

Mining Management Plan Exploration Activities

Northern Territory of Australia – Mining Management Act

It is recommended that the Mining Management Plan 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 Lease Stage 2 Exploration Program
Authorisation Number Insert existing authorisation number, where applicable	0887-01 (Southern Lease Project)
Operator Name Use ASIC-ABR registered name (if a company), or name of the applicant	Groote Eylandt Mining Company Proprietary Limited
Location and Access Details Include brief description of the location, access details, and distance to nearest town or community	<p>The Southern Lease Stage 2 Exploration Program is located in the south-western part of Groote Eylandt in the Northern Territory, within Exploration Licence EL2455 (termed the Southern Lease). It is adjacent and to the south of the existing Groote Eylandt Mining Company (GEMCO) mine.</p> <p>The Southern Lease is accessed from the existing mine via the Emerald River Road, an unsealed public road.</p> <p>The closest permanent residential community is the township of Angurugu, located approximately 11 km from the northern boundary of the Southern Lease.</p> <p>See Section 2.2.2 of the Notice of Intent (Attachment B) for further details.</p>
Target Commodity Details Include target commodities (i.e. gold, copper etc.)	Manganese
Mining Activities Summarise the mining activities (exploration) to be the subject of the proposed Authorisation or Variation	<p>The exploration program comprises the following activities:</p> <ul style="list-style-type: none">• Reverse Circulation (RC) infill drilling in areas on the western side of the Southern Lease; and• Diamond drilling in areas on the western side of the Southern Lease. <p>See Section 2.7 of the Notice of Intent (Attachment B) for further details.</p>

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<p>Proposed Schedule Include start and finish dates of ground disturbing work</p>	<p>The exploration program is intended to be undertaken over at least two drilling campaigns, in successive dry seasons. The exploration program is scheduled to commence in the second half of 2020 and to be completed in 2022. Exploration activities will commence once regulatory and land owner approvals have been obtained, therefore the schedule is dependent on the timing of these approvals.</p>
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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	Property Name or Land Holder
EL2455	Groote Eylandt Mining Company Proprietary Limited	11/10/2022	Southern Lease

Organisational Structure

Position Title	Name
Vice President Operations (GEMCO)	Jo-Anne Scarini
Production Planning Manager (GEMCO)	Michael Smith
Exploration Superintendent (GEMCO)	Ken Pegg
Senior Geologist (GEMCO)	Craig Winter
Principal Resource Geology (South32)	Josh Harvey
Project Study and Approvals Manager (GEMCO)	Mike Chapman

Delete or add rows for various position titles as required

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 (Evidence of consultation with DENR and/or management plan)
<p>Step 1: Are there any threatened flora and fauna species or habitats of significance that may occur in the proposed work area?</p>	<p>YES</p>	<p>As part of the Notice of Intent, an assessment of the baseline terrestrial ecology of the Southern Lease, including the exploration program area, was conducted (Baseline Terrestrial Ecology Report). The assessment concluded a number of threatened and migratory fauna species are either present or assessed to have a moderate or high likelihood of occurring in the exploration program area.</p> <p>Therefore, a Significant Impact Assessment was undertaken (Assessment of Impacts on Listed Species Report). This included an assessment of the impact of clearing required for drill pads and access tracks. The potential for indirect impacts from drilling was also assessed and measures to avoid and mitigate impacts were also considered.</p> <p>The assessment identified that the exploration program will not give rise to significant impacts on listed species. The assessment specifically considered measures to avoid and mitigate impacts, including the pre-clearance survey and Permit to Clear process, rehabilitation activities, and environmental controls to prevent the introduction of weeds or Cane Toads. It was concluded that given the measures to avoid and minimise impacts, no significant impacts on</p>	<p>The Notice of Intent has been appended as Attachment B, which includes two technical ecology reports:</p> <ul style="list-style-type: none"> • Appendix A - Baseline Terrestrial Ecology; and • Appendix B - Assessment of Impacts on Listed Species.

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ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION <small>(Evidence of consultation with DENR and/or management plan)</small>
		terrestrial flora and fauna, biological diversity and ecological integrity, are predicted.	
Step 2: Are there any known declared weeds within the proposed work area?	NO	The Southern Lease is currently unaffected by weed species. No declared weeds were recorded within the Southern Lease during terrestrial ecology field surveys undertaken for the Notice of Intent or during previous pre-clearance surveys undertaken as part of the Permit to Clear process. Section 6 of the Notice of Intent describes the measures that will be adopted to prevent the introduction of weeds.	Refer to the Notice of Intent (Attachment B) - Appendix A (Baseline Terrestrial Ecology) for further details.
Step 3: Will you be using water from bores or other sources for the operation?	NO	The water demands for the exploration program are minimal. Water will be obtained from the existing GEMCO mine and no water will be extracted from bores or waterways in the Southern Lease. No changes to water licencing are required.	Refer to the Notice of Intent (Attachment B) for further details.

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	The Notice of Intent includes a detailed assessment of potential impacts and was prepared in accordance with the NT EPA Environmental Factors and Objectives Guideline. The Notice of Intent has concluded that the exploration program is not predicted to have a significant impact on the environment. There is a high level of confidence in this conclusion because of the large amount of baseline environmental work that has been undertaken, including large scale field programs. In addition, the proposed activities are very similar in scope to other exploration programs previously undertaken by the proponent in the Southern Lease and in its other tenements on Groote Eylandt. The potential impacts from exploration are therefore well understood and the management measures are well established. See Section 4 of the Notice of Intent (Attachment B) for further details.

ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
<p>Step 5: Are there Aboriginal sacred sites in the Project area?</p>	<p>YES</p>	<p>Although Aboriginal sacred sites occur in the Southern Lease, GEMCO has been working with the Anindilyakwa Land Council (ALC) to identify areas which have cultural significance in order to ensure that exploration does not give rise to any impacts on sacred sites. GEMCO has developed a potential exploration area that takes account of environmental and cultural constraints, including the culturally sensitive areas identified by the ALC. Restricting exploration to this area is a key mechanism for ensuring that no exploration is undertaken in areas that have been identified as culturally sensitive. Furthermore, GEMCO has a Permit to Clear process that is followed before any areas are disturbed. This includes flagging of areas proposed to be cleared and then submission of proposed clearing plans to the ALC for endorsement. As part of this process, the ALC invites cultural monitors (i.e. Traditional Owners acknowledged as being able to speak on behalf of the country) to inspect areas proposed to be cleared. See Section 5 of the Notice of Intent (Attachment B) for further details.</p>
<p>Step 6: Are there archaeological and heritage sites in the Project area?</p>	<p>YES</p>	<p>Although archaeological and heritage sites occur in the Southern Lease, the exploration program has been designed to avoid these areas, and no impacts on archaeological and heritage sites are therefore predicted. See Section 5 of the Notice of Intent (Attachment B) for further details.</p>

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 clearly identify amendments made.

Section	Amendment

Delete or add rows as required

Section 4 – Activities Proposed

Mining Interests (i.e. titles)	EL2455
Number and type of proposed drill holes	<ul style="list-style-type: none"> 832 RC Drill Holes 75 Diamond Drill Holes
Maximum depth of proposed holes (m)	<ul style="list-style-type: none"> RC Drill Holes – 60 m Diamond Drill Holes – 50 m
Number and size of drill pads to be cleared (Length: m x Width: m)	832 RC Drill Pads: <ul style="list-style-type: none"> 792 Regular Drill Pads – 18 m x 10 m 40 Turn Around Drill Pads – 18 m x 17 m 55 Diamond Drill Pads – 18m x 17m
Total area of drill pads to be cleared (ha)	16.17 ¹ ha
Is drilling likely to encounter groundwater? (Y, N, unsure)	Yes
Number of costeans (Length: m x Width: m x Depth: m)	N/A
Number of bulk sample pits	N/A
Total bulk sample (tonnes) (Length: m x Width: m x Depth: m)	N/A
Bulk sample pits approved under <i>Mineral Titles Act?</i> (Y or N)	N/A
Length of line/track clearing (km: x Width: m)	<ul style="list-style-type: none"> Length of new tracks: 94.2 km Clearing of new tracks: 23.77² ha Length of previously cleared access tracks: 55.75 km
Camp area to be cleared (ha)	N/A
Camp Infrastructure (i.e. demountable, tents)	N/A
Previous disturbance yet to be remediated on title (ha) if	51.63 ³ ha
Other	N/A
Total area disturbed proposed (ha)	39.94 ha

¹ The diamond drill pads will be located on existing RC drill pads, reducing the need for additional clearing. Therefore, the value given to the “total area of pads to be cleared” is equal to the total pad clearing, less the portion of diamond drill pads located on existing RC drill pads (i.e. 55 x 18 m x 10 m).

² All RC drill pads will be located on access tracks, reducing the need for additional clearing. Therefore, the value given to the “clearing of new tracks” is equal to the total track clearing, less the portion of track located within each adjacent drill pad (i.e. 832 x 18 m x 3 m).

³ The value given to the “previous disturbance yet to be remediated” is equal to the total area disturbed less the total area remediated (refer Section 5 – Previous Disturbance). The FY17 Exploration Program area has been either: 1) remediated; 2) not remediated because the area had sufficient topsoil supporting regrowth and/or the track was to be used for future drilling access; or 3) was not required to be remediated because holes were drilled on an existing road. Rehabilitation of the Stage 1 Exploration Program area is ongoing as a result of delays from weather and access constraints and restrictions arising from COVID-19.

Section 5 – Previous Disturbance (for existing Authorisations only)

Mining Interests (i.e. titles)	EL2455
Number/type of holes drilled	Exploration Program (FY17): <ul style="list-style-type: none"> • 294 RC Drill Holes Stage 1 Exploration Program (FY20): <ul style="list-style-type: none"> • 460 RC Drill Holes • 4 Diamond Drill Holes • 18 Regional Exploration Holes Geotechnical Program (FY20): <ul style="list-style-type: none"> • 7 Test Pits • 1 Bore Hole
Maximum depth of holes drilled (m)	69 m
Number of holes remediated (i.e. plugged/capped)	Exploration Program (FY17): 294 RC Drill Holes Stage 1 Exploration Program (FY20): <ul style="list-style-type: none"> • 460 RC Drill Holes • 4 Diamond Holes • 18 Regional Exploration Holes Geotechnical Program (FY20): <ul style="list-style-type: none"> • 7 Test Pits • 1 Bore Hole
Number and size of drill pads cleared (Length: m x Width: m)	Exploration Program (FY17): <ul style="list-style-type: none"> • 265 RC Rill Pads – 18 m x 10 m Stage 1 Exploration Program (FY20): <ul style="list-style-type: none"> • 460 RC Drill Pads: <ul style="list-style-type: none"> ○ 424 Regular Drill Pads – 18 m x 10 m ○ 36 Turn Around Drill Pads – 18 m x 17 m • 4 Diamond Drill Pads – 18 m x 17 m
Total area of drill pads cleared (ha)	Exploration Program (FY17): 4.77 ha Stage 1 Exploration Program (FY20): 8.78 ⁴ ha
Total area of drill pads remediated (ha)	Exploration Program (FY17): 2.5 ⁵ ha Stage 1 Exploration Program (FY20): 0 ⁶ ha
Was groundwater encountered? (Y or N)	Yes

⁴ The diamond drill pads are located on existing RC drill pads, reducing the need for additional clearing. Therefore, the value given to the “total area of pads to be cleared” is equal to the total pad clearing, less the portion of diamond drill pads located on existing RC drill pads (i.e. 4 x 18 m x 10 m).

⁵ The FY17 Exploration Program area has been either: 1) remediated; 2) not remediated because the area had sufficient topsoil supporting regrowth and/or the track was to be used for future drilling access; or 3) was not required to be remediated because holes were drilled on an existing road.

⁶ Rehabilitation of the Stage 1 Exploration Program area is ongoing as a result of delays from weather and access constraints and restrictions arising from COVID-19.

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Mining Interests (i.e. titles)	EL2455
Length of line/track cleared (Length: km x Width: m)	Exploration Program (FY17): <ul style="list-style-type: none"> • Length of track: 72.9 km • Clearing of track: 20.44⁷ ha Stage 1 Exploration Program (FY20): <ul style="list-style-type: none"> • Length of track: 73.9 km • Clearing of track: 19.69⁸ ha Geotechnical Program (FY20): <ul style="list-style-type: none"> • Length of track: 1.51 km • Clearing of track: 0.45 ha
Length of line/track remediated (Length: km x Width: m)	Nil
Number of costeans excavated (L: m x W: m x D: m)	N/A
Number of costeans remediated	N/A
Total bulk sample pits excavated (Length: x Width: x Depth: m)	N/A
Total bulk sample pits remediated	N/A
Camp area/s cleared (ha)	N/A
Camp area/s remediated (ha)	N/A
Total area disturbed (ha)	Exploration Program (FY17): 25.21 ha Stage 1 Exploration Program (FY20): 28.47 ha Geotechnical Program (FY20): 0.45 ha TOTAL: 54.13 ha
Total area remediated (ha)	Exploration Program (FY17): 2.5 ha Stage 1 Exploration Program (FY20): 0 ha Geotechnical Program (FY20): 0 ha TOTAL: 2.5 ha

⁷ All RC drill pads are located on access tracks, reducing the need for additional clearing. Therefore, the value given to the "clearing of tracks" is equal to the total track clearing, less the portion of track located within each adjacent drill pad (i.e. 265 x 18 m x 3 m).

⁸ All RC drill pads are located on access tracks, reducing the need for additional clearing. Therefore, the value given to the "clearing of tracks" is equal to the total track clearing, less the portion of track located within each adjacent drill pad (i.e. 460 x 18 m x 3 m).

Section 6 – Environmental Management

By checking these 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	✓	Blade-up approach for clearing will be used (i.e. no windrows, leave root stock and topsoil)
6.2	✓	Significant vegetation will be avoided during clearing (i.e. large trees, specimens providing habitat or food sources, riparian vegetation, and threatened species)
6.3	✓	Vegetation clearing during, and immediately after rainfall events, will be avoided
6.4	✓	Vegetation clearing will be kept to the minimum required to safely traverse vehicles and drill rigs along tracks and drill pads
6.5	✓	Where blade-up techniques cannot be employed, topsoil and vegetation will be stockpiled appropriately for remediation purposes
6.6	✓	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	✓	Sumps will be lined or tanks of appropriate size to contain water, sediment and drilling fluids encountered during drilling, will be used
6.8	✓	Sumps, drill holes, and fuel stores will be located away from environmentally significant areas and water courses
6.9	✓	Excavations (sumps, costeans and pits) will be appropriately ramped to allow fauna egress
6.10	✓	Drill holes will be securely capped immediately after drilling
6.11	✓	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	✓	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	✓	Hazardous substances (including hydrocarbons) will be stored and handled in accordance with relevant Australian Standards
6.14	✓	Hydrocarbons will be stored in lined and bunded areas
6.15	✓	Waste will be stored securely while on-site to minimise windblown rubbish and access by feral animals
6.16	✓	Waste will be removed off-site and disposed of at an appropriate waste management facility
6.17	✓	All environmental incidents will be reported to the Department in accordance with Section 29 of the Mining Management Act.

Justification and alternative management measures:

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Section 7 – Remediation and Closure

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

7.1	✓	Drill holes 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	✓	Drill samples/spoil returned down drill holes, buried in sumps, or removed from site
7.3	✓	All drill hole and access markers including flagging tape, wooden markers and star pickets will be removed from site
7.4	N/A	Re-contouring of cut and fill drill pads will be consistent with the surrounding terrain
7.5	N/A	Ripping/scarifying of drill pads, and compacted areas along the contour (on sloping ground) and cross-ripping (zig-zag) along tracks
7.6	✓	Tracks will be remediated, including pushing in all windrows
7.7	✓	Appropriate erosion and sediment controls will be installed where erosion is evident or likely to occur
7.8	✓	All tracks will be remediated unless otherwise agreed in writing by the land holder or appropriate third party
7.9	N/A	Access through watercourses will be removed and banks restored
7.10	✓	No erosion is occurring in disturbed areas, on tracks and in remediated areas
7.11	✓	All excavations backfilled within 6 months of completion of drilling
7.12	N/A	All water bores decommissioned unless otherwise agreed in writing by the land holder or appropriate third party. The bore must comply with the Minimum Construction Requirements for Water Bores in Australia and may require permits or licenses under the <i>Water Act</i>
7.13	✓	All rubbish and infrastructure will be removed from site
7.14	✓	Replacement of topsoil and vegetation
7.15	✓	Contaminated soils (e.g. hydrocarbon or hazardous chemicals) will be remediated or removed from site
7.16	✓	Monitoring will be undertaken following the wet season or a significant rainfall event

Justification and alternative management measures:

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Section 8 – Required Attachments

8.1	Security Calculation Spreadsheet	Attachment A
8.2	Nomination of Operator Form	Not applicable
8.3	Spreadsheet with coordinates of proposed drill holes or polygons of target areas	Polygons of target areas have been provided as a series of KMZ files which show: <ul style="list-style-type: none"> • 832 RC Drill Holes • 25 Diamond Drill Holes⁹
8.4	Google Earth KML/shape files/track logs of proposed tracks and camp sites	Proposed tracks have been provided as a series of KMZ files.
8.5	A map of the work area(s) showing:	Refer to Attachment B (Notice of Intent) Figure 1-2
	1. title boundaries and title numbers	
	2. current and proposed drill holes, or polygons of target areas	Refer to Attachment B (Notice of Intent) Figure 1-2 and Figure 2-9.
	3. current and proposed tracks	Refer to Attachment B (Notice of Intent) Figure 1-2 and Figure 2-9
	4. remediated areas	Refer to Attachment C (Remediation Register) Figure 1
	5. camp sites	Not applicable
	6. sacred/heritage sites	Refer to Attachment B (Notice of Intent) Figure 5-1.
7. environmental constraints	Refer to Attachment B (Notice of Intent) Figure 2-7. The areas within the potential mineralised area that have been excluded from the potential exploration area are those with environmental or cultural constraints.	
8.6	Remediation Register (for existing Authorisations)	Attachment C
8.7	Photographs of remediation work	Attachment D
8.8	Radiation Management Plan (if applicable)	Not applicable

⁹ The remaining diamond drill holes will be positioned on RC drill pads based on results from previous RC drilling.

Section 9 – Declaration

The Mining Management Plan must be endorsed by a senior representative of the company who has the appropriate level of authority to do so.

	Author	Reviewed by			Approved by
Date	31/07/2020	3/8/2020	3/8/2020	2/8/2020	4/08/2020
Name	Melinda Simmons	Josh Harvey	Ken Pegg	Mike Chapman	Michael Smith
Signature	<i>Melinda Simmons</i>	<i>Josh Harvey</i>	<i>Kenneth Pegg</i>	<i>Mike Chapman</i>	<i>Michael Smith</i>

I **Michael Smith** (*name of approving person*), **Manager Production Planning - GEMCO** (*position title*) declare that I have the authority to make the commitments contained in this mining management plan on behalf of the company. To the best of my knowledge the information contained in this plan is true and correct and commit to undertake the works in accordance with the agreed minimum standards and all relevant Northern Territory and Commonwealth Government legislation.

SIGNATURE: *Michael Smith*

DATE: 4/08/2020