

# Exploration Operations Mining Management Plan and Public Report

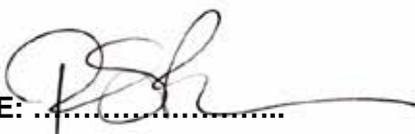
Include the following details on the title page:

- Operator Name: Molyhil Mining Pty Ltd
- Project Name: Molyhil
- Authorisation Number: 0289-04
- MMP Reporting Year: 2016
- Date: October 4, 2016
- Document Distribution List: NT DPIR, File

The MMP must be endorsed by a senior representative of the company who has the appropriate level of delegation.

	Author	Reviewed by	Approved by
Date			27 October 2016
Name			Richard Bradey
Signature			

I Richard Bradey *Thor Mining Exploration Manager* declare that to the best of my knowledge the information contained in this mining management plan is true and correct and commit to undertake the works detailed in this plan in accordance with all the relevant Local, Northern Territory and Commonwealth Government legislation.

**SIGNATURE:**  .....

**DATE:** 27 October 2016 .....

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- Thor Mining Environmental Management System
- Thor Mining Corporate Environmental Policy
- Rehabilitation register
- Environmental monitoring report
- NT Dept NRM site report
- Archeological Assessment report
- Copies of AAPA and NT Heritage Register search results
- Closure Costing Summary Sheet

# Amendments

Section	Amendment

## 1.0 Operator Details

Provide operator details including:

- Operator Name: MOLYHIL MINING PTY LTD
- Key contacts: Richard Bradey Exploration Manager
- Postal address: PO Box458, Marlestone SA 5033
- Street address: 58 Galway Ave Marlestone
- Phone details: 08-7324 1935
- Email: rbradey@thormining.com

### 1.1 Organisational Structure

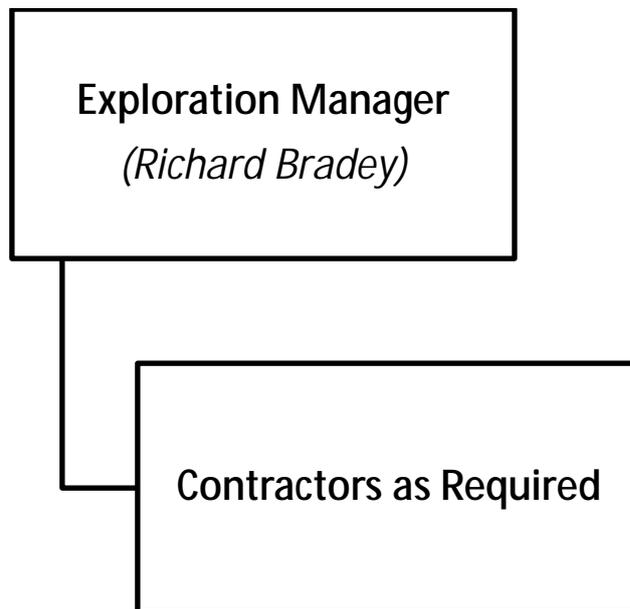


Figure 1: Thor Mining exploration organisation chart

### 1.2 Workforce

The Thor Mining exploration workforce is as shown in Figure 1. For specific projects additional contract staff may be enlisted which may include; geologists, field assistants, drillers, and drillers offsidars.

## 2.0 Identified Stakeholders and Consultation

<b>Stakeholder</b>	<b>Contact</b>	<b>Contact Title</b>	<b>Consultation Detail</b>
Department of Primary Industry and Resources	Kirsten Johnston	Mining Team Manager	Environmental compliance Mining Management Plan
NT WorkSafe	Nigel Butler	Senior Workplace Safety Inspector	Safety Management
Traditional owners	varies		Via the CLC
Central Land Council	Julie-Ann Stoll	Mining Manager	Updates provided as developments occur
Jinka Station	Michael Broad	Pastoral Leaseholder	Annually and prior to site access / activity
Thor Mining plc shareholders	varies		ASX announcements and AGM

### 3.0 Project Details

Provide details of the exploration project including:

- Authorisation: Number 0289-04
- Project name: Molyhil
- Location: 240 km North East of Alice Springs via Stuart & Plenty Highways
- Mining interest/s: EL22349, ML23825
- Title holder: Molyhil Mining Pty Ltd

Location maps and site plans:

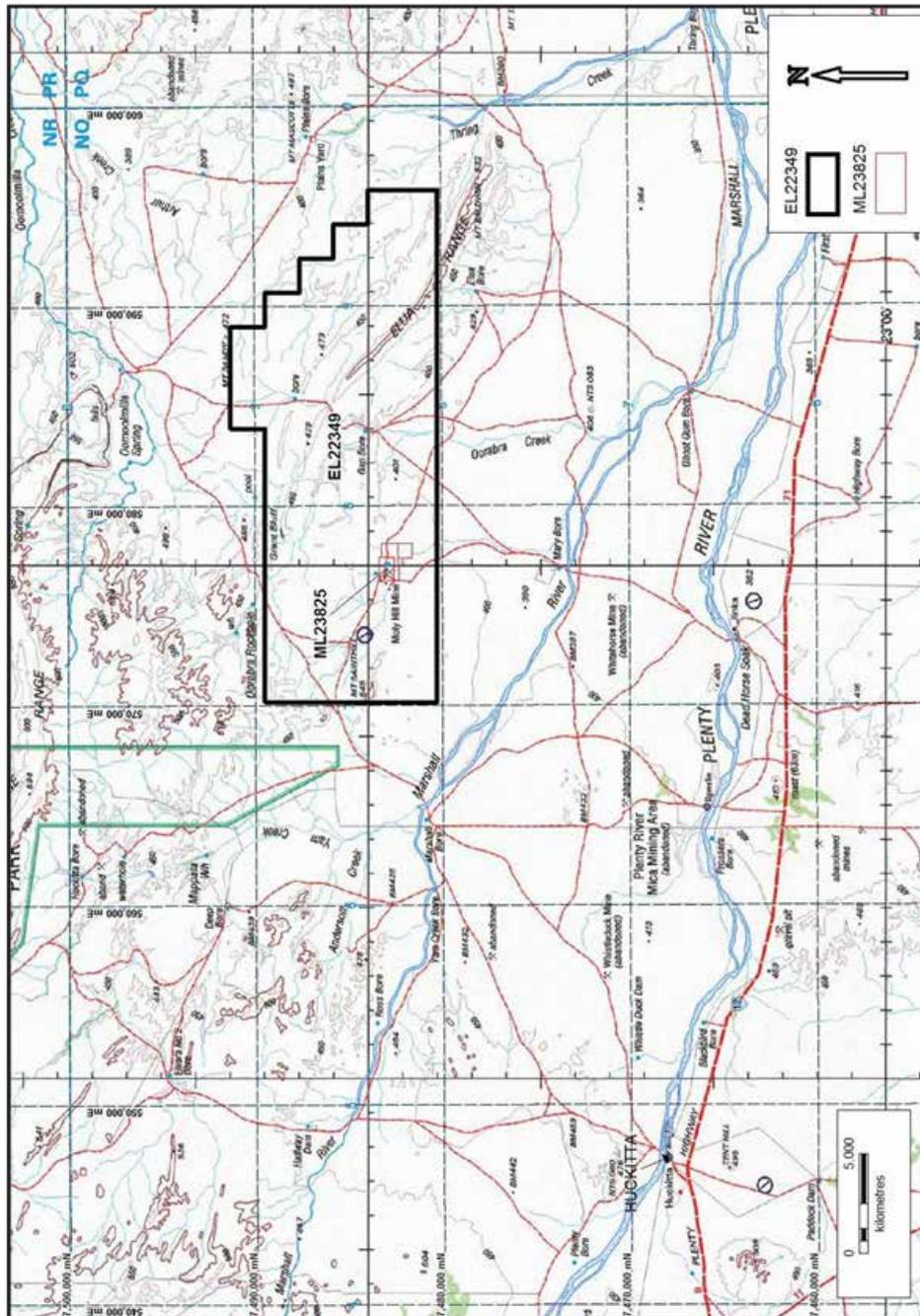


Figure 2: Molyhil location plan

### 3.1 Previous Activities and Current Status

Petrocarb Exploration NL (“Petrocarb”) acquired the operation in 1978 and production continued until late 1981 when the price of tungsten collapsed. The main pit is 130 m long x 100 m wide x 20 m deep. It is estimated that nearly 900,000 tonnes of waste plus ore have been removed from the open-cut (30,000m<sup>3</sup>). Petrocarb completed numerous diamond drill holes and trial mining to determine the true nature of the mineralisation. The area was rehabilitated by Petrocarb once mining ceased 1999 to the satisfaction of the NT Government and the tenement was subsequently surrendered.

Tennant Creek Gold Ltd (TNG) acquired the Molyhil Project during 2003 and commenced a systematic exploration program to fully evaluate the deposit. During 2004, Tennant Creek Gold Ltd completed a reverse circulation and diamond resource drill program comprising 2942 metres of RC drilling in 23 holes, and 675.6 metres of diamond core drilling in 5 holes.

In 2004 an unknown quantity of saline pit water was released by Tennant Creek Gold into the adjoining water courses which resulted in the mortality of trees and shrubs in four locations. Environmental monitoring commissioned by Thor Mining since that time has shown soil salinity has returned to background levels and vegetation is regrowing.

In 2005, the project was sold to Sunsphere Pty Ltd which subsequently underwent a name change to Molyhil Mining Pty Ltd on 2 April 2007. Three underground shafts and crosscuts were mined below the open cut pit. Approximately 2300 tonnes of rock were crushed, sampled and assayed. At the completion of this bulk sampling program, the shaft openings were secured with steel plates. Approximately 100 x 5 tonne ore sample piles covering an area of 4000 square metres remains to be rehabilitated. A 10 metre wide break in the pit bunding was cut to facilitate access to the pit (Figure 3).

Further drilling campaigns were carried out in September 2006, March 2007, January 2009 and July 2011. Details of these holes and their current status are tabulated in Appendix B.

A total of 227 holes have been drilled at the site (including three shafts) which can be grouped into the following categories;

- Rehabilitated holes – 42 rehabilitated holes, 3 holed destroyed by subsequent shaft mining and 6 holes which are or will be used for water supply. Three Thring Creek holes are now confirmed rehabilitated (Refer attached letter with photographic evidence and pastoralist consent).
- 65 Aircore / RAB holes drilled in 2016 and rehabilitated immediately upon completion.
- Holes to be rehabilitated – 114 holes with collars remaining to be decommissioned.
- The three vertical shafts also remain to be backfilled.

The full list of these holes with their location co-ordinates is appended.

### 3.2 Proposed Activities

A targeted bedrock geochemistry program was implemented in September 2016. The implemented program comprised 65 holes up to a maximum of 18 metres depth and rehabilitated immediately following completion of drilling. Collar coordinates have been added to the appended drill hole location summary. Collar location plan is provided (Figure 4).



Figure 3: Detail of Molyhil mine site

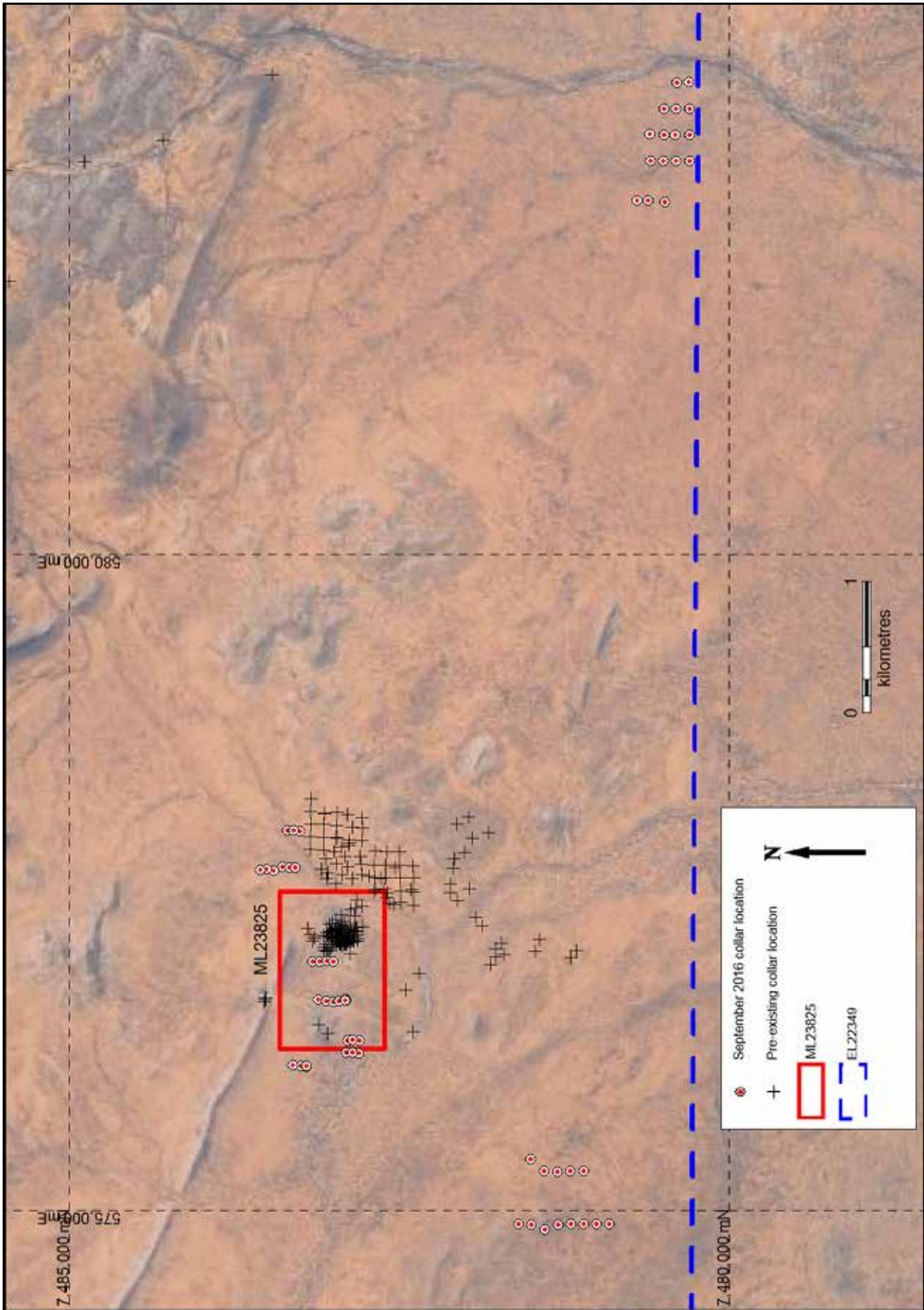


Figure 4: 2106 Collar location plan

## 4.0 Current Project Site Conditions

An NT NRM Snapshot report is appended in Appendix D covering the area of EL22349.

Site Conditions	Description
Geology	The area consists of undulating, flat ground underlain by Quaternary alluvial sands. Small ridges of Proterozoic sediments and quartz veins occur in the immediate mine area.
Hydrology	<p>Small sandy creeks drain the immediate mine area and flow south, parallel with Oorabra Creek, and drain into the Plenty River. The creeks are all normally dry.</p> <p>Currently there is about 1m of water in the bottom of the pit.</p> <p>There are six registered water bores within the area of EL22349 as shown in Figure 5.</p>
Flora	<p>Dominant species are Eucalyptus and Acacia with scattered grasses and Spinifex typical of the semi-arid regions of Central Australia. Dinkum land system (LS 53) covers the red sandy plains and small stony tracts NE of Molyhil Creek and south of the schist hills, approximately 85% of the mine lease. The vegetation is dominated by Georgina Gidgee (<i>Acacia georginae</i>) in the plains, River Red Gums (<i>Eucalyptus camaldulensis</i>) in the creeks with heavily grazed Buffel grass (<i>Cenchrus ciliaris</i>) and Bogan flea burr (<i>Calotis hispidula</i>) in the ground layer. Ruby Dock (<i>Rumex vesicaria</i>) has been observed growing in disturbed areas after winter rain in August 2006 by DPIFM staff.</p> <p>A search of the EPBC Act (1999) website listed no threatened species known in the area. Likewise, none of the species identified are listed in the Northern Territory list of threatened species (Parks &amp; Wildlife web site) – Lindbeck &amp; Associates, Project PER June 2007, p64.</p>

Fauna	<p>There are numerous animals in the area including Euros (<i>Marcopus robustus</i>), Red Kangaroos, House Mice, Long-nosed Dragon (<i>Amphibolurus longirostris</i>), Geckoes, Zebra finches, Willie-wagtails, White-plumed Honeyeaters and Magpie-larks. Feral animals include camels, cats and rabbits.</p> <p>No threatened species listed under the TWPC Act or the NT Fauna Atlas records were recorded during the surveys [2004 &amp; 2006-7] or have been recorded from literature surveys. One threatened species listed under the EPBC Act 1999, Rainbow Bee Eater (<i>Merops ornatus</i>) was recorded during the survey. (Moon et al, in Lindbeck &amp; Associates, Project PER June 2007 p64). Two additional species listed under the EPBC Act (1999) could potentially occur in the area: Mulgara (<i>Dasyercus cristicauda</i>) and Black-footed Rock Wallaby (<i>Petrogale lateralis</i> – MacDonnel Ranges Race).</p> <p>Although no record of these species have occurred [sic] within the mine lease area, it would be expected that Black-footed Rock Wallabies may have and may still occupy the nearby ranges. No record of either of these species was recorded during the surveys (Lindbeck <i>op. cit.</i>)</p> <p>Drilling will not impact the nearby ranges because of their distance from proposed activities (&gt;0.5 km) and their significance to Aboriginal traditional owners.</p>
Conservation Park	No part of EL22349 coincides with the area of the Dulcie Range National Park.
Site of Conservation Significance	EL22349 falls largely within the Site of Conservation Significance - Area 51 the surrounds of the Dulci Ranges National Park (Figure 5).
Land Use	Cattle grazing.
Historical, Aboriginal, Heritage Sites	<p>Figure 5 shows Aboriginal heritage areas identified from and AAPA database search. Specific site clearance will be undertaken on an as needs basis.</p> <p>An agreement has been reached between Molyhil Mining Pty Ltd and the traditional owners regarding Mineral Lease area. The signing ceremony was conducted on site in October 2007.</p> <p>An Aboriginal heritage survey conducted by Tim Hill in November 2012. A total of 7,680 metres was surveys across the study area, including peripheral activities such as the borefileds expansion, the airstrip upgrade and creek crossing at the Plenty River. No archaeological sites were recorded during the survey. It is reasonable to infer- based on the sample survey- that no archaeological sites or materials will be present within the study area.</p>

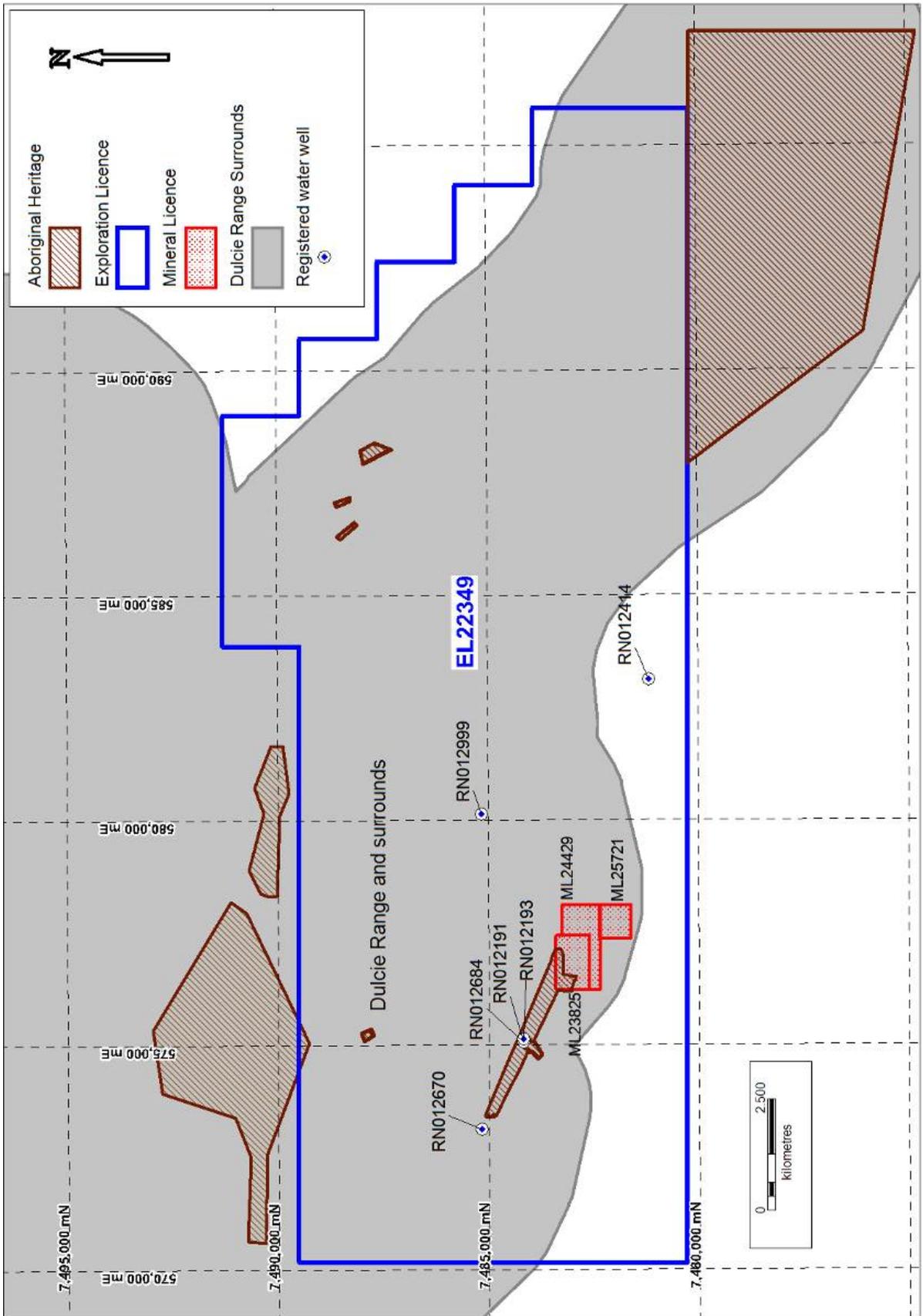


Figure 5: Areas of significance relative to EL22349 & ML23825

## **5.0 Environmental Management System**

A copy of the Company's Environmental Management System is appended to this report

The company is committed to conducting all of its operations in an environmentally responsible manner and will plan and manage its activities to minimise disturbances and prevent pollution to the environment in which it operates observing all environmental laws and regulations and in a manner consistent with the terms of the appended EMS.

### **5.1 Environmental Policy and Responsibilities**

Molyhil Mining Pty Ltd will be responsible for implementation of its environmental policy within industry standard guidelines. The senior Molyhil Mining employee on site will be responsible for environmental management within the project area. A copy of the company's Environmental Policy is appended.

### **5.2 Statutory and Non-Statutory Requirements**

Relevant legislation and requirements.

- Mineral Titles Act;
- Mineral Title Regulations;
- Mining Management Act;
- NT Aboriginal Sacred Sites Act / Native Titles Act;
- Water Act;
- Heritage Act;
- Environmental Protection and Biodiversity Conservation Act
- Northern Territory Parks and Wildlife Conservation Act;
- Soil Conservation and Land Utilization Act;
- Weeds Management Act;
- Bushfires Act;
- Work Health and Safety (National Uniform Legislation) Act 2011

Non-statutory requirements

- Agreement between Molyhil Mining Pty Ltd and Aboriginal traditional owners signed in October 2007.

### **5.3 Induction and Training**

Environmental topics are included in the site induction program which all site personnel receive. These will include: rubbish and waste disposal, spill management, dust control, water flows, wildlife preservation, fire, aboriginal sites and incident reporting.

### **5.4 Identification of Environmental Aspects and Impacts**

Environmental aspects and impacts associated with the site and proposed activities, as defined by ISO14001:2015:

Aspect	Impact	Risk Rating	Management measures (prevention)	Management measures (remediation)
Clearing of drill pads and tracks	Temporary loss of native flora and fauna. Potential erosion.	Low 1	Keep clearing to a minimum; maximize 'blade up' retention of rootstock.	Fix any damage caused by erosion
Drilling	Hydrocarbon spills causing contamination of the environment.	Mod 2	Minimise hydrocarbon spills.	Remove any contaminated soil from site.
Drilling	Dust and noise emission causing Temporary pollution and disturbance to fauna	Mod 2	Suppress dust emission and minimise noise where possible.	Temporary effect will naturally attenuate
Drilling	Saline water discharged having a negative impact on vegetation.	Low 1	Use sumps to collect and contain. Cease drilling to control if required	Pump out water to pit if required
Hydrocarbon storage	Hydrocarbon leak/spill causing contamination of soil and ground water	Mod 2	Bund all tanks. Minimise spillage during fuel transfer.	Remove any contaminated soil from site.
Driving around tenement	Spread of weeds	Low 2	Clean vehicles before access to site and on completion of work.	Control weed infestation with proscribed herbicide
Camp Area	Temporary loss of native flora and fauna. Potential contamination of the environment.	Low 1	The camp area will be situated in a previously disturbed area immediately to the north of the pit.	Ongoing and final clean-up as per waste management plan.
Waste Management	Potential contamination of the environment.	Low 1	Waste management plan included in site induction. Provide waste collection containers as per WMP	Organic waste buried on completion of program. Non-biodegradable waste will be contained and removed from site to an approved waste facility.

## 5.5 Environmental Audits, Inspections and Monitoring

Low Ecological Services has visited the site and presented several reports to Molyhil Mining since 2004. Molyhil Mining continues to monitor environmental impacts of exploration activities and addresses any rehabilitation requirements as required.

#### Site Inspection Summary (since 2015)

<b>Activity</b>	<b>Conducted by</b>	<b>Date</b>	<b>Findings</b>
Site Inspection	DME	June 2015	Refer to Record of compliance directives in Section 5.6.2 Performance Reporting.

## 5.6 Environmental Performance

### 5.6.1 Objectives and Targets

Thor Mining plc aims to minimise environmental impacts at every stage of work, from planning through exploration, development, mining, production and decommissioning.

The environmental objective will be achieved through the implementation of the following;

- Develop and implement controls and strategies to identify, minimise environmental impacts arising from the company's activities;
- Manage, monitor and evaluate environmental performance, striving to achieve continuous improvement;
- Have timely and effective communications with regulators, landowners, relevant indigenous people and others who may be directly affected by company operations;
- Seek continuous improvement in, waste management and the efficient use of resources;

## 5.6.2 Performance Reporting

	Reference / Section	DoR Comment	Response
ME Reference: MR2013/0453			
1	1.4 Map	Remove EL 28948 & EL28949 from map	Done
2	2.0 History of Development	Update ore sample area to be rehabilitated to 4000m <sup>2</sup>	Done
3		Confirm holes to be rehabilitated	Done
4		Provide details of shaft rehabilitation in Molyhill pit	Done
5	3.0 Current Site Conditions	Include list of water bores and commit to not disturbing them	Done
6	4.7 Environmental Incident Reporting	Update reference from draft to final	Done
7	EMS Procedures	Amend procedures: <ul style="list-style-type: none"> <li>• Dispose of samples below grade only</li> <li>• Plastic must not be buried</li> </ul>	Done
DME Reference: MR2014/0077			Date: September 2015
1	General	Notify Penyeme of geochem drilling activities	Residence deserted
2		Note in MMP that proposed drilling falls within Dulci Ranged SOC	Done
3		No clearing for drilling should occur within 25m of creeks	No clearing was planned or requested

DME Reference: MR2015/0330			
1	2. History & Current status	Timeframe for rehabilitation of 37 holes	The remaining 37 holes will be rehabilitated at the commencement of mining.
2		Check co-ordinates of Gap Bore	Gap bore is the property of the pastoralist and has no bearing on the Molyhill project. It has been removed from the record.
3	4. Environmental Management Plan	The Environmental Policy should commit to prevent pollution, comply with legal and other requirements and continuous improvement.	Done – Policy is appended
4		Outline procedures in the event of an environmental emergency	To be completed prior to next exploration program and included in the 2017 MMP update report. Refer to section 4
5		A site register should be maintained and available at the site detailing employment and injury summaries, worker competencies and incidents.	The register will remain at head office in Adelaide until ongoing activities resume at the site.
6		Environmental audits and inspections should detail audits, inspections and their findings & directives.	Done – refer to Section 4 above
7	Environmental Status Report	When will the next round of soil and photo monitoring be conducted	Soil and photo monitoring will recommence once activities at the site resume.
8	Environmental Management System	Conduct annual review of EMS and include in MMP	Done
DME Site Inspection Report June 2015			
1		Maintain drill hole collars	Ongoing
2		Develop Weed Management Plan	Done Refer to EMS Appendix F
3		Remove pod and drums	Done

## **5.7 Emergency Procedures and Incident Reporting**

Although elements of environmental emergency response are covered in the general site induction, a specific plan has not yet been written for exploration activities at Molyhil. A Specific plan will be drafted prior to the next exploration program and included in the 2017 MMP update report.

Any environmental incident will be reported on a form which will describe the incident and a site register will be kept. The subsequent investigation and outcome will also be recorded on the same form and filed for future reference. The EMP and procedures will be revised if necessary on the basis of any incident investigation.

Incidents will be reported as per the Minerals and Energy advisory guideline #AT8-006, 10 January 2014.

Thor Mining is committed to reporting all safety and environmental incidents as per Section 29 of The Mining Management Act.

## 6.0 Exploration Rehabilitation

Rehabilitation methods are described in the following **Table 2**.

**Table 2:**

<b>Disturbance</b>	<b>Rehabilitation Methods</b>	<b>Schedule (Timing)</b>	<b>Closure Objectives / Targets</b>	<b>Monitoring and Remediation</b>
Drill holes	Peg removed. Collar cut and hole plugged with plastic cone 400mm below ground level, backfilled, and mounded with soil. Uncollared holes to be plugged at least 1 m below ground level. Drill spoils returned to drill hole and remaining inert material placed in the open cut pit. Sample bags and all rubbish removed.	Collar temporary capped at the completion of each hole. Rehabilitation of the drill holes will be undertaken at commencement of mining.	All holes plugged/capped and stable/safe prior to end of program.	Inspection of holes to be undertaken at end of wet season/within six months to ensure no hole plug failures and in subsequent years to monitor site stability. Remediation of any failures to be undertaken at inspection.
Drill pads	Drill pads to re-contoured to blend with surrounding topography and ripped across slope. Cleared vegetation to be spread over the site.	On completion of drilling	Drill sites to be returned to original contour and to blend with surrounding environment. Natural regrowth without weed infestation	Inspection of drill sites to be undertaken at end of wet season or within six months to monitor site stability, erosion, weeds and natural vegetation regrowth. Remediation of any unsuccessful objectives to be initiated at the inspection.
Sumps	Sumps to be backfilled and separately stockpiled top soil to be respread on top.	On completion of drilling	Sumps to be returned to original contour and to blend with surrounding environment. Natural regrowth without weed infestation	Inspection of drill sites to be undertaken at end of wet season or within six months to monitor site stability, erosion, weeds and natural vegetation regrowth. Remediation of any unsuccessful objectives to be initiated at the inspection.
Costeans	To be backfilled and separately stockpiled top soil to be respread on top.	On completion of assay	To be returned to original contour and to blend with surrounding environment. Natural regrowth without weed	Inspection of sites to be undertaken at end of wet season or within six months to monitor site stability, erosion, weeds and natural vegetation regrowth.

<b>Disturbance</b>	<b>Rehabilitation Methods</b>	<b>Schedule (Timing)</b>	<b>Closure Objectives / Targets</b>	<b>Monitoring and Remediation</b>
			infestation	Remediation of any unsuccessful objectives to be initiated at the inspection.
Bulk sample pits				
Tracks / Gridlines	Windrows and cleared vegetation to be smoothed back over the track, bunds placed across the track to prevent erosion to and track to be cross-ripped or scarified. Creek crossings to be removed and natural drainages and waterways to be re-established and banks stabilised.	On completion of program	To be returned to original contour and to blend with surrounding environment. Natural regrowth without weed infestation	Inspection of sites to be undertaken at end of wet season or within six months to monitor site stability, erosion, weeds and natural vegetation regrowth. Remediation of any unsuccessful objectives to be initiated at the inspection.
Sample bags	Sample bags to be removed and drill cuttings to be backfilled in the drill hole, or buried in the sump; inert material may be respread over the drill site. Radioactive or acidic drill cuttings to be backfilled in the drill hole or buried in the sump beneath a minimum of 1 m clean fill.	On completion of assay	Drill sites to be left free of rubbish	Check all drill sites at end of program.
Camp	Remove all equipment and rubbish. Windrows and cleared vegetation to be smoothed back over any cleared areas.	On completion of program	To be returned to original surrounding environment. Natural regrowth without weed infestation	Check all drill sites at end of program

## **6.1 Exploration Rehabilitation Register**

No new roads or tracks have been constructed at the site since the tenement was surrendered to the Northern Territory Government in 1999. All subsequent activities have utilised existing tracks and therefore no allowance for track remediation is made in the security calculation.

227 holes have been drilled at the site (including three vertical shafts) which can be grouped into the following categories;

- Rehabilitated holes – 42 rehabilitated holes, 3 holes destroyed by subsequent shaft mining and 6 holes which are or will be used for water supply. Three Thring Creek holes are now confirmed rehabilitated.
- 65 Aircore / RAB holes drilled in 2016 and rehabilitated immediately upon completion.
- Holes to be rehabilitated – 114 holes with collars remaining to be decommissioned.
- The three vertical shafts also remain to be backfilled.

The full list of these holes with their location co-ordinates is appended.

## **6.2 Costing of Closure Activities**

Costing of closure has been provided in the appended spread sheet.