

Mining Management Exploration Activities

Northern Territory of Australia – Mining Management Act 2001

It is recommended that the Mining Management Plan (MMP) is completed in conjunction with the user guide available on the [Northern Territory Government website](#).

Section 1 – Project Details

Project Name Provide new or existing project name	Southern Project Area
Authorisation Number Insert existing authorisation number, where applicable	0475-04
Operator Name Use ASIC-ABR registered name (if a company), or name of the applicant	Emmerson Resources Ltd
Operator ABN and ACN numbers	117 086 745
Location and Access Details Include brief description of the location, access details, and distance to nearest town or community	<p>The Southern Project Area (SPA) covers a number of tenements located to the south and south west of the Tennant Creek Township, between 2 and 26km in distance.</p> <p>The SPA is bisected by the Chariot Haul Road access is gained from this major road with further access to other areas of the SPA via historic mine roads, existing 4WD and fence line tracks these will be utilised for access and therefore no new tracks will be required.</p>
Target Commodity Details Include target mineral commodities (i.e. gold, copper etc.)	Gold, Copper, Bismuth, battery and base metals.
Mining Activities Summarise the mining activities (exploration) to be the subject of the proposed Authorisation or Variation. Drilling programs over a maximum of four years are supported and encouraged and can be staged. Please refer to the guidelines for further information.	Planned activities are for the drilling of 55 RC drill holes and 7 diamond holes over seven project areas, West Gibbet, Mondeuse/Shiraz, Traminer, Malbec, Chariot, TC8 and regional targets.

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Proposed Schedule Include start and finish dates of ground disturbing work	Work is planned to commence in May 2021 and completed by December 2021 .
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Mining Interest and Land Ownership

List the mining interests (titles), the title holder name/s, the title expiry date and the Property name/Land holder (e.g. pastoralist or Aboriginal land trust) for each title.

Title Number	Title Holder	Expiry Date	Underlying Property Name or Land Holder
EL23285	Giants Reef Exploration	20/12/2019	Aboriginal Freehold Land
EL23286	Giants Reef Exploration	29/09/2020	Aboriginal Freehold Land
EL23905	Giants Reef Exploration	20/12/2019	Aboriginal Freehold Land
EL28601	Giants Reef Exploration	7/07/2021	Tennant Creek Station
EL28775	Giants Reef Exploration	13/09/2019	Tennant Creek Station
MA23236	Giants Reef Exploration	30/11/2020	Crown Land
MA30798	Giants Reef Exploration	18/10/2021	Crown Land
MCC334	Giants Reef Exploration	31/12/2028	Aboriginal Freehold Land
MCC344	Giants Reef Exploration	8/03/2028	Aboriginal Freehold Land
MCC364	Giants Reef Exploration	31/12/2028	Aboriginal Freehold Land
MCC365	Giants Reef Exploration	31/12/2028	Aboriginal Freehold Land
MCC366	Giants Reef Exploration	31/12/2028	Aboriginal Freehold Land
MCC524	Santexco	28/01/2021	Crown Land
MCC55	Santexco	7/06/2028	Tennant Creek Station
MCC56	Santexco	7/06/2028	Tennant Creek Station
MCC57	Santexco	7/06/2028	Tennant Creek Station
ML23216	Giants Reef Exploration	18/07/2027	Aboriginal Freehold Land
ML30096	Giants Reef Exploration	14/04/2021	Tennant Creek Station
ML30322	Santexco	7/07/2024	Tennant Creek Station
ML30872	Santexco	22/09/2020	Tennant Creek Station
ML31123	Santexco	1/02/2021	Crown Land
MLC176	Giants Reef Exploration	31/12/2024	Tennant Creek Station
MLC177	Giants Reef Exploration	31/12/2025	Tennant Creek Station

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Title Number	Title Holder	Expiry Date	Underlying Property Name or Land Holder
MLC18	Santexco	31/12/2029	Tennant Creek Station
MLC342	Santexco	31/12/2022	Aboriginal Freehold Land
MLC48	Santexco	31/12/2026	Aboriginal Freehold Land
MLC49	Santexco	31/12/2025	Aboriginal Freehold Land
MLC527	Giants Reef Exploration	31/12/2026	Aboriginal Freehold Land
MLC591	TC8	31/12/2026	Aboriginal Freehold Land
MLC592	TC8	31/12/2026	Aboriginal Freehold Land
MLC593	TC8	31/12/2026	Aboriginal Freehold Land
MLC594	TC8	31/12/2026	Aboriginal Freehold Land
MLC595	TC8	31/12/2026	Aboriginal Freehold Land
MLC596	TC8	31/12/2026	Aboriginal Freehold Land
MLC597	TC8	31/12/2026	Aboriginal Freehold Land
MLC601	TC8	31/12/2028	Aboriginal Freehold Land
MLC602	TC8	31/12/2028	Aboriginal Freehold Land
MLC603	TC8	31/12/2028	Aboriginal Freehold Land
MLC604	TC8	31/12/2028	Aboriginal Freehold Land
MLC605	TC8	31/12/2028	Aboriginal Freehold Land
MLC645	Giants Reef Exploration	31/12/2027	Aboriginal Freehold Land
MLC654	TC8	31/12/2027	Aboriginal Freehold Land
MLC66	Santexco	31/12/2027	Tennant Creek Station
MLC67	Santexco	31/12/2027	Tennant Creek Station

Please note a Land Access Agreement (LAA) is required for disturbance proposed on Pastoral Properties on Exploration Licence (EL).

Organisational Structure

Position Title	Name
Managing Director	Rob Bills
Exploration Manager	Ana Liza Cuison
Senior Geologist	Rhianna Farrell

Section 2 – Operator Self-Assessment of the Environmental Risk

The purpose of this self-assessment is to ensure Operators complete a project risk assessment of potential environmental impacts and are aware of other legislative obligations from various Agencies. As a result of this self-assessment, further information may be required in the form of a management plan to enable full assessment of the MMP. If you have any queries please contact a Mining Officer prior to submitting the MMP. Useful resources to assist with this self-assessment are provided in the User Guide.

Environmental considerations

ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (e.g. evidence of consultation with DEPWS and/or management plan where required).
Step 1: Are there any threatened flora and fauna species or habitats of significance that may occur in the proposed work area?	Yes.	EcOz undertook a desktop review of Threatened Species, Weeds and Pests. Nine threatened species have the potential of occurring within the project area. The Grey Falcon is the only threatened species with a high likelihood of occurrence. As outlined in Appendix 5, it is expected that the Grey Falcon's suitable nesting habitat (if present) will not be impacted by drilling operations.	Emmerson engaged EcOz to prepare a desktop review of Threatened Species, Weeds and Pests. This is appended to this document at Appendix 5.

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ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (e.g. evidence of consultation with DEPWS and/or management plan where required).
<p>Step 2: Are there any known declared weeds within the proposed work area?</p>	<p>Yes.</p>	<p>EcOz provided recommendations by the Weed Management Branch in the desktop review of Threatened Species, Weeds and Pests. Emmerson will follow the below recommendations:</p> <ul style="list-style-type: none"> • Contact land managers about the most up to date weed information before commencing work. • Operations staff should be able to identify declared weeds relevant to the region. • Equipment, particularly when coming from interstate, should be cleaned and inspected for weed seeds prior to commencement of works. • Avoid passing through weeds. • Where weeds cannot be avoided, vehicles should be cleaned before moving to weed free areas. • Clean machinery, vehicles and equipment before moving between sites or across property lines. • Clean down into an accessible, flat area that does not run into a waterway. Record the location of clean down area. • Inspect corridors, tracks and clean down areas after the first rains post disturbance. Control weeds before they establish. • Minimise disturbance to existing land surface and native vegetation. • Do not import or export contaminated materials including sand, gravel, rock and fill. • Work in collaboration with relevant government agencies and land holders, particularly those who have adjoining, overlapping or adjacent corridors. 	<p>Emmerson engaged EcOz to prepare a desktop review of Threatened Species, Weeds and Pests. This is appended to this document at Appendix 5.</p>

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ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (e.g. evidence of consultation with DEPWS and/or management plan where required).
Step 3: Will you be using water from bores or other sources for the operation?	No-	water will be carted from Tennant Creek. Water related matters on mineral titles are no longer exempt from the <i>Water Act 1992</i> . Please consult with DEPWS Water Resources and/or familiarise yourself with the <i>Water Act</i> to ensure compliance under this Act when undertaking exploration activities.	Refer to Appendix 1 'Hydrology'

Environmental assessment and cultural considerations

ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
Step 4: Is your project likely to have a significant impact on the environment?	No	Refer to the NTEPA Environmental Factors and Objectives Guideline.
Step 5: Are there Aboriginal sacred sites in the Project area?	Yes	Previous advice has been sought from the AAPA. Emmerson are currently obtaining a sacred site clearance certificate through the Central Land Council (CLC). A copy of the application is at Appendix 7. Emmerson will follow the advice given from the CLC with regards to the sacred sites.
Step 6: Are there archaeological and heritage sites in the Project area?	No	Advice was sought from the Heritage, Libraries and Sport Division of the Department of Tourism, Sport and Culture (now NT Department of Territory Families, Housing and Communities (DTFHC)) in August 2020. It was advised that there are no heritage places or archaeological sites located within the area.

Section 3 – Amendments

As per Section 41(3) of the *Mining Management Act*, an MMP reviewed and amended under Section 41(1)(a) is to have amendments made since the previous MMP submission clearly identified.

Section	Amendment
Section 1	Mining Activities and Proposed Schedule information updated.
Section 4	Proposed Activities updated.
Section 5	New Disturbance Tracking spreadsheet filled in and Attached at Appendix 10.

Section 4 – Activities Proposed for this MMP only

Mining Interests (i.e. titles)	Malbec ML300 96 & EL2860 1	Chariot ML2321 6 & MLC177	Traminer MLC66	Regional EL28775 & EL23285	Mondeuse MCC55 & MCC57	West Gibbet MLC18	TC8 MLC593 & MLC592
Number and type of proposed exploration drill holes	10 RC Drill Holes	3 RC, 7 Diamond Drill Holes	5 RC Drill Holes	15 RC Drill Holes	5 RC Drill Holes	13 RC Holes	4 RC Drill Holes
Maximum depth of proposed holes (m)	300m	300m	300m	300m	300m	300m	300m
Number and size of drill pads to be cleared (Length: m x	10 drill pads (20m X 30m)	10 drill pads (20m X 30m)	5 drill pads (20m X 30m)	15 drill pads (20m X 30m)	5 drill pads (20m X 30m)	13 drill pads (20m X 30m)	4 drill pads (20m X 30m)
Total area of drill pads to be cleared (ha)	0.6 ha	0.6 ha	0.3 ha	0.9 ha	0.3 ha	0.78 ha	0.24 ha
Number of proposed water bores	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Is drilling likely to encounter groundwater in multiple or confined aquifers? (Y, N, unsure) If answering yes, please	Unsure – refer to Appendix 1 'Hydrology'	Unsure – refer to Appendix 1 'Hydrology'	Unsure – refer to Appendix 1 'Hydrology'	Unsure – refer to Appendix 1 'Hydrology'	Unsure – refer to Appendix 1 'Hydrology'	Unsure – refer to Appendix 1 'Hydrology'	Unsure – refer to Appendix 1 'Hydrology'
Number of costeans	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Volume to backfill costeans (Length: m x Width: m x Depth: m)	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Number of bulk sample pits	Nil	Nil	Nil	Nil	Nil	Nil	Nil

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Volume to backfill bulk sample pits (Length: m x Width: m x Depth:	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Bulk sample pits approved under <i>Mineral Titles Act?</i> (Y or N). If Yes provide approval	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Line/track clearing: (length m x width m)	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Area of proposed line/track clearing (ha)	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Camp area to be cleared (ha)	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Camp Infrastructure (i.e. demountable, tents) Please provide a complete list with measurements as required in the security calculation	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Other	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Total proposed area of disturbance (ha)	0.6 ha	0.6 ha	0.3 ha	0.9 ha	0.3 ha	0.78 ha	0.24 ha

Staging approach based on disturbance can be proposed and will be considered by the Department.

Section 5 – Previous Disturbance (for existing Authorisations only)

The 'Disturbance Tracking' spreadsheet is attached at Appendix 10.

Section 6 – Environmental Management

By checking these shaded boxes, you are agreeing to implement the following minimum environmental management standards on the project area. Where boxes have been left unchecked, justification is required.

6.1	X	Blade-up approach for clearing will be used (i.e. no windrows, leave root stock and topsoil)
6.2	X	Significant vegetation will be avoided during clearing (i.e. large trees, specimens providing habitat or food sources, riparian vegetation, and threatened species)
6.3	X	Vegetation clearing during, and immediately after rainfall events, will be avoided
6.4	X	Vegetation clearing will be kept to the minimum required to safely traverse vehicles and drill rigs along tracks and drill pads
6.5	X	Where blade-up techniques cannot be employed, topsoil and vegetation will be stockpiled appropriately for rehabilitation purposes
6.6	X	All employees and contractors will be trained and inducted in relation to the management of environmental risks in the work area, including weeds, waterways, threatened species, soil erosion, sacred sites and heritage areas
6.7	X	Sumps will be lined or tanks of appropriate size to contain water, sediment and drilling fluids encountered during drilling, will be used
6.8	X	Sumps, drill holes, and fuel stores will be located away from environmentally significant areas and water courses
6.9	X	Excavations (sumps, costeans and pits) will be appropriately ramped to allow fauna egress
6.10	X	Drill holes will be securely capped immediately after drilling
6.11	X	Vehicle hygiene measures will be employed to prevent the introduction and spread of invasive species and pathogens when mobilising vehicles and equipment from one location to another
6.12	X	Hydrocarbon spills will be minimised using liners and drip trays under machinery, and appropriately sized spill-kits available in the event of a spill
6.13	X	Hazardous substances (including hydrocarbons) will be stored and handled in accordance with relevant Australian Standards
6.14	X	Hydrocarbons will be stored in lined and bunded areas
6.15	X	Waste will be stored securely while on-site to minimise windblown rubbish and access by feral animals
6.16	X	Waste will be removed off-site and disposed of at an appropriate waste management facility
6.17	X	All environmental incidents will be reported to the Department in accordance with Section 29 of the <i>Mining Management Act</i> .
6.18	X	Acid and Metalliferous Drainage (AMD) and Potentially Acid Forming (PAF) material derived from drilling cuts will be managed to avoid AMD and PAF related issues on site

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6.19	N/A	Radioactive/NORM drill cuttings will be managed to avoid radiation related issues on site.
6.20	X	Dust management will be implemented on site.

Justification and alternative management measures:

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Section 7 – Rehabilitation and Closure

By checking these shaded boxes, you are agreeing to implement the following minimum rehabilitation standards on the project area. Where boxes have been left unchecked, justification is required.

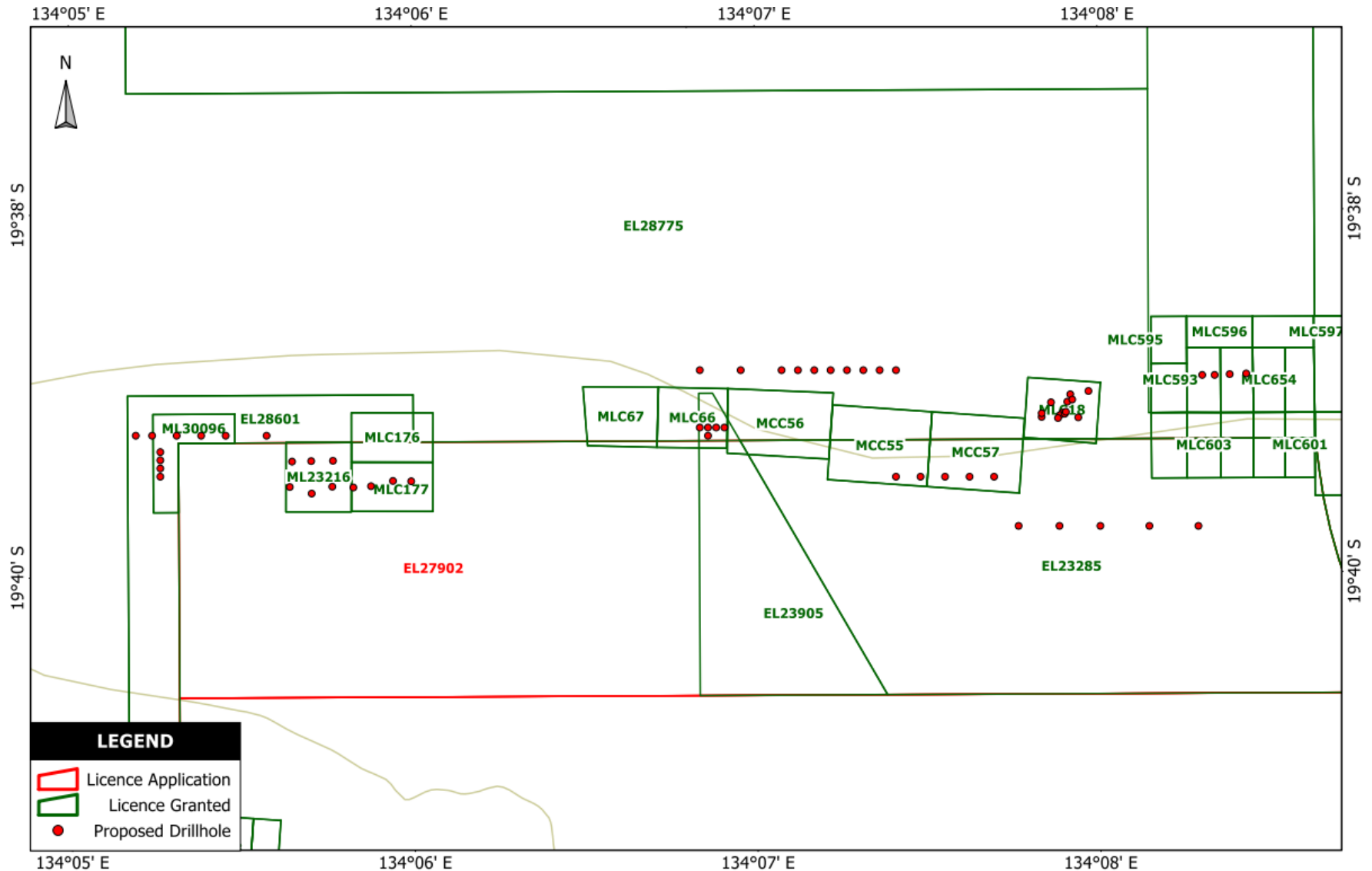
A refund of security related to completed rehabilitation on site requires the submission of a rehabilitation report including photographs, an updated security calculation and updated disturbance tracking spreadsheet to the Department.

7.1	<input checked="" type="checkbox"/>	Drill holes will be plugged below ground level at a minimum depth of 0.4 metres and soil mounded to prevent subsidence, within 6 months of completion of drilling.
7.2	<input checked="" type="checkbox"/>	Drill holes encountering multiple or confined aquifers will be grouted with concrete.
7.3	<input checked="" type="checkbox"/>	Drill samples/spoil will be returned down drill holes, buried in sumps, or removed from site.
7.4	<input checked="" type="checkbox"/>	All drill hole and access markers including flagging tape, wooden markers and star pickets will be removed from site.
7.5	<input checked="" type="checkbox"/>	Cut and fill drill pads will be re-contoured to be consistent with the surrounding terrain.
7.6	<input checked="" type="checkbox"/>	Drill pads and compacted areas along the contour (on sloping ground) will be ripped/scarified of and tracks will be cross-ripped (zig-zag).
7.7	<input checked="" type="checkbox"/>	Tracks will be rehabilitated, including pushing in all windrows, unless otherwise agreed in writing by the land holder or appropriate third party.
7.8	<input checked="" type="checkbox"/>	Appropriate erosion and sediment controls will be installed where erosion is evident or likely to occur.
7.10	<input checked="" type="checkbox"/>	Access through watercourses will be removed and banks restored.
7.11	<input checked="" type="checkbox"/>	All previously disturbed areas will be stable, with no evidence of active soil erosion.
7.12	<input checked="" type="checkbox"/>	All excavations will be backfilled within 6 months of their completion.
7.13	<input checked="" type="checkbox"/>	All water bores will be decommissioned unless otherwise agreed in writing by the land holder or appropriate third party.
7.14	<input checked="" type="checkbox"/>	All rubbish and infrastructure will be removed from site.
7.15	<input checked="" type="checkbox"/>	Topsoil will be replaced and vegetation re-established.
7.16	<input checked="" type="checkbox"/>	Contaminated soils (e.g. hydrocarbon or hazardous chemicals) will be rehabilitated or removed from site.
7.17	<input checked="" type="checkbox"/>	Monitoring will be undertaken following the wet season or a significant rainfall event.

Justification and alternative management measures:

Section 8 – Required Attachments

8.1	X	Initial Application for Authorisation or variation of Authorisation (only if details on the form have subsequently changed).
8.2	X	Nomination of Operator Form, where required
8.3	X	Security Calculation Spreadsheet
8.4	X	Evidence of Land Access Agreement if operating on an Exploration Licence (EL) on Pastoral Lease (e.g. two-ways exchange of email)
8.5	X	Disturbance tracking spreadsheet (for existing Authorisations)
8.6	X	Spreadsheet with coordinates of proposed drill holes or polygons of target areas
8.7	X	KML/shape files/track logs of proposed tracks, camp sites and proposed drill holes or polygons of target areas
8.8	X	Map(s) of the work area(s) showing: <ul style="list-style-type: none"> 1. title boundaries and title numbers 2. current and proposed drill holes, or polygons of target areas 3. current and proposed tracks 4. rehabilitated areas 5. camp sites 6. heritage sites or significant environmental areas 7. environmental constraints
8.10	N/A	Radiation Management Plan (if applicable)
8.12	X	Document(s) being appended in relation to Section 2 (if any): <ul style="list-style-type: none"> - Appendix 5- EcOz Desktop review of Threatened Species, Weeds and Pests - Appendix 1- Appendix 1 'Hydrology' - Appendix 7- CLC Sacred Site Clearance Certificate Application- in progress with the CLC - Appendix 4- Archaeological & Heritage Search Results



**EMMERSON RESOURCES LTD
2021 PROPOSED DRILLHOLES
SOUTHERN PROJECT LOCATION MAP**



DRAWN BY: AMETS (www.amets.com.au)
DATE: 15/04/2021
DATUM: GDA94