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Introduction

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1 INTRODUCTION

1.1 INTRODUCTION

The Groote Eylandt Mining Company Pty Ltd (GEMCO) (the "proponent") is proposing to undertake the Southern Lease Exploration Program (2023-2025) (the exploration program) in Exploration Licence (EL) 2455, known as the Southern Lease. The exploration program is scheduled to commence in 2023 and will take approximately three years to complete. A referral under the *Environment Protection Act 2019* (NT) (EP Act) is being made for the exploration program. This section of the EP Act Referral includes background to the exploration program and the proponent, and a description of the regulatory approval process. The structure of the EP Act Referral and the team who have contributed to its preparation are also discussed.

1.2 BACKGROUND

The proponent operates a manganese mine (termed "the existing GEMCO mine" or the Western Leases) on Groote Eylandt (Figure 1-1). The existing mine is the main development on the island and has been operating for nearly 60 years. Operations at the existing mine involve mining manganese ore by open cut mining methods. Once the ore has been sized and washed, it is transported to the proponent's port facility at Milner Bay (Figure 1-1). The proponent also has approval for a new mining area, termed the Eastern Leases, and construction in the Eastern Leases commenced in 2022.

As part of its long-term strategy, the proponent is assessing potential future manganese resources. The Southern Lease is the most prospective exploration area on Groote Eylandt and exploration, undertaken since 2016, has confirmed the presence of high grade manganese ore. The proponent is proposing to undertake additional exploration drilling to obtain further information about the manganese resource. It is also proposing to undertake geotechnical investigations that would inform the design of a potential future mining project in the Southern Lease. The exploration drilling and geotechnical investigations are collectively referred to as the "exploration program" and an overview of the activities are provided in Section 1.3, with a detailed description in Section 2 – Project Description. The exploration program is scheduled to commence in 2023 and will take approximately three years to complete.

1.3 OVERVIEW OF EXPLORATION PROGRAM

1.3.1 Exploration Drilling

Background

Exploration is undertaken in a structured, progressive manner designed to gain increasing levels of understanding about the geology and mineralisation of the exploration area. Regional exploration holes are drilled initially to provide information on whether any manganese mineralisation is present, as well as the potential extent of mineralisation. The results from the regional exploration holes guide the planning of future exploration programs.

In areas where manganese is discovered, exploration holes are drilled in a defined grid pattern. Initially, this involves drilling at a relatively wide spacing, with exploration holes being 240 m apart. The results from this drilling are used to identify areas where further geological information is required and a narrower grid spacing (e.g. 120 m apart) is used in subsequent exploration programs for these areas. This process of drilling the exploration holes at a narrower grid spacing (i.e. "infill drilling") continues until enough information about the resource has been obtained to provide the proponent with sufficient confidence to assess the quantity and quality of the mineralisation. Infill drilling is generally undertaken using the Reverse Circulation (RC) technique where drill chip

samples are collected at regular 0.5 m intervals down a vertical exploration hole. Infill drilling provides information on the depth, thickness and quality of manganese mineralisation.

Another form of exploration drilling (diamond drilling) is used to provide information on the geometallurgical properties of the resource. Diamond drilling provides core samples, which are subject to laboratory testing of geometallurgical properties, including the yield and grade of the resource.

Exploration is undertaken over multiple seasonal campaigns, with each campaign building on the results of the previous one. This process improves the understanding of the extent, depth, thickness and quality of the mineralisation, with the goal of defining a mineable resource.

Proposed Exploration Drilling

The proponent has undertaken several previous exploration campaigns in the Southern Lease since 2016. It is now seeking approval for a new exploration program that would involve the following:

- An infill drilling program comprising approximately 1,424 RC drill holes; and
- Geometallurgical investigations, comprising diamond drilling, at approximately 14 locations.

An indicative layout of the proposed exploration drilling is shown in Figure 1-2. The proposed drilling locations are in areas where exploration has taken place previously and shown that manganese mineralisation is present. Where possible, the proponent will access exploration holes using exploration tracks from previous exploration programs, but it will also be necessary to develop new tracks. These exploration holes and tracks will be progressively rehabilitated as exploration is undertaken.

Depending on the results of the exploration program, further exploration may be required in the future. The details of any potential future exploration work cannot be determined at this point in time because the scope and location of future exploration is dependent on the results of the proposed exploration drilling. Separate approvals will therefore be sought for any future exploration that may be required.

1.3.2 Geotechnical Investigations

Background

Geotechnical investigations are undertaken to obtain information about the physical, mechanical and chemical properties (i.e. the geotechnical properties) of soil and sub-surface materials. The information from geotechnical investigations is used to inform engineering design, such as the design of haul roads and water storage facilities. It is also used to determine the suitability of materials to be used in construction. Geotechnical investigations also provide information that influences the design of mining quarries (e.g. pit slope, ground stability and safe offset distances between mining quarries and structures). Test pits, developed with a backhoe, are a common method for geotechnical investigations. Test pits provide bulk samples of material for laboratory testing, including strength testing, dispersion, and material quality/characterisation. Diamond drilling, the method described above in relation to exploration drilling, is also used for geotechnical investigations. The core samples obtained from diamond drilling, undertaken as part geotechnical investigations, are subject to laboratory testing for geotechnical properties.

Proposed Geotechnical Investigations

The proponent is proposing to undertake the following geotechnical investigations:

- The development of approximately 63 geotechnical test pits; and
- The drilling of approximately 14 geotechnical boreholes (using diamond drilling). This is different to the diamond drilling to be undertaken at 14 locations for the purpose of geometallurgical investigations (described in Section 1.3).

An indicative layout of the proposed geotechnical investigations is shown in Figure 1-2. In order to reduce the disturbance footprint, the majority of test pits have been sited on existing tracks, or on tracks that will be developed to facilitate geotechnical drilling. A small number of test pits will be located on the drill pads developed for the geotechnical boreholes. Some new access tracks will be required to access test pit locations and drill pads for the geotechnical boreholes. Test pits will be backfilled immediately following the collection of samples. Disturbed areas, including access tracks and drill pads, will be progressively rehabilitated as the geotechnical investigations are undertaken.

1.4 THE PROPONENT

The proponent, GEMCO, has two shareholders, South32 Limited (60%) and Anglo Operations (Australia) Pty Ltd (40%).

South32 is a globally diversified metals and mining company. South32 mines and produces bauxite, alumina, aluminium, metallurgical coal, manganese, copper, nickel, silver, lead and zinc in Australia, Southern Africa and South America. Manganese product from the existing GEMCO mine is shipped to customers around the world.

Anglo Operations (Australia) Pty Ltd is a wholly owned subsidiary of Anglo American Plc, a mining group based in the United Kingdom that is listed on the London Stock Exchange. Anglo American Plc is one of the world's largest mining companies and has a diverse portfolio of interests in iron ore, manganese, base metals, precious metals, minerals, and steelmaking coal.

Key contact details for the proponent and Hansen Environmental Consulting, its environmental consultant for this EP Act Referral, are provided in Table 1-1.

Table 1-1 Contact Details

	PROPONENT	ENVIRONMENTAL CONSULTANT
Company Name	Groote Eylandt Mining Company Pty Ltd (GEMCO)	Hansen Environmental Consulting
Postal Address	GEMCO, Rowell Highway, Alyangula NT 0885	GPO BOX 102, Brisbane QLD 4001
Phone	(08) 8987 4435	(07) 3180 1234
Contact Person: Name	Mike Chapman	Laura Knowles
Contact Person: Title	Project Study & Approvals Manager	Principal Environmental Scientist
Contact Person: Email	mike.chapman@south32.net	lknowles@hansenec.com.au

1.5 REGULATORY APPROVALS

1.5.1 Overview

Table 1-2 lists the key approvals required for the exploration program.

Table 1-2 Key Regulatory Approvals

APPROVAL	LEGISLATION	AGENCY	STATUS
NORTHERN TERRITORY APPROVALS			
Environmental Approval	*Environment Protection Act 2019* (NT) (EP Act)	Northern Territory Environment Protection Authority (NT EPA)	Under the EP Act, if a project has the potential to have a significant impact on the environment, a referral must be made to the NT EPA to confirm if an approval is required and, if required, the appropriate approval pathway. The EP Act assessment process is described in Section 1.5.2. An assessment of impacts has been undertaken using the definition of 'significant impact' from Section 11 of the EP Act, as well as the *NT EPA Environmental factors and objectives* (NT EPA, 2022) guideline. This assessment concluded that the exploration program is unlikely to have a significant impact on the environment. Section 3 – Review of Environmental Factors, provides further detail. Notwithstanding this finding, the proponent is lodging this EP Act Referral to obtain certainty on the approval requirements for the exploration program.
Mining Management Plan	*Mining Management Act 2001* (NT)	Department of Industry, Tourism and Trade (DITT)	It will be necessary to obtain Authorisation for the exploration program under the *Mining Management Act 2001* (NT). This Authorisation will not be granted until the NT EPA has undertaken any necessary environmental assessment.
FEDERAL GOVERNMENT APPROVALS			
Environmental approval	*Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	The EPBC Act requires approval to be obtained for activities that are likely to have a significant impact on Matters of National Environmental Significance (MNES). The two MNES that may be relevant to the exploration program are: ● Listed Threatened Species and Ecological Communities; and ● Listed Migratory Species. An assessment of significance has been undertaken using the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* prepared by the Department of the Environment (2013). A description of terrestrial ecology values is provided in the *Baseline Terrestrial Ecology Report*

APPROVAL	LEGISLATION	AGENCY	STATUS
			(Appendix A) and the assessment of impacts is provided in the *Assessment of Impacts on Listed Species Report* (Appendix B). The assessment has concluded that the exploration program is unlikely to have a significant impact on MNES and consequently does not require approval under the EPBC Act. Notwithstanding this finding, the proponent is proposing to lodge an EPBC Act Referral to obtain certainty on the approval requirements for the exploration program.
Consent from landowners	*Aboriginal Land Rights (Northern Territory) Act 1976* (Cth) (ALRA)	Prime Minister and Cabinet	ALRA is Commonwealth legislation which provides Aboriginal landowners with legal title to traditional lands. Freehold land granted under ALRA is referred to as Aboriginal land. Groote Eylandt is Aboriginal land under ALRA and the Anindilyakwa Land Council (ALC) is the land council responsible for this land. The proponent signed an Exploration Agreement under ALRA with the ALC on 17 May 2016. The Exploration Agreement describes the conditions under which exploration may be undertaken within the Southern Lease. This includes environmental conditions such as ensuring culturally and environmentally sensitive areas are avoided, and undertaking baseline environmental studies and ongoing monitoring. It also details the compensation to be provided to Traditional Owners for undertaking works in the Southern Lease and describes the process for engaging with Traditional Owners.
Tenement	*Mineral Titles Act 2010* (NT)	DITT	EL2455 is an exploration tenement located to the south of the existing mine. It was originally granted on 12 October 2016 and was renewed for a further two years on 16 December 2022. The proponent will continue to renew the tenement, as necessary.

1.5.2 EP Act Environmental Approval Process

Overview of Process

The EP Act and *Environment Protection Regulations 2020* (NT) (EP Regulations) establish a framework for assessing potential environmental impacts of development projects (termed "actions"). The NT EPA is the administering authority for the EP Act. Actions with the potential to have a significant impact on the environment require referral under the EP Act and EP Regulations. The NT EPA will use the information in the EP Act Referral to determine whether environmental impact assessment is required and, if required, the level of assessment that must be undertaken. If an action requires environmental assessment, it will also be necessary to obtain an Environmental Approval from the Northern Territory Minister for the Environment (the Minister) before proceeding. The main steps involved in the EP Act Referral process are described below.

Step 1 – Preparation and Lodgement of EP Act Referral

Hansen Environmental Consulting prepared this EP Act Referral on behalf of the proponent. This document has been prepared to enable the NT EPA to determine whether the exploration program is expected to give rise to significant impacts and hence whether it will require further environmental assessment. This referral has been prepared in accordance with the referral information requirements described in the NT EPA Guideline *Referring a proposal to the NT EPA* (NT EPA, 2021).

This guideline (and associated guideline: *NT EPA Environmental factors and objectives* (NT EPA, 2022)) explains that environmental factors and objectives underpin the assessment of environmental impacts. Environmental factors are broad divisions of the environment that may be impacted by a proposed action. Objectives have been developed for each environmental factor and potential impacts must be considered relative to these objectives. Section 3 – Review of Environmental Factors provides an overview of environmental factors and objectives and concludes that the environmental factors most relevant to the exploration program are:

- Terrestrial ecosystems, discussed in Section 4 – Terrestrial Ecosystems; and
- Culture and heritage, discussed in Section 5 – Culture and Heritage.

These sections conclude that the exploration program is not predicted to have a significant impact on these environmental factors. The overall conclusion of the referral is, therefore, 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. The potential impacts from exploration are therefore well understood and the measures to mitigate these impacts are well established. Despite this finding, a referral under the EP Act is being made for the exploration program, to obtain certainty on the approval status of the project.

The proponent has undertaken detailed and regular consultation with the ALC and Traditional Owners, prior to preparing this EP Act Referral. This consultation is described in Section 2 – Project Description. In November 2022, the proponent also approached the NT EPA about the exploration program. The NT EPA advised that a pre-lodgement meeting was not necessary for the referral.

Step 3 – NT EPA Reviews Referral

The NT EPA will conduct a preliminary review of the referral to determine whether it contains sufficient information to inform stakeholders of the proposed action and whether it has the potential to have a significant impact on the environment. This review can take up to 15 business days. The NT EPA may also request additional information to be provided, if needed. The preliminary review will culminate in the NT EPA either accepting or rejecting the referral.

Step 4 – Public Exhibition of Referral

If the NT EPA accepts the referral, it is placed on public exhibition for 20 business days. Government agencies and the public can make submissions on the referral during this period.

Step 5 – Decision on Assessment Approach

Within 30 business days from the end of the public exhibition period, the NT EPA will determine whether the proposed action requires assessment under the EP Act due to the potential for significant impacts on the environment, and if so, the assessment approach required. Alternatively, the NT EPA may decide at this stage that the proposed action does not require assessment under the EP Act. A notice of decision will be provided to the proponent, supported by a statement of reasons.

Next Steps

If the NT EPA determines that environmental assessment is required, there are several possible environmental assessment approaches, ranging from the lowest tier of assessment (i.e. assessment based on the information submitted as part of the EP Act Referral) to the highest tier of assessment (assessment by inquiry, being a panel appointed by the NT EPA). At the conclusion of the environmental assessment process, an Environmental Approval can be sought from the Minister and must be obtained prior to the action proceeding.

If the NT EPA determines that environmental assessment under the EP Act is not required, the action may then proceed, subject to any other necessary regulatory approvals being in place (refer Table 1-2).

1.6 REPORT STRUCTURE

Volume 1

	Executive Summary	Section 5	Culture and Heritage
Section 1	Introduction	Section 6	Avoidance and Mitigation
Section 2	Project Description	Section 7	Glossary
Section 3	Review of Environmental Factors	Section 8	Abbreviations
Section 4	Terrestrial Ecosystems	Section 9	References

Volume 2

Appendix A	Baseline Terrestrial Ecology Report
Appendix B	Assessment of Impacts on Listed Species Report
Appendix C	2021 Camera Fauna Monitoring Program Report

1.7 STUDY TEAM

This EP Act Referral has been prepared by Hansen Environmental Consulting in association with ecological specialists. Table 1-3 lists the EP Act Referral components and study team members involved in researching, writing and reviewing each section. Table 1-4 provides the qualifications and experience of the team members.

Table 1-3 EP Act Referral Study Team

EP ACT REFERRAL COMPONENT		TEAM MEMBER	COMPANY
EP ACT REFERRAL DRAFTING AND MANAGEMENT			
Project Director		Peter Hansen	Hansen Environmental Consulting
Project Manager		Laura Knowles	Hansen Environmental Consulting
EP Act Referral contributors		Jesse Scherer Deana Barnard	Hansen Environmental Consulting
SPECIALIST REPORTS			
A	Baseline Terrestrial Ecology Report	Katrina Wolf	Cumberland Ecology
B	Assessment of Impacts on Listed Species Report	Katrina Wolf	Cumberland Ecology
C	2021 Camera Fauna Monitoring Program Report	Katrina Wolf	Cumberland Ecology

Table 1-4 Qualifications and Experience of Study Team

TEAM MEMBER AND COMPANY	TITLE	QUALIFICATIONS	YEARS OF EXPERIENCE
HANSEN ENVIRONMENTAL CONSULTING			
Peter Hansen	Director	BE(Hons)	32
Laura Knowles	Principal Environmental Scientist	BSc(Hons), HDipEd, MPhil(EnvSc)	24
Jesse Scherer	Environmental Scientist	BSc, MEnv	4
Deana Barnard	Graduate Environmental Scientist	BSc	1
CUMBERLAND ECOLOGY			
David Robertson	Director	BSc(Hons), PhD(Ecology)	32
Katrina Wolf	Principal Ecologist	BSc	14
Trevor Meers	Senior Ecologist	BAppSc, PhD(Restoration Ecology)	15

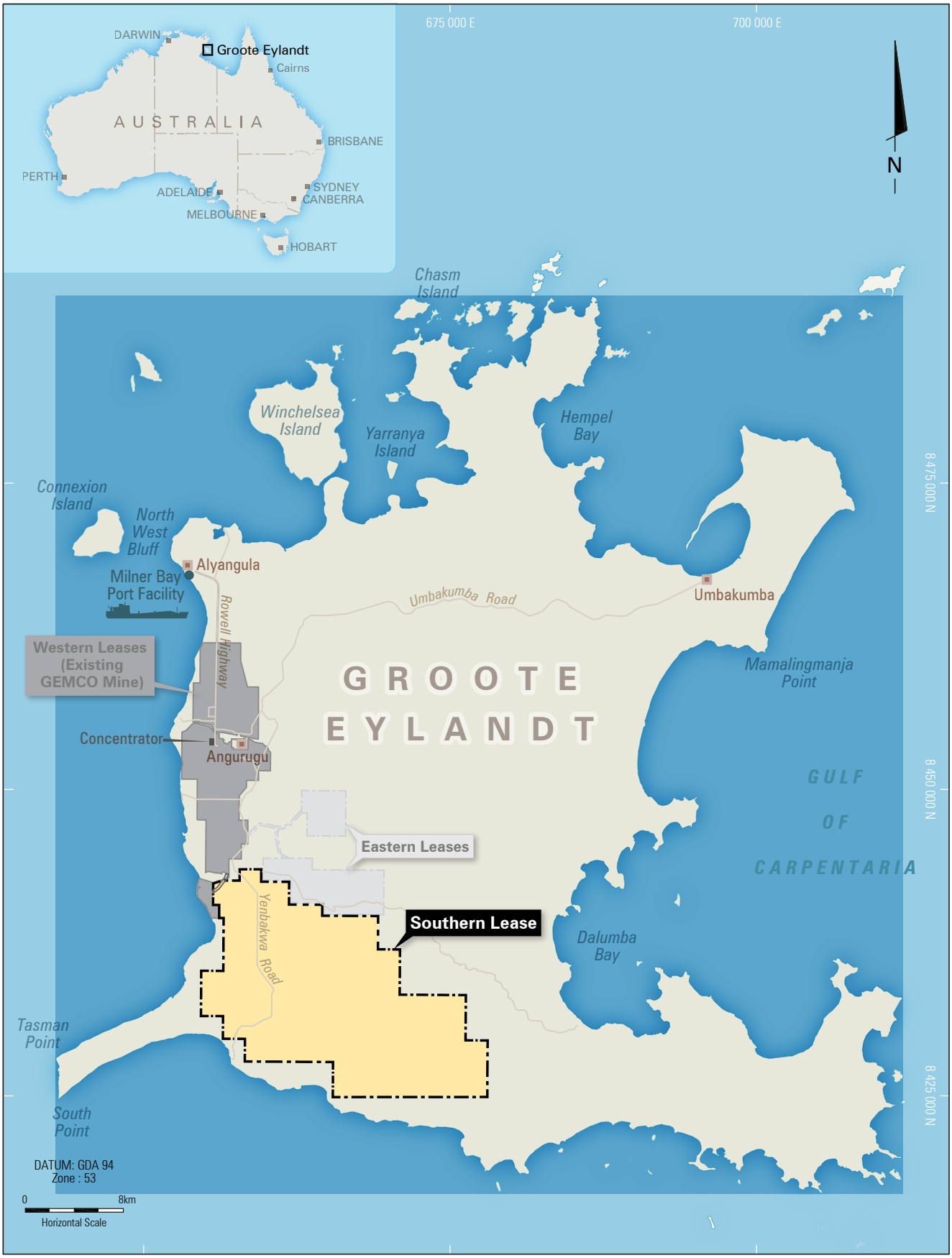
Personnel representing the proponent were involved in providing project information and reviewing the EP Act Referral. Table 1-5 provides the qualifications and experience of the personnel.

Table 1-5 Qualifications and Experience of Proponent Personnel

PERSONNEL	TITLE	QUALIFICATIONS	YEARS OF EXPERIENCE
Mike Chapman	Project Study and Approvals Manager	BNatRes	30
Melinda Mead	Project Study and Approvals Advisor	LLB, BCom	7
David Hope	Senior Manager Tenure Mining Rights & Resource Geology	BSc, GCertGeoStat	29
Josh Harvey	Lead Resource Geology	BSc(Hons)	20
Adrian Byers	Principal Resource Geologist	BSc(Hons), GCertGeoStat	17
Craig Winter	Senior Exploration Geologist	BSc(Hons)	10
Rick Guerini	Superintendent Geology Services	BSc(Hons)	9

The proponent would like to gratefully acknowledge the assistance of the Traditional Owners of Groote Eylandt and the ALC, including members of the Amagula, Maminyamanja, Wurrawilya, and Wurramara clans.

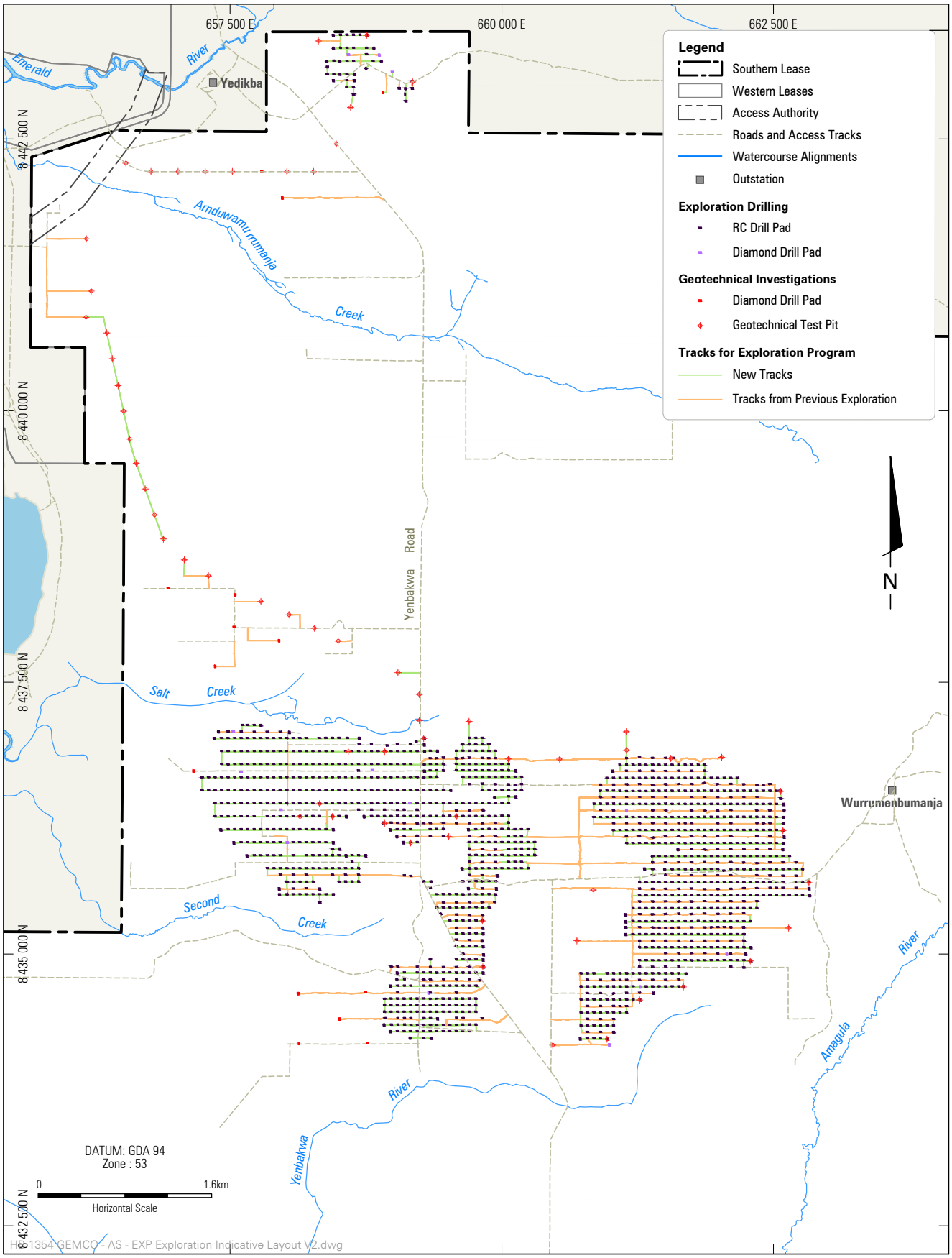
FIGURES



SOUTHERN LEASE EXPLORATION PROGRAM

Location Plan

FIGURE 1-1



SOUTHERN LEASE EXPLORATION PROGRAM

Exploration Program (2023-2025)
Indicative Layout Plan

FIGURE 1-2