecurity	Weeds and pest animals such as pigs, cats and cane toads	- Decrease in biodiversity due to inappropriate management of weeds - Spreading of weeds into unaffected area - Introduction of pest species causing mortality of flora and fauna species - Introduction of pest species causing a decrease in biodiversity	Medium 9	Low 5
Fire	Controlled and wildfire	- Biodiversity loss - Direct mortality of native vegetation and terrestrial fauna.	Medium 13	Low 4
Resource Consumption - water	Surface Water and groundwater	- Depletion in Natural Resources	Medium 9	Low 5
Resource Consumption - Fuel	Fuel use	- Depletion of natural resources - Increased contribution to Global warming	Medium 14	Low 2
Waste Management	Hazardous and non-hazardous	- Incorrect disposal of hazardous waste resulting in contamination of land, surface or groundwater resources. - Incorrect disposal of waste resulting in contamination of land, surface waters or groundwater resources. - Insufficient remediation of the site leaving behind waste resulting in contamination of land, surface waters or groundwater resources.	Low 6	Low 3

* Public amenity is an intangible feature that enhances the area or community it is located in such as the view, landscape, clean air etc.

A total of 10 aspects were identified. A brief summary of the risk scores are below.

Table 5-5 – Summary of Inherent and Residual Risks

Inherent Risks		Residual Risks	
Risk Level	Number of Risks	Risk Level	Number of Risks
<i>Low</i>	3	<i>Low</i>	9
<i>Medium</i>	7	<i>Medium</i>	1
<i>High</i>	0	<i>High</i>	0
<i>Extreme</i>	0	<i>Extreme</i>	0

The highest potential environmental risk of the drill program was identified as the potential for Fire Management. This is predominantly due to works being conducted in the dry season. The controls in place to manage the risk of uncontrolled fire include the following:

- Site Induction – discuss fire risks and emergency response procedures.
- Prescribed burning to take place prior to clearing/drilling activities to reduce fuel load and fire risk.
- A Water truck or similar will be parked up at the drill site at all times.
- Maintain radio contact with Browns Mine Control room at all times.
- Emergency Response procedures to be in place.
- Fire Management Plan
- Spill Response Kits to be kept on support vehicles.
- Safe storage of flammable products
- Regular service and maintenance of equipment.
- Maintain good housekeeping.

5.7 Environmental Audits, Inspections and Monitoring

Inspections

The Environmental Compliance Manager and/or appointed representative will undertake regular site inspections to assess project risk including:

- Clearing – Inspect the area post burning to demarcate the clearing area with the earthmoving contractor avoiding mature trees and *Cycad Armstrongii* species.
- Drilling Activities – Regular inspections during drilling will be conducted to assess water management, containment of potential contamination sources and implementation of safety and environmental management practices.
- Rehabilitation- Inspect and assess the rehabilitation requirements and coordinate with the earthmoving contractor. Ongoing inspections will be required on completion and following the wet season to address and remediation that may be required.

Monitoring

Monitoring will be the responsibility of the Environmental Compliance Manager. Monitoring will be conducted via the inspection process. The Environmental Compliance Manager will perform regular inspections throughout the program. These inspections will monitor the environmental performance and identify if any additional measures need to be implemented. Several Environmental consultants are on hand should technical advice or assistance be required at any time during the program. Photographic records will be kept at all stages of the program.

Objectives and Targets

Table 5-6 details the objectives and targets for the drilling and rehabilitation program and will be reported on in the Application for Closure.

Table 5-6 – Objectives and Targets

Objectives	Targets	Indicators
To establish and maintain awareness of the importance of protecting the site environmental compliance.	All workforce personnel to have completed the Site induction.	Training records.
Minimise fire risk to ensure a high level of safety for persons, property and environment.	No incidents of damage or loss associated with controlled or accidental fires ignited on the project site.	Site inspections. Number of incidents recorded.
No contamination of soil and water (including groundwater).	No incidents of loss of containment of contaminants from the project area	Site inspections. Incident Register.
No disturbance to areas of cultural heritage areas.	Zero incidents involving disturbance to known cultural heritage sites.	Site inspections. Number of incidents reported.
No clearing of mature trees or known threatened species.	No incidents recorded of clearing being undertaken without a permit.	Site inspections. Incident Register.
No adverse effects on flora and fauna.	No recorded incidents of harm to flora or fauna species.	Site inspections. Number of incidents reported.
Minimise adverse impacts from dust generation on the environment and the health of the workforce.	No impacts to vegetation health from smothering. No dust related health impacts to the workforce.	Visual inspections and future biological surveys. Incident register.
No evidence of significant erosion or sedimentation issues due to poor land management.	No incident of environmental harm due to erosion and sedimentation events.	Site inspections. Incident Register.
Prevent the introduction of new weed species.	Zero introduction of new weed species	Site inspections. Reports of new weed species and future flora survey results

Objectives	Targets	Indicators
Ensure that all wastes, including hazardous material, solid putrescibles and biodegradable and inert wastes are managed safely and in an environmentally appropriate manner.	All hazardous materials and wastes to be stored, handled and disposed of in line with legislative requirements.	Site inspections. Number of hazards and incidents reported.
Minimise disturbance to local residents	No complaints from local residents of noise or vibration disturbances.	Number of incidents reported
Ensure that the necessary regulatory requirements are met.	No non-compliances with legislation.	Number of non-compliances or incidents.

Performance Reporting

This is a new Application for Authorisation and as such there is no performance reporting required.

5.8 Emergency Procedures and Incident Reporting

Environmental Emergency Response Management Plan

The management of emergency responses will be undertaken in accordance with the Environmental Emergency Response Management Plan (EERP). The EERP outlines standardised responses to the most likely environmental emergency situations pertaining to the project including:

- Fire/Explosion
- Loss of Containment – Untreated water
- Loss of Containment – Fuel
- Loss of Containment – Chemical
- Loss of Containment – PAF Material
- Loss of Containment – Radioactive Material
- Natural Disasters

Response to an emergency will depend on the circumstances and severity. General response procedures are listed below.

1. Take necessary steps to ensure the safety of all personnel.
2. Control, contain or stop the incident and the impact from spreading, where safe to do so.
3. Where assistance is required, establish contact with the Browns Project Control Room.
4. Where necessary the Control Room will make contact with emergency services.
5. Contact Senior Geologist as soon as practical.
6. Follow incident reporting protocol.
7. Complete actions as per the Trigger Action Plan (Table 5-7 below).

Table 5-7 – Environmental Emergency Response Trigger Action Plan

Event Level	Trigger	Action	Responsibility
Low - Med	Environmental emergency causing contamination to land, air or water resources to a confined area that can be cleaned up quickly and without residue.	<ul style="list-style-type: none"> Follow the requirements of the Spill Response Procedure if applicable. Report the incident. Report incident to relevant agencies. Initiate remediation activities if required. Investigate the cause of the fire and implement preventative measures. Assess effectiveness of fire response procedures. 	Environmental Compliance Manager
Moderate - High	Environmental emergency causing contamination to land, air or water resources to a large area that can be cleaned without permanent damage to the environment.	<ul style="list-style-type: none"> Follow the requirements of the Spill Response Procedure and / or Emergency Response Plan if applicable. Initiate remediation activities. Report incident to relevant agencies. Conduct investigation and implement preventative measures. Implement contaminated sites monitoring and remediation program 	Director and Environmental Compliance Manager
Very High - Extreme	Environmental emergency causing contamination to land, air or water resources to a large area that cannot be fully remediated and has resulted a long-term impact on the environment.	<ul style="list-style-type: none"> Follow the requirements of the Spill Response Procedure and / or Emergency Response Plan if applicable. Initiate remediation activities. Report incident to relevant agencies. Conduct investigation and implement preventative measures. Implement contaminated sites monitoring and remediation program 	Director and Environmental Compliance Manager

Incident Reporting

Environmental incidents which occur as a result of the drilling program will be logged and investigated as per standard operating procedures. Findings from incident investigations will be used to update site procedures and management plans. In addition, these finding will be discussed at site safety meetings. This will ensure the likelihood of repeat incidents are eliminated or significantly reduced. All reporting will be conducted in accordance with the Environmental Incident Reporting and Investigation Procedure.

Statutory Incident Reporting

External incident reporting will be provided in accordance with legislative requirements across the project. A summary of incident reporting requirements is provided in Table 5-8.

The Director or delegate is responsible for all external incident reporting communications. Statutory incident reporting will be summarised within future MMP's.

Table 5-8 - Regulatory Reporting Requirements

Entity	Trigger	Timeframe and Contact Details	Incident Reporting Details
<p>Northern Territory Environmental Protection Authority (NT EPA)</p>	<p>Incident which causes, or is threatening or may threaten to cause pollution resulting in material environmental harm or serious harm.</p> <p>Qualifying triggers requiring submittal of Section 14 Incident Report to NT EPA are any of the following:</p> <ul style="list-style-type: none"> • is not trivial or negligible in nature; or • consists of an environmental nuisance of a high impact or on a wide scale; or • results, or is likely to result in \$50,000 or more in taking action to prevent or minimise environmental harm or rehabilitate the environment; or results in actual or potential loss or damage to value of \$50,000 or more of the prescribed amount (whichever is the greater). 	<p>< 24 hrs post incident ntepa@nt.gov.au pollution@nt.gov.au</p>	<p>The Section 14 Incident Report Form requires the following details:</p> <ul style="list-style-type: none"> • Incident causing or threatening to cause pollution; • Location occurred and area impacted; • Date and time; • How the pollution has occurred, is occurring or may occur; • Attempts made to prevent, reduce, control, rectify, investigation and/or clean up the pollution or resultant environmental harm caused or threatening to be caused by the incident; and • Operator details. <p>The form is to be signed by the HSEC Manager and/or General Manager for submission. The Section 14 Incident Report Form are located on line.</p>
<p>Department of Primary Industry and Resources (DPIR)</p>	<p>Incident which causes minor environmental impact with some minor actual or potential harm to the environment.</p>	<p>As soon as practicable. Mineral.Info@nt.gov.au</p>	<p>The Section 29 Notification of Environmental Incident Form requires the following details:</p> <ul style="list-style-type: none"> • Site and operator details. • Location occurred and area impacted (GPS coordinates); • Date and time; • Description of incident • Emergency and remedial actions taken. • Nature of impact and severity; • Current situation;

Entity	Trigger	Timeframe and Contact Details	Incident Reporting Details
NT WorkSafe	Incident which results in either: <ul style="list-style-type: none"> • Death of a person; • Serious injury or illness; or • Dangerous incident. 	Immediate verbal communication. Tel: 1800 019 115 Written notification < 48 hrs post incident. ntworksafe@nt.gov.au	<ul style="list-style-type: none"> • Details of sampling undertaken; and • Notification status internally and externally. The form is to be signed by the HSEC Manager and/or General Manager for submission. The Section 29 Notification of Environmental Incident Form are located on line. The NT WorkSafe Incident Notification Form requires the following details: <ul style="list-style-type: none"> • Person submitting details; • Incident details including date, time and human injury details; • Work activity being undertake at the time of incident; • Witness(es) details; • Details of injured / deceased persons; • Summary of injury or illness; and • Future remedial actions. The form is to be signed by the HSEC Manager and/or General Manager for submission. The NT WorkSafe Incident Notification Form are located on line.
Heritage Branch	Exposure and/or interference with unidentified natural, cultural or indigenous heritage.	As soon as practicable. Tel: 08 8951 9247 heritage@nt.gov.au	No standard notification form is available. However, the following should be provided within the initial notification: <ul style="list-style-type: none"> • Type of natural, cultural or indigenous heritage; • Location of the site (grid reference); • Type and method of interference (exposed and/or damaged); • Name and organisation of discoverer; and • Photograph of site.
Northern Land Council	Entrance and/or damage of sacred site or restricted works area.	As soon as practicable. Tel:(08) 8920 5100	No standard notification form is available. However, the following should be provided within the initial notification: <ul style="list-style-type: none"> • Location of the site (grid reference); • AAPA certificate pertaining to the site; • Summary of damage; • Name and organisation of discoverer; • Type and method of interference (exposed and/or damaged); and • Photograph of damage.

Entity	Trigger	Timeframe and Contact Details	Incident Reporting Details
Aboriginal Areas Protection Authority	Entrance and/or damage of sacred site or restricted works area.	As soon as practicable. Tel: 08 8999 5511 enquiries.aapa@nt.gov.au	<p>No standard notification form is available. However, the following should be provided within the initial notification:</p> <ul style="list-style-type: none"> • Location of the site (grid reference); • AAPA certificate pertaining to the site; • Summary of damage; • Name and organisation of discoverer; • Type and method of interference (exposed and/or damaged); and • Photograph of damage.

6. Exploration Rehabilitation

6.1 Exploration Rehabilitation Register

Table 6-1 details the disturbance and rehabilitation methods required for the proposed drilling program. This program will utilise earthworks machinery to cut drill pads and rehabilitate drill pads. General rubbish will be removed daily from drill sites and disposed of at an appropriate waste facility. Tracks will be required at several of the sites. Tracks will have the topsoil reinstated (if present) and will be left to revegetate naturally. If required, erosion control measures will be constructed and tracks will be ripped to facilitate natural revegetation.

Table 6-1 – Description of Rehabilitation Methods

Disturbance	Rehabilitation	Schedule (Timing)	Closure Objectives / Targets	Monitoring Remediation
Drill holes	<p>Temporary – concrete plug all holes</p> <p>Permanent – Pegs removed. Collared holes will be cut ~400mm below ground level and the holes plugged or cemented. The soil to be mounded over the hole to allow for subsidence to limit the pooling of surface water.</p>	<p>Temporary plug – at the completion of drilling.</p> <p>Permanent closure – Undertaken after downhole geophysics has been completed and all chemical assays have been received.</p>	<p>All holes will be plugged or cement filled. All holes will be deemed safe and stable prior to the end of the drill program.</p>	<p>Inspection of holes will be conducted with six months of completion and after one wet season to ensure no plug failures. Before and after photos to be taken and submitted in the Application for Closure.</p>
Drill Pads	<p>Drill pads will be re-contoured to pre-drilling state</p>	<p>Either undertaken after completion or after downhole geophysics is completed and chemical assays returned and no longer than 6 months after drill hole completion.</p>	<p>Site to be returned to pre-drilling state. Earth or overburden that was excavated from the drill pad site will be pushed back over the site at completion.</p>	<p>Inspection of the drill pads will be conducted with six months of completion and after one wet season to ensure no plug failures. Before and after photos to be taken and submitted in the Application for Closure.</p>
Sumps	<p>Sumps will be back filled and re-contoured to the pre-drilling landform to prevent erosion or sedimentation issues occurring</p>	<p>Filled in at the completion of drilling.</p>	<p>All sumps will be backfilled with the excavated material and respread with stored topsoil (where applicable).</p>	<p>Inspection of the drill pads will be conducted with six months of completion and after one wet season to ensure no plug failures. Before and after photos to be taken and submitted in the Application for Closure.</p>
Samples	<p>Samples will be removed from the site daily. A percentage of the core will be boxed up and dispatched off site while the remaining sample will be stored in industrial plastic core boxes in the core shed located on the Browns Project site.</p>	<p>Core removed from the drill site daily.</p>	<p>No sample to be left at the drill site and all contaminants removed from site and disposed of in an appropriate manner.</p>	<p>Inspection of the drill site to ensure the core has been removed. Before and after photos to be taken and submitted in the Application for Closure.</p>

7. References

Department of Environment and Energy- National Heritage List.

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Department of Environment and Energy – Protected Matters Search Tool.

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Department of Lands, Planning and the Environment - The Heritage Branch. Heritage Register.

<http://www.ntlis.nt.gov.au/heritageregister/f?p=103:300:2380629108490584> . Last accessed: 9 May 2018.

GHD (2009), Report for the Flora and Fauna Characteristics Project Development Area. Coffey Natural Systems Pty Ltd. Darwin Australia.

Northern Territory Government. Northern Territory Flora NT online database.

<http://eflora.nt.gov.au/search?heading=sNTFlora>. Last accessed: 9 May 2018.

Territory Natural Resource Management - Infonet <http://www.ntinfonet.org.au/infonet2/#>. Last accessed: 9 May 2018.

Appendix 1 – Biodiversity Database Search Results.



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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

Report created: 09/05/18 10:20:11

[Summary](#)

[Details](#)

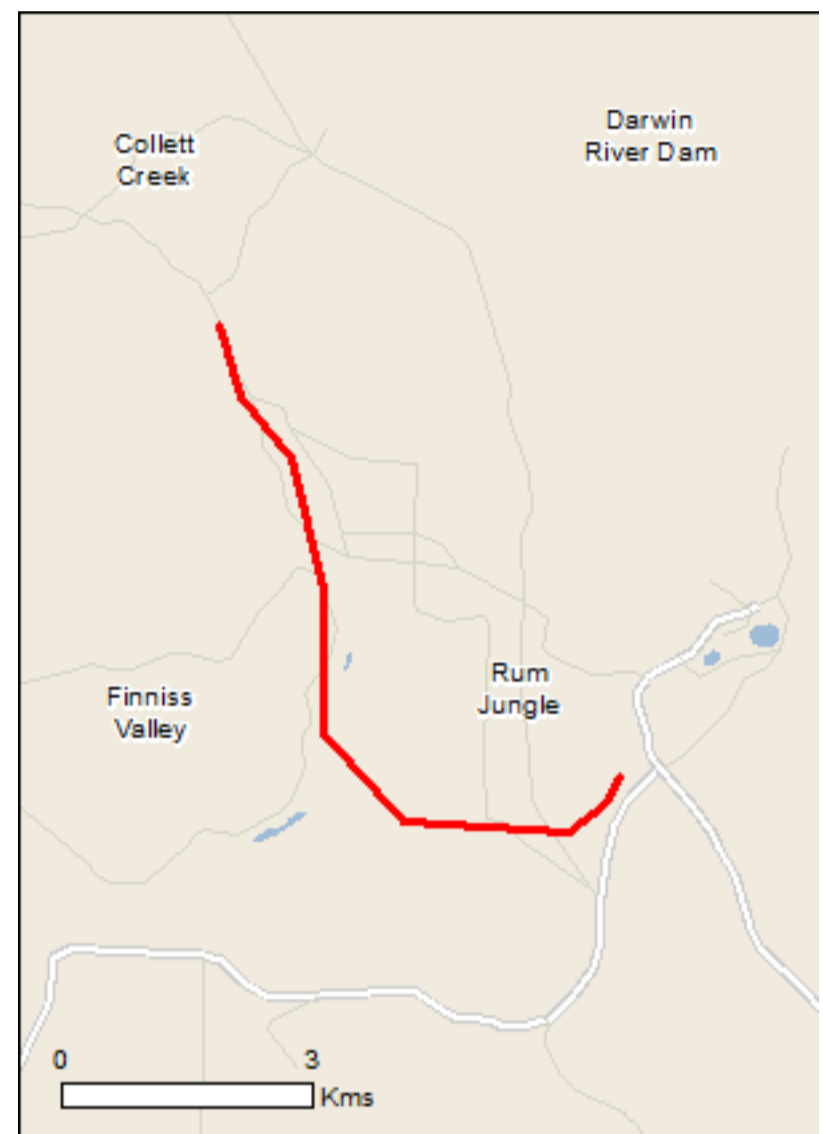
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 5.0Km



Summary

Matters of National Environmental 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:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	18
Listed Migratory Species:	18

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 <http://www.environment.gov.au/heritage>

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	24
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	22
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat known to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Geophaps smithii smithii Partridge Pigeon (eastern) [64441]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat known to occur within area
Mammals		
Antechinus bellus Fawn Antechinus [344]	Vulnerable	Species or species habitat known to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii gouldii Black-footed Tree-rat (Kimberley and mainland Northern Territory), Djintamoonga, Manbul [87618]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Petrogale concinna canescens Nabarlek (Top End) [87606]	Endangered	Species or species habitat likely to occur within area
Phascogale pirata Northern Brush-tailed Phascogale [82954]	Vulnerable	Species or species habitat likely to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheath-tail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Stylidium ensatum a triggerplant [86366]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Acanthopis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat known to occur within area
Sharks		
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Marine Species		
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to 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
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Reptiles		
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnston's River Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Extra Information

Invasive Species

[[Resource Information](#)]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Bubalus bubalis Water Buffalo, Swamp Buffalo [1]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Plants		
Andropogon gayanus Gamba Grass [66895]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		Species or species habitat likely to occur within area
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Mimosa pigra Mimosa, Giant Mimosa, Giant Sensitive Plant, Thorny Sensitive Plant, Black Mimosa, Catclaw Mimosa, Bashful Plant [11223]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Pennisetum polystachyon Mission Grass, Perennial Mission Grass, Missiongrass, Feathery Pennisetum, Feather Pennisetum, Thin Napier Grass, West Indian Pennisetum, Blue Buffel Grass [21194]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Vachellia nilotica Prickly Acacia, Blackthorn, Prickly Mimosa, Black Piquant, Babul [84351]		Species or species habitat may occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, 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 distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-12.95528 130.95083,-12.96278 130.95306,-12.96917 130.95861,-12.98278 130.96194,-12.99778 130.96194,-13.00694 130.97056,-13.00806 130.98806,-13.005 130.99222,-13.00222 130.99361

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.



Custom area

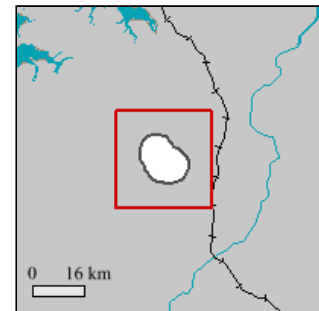
NT NRM Report



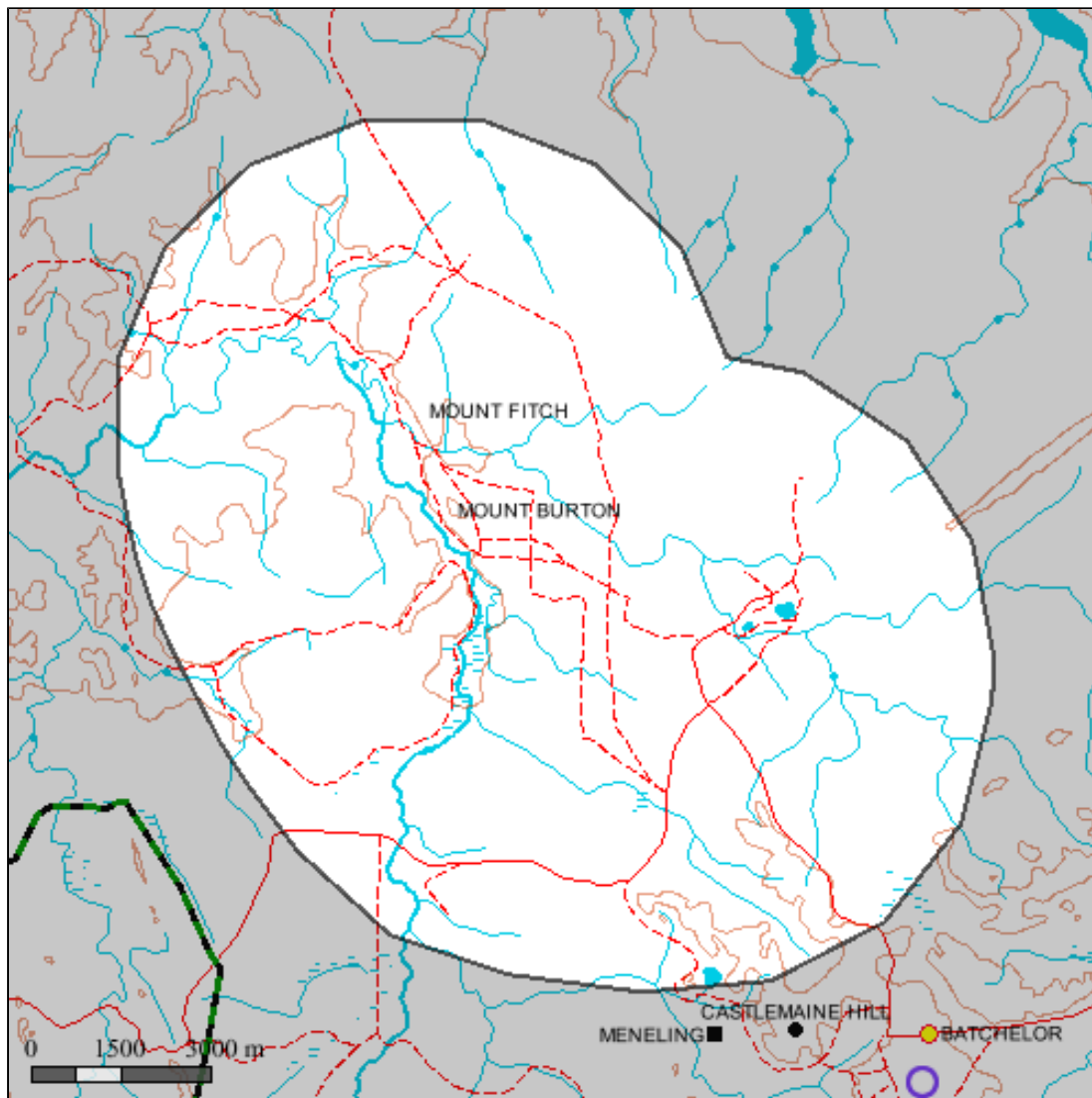
Custom area

Custom area encompasses an area of 146.9 sq km extending from 12 deg 54.0 min to 13 deg 2.0 min S and 130 deg 54.0 min to 131 deg 2.0 min E.

Custom area is located in the Pine Creek, bioregion(s)



Location of Custom area



Custom area Climate

The closest long-term weather station is MIDDLE POINT (12 deg 34.0 min S, 131.3145E) 57 km NE of the center of selected area

Statistics

Mean max temp (deg C)
 Mean min temp (deg C)
 Average rainfall (mm)
 Average days of rain

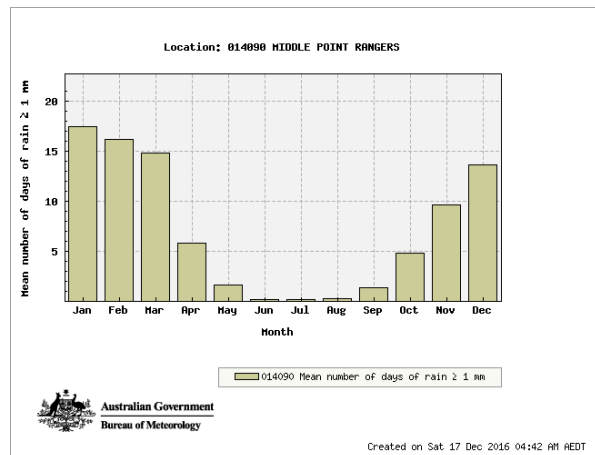
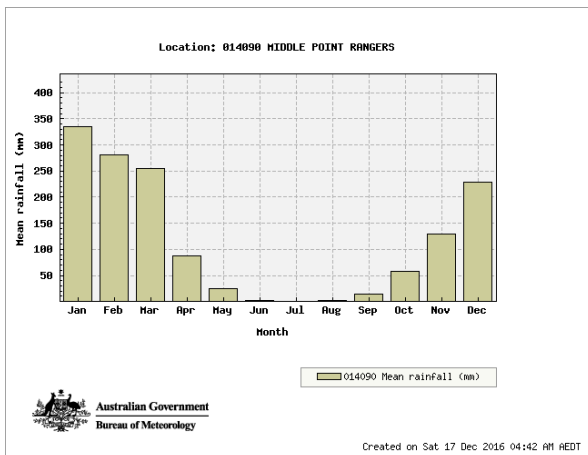
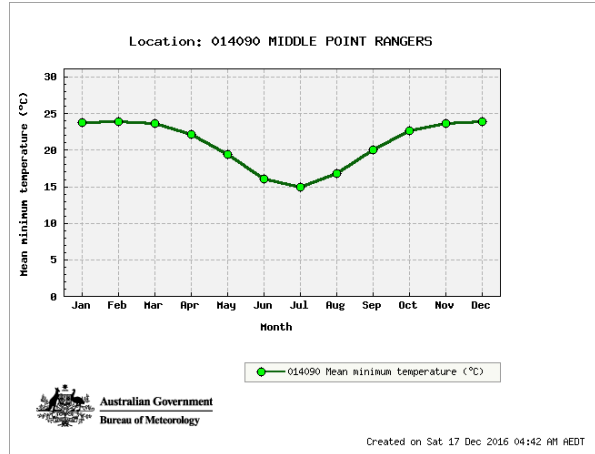
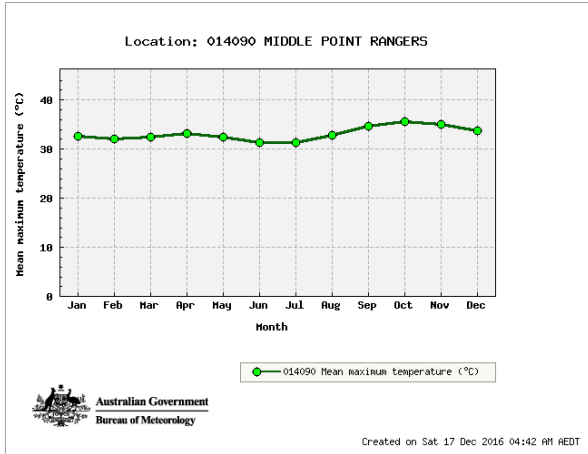
Annual Values

33.1
 20.9
 1421.7
 86.4

Years of record

31
 31
 43
 48

Climate summaries from Bureau of Meteorology (www.bom.gov.au)



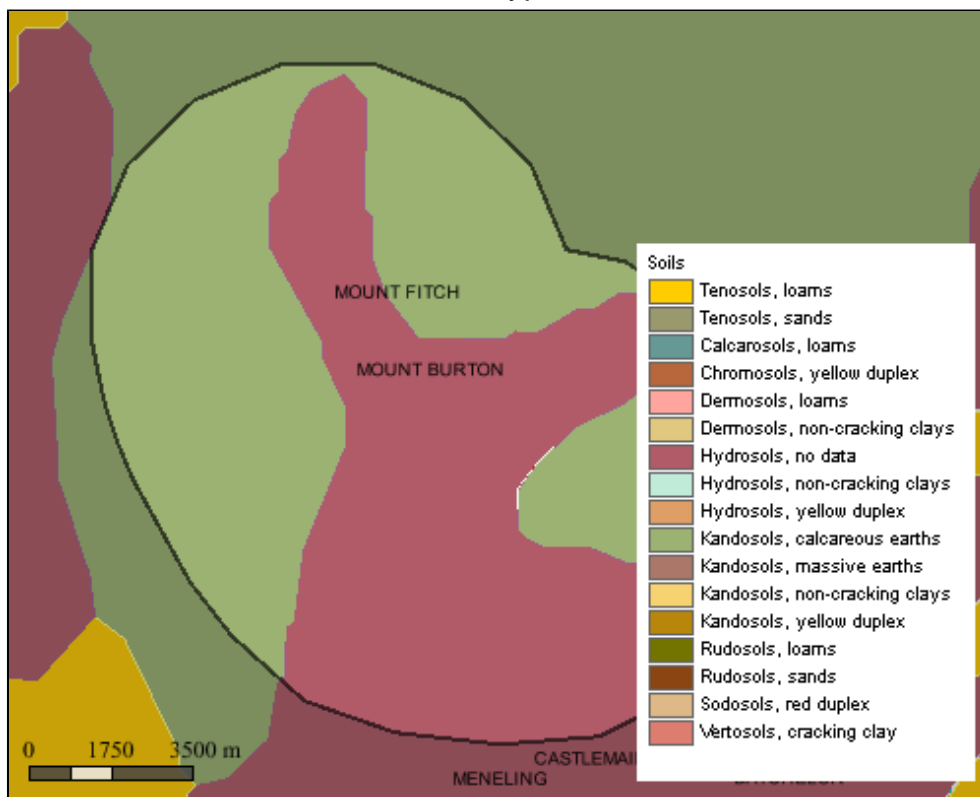
Custom area Soils

Soil Types

Area of soil types (Northcote Factual Key)

Selected area is too small to produce reliable statistics

Soil Types

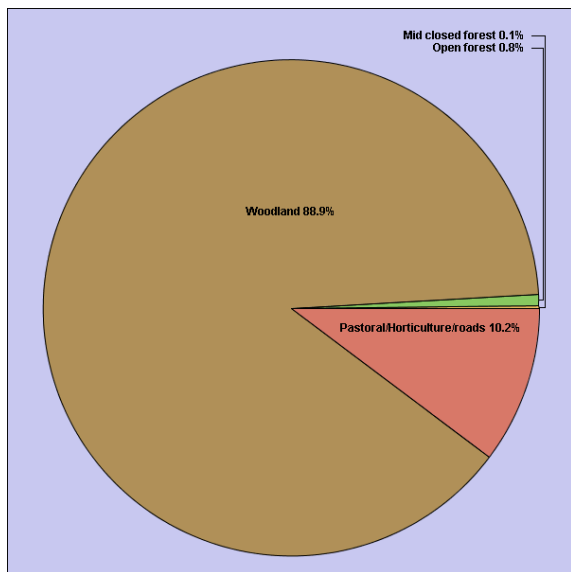


Soils 1:2M Layer is a copy of the NT portion (1:2,000,000 scale dataset) of the CSIRO Atlas of Australian Soils - K.H. Northcote et al. Data scale: 1:2,000,000 ANZLIC Identifier: 2DBC771205D06B6E040CD9B0F274EFE

More details: Go to www.lrm.nt.gov.au/nrmapsnt/ and enter the ANZLIC identifier in the Spatial Data Search

Custom area Vegetation

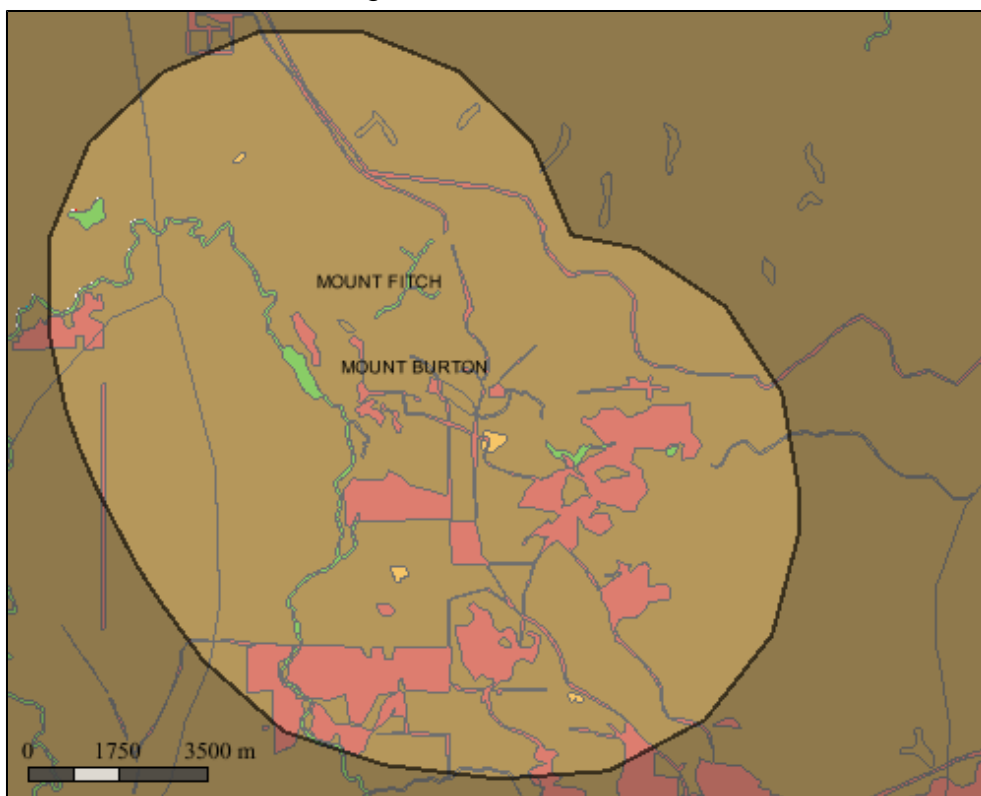
Vegetation Communities



Area of vegetation communities

Category	Area sq km	Area%
Woodland	130.53	88.85
Pastoral/Horticulture/roads	15.04	10.24
Open forest	1.14	.78
Mid closed forest	.19	.13

Vegetation Communities

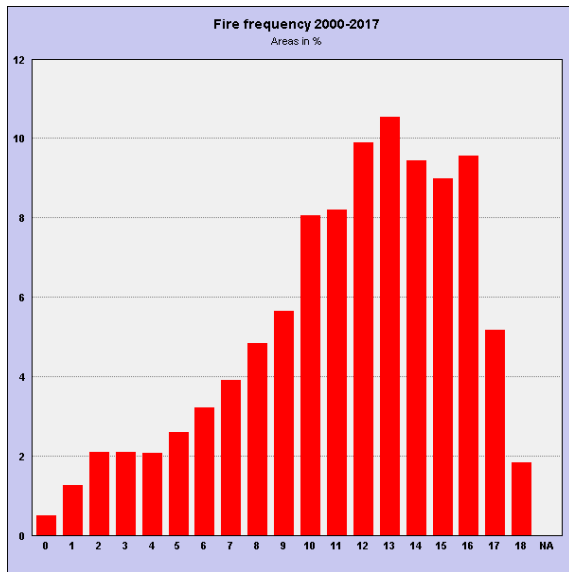


The NVIS 2005 Layer is compiled from a number of vegetation and land unit survey maps that were recoded and re-attributed for the National Vegetation Information System (NVIS)

Data scale variable depending on location. ANZLIC Identifier:2DBC771207006B6E040CD9B0F274EFE
 More details:Go to www.lrm.nt.gov.au/nrmapsnt/ and enter the ANZLIC identifier in the Spatial Data Search

Custom area Fire History

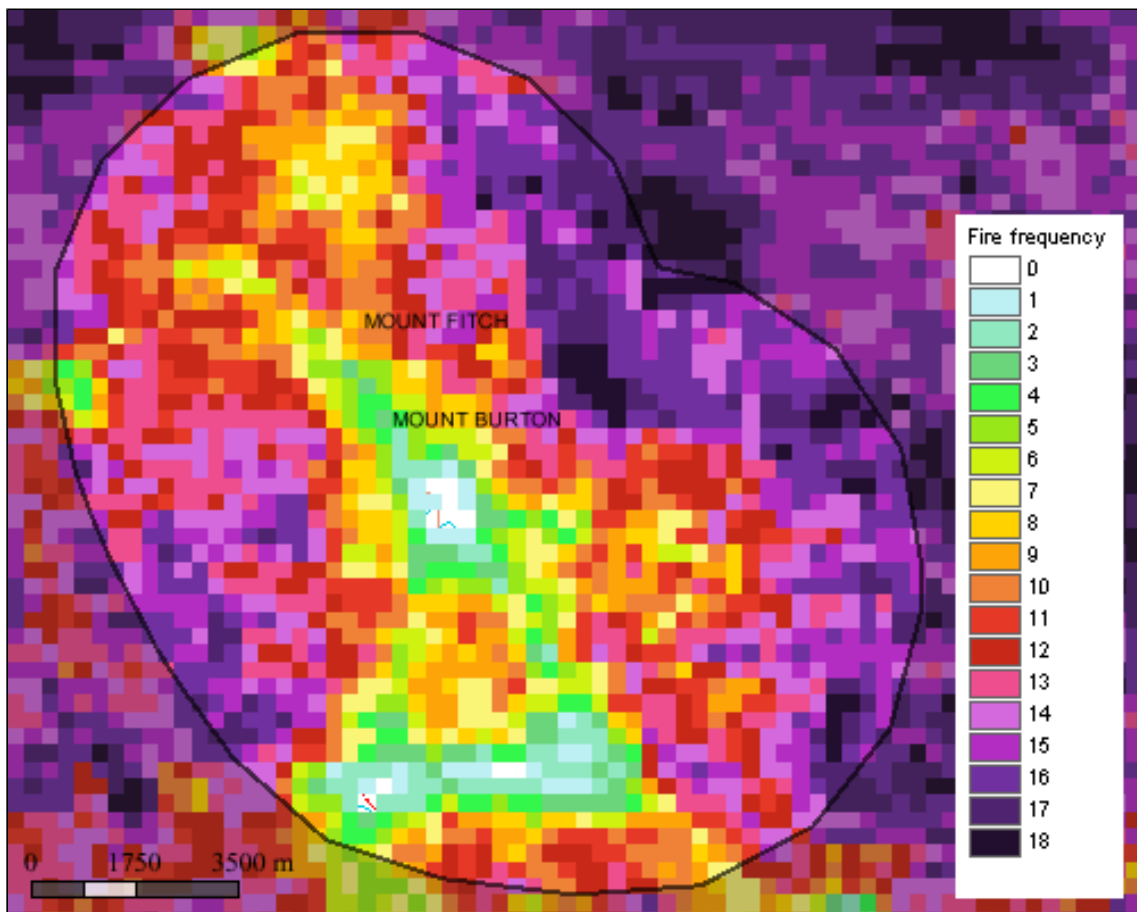
Fire frequency 2000-2017



area burnt for each fire frequency category 2000-2017

Category	Area sq km	Area%
0	.75	.51
1	1.84	1.25
2	3.07	2.09
3	3.09	2.11
4	3.05	2.08
5	3.82	2.60
6	4.74	3.23
7	5.75	3.92
8	7.11	4.84
9	8.31	5.66
10	11.86	8.07
11	12.04	8.20
12	14.54	9.90
13	15.49	10.54
14	13.88	9.45
15	13.20	8.98
16	14.05	9.57
17	7.60	5.18
18	2.70	1.84

Fire frequency 2000-2017



The fire frequency(250m) Layer is derived from satellite imagery sourced from the Moderate Resolution Imaging Spectroradiometer (MODIS) on the NASA Terra satellite
Spatial Resolution: 250m x 250m pixels (at Nadir).

Custom area Threatened Species



Threatened species recorded in Custom area (Records Updated: Sept 2013)

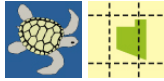
Group	Common Name	Scientific Name	NT Status	National Status	ID	#Observations (Latest)	#Specimens (Latest)	#Surveys (Latest)
Cycads	Armstrong's Cycad	<i>Cycas armstrongii</i>	VU	.	351085	0 (Unknown)	0 (Unknown)	0 (Unknown)
Birds	Partridge Pigeon	<i>Geophaps smithii</i>	VU	VU	176384	2 (1913)	1 (1913)	0 (Unknown)
Birds	Red Goshawk	<i>Erythrotriorchis radiatus</i>	VU	VU	176391	1 (1999)	0 (Unknown)	0 (Unknown)
Birds	Masked Owl (northern mainland)	<i>Tyto novaehollandiae kimberli</i>	VU	VU	594609	1 (2008)	0 (Unknown)	0 (Unknown)
Birds	Gouldian Finch	<i>Erythrura gouldiae</i>	VU	EN	176370	9 (1996)	0 (Unknown)	0 (Unknown)
Mammals	Northern Quoll	<i>Dasyurus hallucatus</i>	CR	EN	176443	2 (2008)	0 (Unknown)	1 (2002)
Mammals	Fawn Antechinus	<i>Antechinus bellus</i>	EN	VU	.	3 (2008)	0 (Unknown)	0 (Unknown)
Mammals	Pale Field-rat	<i>Rattus tunneyi</i>	VU	.	.	0 (Unknown)	0 (Unknown)	1 (2002)

EX = Extinct
 EW = Extinct in the Wild
 ER = Extinct in the NT
 EN = Endangered
 EN/VU = One Endangered subspecies/One Vulnerable subspecies
 VU = Vulnerable
 VU/- = One or more subspecies vulnerable EN/- = One or more subspecies endangered

Survey = this category refers to data collected using systematic survey methodology
 Specimen = this category refers to museum or other records where a specimen has been collected and lodged
 Observation = this category refers to all other incidental recordings where systematic methodology may not have been used consistently.

More species info: Go to www.landmanager.org.au/view/index.aspx?id=####
 where #### is the ID number from the tables above for the species of interest.

Custom area Threatened Species Grid



Threatened species recorded in the grid cell(s) in which Custom area occurs (Records Updated: Sept 2013)

Group	Family Name	Scientific Name	Common Name	NT Status	National Status	#Observations	Latest Observation Date	#Specimens	Latest Specimen Date	#Surveys	Latest Survey Record
Cycads	Cycadaceae	<i>Cycas armstrongii</i>	Armstrong's Cycad	VU		0	Unknown	35	2002	1	2001
Cycads	Cycadaceae	<i>Cycas armstrongii x conferta</i>	Armstrong's Cycad	VU		0	Unknown	5	1991	0	Unknown
Flowering Plants	Orchidaceae	<i>Zeuxine oblonga</i>	Orchid	VU		0	Unknown	1	1989	0	Unknown
Flowering Plants	Fabaceae	<i>Acacia praetermissa</i>	Wattle	VU	VU	0	Unknown	0	Unknown	0	Unknown
Flowering Plants	Malvaceae	<i>Helicteres macrothrix</i>	Helicteres	EN	EN	0	Unknown	8	2011	0	Unknown
Flowering Plants	Rutaceae	<i>Clausena sp. Tipperary</i>	Clausena	EN	-	0	Unknown	4	2010	0	Unknown
Flowering Plants	Lentibulariaceae	<i>Utricularia dunstaniae</i>	Bladderwort	VU		0	Unknown	1	2010	0	Unknown
Flowering Plants	Lentibulariaceae	<i>Utricularia singeriana</i>	Bladderwort	VU		0	Unknown	2	2010	0	Unknown
Fish	Pristidae	<i>Pristis pristis</i>	Freshwater Sawfish	VU	VU	0	Unknown	0	Unknown	0	Unknown
Fish	Terapontidae	<i>Pingalla lorentzi</i>	Lorentz's Grunter	VU		0	Unknown	0	Unknown	0	Unknown
Reptiles	Varanidae	<i>Varanus mertensi</i>	Mertens' Water Monitor	VU		9	2001	6	2006	6	2001
Reptiles	Varanidae	<i>Varanus mitchelli</i>	Mitchell's Water Monitor	VU		4	2011	8	1995	3	2006
Reptiles	Varanidae	<i>Varanus panoptes</i>	Yellow-spotted Monitor	VU		7	2002	0	Unknown	4	2001
Birds	Columbidae	<i>Geophaps smithii</i>	Partridge Pigeon	VU	VU	112	2011	2	2005	9	2011
Birds	Accipitridae	<i>Erythrotriorchis radiatus</i>	Red Goshawk	VU	VU	3	1999	2	1962	0	Unknown
Birds	Tytonidae	<i>Tyto novaehollandiae kimberli</i>	Masked Owl (northern mainland)	VU	VU	2	2008	0	Unknown	0	Unknown
Birds	Estrildidae	<i>Erythrura gouldiae</i>	Gouldian Finch	VU	EN	16	2005	21	1962	0	Unknown
Mammals	Dasyuridae	<i>Dasyurus hallucatus</i>	Northern Quoll	CR	EN	89	2011	27	2004	70	2002
Mammals	Dasyuridae	<i>Antechinus bellus</i>	Fawn Antechinus	EN	VU	5	2008	5	1995	9	2011
Mammals	Dasyuridae	<i>Phascogale pirata</i>	Northern Brush-tailed Phascogale	EN	VU	3	2001	0	Unknown	0	Unknown
Mammals	Macropodidae	<i>Petrogale concinna</i>	Nabarlek	VU	EN	0	Unknown	2	1957	2	1996
Mammals	Megadermatidae	<i>Macroderma gigas</i>	Ghost Bat		VU	13	1988	3	1994	5	2011
Mammals	Hipposideridae	<i>Hipposideros inornata</i>	Arnhem Leaf-nosed Bat	VU	EN	1	1978	0	Unknown	0	Unknown
Mammals	Muridae	<i>Conilurus penicillatus</i>	Brush-tailed Rabbit-rat	EN	VU	4	Unknown	0	Unknown	0	Unknown
Mammals	Muridae	<i>Mesembriomys gouldii gouldii</i>	Black-footed Tree-rat	VU	EN	9	2007	2	1990	19	2006
Mammals	Muridae	<i>Xeromys myoides</i>	Water Mouse		VU	1	1972	0	Unknown	0	Unknown
Mammals	Muridae	<i>Rattus tunneyi</i>	Pale Field-rat	VU		32	2007	6	1996	64	2006

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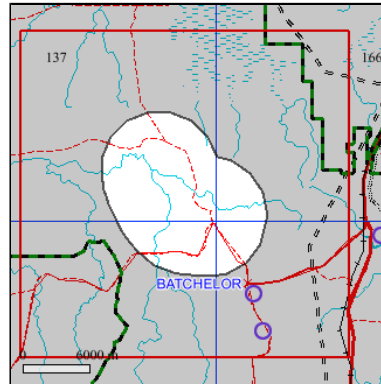
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More species info: Go to www.landmanager.org.au/view/index.aspx?id=####
where #### is the ID number from the tables above for the species of interest.

Species listed in the table above were recorded from all the grid cells shown below (red/blue line) that overlap Custom area



Custom area Weeds and Potential Weeds



Introduced plants recorded in the grid cell(s) in which Custom area occurs and that have been identified as problem weeds in one or more locations in northern Australia. Occurrence based on Northern Territory Government databases.

Family Name	Scientific Name	Common Name	NT Status	National Status	Other Status	#Surveys	Latest Record
Anacardiaceae	<i>Anacardium occidentale</i>	Cashew Nut			C&E	0	Unknown
Poaceae	<i>Andropogon gayanus</i>	Gamba Grass	A C	WONS	MP K1 Q2 WA2 C&E G&M CYP	1	2003
Polygonaceae	<i>Antigonon leptopus</i>	Coral Vine			C&E	0	Unknown
Meliaceae	<i>Azadirachta indica</i>	Neem			MP K1 C&E G&M CYP WeedsAus	0	Unknown
Poaceae	<i>Bothriochloa pertusa</i>	Indian Bluegrass			DEU	0	Unknown
Fabaceae	<i>Calopogonium mucunoides</i>	Calopo			MP C&E CYP	0	Unknown
Apocynaceae	<i>Calotropis procera</i>	Rubber Bush	B C (S of 16 5 deg S)		WA1 WA2 G&M	0	Unknown
Poaceae	<i>Cenchrus echinatus</i>	Mossman River Grass	B C		NSW	0	Unknown
Poaceae	<i>Cenchrus pedicellatus</i>	Mission Grass (annual)			WeedsAus	62	2006
Poaceae	<i>Cenchrus polystachios</i>	Mission Grass (perennial)	B C		MP K2 C&E G&M	3	2003
Poaceae	<i>Cenchrus setiger</i>	Birdwood Grass			DEU	0	Unknown
Poaceae	<i>Cenchrus setosus</i>	Mission Grass (perennial)	B C		MP K2 C&E G&M	0	Unknown
Fabaceae	<i>Centrosema molle</i>	Centro			MP	1	2001
Poaceae	<i>Chloris barbata</i>	Purpletop Chloris			DEU	0	Unknown
Fabaceae	<i>Crotalaria goreensis</i>	Gambia Pea			MP	11	2006
Cucurbitaceae	<i>Cucumis melo</i>	Ulcardo Melon			DEU	0	Unknown
Cyperaceae	<i>Cyperus rotundus</i>	Nutgrass			DEU SA	0	Unknown
Solanaceae	<i>Datura ferox</i>	Fierce Thornapple	A C		WA1 WA3 WA4 G&M	0	Unknown
Fabaceae	<i>Delonix regia</i>	Poinciana			C&E	0	Unknown
Poaceae	<i>Echinochloa colona</i>	Awnless Barnyard Grass			DEU	6	2001
Poaceae	<i>Echinochloa polystachya</i>	Aleman Grass			MP C&E G&M CYP	0	Unknown
Poaceae	<i>Eragrostis pilosa</i>	Soft Lovegrass			DEU	0	Unknown
Amaranthaceae	<i>Gomphrena celosioides</i>	Gomphrena Weed			DEU	0	Unknown
Malvaceae	<i>Grewia asiatica</i>	Phassa Plum			C&E G&M CYP	0	Unknown
Boraginaceae	<i>Heliotropium indicum</i>	Indian Heliotrope			DEU	0	Unknown
Lamiaceae	<i>Hyptis suaveolens</i>	Hyptis	B C		G&M	200	2006
Convolvulaceae	<i>Ipomoea quamoclit</i>	Cupid's Flower			C&E	0	Unknown
Euphorbiaceae	<i>Jatropha gossypifolia</i>	Bellyache Bush	B C	WONS	K2 WA1 WA4 Q2 C&E G&M CYP DEU	0	Unknown
Verbenaceae	<i>Lantana camara</i>	Lantana	B C	WONS	K2 WA1 Q3 Gr G&M CYP DEU NSW SA	0	Unknown

Family Name	Scientific Name	Common Name	NT Status	National Status	Other Status	#Surveys	Latest Record
Lamiaceae	<i>Leonotis nepetifolia</i>	Lions Tail	B C		MP K2 C&E CYP	0	Unknown
Fabaceae	<i>Leucaena leucocephala</i>	Coffee Bush			MP C&E G&M CYP	0	Unknown
Fabaceae	<i>Leucaena leucocephala</i> <i>subsp. leucocephala</i>	Coffee Bush			MP C&E G&M CYP	0	Unknown
Fabaceae	<i>Macroptilium atropurpureum</i>	Siratiro			C&E	0	Unknown
Malvaceae	<i>Malachra fasciata</i> var. <i>lineariloba</i>	Roadside Leafbract			CYP	0	Unknown
Malvaceae	<i>Malvastrum americanum</i>	Spiked Malvastrum			DEU	0	Unknown
Poaceae	<i>Megathyrsus maximus</i>	Guinea Grass			MP DEU	0	Unknown
Poaceae	<i>Melinis repens</i>	Red Natal Grass			DEU	0	Unknown
Fabaceae	<i>Mimosa pigra</i>	Mimosa	A (S of 14 deg S) B (N of 14 deg S) C	WONS	MP K2 WA1 WA2 Q1 G&M CYP SA	0	Unknown
Fabaceae	<i>Mimosa pudica</i>	Common Sensitive Plant	C		WA1 WA2	0	Unknown
Oxalidaceae	<i>Oxalis corniculata</i>	Creeping Wood-sorrel			NSW	0	Unknown
Verbenaceae	<i>Phyla nodiflora</i> var. <i>nodiflora</i>	Lippia			G&M NSW	1	1981
Araceae	<i>Pistia stratiotes</i>	Water Lettuce	B C		WA1 WA2 Q2 CYP NSW	1	1991
Combretaceae	<i>Quisqualis indica</i>	Rangoon Creeper			C&E	0	Unknown
Salviniaceae	<i>Salvinia molesta</i>	Salvinia	B C	WONS	MP WA1 WA2 Q2 G&M NSW SA	0	Unknown
Plantaginaceae	<i>Scoparia dulcis</i>	Bitter Broom			DEU	0	Unknown
Fabaceae	<i>Senna obtusifolia</i>	Sicklepod	B C		WA1 WA2 Q2 G&M CYP DEU	1	2001
Fabaceae	<i>Senna occidentalis</i>	Coffee Senna	B C		G&M DEU	0	Unknown
Fabaceae	<i>Senna tora</i>	Foetid Cassia			WA1 WA2 Q2 G&M CYP	0	Unknown
Malvaceae	<i>Sida acuta</i>	Spiny-head Sida	B C		WA1 G&M	11	2006
Malvaceae	<i>Sida cordifolia</i>	Flannel Weed	B C		WA1 G&M DEU	4	2001
Malvaceae	<i>Sida rhombifolia</i>	Paddy's Lucerne	B C		MP G&M DEU	0	Unknown
Malvaceae	<i>Sida spinosa</i>	Spiny Sida			DEU	0	Unknown
Verbenaceae	<i>Stachytarpheta australis</i>	Branched Porterweed	B C			2	2006
Verbenaceae	<i>Stachytarpheta cayennensis</i>	Cayenne Snakeweed	B C		NSW	1	1989
Verbenaceae	<i>Stachytarpheta jamaicensis</i>	Jamaican Snakeweed	B C			2	2001
Fabaceae	<i>Stylosanthes guianensis</i>	Common Stylo			DEU	0	Unknown
Fabaceae	<i>Stylosanthes hamata</i>	Caribbean Stylo			DEU	1	2001
Fabaceae	<i>Stylosanthes humilis</i>	Townsville Lucerne			DEU	0	Unknown
Fabaceae	<i>Stylosanthes scabra</i>	Shrubby Stylo			G&M DEU	0	Unknown
Asteraceae	<i>Synedrella nodiflora</i>	Cinderella Weed			C&E	1	1988
Poaceae	<i>Themeda quadrivalvis</i>	Grader Grass	B C		G&M CYP DEU	1	2001
Zygophyllaceae	<i>Tribulus terrestris</i>	Caltrop	B C		CYP SA	0	Unknown
Poaceae	<i>Urochloa mosambicensis</i>	Sabi Grass			DEU	1	1993
Poaceae	<i>Urochloa mutica</i>	Para Grass			MP G&M	1	1991

Family Name	Scientific Name	Common Name	NT Status	National Status	Other Status	#Surveys	Latest Record
Rhamnaceae	<i>Ziziphus mauritiana</i>	Chinee Apple	A C		K2 WA1 WA5 Q2 G&M CYP DEU	0	Unknown

Status Codes:

1. NATIONAL STATUS CODES

Alert, Alert List for Environmental Weeds (Please call Exotic Plant Pest Hotline 1800 084 881 if you think you have seen this weed)

Sleeper, National Sleeper Weed

Target, Targeted for eradication. (www.landmanager.com.au/view/index.aspx?id=449837)

WONS, Weeds of National Significance

2. NT STATUS CODES

A, NT Class A Weed (to be eradicated)

B, NT Class B Weed (growth & spread to be controlled)

C, NT Class C Weed (not to be introduced) (www.landmanager.com.au/view/index.aspx?id=449869)

3. OTHER STATUS CODES

C&E, Csurhes, S. & Edwards, R. (1998) Potential Environmental Weeds in Australia. Candidate Species for Preventative Control. Environment Australia, Canberra (www.landmanager.com.au/view/index.aspx?id=394504)

CYP, Draft Cape York Peninsula Pest Management Plan 2006-2011 (www.landmanager.com.au/view/index.aspx?id=371200)

DEU, Plants listed as environmental weeds by the Desert Uplands Strategic Land Resource

Assessment (www.landmanager.com.au/view/index.aspx?id=332123)

G&M, Grice AC, Martin TG. 2005. The Management of Weeds and Their Impact on Biodiversity in the Rangelands. Cooperative Research Centre (CRC) for Australian Weed Management and CSIRO Sustainable Ecosystems. Commonwealth Australia (www.landmanager.com.au/view/index.aspx?id=163572)

Gr, Groves et al. 2003. Weed categories for natural and agricultural ecosystem management. Bureau of Rural Sciences (www.landmanager.com.au/view/index.aspx?id=388018)

K0, High Priority Weeds not yet established in the Katherine region

K1, High Priority Weeds posing environmental threats in the Katherine region

K2, High Priority Weeds posing existing threats in the Katherine region, as described in the Katherine Regional Weed Management Strategy 2005-2010 (www.landmanager.com.au/view/index.aspx?id=130286)

MP, Northern Territory Parks & Conservation Masterplan (www.landmanager.com.au/view/index.aspx?id=144141)

NAQS, North Australian Quarantine Strategy Target List (www.landmanager.com.au/view/index.aspx?id=449416)

NSW, Declared Noxious Weed in NSW (www.landmanager.com.au/view/index.aspx?id=449983)

Q1, QLD Class 1 Weed (not to be introduced, kept or supplied)

Q2, Class 2 Weed (eradicate where possible, not to be introduced, kept or supplied)

Q3, Qld Class 3 Weed (to be controlled near environmentally sensitive areas- not to be supplied/sold without a permit) (www.landmanager.com.au/view/index.aspx?id=190714)

SA, Declared Plant in South Australia (www.landmanager.com.au/view/index.aspx?id=449996)

WeedsAus, Listed as a significant weed by Weeds Australia (www.landmanager.com.au/view/index.aspx?id=14576)

WA1, WA Weed Class P1 (movement prohibited)

WA2, WA Weed Class P2 (aim to eradicate)

WA3, WA Weed Class P3 (control infestations)

WA4, WA Weed Class P4 (prevent spread)

WA5, WA Weed Class P3 (control infestations on public land) (www.landmanager.com.au/view/index.aspx?id=449884).

Survey = this category refers to data collected using systematic survey methodology

Specimen = this category refers to museum or other records where a specimen has been collected and lodged

Observation = this category refers to all other incidental recordings where systematic methodology may not have been used consistently.

More species info: Go to www.landmanager.org.au/view/index.aspx?id=####

where #### is the ID number from the tables above for the species of interest.

Plants listed in the table above were recorded from all the grid cells shown below (red/blue line) that overlap Custom area

Custom area Pest and Potential Pest Animals



Animals with pest potential recorded in the grid cell(s) in which Custom area occurs. Occurrence based on Northern Territory Government databases.

Common Name	Scientific Name	NT Status	National Status	ID	#Observations (Latest)	#Specimens (Latest)	#Surveys (Latest)
Cane Toad	<i>Rhinella marina</i>	P	.	183252	15 (2011)	1 (2010)	21 (2011)
Asian House Gecko	<i>Hemidactylus frenatus</i>	P	.	188964	5 (2008)	2 (1977)	1 (1988)
Flower-pot Blind Snake	<i>Ramphotyphlops braminus</i>	P	.	189084	0 (Unknown)	1 (2002)	0 (Unknown)
Red-tailed Black-cockatoo	<i>Calyptorhynchus banksii macrorhynchus</i>	N	.	223765	197 (2011)	1 (1979)	8 (2011)
Sulphur-Crested Cockatoo	<i>Cacatua galerita</i>	N	.	223772	230 (2011)	0 (Unknown)	36 (2011)
Agile Wallaby	<i>Macropus agilis</i>	N	.	223786	36 (2011)	1828 (1970)	29 (2011)
Black Rat	<i>Rattus rattus</i>	P	.	183236	4 (1995)	10 (1977)	1 (2001)
Dingo / Wild dog	<i>Canis lupus</i>	N	.	183280	17 (2011)	3 (1991)	6 (2001)
Cat	<i>Felis catus</i>	P	.	183259	16 (1991)	1 (2005)	1 (2001)
Rabbit	<i>Oryctolagus cuniculus</i>	P	.	187331	1 (2007)	0 (Unknown)	0 (Unknown)
Horse	<i>Equus caballus</i>	P	.	183315	16 (2011)	0 (Unknown)	1 (2001)
Pig	<i>Sus scrofa</i>	P	.	183329	19 (2011)	1 (1974)	13 (2002)
Swamp Buffalo	<i>Bubalus bubalis</i>	P	.	183245	21 (2011)	0 (Unknown)	6 (2011)
Cattle	<i>Bos taurus</i>	P	.	183266	81 (2000)	0 (Unknown)	2 (2011)
Sambar	<i>Cervus unicolor</i>	P	.	183343	1 (2008)	0 (Unknown)	0 (Unknown)

NT STATUS CODES:

Int, Introduced species (all non-prohibited vertebrates, and all other exotic species (www.landmanager.com.au/view/index.aspx?id=280771))

N, Native species with pest potential.

P, Prohibited species (all exotic vertebrates except those listed as non-prohibited (www.landmanager.com.au/view/index.aspx?id=450509))

Survey = this category refers to data collected using systematic survey methodology

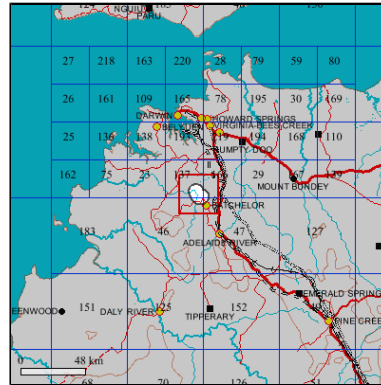
Specimen = this category refers to museum or other records where a specimen has been collected and lodged

Observation = this category refers to all other incidental recordings where systematic methodology may not have been used consistently.

More species info: Go to www.landmanager.org.au/view/index.aspx?id=####

where #### is the ID number from the tables above for the species of interest.

Potential pest animals listed in the table above were recorded from all the grid cells shown below (red/blue line) that overlap Custom area



Soils and vegetation graphs and tables refer to area of soils and vegetation only. Fire graphs and tables refer to entire selected area including sea if present. Calculations are derived from map images or vector data, and should be taken as a guide only. Accuracy cannot be guaranteed. For small areas, figures should be rounded to the nearest whole number.

Fire map layers used in these reports have been updated in 2018 so their pixels are aligned to the same grid.

Appendix 2 – Company Policies



Environmental Policy

Northern Territories Resources Pty Ltd (NTR) and subsidiaries are committed to being leaders in environmental excellence by:

- ◆ Managing activities to minimise the impact on the environment.
- ◆ Seeking continual improvement of our environmental performance.

In achieving these objectives, NTR will:

- ◆ Meet and comply with applicable laws, regulations and voluntary commitments.
- ◆ Apply, maintain and audit environmental standards, regulations and good working practices and, where such do not exist, adopt the most practical methods available.
- ◆ Assess potential environmental aspects and impacts before conducting new activities, and set environmental objectives and targets.
- ◆ Work actively with government agencies to develop regulatory instruments which will achieve desirable environmental outcomes.
- ◆ Work in cooperation with outside groups toward a consensus on environmental quality standards.
- ◆ Ensure public awareness and understanding of environmental issues associated with its operations and of environment-related actions taken by the Company.
- ◆ Reduce waste generation wherever possible.
- ◆ Undertake regular reviews to ensure that the objectives of the environmental management system are being met and take remedial actions where necessary.

Dr Andrew Tong

Director

Northern Territories Resources Pty Ltd

Date 24/6/2017

Document No: NTR-ENV-POL-001	Approved Andrew Tong	Issue Date: 26 th June 2017	Revision No: 3 Review Date 24 th June 2017
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Code of Conduct and Ethics

1. INTRODUCTION

The honesty, integrity and sound judgment of our employees is essential to the Company's reputation and success.

This Code of Conduct and Ethics governs the actions and working relationships of the Company's employees with current and potential customers, fellow employees, competitors, government and self-regulatory agencies, the media, and anyone else with whom the Company has contact. These relationships are essential to the continued success of the Company.

When this Code of Conduct and Ethics refers to "the Company," that term includes all personnel associated with Northern Territories Resources Pty Ltd and subsidiary entities.

This Code of Conduct and Ethics

- Requires honest and ethical conduct, including proper and ethical procedures for dealing with actual or apparent conflicts of interest between personal and professional relationships.
- Requires full, fair, accurate, timely and understandable disclosure in the periodic reports required to be filed by the Company with governmental agencies.
- Requires compliance with applicable laws, rules and regulations.
- Addresses potential or apparent conflicts of interest and provides guidance for employees to communicate those conflicts to the Company.
- Addresses misuse or misapplication of the Company's property and business opportunities.
- Requires confidentiality and fair dealing within the Company and outside the Company.
- Requires proper reporting of any illegal behaviour.

2. CONFLICTS OF INTEREST

A "conflict of interest" occurs when your private interest in any way interferes with the interests of the Company. You are expected to avoid all situations that might lead to a real or apparent material conflict between your self-interest and your duties and responsibilities as an employee of the Company.

Any position or interest, financial or otherwise, that could materially conflict with your performance as an employee of the Company, or that affects or could reasonably be

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expected to affect your independence or judgment concerning transactions between the Company, its customers, suppliers or competitors or otherwise reflects negatively on the Company would be considered a conflict of interest.

3. CONFIDENTIALITY

Non-public information regarding the Company or its business, employees, customers and suppliers is confidential. As an employee, you are trusted with confidential information. You are only to use such confidential information for the intended business purpose of the Company. You are not to share confidential information with anyone outside of the Company, including family and friends, or with other employees of the Company who do not need the information to carry out their duties. You may be required to sign a specific confidentiality agreement in the course of your employment at the Company.

Whether a specific confidentiality agreement is required of you or not, your obligation to keep all information confidential continues even if your employment with the Company ends.

The following is a non-exclusive list of confidential information:

- Material, non-public financial information regarding the Company or any of its subsidiaries or affiliates.
- Trade secrets, which include customer lists, pricing and cost information, business or technical information, programs, methods, techniques, compilations or other information that is valuable because it is not generally known.
- Any invention or process developed by an employee using the Company's facilities or trade secrets, resulting from any work for the Company, or relating to the Company's business.

All public and media communications involving the Company must have prior clearance by the Company's senior management.

4. BUSINESS OPPORTUNITIES OF THE COMPANY

Using confidential information about the Company or its business, employees, customers or suppliers for personal benefit or disclosing such information to others outside your normal duties is prohibited.

Employees are prohibited from:

- Personally benefiting from opportunities that are discovered through the use of the Company's property, or through their contacts, information or position with the Company.

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- Accepting employment or engaging in a business (including consulting or similar arrangements) that may conflict with the performance of your duties for the Company or the Company's business interest.
- Soliciting, demanding, accepting or agreeing to accept anything of value from any person in conjunction with the performance of your employment or duties for the Company.
- Acting on behalf of the Company in any transaction in which you or any member of your immediate family has a significant direct or indirect financial interest.
- Accepting any gifts from outside sources; if any gifts are received they must be declared.

5. INSIDER TRADING

It is both unethical and illegal to buy, sell, trade or otherwise participate in transactions involving the Company's securities while in possession of material information concerning the Company that has not been released to the general public, but which when released may have an impact on the market price of the Company's securities.

It is also unethical and illegal to buy, sell, trade or otherwise participate in transactions involving the securities of any other company while in possession of similar non-public material information concerning such company. Any questions concerning the propriety of effecting a transaction in the Company's (or other company's) securities should be directed to the Company's Chairman.

6. OUTSIDE BUSINESS RELATIONSHIPS

Before agreeing to act as a consultant or advisor for any other business organisation, you should notify your immediate supervisor.

Employees who are considering outside employment should notify their manager or supervisor who will review outside employment requests for potential conflicts of interest.

7. OTHER AGREEMENTS

At or prior to their hiring date, employees must disclose the existence of any employment agreement, non-competition or non-solicitation agreement, confidentiality agreement or similar agreement with a former employer that in any way restricts or prohibits their performance of any duties or responsibilities of their positions with the Company. Copies of such agreements should be provided to the Company to permit evaluation of the agreement in light of the employee's position.

In no event, shall an employee use any trade secrets, proprietary information or other similar property, acquired in the course of his or her employment with another employer, in the performance of his or her duties for or on behalf of the Company.

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8. PROTECTION AND PROPER USE OF COMPANY PROPERTY

All employees should protect the Company's property and assets and ensure their proper use. Theft, carelessness and waste can directly impact the Company's profitability, reputation and success. Permitting the Company's property (including data transmitted or stored electronically and computer resources) to be damaged, lost, or used in an unauthorised manner is strictly prohibited. Employees may not use official stationery for personal purposes.

9. COMPLIANCE WITH LAWS, RULES AND REGULATIONS

This Code of Conduct and Ethics is based on the Company's policy that all employees comply with the law. While the law prescribes a minimum standard of conduct, this Code of Conduct and Ethics requires conduct that often exceeds the legal standard.

10. REPORTING OF ILLEGAL OR UNETHICAL BEHAVIOR

The Company recognises that its employees, customers and suppliers must have faith and confidence in the honesty and character of its personnel. Fraud is an element of business that can significantly affect the reputation and success of the Company. The Company requires its employees to talk to supervisors, managers or other appropriate personnel to report and discuss any known or suspected criminal activity or violations of this Code involving the Company or its employees.

If, during the course of your employment, you become aware of any suspicious activity or behaviour, including concerns regarding questionable accounting or auditing matters, you should report such activity or behaviours to a member of the Company's senior management. Reporting the activity will not subject the employee to discipline absent a knowingly false report. All reports will be treated confidentially. Anonymous reports will also receive a full inquiry.

11. ADMINISTRATION AND WAIVER OF CODE OF CONDUCT AND ETHICS

All managers and direct supervisors are responsible for reviewing this Code of Conduct and Ethics with their subordinates.

Employees will be required to sign the bottom of this document to verify that they have read this Code of Conduct and Ethics and will comply with its provisions.

Employees of the Company are expected to follow this Code of Conduct and Ethics at all times. In rare circumstances, situations may arise in which a waiver may be appropriate. Waivers will be determined on a case-by-case basis by the Company's senior management with the advice of the Company's counsel.

Known or suspected violations of this Code of Conduct and Ethics will be investigated and may result in disciplinary action up to and including immediate termination of employment from the Company.

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Any questions and further information on this Code of Conduct and Ethics should be directed to the Director.

ACKNOWLEDGMENT

“I have read the Code of Conduct and Ethics and agree to comply with its provisions”

Name: _____
(Please print)

Signature: _____ **Date:** _____

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Equal Opportunity and Affirmative Action Policy

Northern Territories Resources Pty Ltd (NTR) is an equal opportunity employer, committed to providing a positive and friendly work environment, free from any form of discrimination or harassment.

NTR supports the philosophy of equality in selection, training and opportunities for advancement for all without regard to race, colour, age, political beliefs, sex, religion, ancestry, handicap, national origin or marital status, and actively creates procedures and champions behaviours that promote this philosophy.

Equal Employment Opportunity (EEO) is the goal whereby every individual has the same environment in which to develop their full potential and have access to opportunities for which they have the appropriate skills.

Affirmative Action (AA) is a legislated process which is committed to ensuring equality for women with employment and promotional opportunities within the workplace.

Equality and merit will always be the only criteria used when offering opportunities for career development, promotion, training and recruitment.

Everyone's support and cooperation is sought in avoiding practices and behaviours which lead to discrimination.

Dr Andrew Tong

Director

Northern Territories Resources Pty Ltd

Date 24/6/2017

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Corrective Counselling Policy

Corrective counseling may be initiated when management believes that an employee's performance problem may be resolved through adequate counselling. Corrective counselling is completely at the discretion of management. Nothing in this policy is intended to alter the right of the company to apply any form of discipline, including termination of employment, that is deemed reasonable and appropriate under the circumstances. This policy is intended merely as a guideline and should not be construed as promising any particular course of action with regard to employee discipline. All decisions related to the form of employee discipline rest within the sound discretion of management.

The steps in corrective counselling and performance improvement are as follows, although management may skip one or more of these steps under appropriate circumstances:

1. Verbal counselling – As the first step in correcting unacceptable performance or behaviour, Management may review pertinent job requirements with the employee to ensure his or her understanding of them. Management may consider the severity of the problem, the employee's previous performance and all of the circumstances surrounding the particular case. If the problem continues, in the second step the manager may define the problem in more specific terms and work with the employee to identify the requirements for performance improvement or change of conduct. The seriousness of the performance or misconduct may indicate that a written warning, probation, or possible termination of employment could result if the problem is not resolved. The employee should be asked to review what has been discussed to ensure his or her understanding of the seriousness of the problem and the corrective action necessary. Verbal counselling is still documented and becomes part of the employee's personnel file.
2. Written warning – If the unacceptable performance or behaviour continues, the next step should be a written warning. Also, certain circumstances may justify written warning without first using verbal counselling. The written warning defines the problem and how it may be corrected. The seriousness of the problem is again emphasized, and the written warning may indicate that discipline up to and including termination of employment may result if improvement is not observed. Written warning also becomes part of the employee's personnel file.
3. Suspension – A suspension without pay may be justified when circumstances reasonably require an investigation of a serious incident in which the employee was allegedly involved. A suspension may also be warranted when employee safety, welfare, or morale may be adversely affected. In addition, suspension without pay may be imposed for misconduct such as some minor violations of safety rules. In implementing a suspension, a written counselling report may set forth the circumstances justifying the suspension. Such a report will become part of the employee's personnel file.
4. Involuntary Termination – Involuntary termination occurs when the company terminates an employee's employment and does not include voluntary termination by the employee.

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ACKNOWLEDGMENT

"I have read the Code of Conduct and Ethics and understand the provisions of the Corrective Counselling Policy"

Name: _____
(Please print)

Signature: _____ Date: _____

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Community Relations Policy

Northern Territories Resources Pty Ltd (NTR) is committed to developing mutually beneficial relationships with local communities.

In achieving this objective, NTR will:

- ◆ Establish and maintain effective, positive and respectful communication with members of local communities;
- ◆ Ensure that local residents are properly consulted regarding any development proposed by NTR that may have a social, cultural, economic or historical impact on their community and/or livelihoods;
- ◆ Aim to maximise the economic development of local communities through the employment of local residents, and support of local businesses;
- ◆ Aim to introduce or contribute toward financial support for education, training and employment programs for local residents including the provision of scholarships, mentor arrangements and workshops;
- ◆ Ensure that its activities are conducted in a manner that is sensitive to local peoples' rights and interests and in particular, that it is familiar with and acknowledges local heritage issues;
- ◆ Conduct all activities with respect for the environment;
- ◆ Ensure that its activities are conducted in compliance with Local, Territory and Federal Government legislation, and respect appropriate indigenous customs.

Dr Andrew Tong

Director

Northern Territories Resources Pty Ltd

Date 24/6/2017

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Health and Safety Policy

The Northern Territories Resources Pty Ltd (NTR) will conduct its business activities in such a manner as to protect the safety and health of all employees, contractors, visitors and the greater community.

NTR will as a minimum comply with all statutory and legal requirements as prescribed under the Northern Territory Mining Act, NT Worksafe and relevant Codes of Practice.

Our company is therefore committed to:

- ◆ Improving the management and best practices, so as to provide a safe and healthy work environment in compliance with relevant regulator, legislative and company requirements;
- ◆ Identifying hazards, evaluating risks and eliminating or reducing, as far as reasonably practicable, any risks associated with the company's activities on a regular basis;
- ◆ Meeting its obligations to employees, contractors/vendors and members of the public who may be affected by its operations;
- ◆ Consulting and communicating with its employees and other interested parties on health and safety matters and encouraging employees to participate in the company's health and safety program;
- ◆ Ensuring, through appropriate training, planning and communications, that all personnel onsite are aware of their responsibilities regarding health and safety and competent to perform their jobs;
- ◆ Establishing and communicating the accountabilities and responsibilities (including Duty of Care) of all management, employees and contractors for Health and Safety;
- ◆ Employing contractors who demonstrate a high level of commitment and performance to health and safety.

The success of this policy requires commitment from all employees and contractor/vendors. It is the responsibility of each employee to observe all health and safety rules and procedures and cooperate with the company in complying with its statutory obligations. Employees must be aware at all times of the responsibilities that they have for both their own safety and the safety of others.

Responsibility for implementation of the safety policy lies with the Management Team that the objectives are all met. This policy is communicated, implemented and maintained at all levels throughout the organisation. It is annually reviewed and revised as needed to ensure its continuing suitability and adequacy and is available to external interested parties upon request.

Dr Andrew Tong
Director
Northern Territories Resources Pty Ltd

Date 24/6/2017

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Duty of Care Policy

Northern Territories Resources Pty Ltd (NTR) will comply with, and expects all employees and contractors to comply with, the Northern Territory *Work, Health and Safety (National Uniform Legislation) Act*, as outlined below.

NTR will ensure, so far as is reasonably practicable, that the health and safety of other persons is not put at risk from work carried out as part of the conduct of its business.

NTR will provide and maintain:

- ◆ A work environment without risks to health and safety;
- ◆ Safe plant and structures; and safe systems of work;
- ◆ Adequate facilities for the welfare at work of workers and ensure access to those facilities;
- ◆ Information, training, instruction and supervision necessary to protect all persons from risks to their health and safety;
- ◆ Workplace monitoring for the purpose of preventing illness or injury of workers.

NTR expects that employees will:

- ◆ Exercise due diligence which involves taking reasonable steps;
- ◆ Acquire and keep up to date knowledge of work health and safety matters;
- ◆ Gain an understanding of the nature of the operations at NTR and generally of the hazards and risks associated with those operations;
- ◆ Comply with and use appropriate resources and processes to eliminate or minimise risks to health and safety;
- ◆ Comply with processes for reporting and investigating incidents, hazards and risks.

While at work, a worker must:

- ◆ Take reasonable care for his or her own health and safety;
- ◆ Take reasonable care that his or her acts or omissions do not adversely affect the health and safety of other persons;
- ◆ Comply with any reasonable instruction that is given by supervisory or management staff so far as the worker is reasonably able;
- ◆ Comply with NTR policies and procedures relating to health or safety at the workplace.

Dr Andrew Tong
CEO
Northern Territories Resources Pty Ltd

Date 24/6/2017

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Drug and Alcohol Policy

Northern Territories Resources Pty Ltd (NTR) is committed to fulfilling its duty of care by:

- ◆ Protecting the safety, health and welfare of all employees, contractors or visitors from injuries and disabilities resulting from the use of alcohol or drugs, whether that use is by the individual concerned, or by any other person;
- ◆ Prohibiting employees, contractors or visitors from possessing, consuming, using, selling, giving or otherwise disposing of any alcoholic liquor or drugs, or being under the influence of the same whilst at any NTR site;
- ◆ Prohibiting employees, contractors or visitors from entering, remaining on and/or carrying out work at any NTR site, including operating plant or equipment, when the employee, contractor or visitor has a positive alcohol concentration or a positive drug reading, when tested by recognised industry means;
- ◆ Providing alcohol and other drugs screening programs as part of the pre-employment medical criteria with ongoing screening to monitor conformance;
- ◆ Providing for random testing of all personnel (employees, contractors or visitors) at any time on any NTR site.

The procedures developed to support this policy include provisions designed to protect the privacy and confidentiality of all personnel with the aim of respecting the rights of all personnel at all times, including persons taking prescription drugs.

Dr Andrew Tong

Director

Northern Territories Resources Pty Ltd

Date 24/6/2017

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Appendix 3 – Risk Assessment and Risk Matrix

Environmental Risk Assessment - Drill Program 2018 Litchfield Tenements

Aspects	Activity/ Risk	Potential Environmental Impacts	Inherent Risk			Risk Mitigation	Residual Risk		
			Consequence	Likelihood	Risk Score		Consequence	Likelihood	Risk Score
Emissions to Air (dust, odour, vapour, fire, GHG, radiation, other)	<ul style="list-style-type: none"> - Wind erosion from exposed surfaces - Dust generated from drilling activities - Dust generated from rehabilitation activities - Fuel emissions from drill rig - Increased vehicle movement 	<ul style="list-style-type: none"> - Degradation in air quality - Visual amenity - Degradation to vegetation communities through dust deposition - Impact to fauna health - Impact to sensitive receptors (including neighbouring farms and motorists) - Increased contribution to GHG emissions - Potential radiation exposure 	Low	Possible	Low 6	<ul style="list-style-type: none"> - During times of excessive wind and where dust is being generated from drilling activities, drilling operations is to stop until conditions improve - Limit unnecessary use of equipment/vehicles - Preliminary results indicate that there is no to low risk of intercepting uranium or any other mineral that has a radiation risk. The geologist will monitor this. 	Low	Unlikely	Low 3
Noise and Vibration	<ul style="list-style-type: none"> - Use of drill rigs and power tools - Machinery undertaking earthworks for rehabilitation 	<ul style="list-style-type: none"> - Public amenity - Fauna Disturbance 	Low	Possible	Low 6	<ul style="list-style-type: none"> - Regular service and maintenance of equipment. - Install standard noise abatement devices (eg mufflers) on machinery and vehicles. - Works only conducted in daylight hours - no nightshift - Land owners have been consulted prior to setting up this program 	Low	Unlikely	Low 3
Releases to Land and Water (Waste Water, Hydrocarbon, Chemicals, Other)	<ul style="list-style-type: none"> - Management of drilling muds - Establishment of drill pads on ramps or areas of uneven terrain - Storage and handling of fuels or chemicals - Extreme rainfall event 	<ul style="list-style-type: none"> - Overflow of contaminated drilling mud - Erosion and sediment control issues impacting surrounding environment - Spill or leak to the environment with potential to contaminate land resources 	Minor	Possible	Medium 9	<ul style="list-style-type: none"> - Use of adequately sized sumps to capture drilling mud/waste water - Water Management Plan - Use, store and handle chemicals in accordance with legislation and Australian Standard AS1940 - Locate chemical storage > 50 metres from waterways or drainage lines. - Safety Data Sheets kept on site for all chemicals being stored as part of drilling program - Drilling activities to cease during in heavy rain events. - Drill pads located in stable location and sediment controls put in place where necessary - Drill holes/ sumps to be located away from waterways (>50m) - Rehabilitation of pads, holes and sumps as soon as practicable - Spill response Kits and Emergency Trailer - Contractor to safety store all fuel and hydrocarbon products. Any bulk products will be stored within the Browns Project Mine Facility. 	Minor	Unlikely	Low 5
Biological and Land Management	<ul style="list-style-type: none"> - Animal entrapment - Vehicle Movement - Standing water left unattended in drains 	<ul style="list-style-type: none"> - Fauna injury or death due to entrapment in sumps or boreholes - Direct fauna mortality from vehicle collision - Increase in biting insect populations 	Minor	Likely	Medium 14	<ul style="list-style-type: none"> - Daily visual inspections of water bodies and drainage - Plug bore holes immediately - Drive a reduced speeds around work areas to reduce risk of animal collision - Hazard and incident reporting - Rehabilitation of pads, holes and sumps as soon as practicable - Mature trees and <i>Cycad Armstrongii</i> will be avoided during clearing activities. 	Minor	Rare	Low 2
Cultural and Heritage Management	<ul style="list-style-type: none"> - Activities with potential to interaction with archaeological sites - New employees/contractors working on the site. 	<ul style="list-style-type: none"> - Destruction of known sites - Destruction of previously unregistered / unknown sites 	Moderate	Possible	Medium 13	<ul style="list-style-type: none"> - Aboriginal Areas Protection Authority Abstract of Records obtained and sites close to sacred sites or restricted work areas have been cancelled. - Site Induction will discuss procedures should activities come across a suspected archaeological site. - Should any item be encountered which might be an artefact of heritage value, cease all construction work and notify the supervisor immediately - Prescribed burns prior to clearing so areas can be inspected prior to clearing. - Cultural Heritage Management Plan 	Moderate	Rare	Low 4

Aspects	Activity/ Risk	Potential Environmental Impacts	Inherent Risk			Risk Mitigation	Residual Risk		
			Consequence	Likelihood	Risk Score		Consequence	Likelihood	Risk Score
Biosecurity (Weeds and Pest Animals)	<ul style="list-style-type: none"> - Vehicle movement and movement of construction materials - Contractor equipment entering site - Increase in vehicular movement to and from site - Weed management of rehabilitated areas. 	<ul style="list-style-type: none"> - Decrease in biodiversity due to inappropriate management of weeds - Spreading of weeds into unaffected areas - Introduction of pest species causing mortality of flora and fauna species - Introduction of pest species causing a decrease in biodiversity 	Minor	Possible	Medium 9	<ul style="list-style-type: none"> - Weed hygiene and vehicle inspections of all contractor or hire equipment (entering and leaving site). Most sites have significant gamba grass present. A spray unit can be made available to do this at the location - Prescribed burning to be undertaken prior to mobilisation. - Site induction 	Minor	Unlikely	Low 5
Fire Management	<ul style="list-style-type: none"> - Hot work activities - Fire risk from machinery - Incorrect storage of flammable goods - Transportation and storage of of dangerous goods and hazardous materials. - Lightning strikes igniting fires 	<ul style="list-style-type: none"> - Biodiversity loss - Direct mortality of native vegetation and terrestrial fauna 	Moderate	Possible	Medium 13	<ul style="list-style-type: none"> - Regular service and maintenance of equipment - Prescribed burning to take place prior to clearing/drilling activities to reduce fuel load and fire risk. - A Water truck or similar will be parked up at the drill site at all times. - Site Induction discuss fire risks and emergency response procedures - Maintain good house keeping - Maintain radio contact with Browns Control room at all times. - Emergency Response procedures to be in place - Fire Management Plan - Spill Response Kits to be kept on support vehicles. - Safe storage of flammable products 	Moderate	Rare	Low 4
Resource Consumption (Surface Water, Groundwater)	<ul style="list-style-type: none"> - Increased water demand 	<ul style="list-style-type: none"> - Depletion in Natural Resources 	Low	Possible	Low 6	<ul style="list-style-type: none"> - Drilling will only intercept unconfined aquifers. This water will be cycled through sumps and reused will drilling. - Potable waterwill be externally sourced - Water will be sourced from the Browns Project site either from the pit or the Sediment Dam 	Low	Unlikely	Low 3
Resource Consumption Fuel Use	<ul style="list-style-type: none"> - Increase in energy consumption due to nature of the equipment required to conduct drill program 	<ul style="list-style-type: none"> - Depletion of natural resources - Increased contribution to Global warming 	Minor	Likely	Medium 14	<ul style="list-style-type: none"> - Regular service and maintenance of plant and equipment - No unnecessary equipment / vehicle usage - Small fleet of maximum 2 drill rigs and associated support and Light vehicles 	Minor	Rare	Low 2
Waste Management	<ul style="list-style-type: none"> - Maintenance of plant and equipment generating waste oils and other listed wastes - Disposal of wastes generated during drilling program - Materials left behind after drilling 	<ul style="list-style-type: none"> - Incorrect disposal of hazardous waste resulting in contamination of land, surface or groundwater resources - Incorrect disposal of waste resulting in contamination of land, surface waters or groundwater resources - Insufficient remediation of the site leaving behind waste resulting in contamination of land, surface waters or groundwater resources 	Low	Possible	Low 6	<ul style="list-style-type: none"> - All waste to be taken off site by the contractor and dispose of at a licenced facility. - Comply with the requirements of the <i>WMPC Act</i> - Recycle waste materials where appropriate. - Remove from the site y. - Hazardous Materials and Waste Management Plan 	Low	Unlikely	Low 3

RISK MATRIX					Likelihood						
Consequence	Injury / Disease to Personnel	Environmental Impact	Damage to Assets and Resources	Production Loss	Damage to Reputation	Not known to occur in the global industry	Known to occur in the global industry but is unlikely	Has occurred in industry and may to occur at some time	Expected to occur at some time in this operation	Expected to occur frequently in this operation	
						Rare	Unlikely	Possible	Likely	Frequent	
	Fatality or multiple disabling injuries or illness (permanent damage)	Massive effect; long term (1 year or more) environmental damage requiring \$2m to correct or in penalties	Extensive damage, large financial loss - \$10m	Long term interruption - 3 months total production loss	Negative press in international media	Critical	M11	M16	H20	E23	E25
	Permanent injury or illness or serious LTI	Major effect; medium term (1 month) environmental damage requiring \$0.5m to correct or in penalties	Major damage, major financial loss - \$1m	Significant interruption - 1 week day total production loss	Considerable negative impact; state wide media coverage for 1 week	Major	M7	M12	H17	H21	E24
	Lost time injury or illness (non-permanent damage)	Localized effect; short term environmental damage requiring \$50k to correct or in penalties	Localized damage, moderate financial loss - \$100k	Minor interruption - half a day total production loss	Limited impact; negative local media coverage for a few days	Moderate	L4	M8	M13	H18	H22
	Medical treatment injury or illness	Slight effect; minor environmental damage requiring \$5k to correct or in penalties	Slight damage, minor financial loss - \$10k	Short interruption- 1 hour total production loss	Slight impact, negative site wide publicity	Minor	L2	L5	M9	M14	H19
Minor injury or illness; first aid	Minimal on site effect	Minimal financial loss - \$1k	Minimal impact	Minimal informal impact contained within the site	Low	L1	L3	L6	M10	M15	

Legend



Low Risk



Moderate Risk



High Risk



Extreme Risk