

MOROAK RESOURCES Pty Ltd

ACN 69616553014

(A family Related Entity to ROPER RESOURCES Pty Ltd)

Third Annual Technical Report EL31489/20

For the period 20-11-2019 to 19-11-2020

Titleholder:	Moroak Resources Pty Ltd
Operator:	Moroak Resources Pty Ltd
Target Commodities:	Heavy Minerals
Project:	Roper Heavy Mineral Project
Date Granted:	20 TH November 2017
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CONTENTS

1	SUMMARY	4
2	INTRODUCTION	5
2.1	Background	5
2.2	Location and Access	5
2.3	Climate	5
2.4	Topography, Vegetation and Water Resources	6
2.5	Tenure	6
2.6	Native Titles and Aboriginal Heritage Sites	7
3	GEOLOGY	8
3.1	Regional Geology	8
3.2	Local Geology EL31489	10
4	PREVIOUS ACTIVITIES AND CURRENT STATUS	10
4.1	Previous Activities	10
4.2	Current Status	11
5	PROPOSED ACTIVITIES 2020/2021	11
5.1	Proposed Exploration Activities EL31489	11
6	REFERENCES	12

Figures

<i>Figure 1</i>	<i>Moroak Resource's EL31489, shown in relation to AIRs two MLs, as well as Regional Towns and Highways</i>	5
<i>Figure 2</i>	<i>EL31489 Coincides with the Perpetual Pastoral Leased of Goondooloo, Moroak and Flying Fox</i>	7
<i>Figure 3</i>	<i>Local Geology EL31489 showing Derim Derim Dolerite (Purple) and Kyalla Formation (Yellow)</i>	10

Tables

<i>Table 1</i>	<i>EL31489 Tenement Details</i>	6
<i>Table 2</i>	<i>Perpetual Pastoral Leases that Coincide with EL31489</i>	6
<i>Table 3</i>	<i>Roper HM Project, Stratigraphy</i>	9
<i>Table 4</i>	<i>Exploration Activities EL31489</i>	11
<i>Table 5</i>	<i>Proposed Exploration Activities EL31489 for 2020/2021</i>	11

1.0 SUMMARY

Moroak Resources Pty Ltd is a family related entity to Roper Resources. Both Roper Ilmenite Pty Ltd and Australian Ilmenite Resources Pty Ltd (AIR), are wholly owned subsidiaries of Roper Resources Pty Ltd. Moroak Resources Pty Ltd in conjunction with Roper Ilmenite and AIR, is focused on developing the ilmenite and magnetite-bearing regolith, derived from the weathering of dolerite sills in the Roper Gulf Shire. Their primary asset is the Roper Heavy Minerals Project (the “Project”) that straddles the Roper Highway about 120km east of Mataranka, and 475km south-east of Darwin, in the Northern Territory (NT), Australia.

Moroak Resources Pty Ltd has three leases within this Project area: EL31489, EL31492 and EL31164

This is the Third EL31489 Annual Technical Report and is for the period 20/11/2019 to 19/11/2020.

The Project lies in Mesoproterozoic sediments of the Roper Group in the central-western Bauhinia Shelf of the McArthur Basin that has been previously been explored for heavy minerals, iron ore, base metals, uranium and diamonds. Sediments of the Maiwok Subgroup in the Project area have been extensively intruded by flat lying late Proterozoic sills of Derim Derim Dolerite containing minor amounts of primary accessory ilmenite, titanomagnetite and magnetite. During prolonged weathering these heavy minerals have been released from the dolerite sills as they become exposed. They are now concentrated at or near the surface within pisolitic, clay-rich ferruginous regolith and black soils in potentially economic concentrations.

To date Moroak Resources Pty Ltd, in conjunction with Roper Resources, has undertaken little exploration in EL31489 as the Roper Heavy Minerals Project has instead focused expenditure on mining infrastructure, process plant and trial mining located within AIRs two MLs, as well as extensive Regional Exploration of AIR’s EL28291.

2.0 INTRODUCTION

2.1 Background

EL31489 is a tenement in the south western part of the Roper Heavy Minerals Project area. It covers regolith-hosted heavy mineral deposits containing ilmenite derived from the weathering of dolerite sills emplaced into Proterozoic sediments of the Roper Group in the upper part of the McArthur Basin between Mataranka and Roper Bar in the NT.

2.2 Location and Access

The tenements of the Roper Heavy Minerals Project are located approximately 120km east of Mataranka in the Roper River Basin of the Northern Territory, adjacent to the Roper Highway that provides all-weather access from the Stuart Highway. Further access is provided by networks of unsealed, dry season station roads, tracks and cleared fence lines. Sealed airstrips at Ngukurr to the east and Minyerri to the south provide all weather access for fixed wing and helicopter medivac and survey operations. See Figure 1.

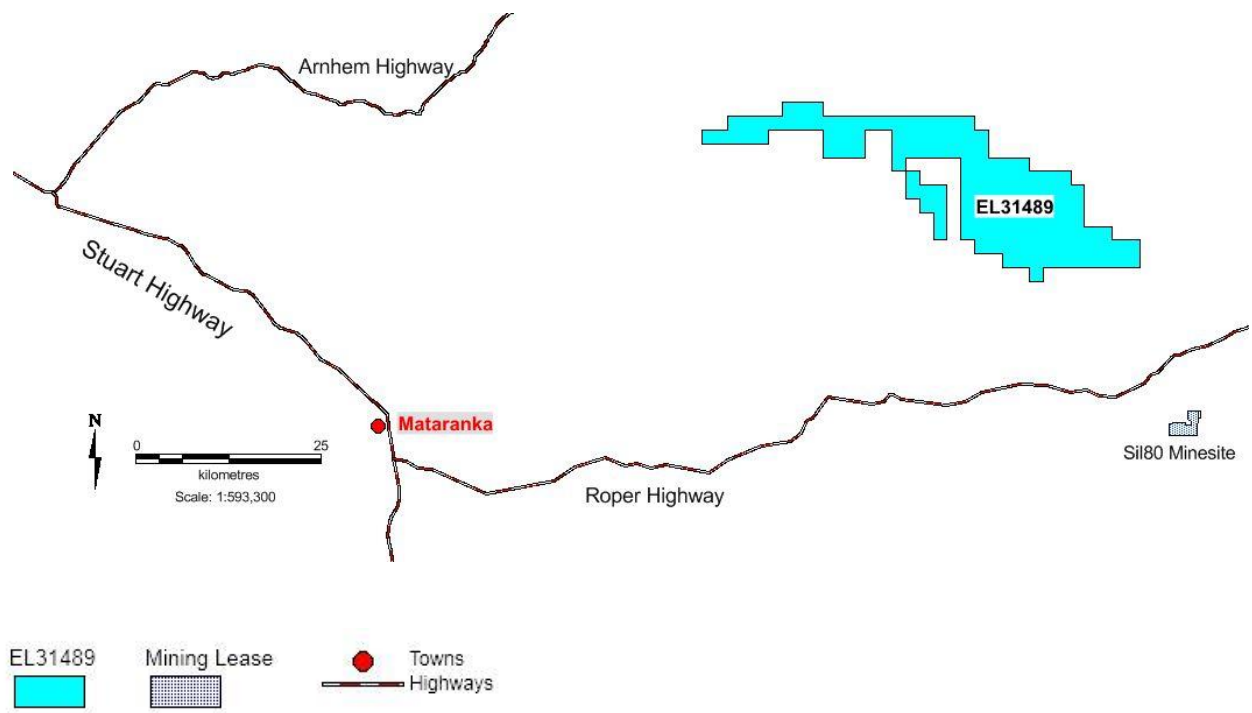


Figure 1: Moroak Resource's EL31489, shown in relation to AIR's two MLs, as well as Regional Towns and Highways

2.3 Climate

The project area has a humid monsoonal climate, with mild dry winters and hot humid summers often with heavy monsoonal rains that are rarely associated with tropical cyclones. The average annual rainfall is approximately 950 millimetres most of which falls between November and April. The wet season usually renders most of the area inaccessible for exploration activities.

2.4 Topography, Vegetation and Water Resources

The Roper Heavy Minerals Project tenements lie within the Gulf Fall physiographic province which is part of the Arnhem Land Plateau land area. Dissection of Proterozoic sediments has produced an undulating topography of low hills and rubble covered ridges with broad areas of alluvial and colluvial plains. Within this province the Roper River catchment consists of some 82,000 square kilometres, extending from the Arnhem and Wilton River Plateau regions in the north to the Carpentaria Highway in the south. It is fed from permanent springs in limestones in the headwaters between Mataranka and Katherine. It borders the Daly River Basin to the west near Mataranka and drains the large Sturt Plateau region located in the south-western section of the catchment. Thirteen significant rivers and creeks drain the system, of which the Roper, Hodgson, Wilton, and Waterhouse Rivers and Flying Fox and Elsey Creeks are perennial.

These areas lie close to the divide between the Roper and Hodgson River systems where vegetation consists of open savannah Eucalyptus woodland with Spinifex locally on sandy and higher ground. Creek beds and water holes of the larger drainage tributaries are typified by paperbark and larger Eucalyptus trees. Dense thickets of lancewood occur on higher ground particularly on the steep slopes adjacent to Cretaceous mesas and sandstone plateaus.

2.5 Tenure

EL31489 was granted on 10/11/2017 covers 129 sub-blocks Table 1 and coincides with the Pastoral Leases of Goondaloo (PPL1068), Moroak (PPL1067) and Flying Fox (PPL01179) Table 2 and as shown in Figure 2.

TENEMENT	TYPE	LAND TENURE	DATE GRANTED	TENEMENT YEAR	CURRENT SUB BLOCKS
31489	EL	PPL	20 November 2017	2	129

Table 1 EL31489 Tenement Details

PROPERTY	PARCEL NUMBER	OWNER	PERPETUAL PASTORAL LEASE
Goondooloo	01287	Moroak Pastoral Company Pty Ltd	PPL1068
Moroak	01288	Moroak Pastoral Company Pty Ltd	PPL1067
Flying Fox	04775	Flying Fox Pty Ltd	PPL1179

Table 2 Perpetual Pastoral Leases that Coincide with EL31489

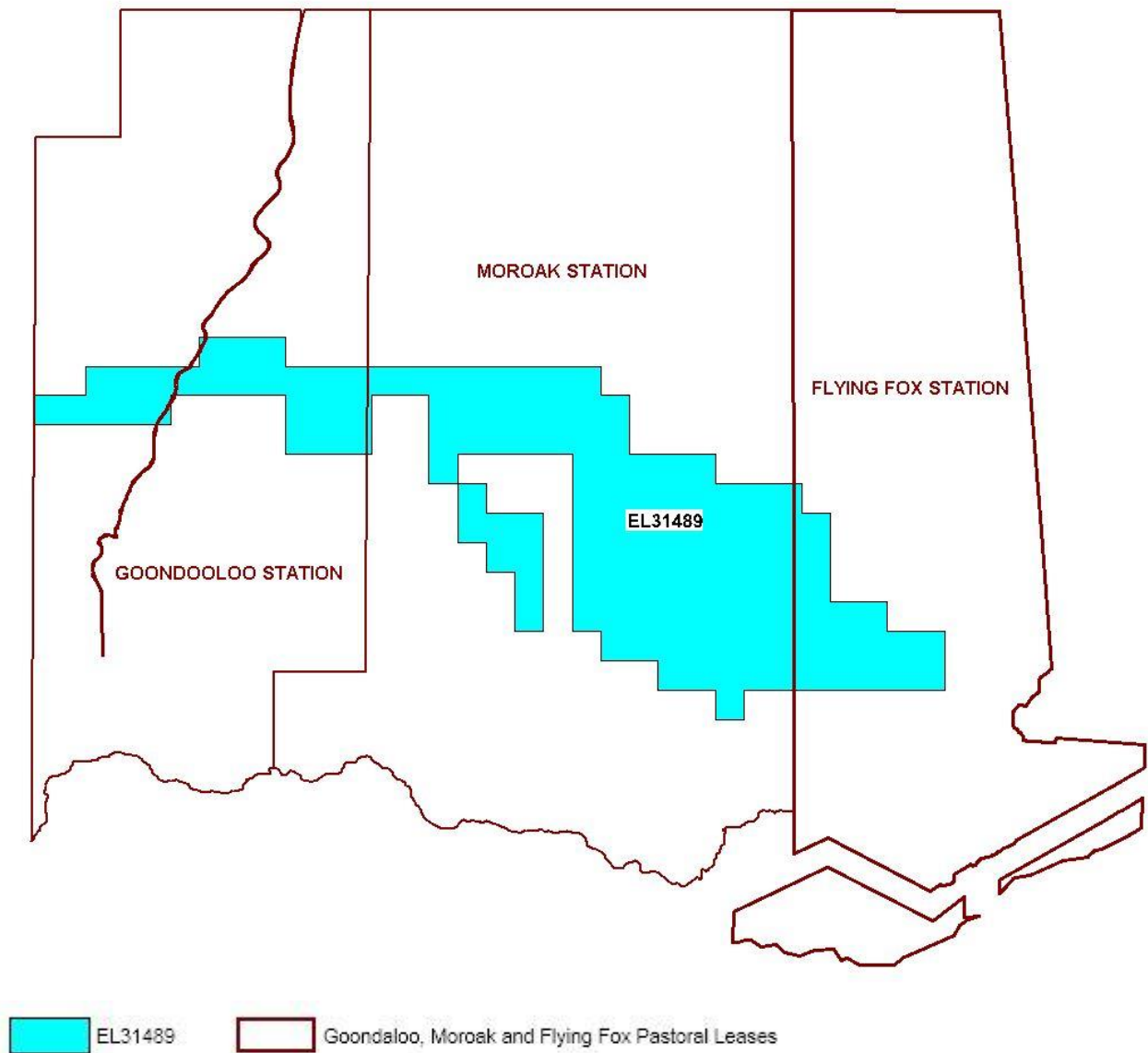


Figure 2. EL31489 Coincides with the Perpetual Pastoral Leased of Goondaloo, Moroak and Flying Fox.

2.6 Native Titles and Aboriginal Heritage Sites

There are no Native Title claims that affect EL31489

Aboriginal heritage sites have not been identified within EL31489. If ground disturbing exploration is planned within EL31489 then the AAPA will be consulted.

3.0 GEOLOGY

3.1 Regional Geology

The Roper Heavy Mineral (HM) Project lies in the central-western Bauhinia Shelf of the southern part of the McArthur Basin, in the northeast of the Northern Territory. The McArthur Basin comprises an unmetamorphosed and relatively undeformed succession of marine clastic and carbonate sedimentary rocks, interspersed with extrusive volcanics and intrusive igneous sills, of Palaeoproterozoic-Mesoproterozoic age, up to 10km thick. It correlates with the highly mineralised Isa Superbasin to the southeast and contains occurrences and resources of base metals, gold, uranium, iron ore, manganese, diamonds, platinum group elements and petroleum.

The Basin represents a passive series of sedimentary cycles developed in response to basement growth faults and accommodation structures represented now by the north-south trending Batten and Walker Troughs and northwest trending fault zones that include the Urapunga Fault Zone that passes through the southern part of the Project area.

The Roper HM Project area is underlain by sediments of the Roper Group comprising quartz sandstones, micaceous siltstones, mudstones black shales and glauconitic sandstones. Ironstones are present in the Sherwin Formation of this subgroup that is the target for iron ore exploration and development in the region, (Table 3: Roper HM Project, Stratigraphy.). This Group is of Mesoproterozoic age, 1429-1324 million years old, and varies from 1.5 to over 3km thick.

Within the Roper Group the Maiwok Subgroup has been intruded extensively by mafic dikes and sills of Derim Derim Dolerite, dated at 1324 million years, that were emplaced soon after deposition and which ceased before regional deformation. This occurred at various stratigraphic levels within and between formations ranging from the Mainoru Formation up to Chalmers River Formation, (Table 2: Roper HM Project, Stratigraphy.). This is a continental tholeiite that varies from aphanitic basalt to holocrystalline microgabbro/gabbro in texture and composition. It comprises plagioclase feldspar varying in composition between andesine and labradorite, clinopyroxene (pigeonite) and minor (up to about 3-5%) iron-titanium oxides (magnetite, titanomagnetite and ilmenite). They exhibit weak deuteric alteration to chlorite, epidote, clay and carbonate. Regional exploration shows that the relative abundances of magnetite-titanomagnetite and ilmenite varies amongst the sills and that the ilmenite- rich sills predominate in the upper parts of the stratigraphy. Although mostly gently dipping to flat-lying, this sequence is locally folded into broad folds and tightly folded domes, (1:250,000 Urapunga Geological Map Sheet SD53-10).

Lower Palaeozoic rocks unconformably overlie the Proterozoic succession comprising Cambrian Antrim Basalts in the far western part of the project area and a strongly dissected sheet of Upper Palaeozoic Cretaceous conglomerates, sandstones, siltstones and claystones preserved as outliers and mesas throughout. Cambrian and Ordovician sediments are recorded in the Katherine district to the west but evidence of these or other intervening Palaeozoic lithologies is missing from the project area. It is assumed that they have either been eroded off or were never deposited here suggesting that the Palaeozoic was a period of extensive denudation here. The following Cenozoic period, starting from the end of the Cretaceous 65 million years ago, was an extensive period of regolith development including the formation of laterite, calcrete and ferricrete. During the Quaternary to Recent extensive deposits of regolith comprising highly ferruginous pisolitic loams and clays and clayey black soils formed on the gentle slopes and floodplains overlying exposed dolerite sills, and unconsolidated gravels, sands and silts accumulated as valley fills and floodplain deposits that reflect material derived from prolonged weathering and erosion of Cretaceous and pre- Cretaceous rocks during the Cenozoic.

Stratigraphy	Sym	Lithology	Sill Groups & HM-Bearing Alluvials
Undifferentiated Alluvium	Qa, Cz	Elluvial, alluvial, sand, silt, gravel	Buka, Big Banana Alluvials
ROPER GROUP			
MAIWOK SUBGROUP			
Chambers Formation	RiverPrc	Siltstone, mudstone, fine sandstone	Strangways, Buka NNE, Buka North, BMC
Bukalorkmi Sandstone	Prl	Quartz sandstone	Buka South, Strangways, BMC East, SILL 80 South SILL 80, Buka NE, Buka East
Kyalla Formation	Pry	Siltstone, mudstone, sandstone	Conways West, Allungalugi, Mt Karmain, Maiwok South, Big Banana South, Tor Ridge Allungalugi, Fitzer, Stow Hill, Mt Cook, Tapp 2, Lower Fox, Maiwok North, Mt Karmain, Fitzer
Moroak Formation Sherwin Member	Prk Prkz	Quartz sandstone Sandstone, siltstone, mudstone & ironstone	Maiwok North, Fox Central Fox Central
Velkerri Formation	Prv	Mudstone, siltstone (organic in part)	Velkerri, SIL046, Big Banana
Bessie Sandstone	Pre	Quartz sandstone	SIL046, SIL053, Big Banana, SIL055, Mt Caroline Chapman East, Conways East,
Corcoran Formation Munyi Member	Pro Prom	Siltstone lower, with sandstone upper Fe sandstone and siltstone	Conways East, Strangways Jalboi, Conways East, Accident West, Mt Fischer,
COLLARA SUBGROUP			
Hodgson Sandstone	Prh	Quartz sandstone	Jalboi East Jalboi East, Wilton West, Wilton East, Accident West
Jalboi Formation	Prj	Fine sandstone, siltstone	Jalboi East, Wilton East, Wilton West, Accident West
Arnold Sandstone	Prx	Quartz sandstone	
Crawford Formation	Prr	Fine sandstone, siltstone	Mountain Valley, Accident West Accident West, Chapman West, Mainoru South, Mountain Valley, Wooden Duck Creek
Mainoru Formation Showell Member	Pru Prus	Undifferentiated Calcareous mudstone, limestone	Wooden Duck Creek, Mainoru North
Wooden Duck Member	Pruw	Mudstone-siltstone-sandstone	
Mountain Valley Limestone	Prut Prun	Mudstone, limestone Mudstone	
Nullawun Member			
Limmen Sandstone	Pri	Quartz sandstone	
Mantungula Formation	Prn	Mudstone, fine sandstone, dolostone	
Phelp Sandstone	Prp	Quartz sandstone	

Table 3: Roper HM Project, Stratigraphy.

4.2 Current Status

Exploration of the Roper HM Project while under receivership in 2014-2015 was limited to Namul Namul Station as part of AIR's EL28291 (Authorization 0005-06) comprising non-destructive geological mapping, stream sediment sampling and broad-spaced shallow (1m) hand auger sampling using existing station tracks and fence lines.

Exploration of the Project since April 2016 has been limited to further non-destructive geological mapping, and broad-spaced shallow (1m) hand auger sampling of other areas of heavy mineral-bearing regolith on Namul Namul Station as part of AIR's EL28291 (Authorization 0005-06), as well as extensive Resource Definition Drilling of AIR's EL28291 in 2018 and 2020, with the Resource Definition Drilling that was conducted in 2020 on EL28291 consisting of nearly 2000 Aircore Drill Holes / Samples and was a major project which utilised much of the project's exploration resources.

As such there has been no exploration activity in EL31489 as summarised below in Table 4.

TITLE	Period	Activity	Details
EL31489	Year 1 (2017-2018)	No field activities	No environmental disturbance
EL31489	Year 2 (2018-2019)	No field activities	No environmental disturbance
EL31489	Year 3 (2019-2020)	No field activities	No environmental disturbance

Table 4: Exploration Activities EL31489.

5.0 PROPOSED ACTIVITIES 2020/2021

5.1 Proposed Exploration Activities EL31489

The exploration work for 2021 will be carried out from the existing AIR mine camp on ML29042. Roper Ilmenite is planning a first pass look at the potential of this lease which it believes may have value in regards to the Dolerite Sills present. However Roper Ilmenite will also be exploring for other potential commodities. A summary of proposed work is given in Table 5.

Title	Program	Proposed Disturbance
		Access Clearing
EL31489	Ongoing Desktop Assessment, Reconnaissance Geological Mapping, Shallow Hand Auger sampling and Stream Sediment sampling of Dolerite Sills and the remainder of EL31489.	NIL

Table 5: Proposed Exploration Activities EL31489 for 2020/2021

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