

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

<p>Project Name Provide new or existing project name</p>	Southern Lease Stage 1 Exploration Program
<p>Authorisation Number Insert existing authorisation number, where applicable</p>	0887-01 (Southern Leases Project)
<p>Operator Name Use ASIC-ABR registered name (if a company), or name of the applicant</p>	Groote Eylandt Mining Company Proprietary Limited
<p>Location and Access Details Include brief description of the location, access details, and distance to nearest town or community</p>	<p>The Southern Lease Stage 1 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 10 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>
<p>Target Commodity Details Include target commodities (i.e. gold, copper etc.)</p>	Manganese
<p>Mining Activities Summarise the mining activities (exploration) to be the subject of the proposed Authorisation or Variation</p>	<p>The exploration program comprises the following activities:</p> <ul style="list-style-type: none"> • Infill drilling areas in the western part of the Southern Lease; • Four diamond drill holes; and • Approximately 40 regional exploration holes. <p>See Section 2.6 of the Notice of Intent (Attachment B) for further details.</p>

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Proposed Schedule Include start and finish dates of ground disturbing work	The exploration program is scheduled to commence in the second half of 2019 and is proposed to be completed in 2020. The exact timing will depend on the timing for the grant of environmental approvals.
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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)	Trevor Page
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>	YES	<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 Permit to Clear process and pre-clearance survey, 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 three technical ecology reports:</p> <ul style="list-style-type: none"> • Appendix A - Baseline Terrestrial Ecology; • Appendix B - Southern Lease Small Mammal Research Project; and • Appendix C - Assessment of Impacts on Listed Species.

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ASSESSMENT ASPECT	YES or NO	ACTIONS REQUIRED (if answered YES)	APPENDED INFORMATION (Evidence of consultation with DENR and/or management plan)
		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. Section 6 of the NOI 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 NOI includes a detailed assessment of potential impacts and was prepared in accordance with the NT EPA Environmental Factors and Objectives Guideline. The NOI 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 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.

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ASSESSMENT ASPECT	YES or NO	MANAGEMENT REQUIREMENTS
<p>Step 5: Are there Aboriginal sacred sites in the Project area?</p>	YES	<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 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>	YES	<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	Exploration Program: <ul style="list-style-type: none"> 41 Regional Exploration Holes (Aircore) 499 Infill Drill Holes (Reverse Circulation) 4 Diamond Drill Holes Geotechnical Program ¹ : <ul style="list-style-type: none"> 7 Test Pits 1 Bore Hole
Maximum depth of proposed holes (m)	Exploration Program: <ul style="list-style-type: none"> Regional Exploration Holes – 60 m Infill Drill Holes – 60 m Diamond Drill Holes – 50 m Geotechnical Program: <ul style="list-style-type: none"> Test Pits – 3 m Bore Hole – 20 m
Number and size of drill pads to be cleared (Length: m x Width: m)	482 Infill Drill Pads <ul style="list-style-type: none"> 438 Regular Drill Pads - 18 m x 10 m 44 Turn Around Drill Pads - 18 m x 20 m 7 Geotech pads – 15 m x 15m
Total area of drill pads to be cleared (ha)	Exploration Program: 6.87 ² ha Geotechnical Program: 0.13 ² 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

¹ The Geotechnical Program was not included as part of the Southern Leases NOI, however, the program will be subject to the same environmental controls (which includes preclearance surveys) as those described in the NOI.

² The pads will be located on existing tracks, 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 adjacent 3 m wide access track.

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Mining Interests (i.e. titles)	EL2455
Length of line/track clearing (km: x Width: m)	Exploration Program: Length of track - 73.9 km Clearing – 22.17 ha (73.9 km x 3 m width) Geotechnical Program: Length of track – 1.51 km Clearing – 0.45 ha (1.51 km x 3 m width)
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 known	N/A
Other	N/A
Total area disturbed proposed (ha)	Exploration Program: 29.04 ha Geotechnical Program: 0.58 ha

Section 5 – Previous Disturbance (for existing Authorisations only)

Mining Interests (i.e. titles)	EL2455
Number/type of holes drilled	294 Reverse Circulation Holes
Maximum depth of holes drilled (m)	120.5 m
Number of holes remediated (i.e. plugged/capped)	294
Number and size of drill pads cleared (Length: m x Width: m)	265 – 18 m x 10 m
Total area of drill pads cleared (ha)	3.3 ³ ha
Total area of drill pads remediated (ha)	2.5 ha
Was groundwater encountered? (Y or N)	Yes
Length of line/track cleared (Length: km x Width: m)	72.9 km x 3 m Clearing – 21.87 ha
Length of line/track remediated (Length: km x Width: m)	Nil
Number of costeans excavated (L: m x W: m x D: m)	Nil
Number of costeans remediated	Nil
Total bulk sample pits excavated (Length: x Width: x Depth: m)	Nil
Total bulk sample pits remediated	Nil
Camp area/s cleared (ha)	Nil
Camp area/s remediated (ha)	Nil
Total area disturbed (ha)	25.2 ha
Total area remediated (ha)	2.5 ha

³ The pads will be located on existing tracks, 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 adjacent 3 m wide access track.

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

Justification and alternative management measures:

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	<input checked="" type="checkbox"/>	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	<input checked="" type="checkbox"/>	Drill samples/spoil returned down drill holes, buried in sumps, or removed from site
7.3	<input checked="" type="checkbox"/>	All drill hole and access markers including flagging tape, wooden markers and star pickets will be removed from site
7.4	<input type="checkbox"/>	Re-contouring of cut and fill drill pads will be consistent with the surrounding terrain
7.5	<input type="checkbox"/>	Ripping/scarifying of drill pads, and compacted areas along the contour (on sloping ground) and cross-ripping (zig-zag) along tracks
7.6	<input checked="" type="checkbox"/>	Tracks will be remediated, including pushing in all windrows
7.7	<input checked="" type="checkbox"/>	Appropriate erosion and sediment controls will be installed where erosion is evident or likely to occur
7.8	<input checked="" type="checkbox"/>	All tracks will be remediated unless otherwise agreed in writing by the land holder or appropriate third party
7.9	<input type="checkbox"/>	Access through watercourses will be removed and banks restored
7.10	<input checked="" type="checkbox"/>	No erosion is occurring in disturbed areas, on tracks and in remediated areas
7.11	<input checked="" type="checkbox"/>	All excavations backfilled within 6 months of completion of drilling
7.12	<input type="checkbox"/>	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	<input checked="" type="checkbox"/>	All rubbish and infrastructure will be removed from site
7.14	<input checked="" type="checkbox"/>	Replacement of topsoil and vegetation
7.15	<input checked="" type="checkbox"/>	Contaminated soils (e.g. hydrocarbon or hazardous chemicals) will be remediated or removed from site
7.16	<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	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	<p>Polygons of target areas have been provided as a series of KMZ files which show:</p> <ul style="list-style-type: none"> • The Infill Drilling Areas • The Regional Exploration Holes • The Diamond Drill Holes • The Geotechnical Holes
8.4	Google Earth KML/shape files/track logs of proposed tracks and camp sites	<p>Proposed tracks have been provided as a series of KMZ files which show:</p> <ul style="list-style-type: none"> • The Infill Drilling Area Access Tracks • The Proposed Route to Regional Exploration Holes • The Geotechnical Hole Access Tracks
8.5	A map of the work area(s) showing:	Refer to Attachment B (Notice of Intent) Figure 3
	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 3 and Figure 2-9.
	3. current and proposed tracks	Refer to Attachment B (Notice of Intent) Figure 3
	4. remediated areas	Refer to Figure 1 of the Remediation Register–“Drill Hole Rehabilitation Status from the FY17 Southern Lease Exploration Program”
	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. 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

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	7/08/2019	7/08/2019	7/08/2019
Name	Mike Chapman	Josh Harvey / Ken Pegg	Michael Smith
Signature			

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: 

DATE: 7 AUGUST 2019