

1.0 EXECUTIVE SUMMARY

1.1 BACKGROUND

Thor Mining PLC (Thor) is planning to develop a tungsten (W) - molybdenum (Mo) open pit operation at the Molyhil Project located northeast of Alice Springs in the Northern Territory. The main objective of the proposed facility is to produce scheelite and molybdenite concentrates and approximately 300,000 tonnes of ore is expected to be treated annually at the mine.

The Molyhil minesite is located 240 km northeast of Alice Springs (320 km by road).

The Molyhil Project is owned by Molyhil Mining Pty Ltd (formerly Sunsphere Pty Ltd) a 100% owned subsidiary of Thor Mining PLC.

Exploration licence EL22349 covers the project area. Three mineral lease applications, MLA23825, MLA24429 and MLA25721 cover the area around the Molyhil deposit and have been applied for by Imperial Granite and Minerals Pty Ltd, Tennant Creek Gold (N.T.) Pty Ltd and Sunsphere Pty Ltd. Sunsphere is the beneficial holder of these mining lease applications. The Molyhil deposit lies on MLA23825 (which lies within EL22349).

Due to previous mining activity and cattle grazing in the area, vegetation is sparse and the land is disturbed. The site was decommissioned and rehabilitated in 1999 to the satisfaction of the NT government.

1.2 PROPOSED PROJECT

The proposed development for the Molyhil Project involves the expansion of an existing pit. The proposed development is a stand alone project and is not a stage or component of a larger action.

The Ore Reserve estimate has been established through a series of mine optimisations and mine designs. The current pit model has estimated probable reserves of 1.094Mt at 0.21% (Mo) and 0.62% (W).

A two-staged pit design has been recommended, providing 201,621t of ore grading 0.26% (Mo) and 1.28% (W) in Stage 1 and 892,237t of ore grading 0.20% (Mo) and 0.47% (W) in Stage 2. All material will be drilled and blasted (except waste rock previously mined that is contained within the footprint of the proposed pit). Blasting will occur every third day.

Mining is planned to be undertaken by conventional truck and shovel operations under contract mining arrangements.

The project is currently expected to generate approximately 1.2 Mt of tailings over a four year period at an annual output of approximately 300,000 t using a combination of magnetic separation, flotation and gravity separation processes to recover magnetite, molybdenite and scheelite respectively.

Tailings will be produced as two separate tailings streams, pyrite concentrate (7.6%) and a combined magnetite concentrate (25.2%) - general plant tailings (67.3%) stream. A ROM pad will provide storage and blending capability for at least one month's supply of ore feed.

The Tailings Storage Facility (TSF) will have a footprint area of approximately 12.8 ha and functional storage area of approximately 9.9 ha. The proposed site for the combined TSF and the magnetite concentrate stockpile area lies approximately 0.4 km east-south east of the existing open-cut pit and approximately 0.2 km to the south-south west of the proposed plant site.

Approximately 90,000 t of magnetite will be produced during the design life of the project.

The concentrate, which is understood to be inert, will be dewatered at the plant and transported by truck or conveyor to the separate storage area adjacent to the northern wall of the TSF. The pyrite concentrate disposal area will be located adjacent to the combined magnetite and general plant tailings TSF.

Molybdenite concentrate handling involves filtration of the concentrate followed by drying and packaging into 1 tonne bulker bags. The concentrate filter cake is dried in a diesel fired fluidised bed drier and packaged into one tonne bulker bags. The bulker bags are transferred by fork lift into a 40 ft sea container for shipment. Gravity tungsten concentrate is dried and subjected to magnetic and high tension separation to produce a final tungsten concentrate and a secondary magnetite product.

Benign waste rock generated from the mining of the open pit will be used to construct the ROM pad, the TSF and also for road base/sheeting materials. Waste dumps have been designed to accommodate waste from the Stage 1 and Stage 2 pits and will be located east and south of the open pit. It is anticipated that sulphidic waste rock will not be generated by the proposed mining operation as only minor traces of sulphides have been identified in the waste.

Earthmoving activities are planned to commence in 2008, at the commencement of the dry season.

Groundwater inflows (and rainfall) into the pit are anticipated to be low in volume and high in salinity and will be collected in in-pit sumps before being directed to a small settling basin to maximise the removal of suspended solids prior to being pumped into the plant process water system or used for dust suppression purposes.

A diversion channel will be constructed immediately north of the pit, waste dump and TSF to divert water from an ephemeral creek that runs between the waste dump and TSF. The diversion will be permanent and will direct the water back to Molyhil creek via Dam creek.

The access road to the mine site coming in from the Plenty Highway will require upgrading to an 8m wide all weather road so it can accommodate double and triple road trains which will use this road for construction access as well as ongoing supplies of diesel fuel, stores and also the shipment of concentrates. The existing access road crosses two main rivers, Plenty River and Marshall River. At these creek crossings, the running surface will be sheeted with road base material that will be placed at the level of the river bed (to avoid silting). A stockpile of road base material will be located in close proximity to the creek crossings, and ongoing maintenance with the use of a loader/grader to remove sediment and reinstate the creek crossing (with stockpiled road base material) following heavy rains will be undertaken by Thor.

Existing access roads will be upgraded as necessary to provide an acceptable access road consistent with the amount of traffic to be handled and the design mine life and to a standard consistent with Thor requirements for durability during and/or following wet weather.

Power to the Accommodation Camp, Process Plant and associated facilities will be supplied from a Build Own and Operate (BOO) Power Station operating on diesel fuel. The power station will consist of a number of independent generating sets connected to a common 3.3 kV bus bar.

The existing airstrip, 2 km northwest of the pit will be upgraded as necessary to meet requirements acceptable to charter aircraft operators and the RFDS for the fly in fly out (FIFO) operation and emergency services.

Office buildings and a workshop/stores facility will be constructed at site. The magazine will be located in the north east corner of ML23825 (MLA23825).

Raw water will be sourced from four production bores located approximately 6-7 km NE of the plant site.

A six kilometre, 160mm diameter HDPE pipeline will be constructed from Prices Bore to the

plant. Feeder lines from the other bores will be 90mm HDPE to the main pipeline. The pipeline will be placed in a v-trench.

Raw water will be delivered via a raw water transfer system to the plant raw water tank, which will provide water to the process plant and to a dedicated reverse osmosis unit for production of potable water. The potable water requirements for the camp and general purpose workshop have been estimated as 5,600 m³ per annum. Process water will also be returned to the circuit from the tailings dam via a water pump installed in a decant well.

The major materials to be utilised in ore processing and concentrate production are: lime, frother, sulphide collector, oxide collector and depressant. Diesel will be contained within self-bunded, double-skinned storage tanks.

A workforce of around 62 personnel will be employed in the operational phases on a 2 weeks on, 1 week off FIFO roster. The workforce will comprise approximately 100 people during construction.

The camp is to be located south of the mining operations and comprises: 64 ensuited rooms, camp manager's office, dining room, laundry, car park and potable water treatment.

A sewage treatment plant is to be installed at the Molyhil Project. The plant will be located south and down slope of the camp within MLA25271. The unit, Novaclear Membrane Bioreactor (MBR), designed by EcoNova will treat a daily wastewater flow of 20 kL/day that will provide recycled water for irrigation throughout the development grounds.

The waste disposal site will be located within the waste dump and will be progressively buried as the waste dump is advanced. Any hydrocarbons such as waste oil will be collected in drums for collection by waste oil contractors and transported to Alice Springs for recycling.

Construction and operational worker changeover will use light commuter aircraft principally from Alice Springs to and from the site airstrip. There will be approximately 30 contractor vehicles on site during construction and an estimated 12 light vehicles on site during operations.

Materials, plant, other construction items and fuel required during the construction phase and similar items including reagents during the operations phase will be transported by road from Darwin or Alice Springs using the Plenty and Stuart Highways.

It is anticipated that there will be three trucks every two weeks loaded with concentrate leaving the site for Darwin Port. It is proposed to use these concentrate trucks to backload reagents and general freight to the site, thus reducing the number of trucks going to Molyhil on the Plenty Highway.

Traditional Owners have requested a change in the access route to the mine/village site to avoid the sacred site at Molyhil. This site of significance has been fenced at the request of the traditional owner. No other sites have been identified in the project area or along the access road.

Whenever possible, progressive rehabilitation of the Molyhil site will occur as disturbed sites no longer required become available. Apart from reshaping these sites, direct placement of topsoil removed from a newly disturbed area will be placed over the area ready for topsoiling. It is planned to return the site to seasonal livestock grazing by cattle after closure. This is the current land use. The site is isolated from human habitation and it is not envisaged that any other land use would be suitable or achievable.

The location of project infrastructure has taken into account the existing environment, potential environmental impacts and the wishes of the traditional owners. A variety of alternatives have been considered.

Benefits resulting from the Molyhil Project include: direct employment for 100 people during construction and 62 people during operation; priority will be placed on sourcing labour from the local area and then from within the national mining industry; supply of goods and services

will be extended to local businesses and the project contributes to the economy of the Federal and Territory Government through tax and royalties generated.

1.3 EXISTING ENVIRONMENT

The Molyhil deposit consists of two adjacent outcropping iron-rich skarn bodies that contain scheelite and molybdenite mineralisation. The mineralisation is coarse-grained and its distribution is irregular. Molybdenum - tungsten mineralization mostly occurs in the Molyhil skarn which is essentially a magnetite / sulphide-rich hornfels unit, comprising up to 80% magnetite (massive 'black rock skarn' or BRS) or lesser magnetite (10-20%) to form a 'banded mineralized skarn' (or BMS).

Molyhil is at an elevation of approximately 400 m above sea level near the Dulcie and Urea Ranges, a series of small hills with skeletal soils and linear outcrops. Two land systems are present within the lease area: Dinkum (LS 53); and Jinka (LS 78).

Dinkum land system covers the red sandy plains and small stony tracts northeast of Molly Hill creek and south of the schist hills, approximately 85% of the mine lease. The vegetation is dominated by Georgina Gidgee *Acacia georginae* in the plains, River Red Gums *Eucalyptus camaldulensis* in the creeks with a heavily grazed Buffel grass *Cenchrus ciliaris* with a small variety of herbaceous plants such as Bogan flea burr *Calotis hispidula* in the ground layer. Jinka land system covers approximately 15% of the mine lease in the north, consisting of a schist/quartz sandstone hill an undulating stony plains with sparse shrubs (*Senna* sp.) and low trees (*Acacia aneura* and *A. georginae*).

The surface soils at Molyhil are both physically and chemically infertile. In particular, the surface horizons are sandy and highly erosive.

The creeks located in the project area are all ephemeral and only flow after heavy rainfall in the upper catchments. There is little evidence of sheet runoff from around the area of the plant and TSF although there are a few small drainage lines that cross the proposed site of the TSF.

The access road from the Plenty Highway to site crosses the Plenty and Marshall Rivers. These rivers are arid-zone rivers that flow into the Simpson desert. They are ephemeral with flows following heavy rains associated with a quick rise in water level followed by days or weeks of reduced flows.

Some minor ground water inflows into the pit may be expected once mining takes place at depths greater than 30 m below the natural surface.

Samples collected from the water in the pit exhibited a pH range of 7.63 to 8.24 and a total salinity range of 84,400mgL⁻¹ to 86,000mgL⁻¹ TDS. Heavy metal content is relatively low.

Kevin Morgan & Associates undertook a groundwater assessment of potential process water supply in October 2006. Four bores were sunk close to a dam located 700 m northwest from the pit. These bores have been drilled to intersect a prominent west-northwest ridge of pelitic and arsenite sediments of the Grant Bluff Formation. In addition fourteen holes were drilled, six to ten kilometres from the mine, to locate the principal process water source.

The waters are low in chloride relative to the ratio of chloride in sea water. Boron ratio is marginally higher than that of sea water and possibly suggests a tourmaline rock source in the catchment. The bromine ratio potentially reflects a meteoric source for recharge.

There are three habitats present within the mine lease: sand plain; alluvial riparian; and rocky hill slope habitat. Heavy grazing of grasses, forbs and small shrubs in the understorey as well as clearing during previous mining activity, has resulted in much of the Molyhil area being highly disturbed.

The dominant vegetation associations are open Gidgee (*Acacia georginae*) woodland over short grass and open Ironwood (*Acacia estrophiolata*) woodland over short grass. According

to Perry et al. (1962), Gidgee communities are extensive in the north-eastern region around Jervois Station. “Sparse low tree” communities mostly characterised by *Acacia estrophiolata*, occur in a range of habitats and are a widespread community. Ground layer vegetation is mostly dominated by Buffel grass (introduced) and Bogan flea (associated with disturbed areas). In general, dominant species for the area are wide spread and their persistence is not dependent on the Molyhil area.

The dominant vegetation includes *Acacia georginae* overstorey, *Senna* spp. shrubs, and heavily grazed *Cenchrus ciliaris* and *Calotis hispidula*. Riparian zones were dominated by *Eucalyptus camaldulensis* overstorey, *Acacia farnesiana* tall shrub layer and *Cenchrus ciliaris* and *Zygochloa paradoxa* in the ground layer.

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.

Currently, Buffel Grass is the main introduced species throughout the area and region. Control of this widespread exotic species is not viable. To a lesser extent Ruby Dock occurs at sites scattered across the existing waste rock dump and this species has the potential to be an invasive weed at the site, however, control methods will be instigated early in the construction phase and through operations.

As the mine lease is situated on land that has been disturbed for many years (if not decades), remaining animal populations are well adjusted to living in such an environment (e.g. Long-nosed Dragons and Geckoes). Renewed mining activity is unlikely to have an impact on remnant populations.

Thirty-two bird species, six mammal and eight reptile species were recorded at the site during the 2004 survey. Red kangaroos and Euros were common and Domestic House Mice were the only mammal species captured. Zebra finches, Willie wagtails, White-Plumed Honeyeaters and Magpie-larks were also commonly observed during the survey.

On species listed as migratory and marine under the EPBC Act (1999), Rainbow Bee-eater (*Merops ornatus*) was recorded during the survey. This species is widely distributed throughout Australia and follows a migratory distribution pattern populating southern regions of Australia during summer and migrating northwards to Northern Australia and Asia during the summer. Disturbance from proposed mining activities is unlikely to have a damaging effect on local and regional populations of this species (or impact the conservation significance of the species).

A search of the EPBC Act (1999) website listed an additional two threatened species that could potentially be in the area: Mulgara (*Dasycercus cristicauda*) and Black-footed Rock Wallaby (*Petrogale lateralis* MacDonnell Ranges race). Although no record of these species have occurred within the mine lease area, it would be expected that Black-footed Rock-Wallabies would have and may still occupy the nearby ranges.

Traditional owners have been regular visitors to the site to discuss their sites and concerns and their input has been included into the design phase of the project. A site visit in March 2007 with the Eastern Arrente people was undertaken to assess the proposed infrastructure locations for sites of aboriginal significance. At the request of the traditional owners Thor has: changed the main access route to the mine/village site to avoid the sacred site at Molyhil, made a variation to avoid some significant trees at the creek crossing and will stockpile Gidgee trees removed from the southern waste rock dump and make them available to the traditional owners for traditional uses.

The site of significance (Molyhil) has been fenced at the request of the traditional owners.

A Tripartite Deed exists between Molyhil Mining Pty Ltd (formerly Sunsphere Pty Ltd), Central Land Council (CLC) and the Traditional owners that forms a mining agreement between all parties at the Molyhil Project. The Deed of agreement has been drawn up and in

the approval process waiting to be signed off.

The location of aboriginal sacred sites was investigated during exploration work undertaken in the area in 2003. Aside from Molyhil, there do not appear to be any aboriginal sacred sites in the project area that will be impacted.

1.4 ENVIRONMENTAL MANAGEMENT

The Environmental Management measures to be employed by Thor for the Molyhil project are summarised in Table 1.

Thor has undertaken a Risk Assessment of the Molyhil operations and are committed to ensuring that all hazards and risks identified are managed effectively to ensure minimise the potential for environmental impacts.

Thor has developed a draft Environmental Management Plan which covers all mining and processing practices associated with Thor's operations and will be reviewed and updated biennially.

Table 1 – Summary of environmental factors and management measures for the Molyhil Project

ENVIRONMENTAL FACTOR	PROJECT COMPONENT	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL MANAGEMENT
Landform & Clearing	<ul style="list-style-type: none"> ▪ Clearing for the Molyhil project is of 74.85 ha of native vegetation ▪ Development of open pit ▪ Construction of waste dump and associated infrastructure ▪ Found within Dinkum and Jinka land systems. 	<ul style="list-style-type: none"> ▪ Temporary and permanent changes to landforms from mining operations. ▪ Increased ponding through alteration in topography that increase retention of rainwater and runoff. 	<ul style="list-style-type: none"> ▪ Minimise the disturbance footprint. ▪ Construction of waste dump in accordance with relevant guidelines. ▪ Minimising the clearing profile. ▪ Before clearing commences, the areas to be cleared will be well-defined clearly marked so that over-clearing will be avoided. ▪ Induction of employees to ensure disturbance is confined to areas identified clearly in the field. ▪ Clearing operators will be supervised. ▪ Avoiding sites where the known rare flora exist. ▪ Protecting all vegetation outside of the clearing profile. ▪ Rehabilitating disturbed areas not required for ongoing maintenance. ▪ Cleaning down of machinery to reduce weed and disease introduction and spread. ▪ Collect and correctly stockpile vegetative material and topsoil for later use at selected sites; ▪ Progressively rehabilitate completed areas as soon as practicable. ▪ Only use local native plant species. ▪ Thor has developed a Vegetation Clearing Management Plan.
Soils	<ul style="list-style-type: none"> ▪ Development and construction of open pit, waste dump and associated infrastructure ▪ The surface soils at Molyhil are both physically and chemically infertile. 	<ul style="list-style-type: none"> ▪ Increased soil erosion due to clearing activities ▪ Changes in soil structure ▪ Reduced viability of seeds due to inappropriate stockpiling activities 	<ul style="list-style-type: none"> ▪ Stripping of all vegetation and topsoils (300mm) and stockpiled for use in rehabilitation works. ▪ During rehabilitation works at the completion of the project, all disturbed areas will be ripped to reduce soil compaction and encourage establishment of vegetation.

ENVIRONMENTAL FACTOR	PROJECT COMPONENT	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL MANAGEMENT
			<ul style="list-style-type: none"> ▪ All rehabilitated landforms have been designed and will be controlled to minimise erosion
Groundwater	<ul style="list-style-type: none"> ▪ Minor pit dewatering in pit expected below 30m. ▪ Borefield (4 bores) 7 km east of site for process and potable water. 	<ul style="list-style-type: none"> ▪ Contamination of groundwater from chemical or hydrocarbon spills ▪ Drawdown of aquifer 	<ul style="list-style-type: none"> ▪ All chemicals and hydrocarbons will be stored in safe storages in accordance with regulatory standards. ▪ Groundwater flows will be collected in in-pit sumps and directed to settling basin where it will be pumped to process plant or used for dust suppression. ▪ Further testing and review will be undertaken by Thor. ▪ Water supply pipeline from borefield will be located in a v-trench and will have flow meters fitted to each bore. ▪ Telemetry system will be fitted to pipeline to detect potential leaks.
Surface hydrology	<ul style="list-style-type: none"> ▪ Diversion of ephemeral creek north of pit and waste dump ▪ Crossing of Plenty and Marshall Rivers (on existing track) for site access. 	<ul style="list-style-type: none"> ▪ Alteration of surface drainage ▪ Stormwater from ROM, fines stockpile and workshops flowing into surrounding environment 	<ul style="list-style-type: none"> ▪ All surface runoff and groundwater flowing into the mine will be captured in ponds and utilised in the crusher system. ▪ Site will be designed to collect and store surface runoff and stormwater so the site is a closed-runoff system.
Vegetation & Flora	<ul style="list-style-type: none"> ▪ 74.85 ha of native vegetation clearing ▪ There are three habitats present within the mine lease: sand plain; alluvial riparian; and rocky hill slope habitat. ▪ Heavy grazing and clearing during previous mining activity, has resulted in much of the Molyhil area being highly disturbed. 	<ul style="list-style-type: none"> ▪ Fragmentation of vegetation communities ▪ Spread of weeds through soil and vehicle movements ▪ Disturbance to threatened flora communities ▪ Dust deposition on surrounding vegetation resulting from clearing of vegetation 	<ul style="list-style-type: none"> ▪ Use of cleared areas. ▪ No rare flora was recorded during surveys. ▪ Progressive rehabilitation will be undertaken where areas are available ▪ Weed hygiene measures will be implemented (refer to next section) ▪ Water carts will be used on an as required basis

ENVIRONMENTAL FACTOR	PROJECT COMPONENT	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL MANAGEMENT
Weeds	<ul style="list-style-type: none"> ▪ 74.85 ha of native vegetation clearing ▪ Ruby dock been recorded on the existing waste dump and stockpiles at site. 	<ul style="list-style-type: none"> ▪ Introduction of weeds into area from clearing and earthmoving activities ▪ Spread of <i>Emex australis</i> (Doublegee) and Ruby Dock. 	<ul style="list-style-type: none"> ▪ Identification of weed infestations or areas susceptible to infestation adjacent to or within the proposed disturbance area. ▪ Restriction of vehicular access to designated tracks and road alignment. ▪ Log to be kept of all vehicles and machinery entering site during construction to ensure all machinery has been blown down and cleaned. ▪ Application of hygiene measures such as vehicle blowdown prior to accessing the project site ▪ Use of approved control mechanisms if noxious weed species are encountered. ▪ Ensure vehicles that access the project site are free from soil and vegetation prior to arrival ▪ Rehabilitation with weed free soils
Terrestrial fauna	<ul style="list-style-type: none"> ▪ Clearing of fauna habitat for the mine and associated infrastructure. ▪ Thirty-two bird species, six mammal and eight reptile species were recorded at the site during the 2004 survey. ▪ Rainbow Bee-eater (listed as migratory under the EOBC Act 1999) has been recorded at the project. ▪ Two EPBC listed animals could potentially be in area: Mulgara & Black-footed Rock Wallaby. No record of these species. 	<ul style="list-style-type: none"> ▪ Loss of fauna habitat ▪ Loss of fauna of conservation significance ▪ Road kills ▪ Increase in feral animals due to mine development 	<ul style="list-style-type: none"> ▪ Use of cleared areas. ▪ No fauna species of conservation significance were recorded. ▪ Fauna egress will be provided in all ponds and dams at site ▪ Site induction will include section of potential species of conservation significance and to report all sightings to environmental personnel. ▪ All staff will be required to obey all speed limits and be prohibited from off-road driving. ▪ Capping of all boreholes ▪ Action will be taken to reduce the occurrence of feral animals such as cats, rabbits and foxes. ▪ Personnel prohibited from bringing pets, firearms or traps to site

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			<ul style="list-style-type: none"> ▪ Putrescible waste hygiene measures will be implemented to reduce the likelihood of feral animals being attracted to the area.
Waste Rock Dump	<ul style="list-style-type: none"> ▪ Small traces of sulphides identified in waste rock. 	<ul style="list-style-type: none"> ▪ Acid development of soils ▪ Contamination of surface and groundwater. 	<ul style="list-style-type: none"> ▪ If PAF rock is identified during mining activities, it will be encapsulated in the waste dump.
TSF	<ul style="list-style-type: none"> ▪ The TSF will have a footprint area of approximately 12.8 ha and functional storage area of approximately 9.9 ha. ▪ The project is currently expected to generate approximately 1.2 Mt of tailings over a four year period (300,000 t annually). 	<ul style="list-style-type: none"> ▪ Contamination of groundwater from leaks in TSF pipelines or structure. 	<ul style="list-style-type: none"> ▪ The beach formed by the tailings discharge will ensure that all runoff will be directed towards the central decant tower to be pumped to the process plant and raw water dam. ▪ Minimise the quantity of water held on the TSF at any one time - in storm events water will be drawn down. ▪ A minimal total freeboard of 300mm will be provided within the ponding water of the TSF that allows for a 1 in 100 year, 72-hour duration rainfall event. ▪ A sediment collection trench/sump will be constructed around the outer wall to collect any runoff. ▪ Regular monitoring of the monitoring bores located around the perimeter of the TSF will detect any impacts to groundwater.
Dust	<ul style="list-style-type: none"> ▪ Clearing and construction activities ▪ Mining activities i.e blasting and digging ▪ Stockpiling of ore ▪ Vehicle traffic on access and haul roads ▪ Ore Crushing 	<ul style="list-style-type: none"> ▪ Accumulation of dust on flora and fauna habitat ▪ Reduction in visibility ▪ Contamination of surface waters 	<ul style="list-style-type: none"> ▪ Use of water carts on an as required basis during clearing and construction. ▪ Regular use of water carts during mining. ▪ Regular use of water carts on access and haul roads. ▪ Crusher will have water sprays to reduce dust generation. ▪ Limiting vehicles to designated access tracks. ▪ Rehabilitation of site at completion of project. ▪

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Noise	<ul style="list-style-type: none"> ▪ Construction of the mine and associated infrastructure ▪ Mining operations ▪ Blasting operations 	<ul style="list-style-type: none"> ▪ Increase in noise levels adjacent to the operation ▪ Inconvenience to surrounding land holders 	<ul style="list-style-type: none"> ▪ The site is remote and isolated from any local residences. ▪ Mining equipment designed to meet occupational and health noise standards. ▪ Hearing protection provided for all personnel.
Odour	<ul style="list-style-type: none"> ▪ Sewage treatment plant 	<ul style="list-style-type: none"> ▪ The project is not anticipated to generate odour. 	<ul style="list-style-type: none"> ▪ None required for operation. ▪ Odour emissions from Sewage Treatment Plant (SWTP) system are low due to aerobic treatment process. All tanks are sealed. ▪ SWTP will be regularly monitored to ensure its operating effectively.
Gaseous emissions	<ul style="list-style-type: none"> ▪ Diesel generators ▪ Explosives used in blasting ▪ Machinery and equipment use 	<ul style="list-style-type: none"> ▪ The project will generate 15,079.7 t CO_{2-e} (13,436 tpa). 	<ul style="list-style-type: none"> ▪ As part of the National Pollutant Inventory (NPI), quantities of air emissions will be estimated or measured and reported annually. ▪ All vehicles and equipments will be regularly serviced ▪ All employees will be encouraged on energy efficient practices that can be used in their daily activities ▪ Only 9.6 ha will remain permanently disturbed, the remainder will be revegetated. ▪ Revegetation of areas will create carbon sequestration over time.
Waste (Industrial & domestic/putrescible)	<ul style="list-style-type: none"> ▪ Generation of waste material during construction and operation 	<ul style="list-style-type: none"> ▪ Surface water contamination ▪ Groundwater contamination ▪ Soil contamination ▪ Encouragement of feral animals 	<ul style="list-style-type: none"> ▪ Designated landfill in waste dump footprint that will contain only inert and putrescible waste materials. ▪ Landfill will be regularly covered ▪ No burning of refuse ▪ No disposal of hazardous goods.

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			<ul style="list-style-type: none"> ▪ Thor will reuse and recycle construction materials, scrap metals, equipment and tyres to minimise disposal into the landfill. ▪ Waste oil and other hydrocarbons will be collected and stored, either in bulk or in 200-litre drums, prior to removal from site by contractor for re-use or other approved form of disposal ▪ All hydrocarbon contaminated material (rags, oil filters etc) will be transported offsite to an approved recycling facility.
<p>Dangerous Goods & Hazardous substances</p>	<ul style="list-style-type: none"> ▪ Diesel fuel ▪ Other petroleum products used in vehicle and service maintenance ▪ Explosives magazine 	<ul style="list-style-type: none"> ▪ Surface water contamination ▪ Groundwater contamination ▪ Soil contamination 	<ul style="list-style-type: none"> ▪ Hazardous substances will be contained within a concrete bunded facility (including a drain pipe and valve) and will be built in accordance with the Australian Dangerous Goods Code and AS1940: <i>“The storage and handling of flammable and combustible liquids”</i>. ▪ Diesel storage tanks will be self bunded (double skinned) and in accordance with the relevant Australian Standards. ▪ Spill response equipment will be located in vicinity of all work areas where chemicals and hydrocarbons are stored. ▪ Only those persons specifically trained in the storage, handling and use of any process plant hazardous materials will be permitted to handle that hazardous material. ▪ A register of all hazardous substances kept at site will be maintained by Thor. ▪ In the unlikely event of an accidental spillage, the spillage will be mitigated by the Molyhil safety and emergency services

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Aboriginal heritage	<ul style="list-style-type: none"> ▪ Construction of mine and associated infrastructure ▪ Sacred site – Molyhil. 	<ul style="list-style-type: none"> ▪ Disturbance of archaeological sites ▪ Disturbance of ethnographic sites 	<ul style="list-style-type: none"> ▪ Agreement of infrastructure plan with traditional owners. ▪ Relocation of access roads and waste dump in accordance with request of traditional owners. ▪ Sacred site – Molyhil, is fenced to prevent access. ▪ A Tripartite Deed exists between Molyhil Mining Pty Ltd (formerly Sunshpere Pty Ltd) (Thor), Central Land Council (CLC) and the Traditional owners that forms a mining agreement between all parties at the Molyhil Project. ▪ Thor will comply with the provisions of the Aboriginal Land Rights (Northern Territory) Act 1976 and the Northern Territory Aboriginal Sacred Sites Act. ▪ Site induction will detail the importance of avoiding aboriginal heritage sites and reporting of any suspected sites ▪ Consultation with Indigenous land owners ▪ Mining will not commence until the AAPA Authorisation certificate has been obtained. All conditions attached to the certificate shall be complied with.

ENVIRONMENTAL FACTOR	PROJECT COMPONENT	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL MANAGEMENT
Fire	<ul style="list-style-type: none"> ▪ Bushfires are a natural hazard throughout arid regions. 	<ul style="list-style-type: none"> ▪ Increased frequency of fires. ▪ Injury to personnel. ▪ Damage to project infrastructure. 	<ul style="list-style-type: none"> ▪ Firebreaks around infrastructure. ▪ Thor has developed a Fire Management Plan which includes: <ul style="list-style-type: none"> ○ developing controls for fire prevention; ○ maintain firebreaks; ○ maintain an effective communication system, incorporating a 'call-out' system; ○ maintain education of fire awareness; ○ maintaining the integrated fire management plan; and ○ on-going training.
Biting Insect	<ul style="list-style-type: none"> ▪ The project could potentially create breeding sites or be located within potential biting insect breeding sites. 	<ul style="list-style-type: none"> ▪ Increase in adult mosquito populations (potentially to pest population sizes). ▪ Transmission of mosquito carried diseases (i.e. malaria). ▪ Production of additional mosquito breeding sites. 	<ul style="list-style-type: none"> ▪ During the site induction all employees will be advised of the potential for seasonal problems relating to biting insects with particular emphasis on the disease carrying potential and potential breeding sites. ▪ All personnel will be advised of the relevant personal protective measures to protect themselves from biting insects. ▪ If mosquito populations cause a significant issue, Thor will liaise with the Medical Entomology Branch (MEB). ▪ The dam located north of the pit and the crossing across the Plenty and Marshall Rivers will be regularly monitored to assess potential breeding sites and biting insect populations.

ENVIRONMENTAL FACTOR	PROJECT COMPONENT	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL MANAGEMENT
Public Health	<ul style="list-style-type: none"> ▪ Camp ▪ Services for staff and contractors 	<ul style="list-style-type: none"> ▪ Creation of health issues in workforce. 	<ul style="list-style-type: none"> ▪ The operation of the camp will be in accordance with the Food Act 2004 and Food Safety Standards, AS 4674 :”Design, Construction and Fit-out of Food Premises”. ▪ The camp will be registered as a boarding house in accordance with the Public Health Act and Public Health (Shops, Eating Houses, Boarding Houses, Hostels and Hotels) Regulations. ▪ Potable water quality will comply with the NH&MRC Australian Drinking Water Guidelines.
Socio-Economic	<ul style="list-style-type: none"> ▪ Development of project 	<ul style="list-style-type: none"> ▪ Direct employment for 100 people during construction and 62 during operation. ▪ The supply of goods and services will be extended to local businesses ▪ Increased traffic movements ▪ Contribution to the Federal and Northern Territory economies due to royalties and taxes. ▪ Increased business opportunities for local businesses. ▪ Temporary change of land use from pastoral to mining. 	<ul style="list-style-type: none"> ▪ Priority will be placed on sourcing labour from the local area and then from within the national mining industry. ▪ Thor intend to encourage economic development of the Northern Territory and the local Alice Springs community in particular and experienced personnel that are employed will be involved in a structured training programme in order to develop a competent operation and maintenance team. ▪ Supply of goods and services will be advertised locally with preference given to local businesses. ▪ On completion of mining activities, the project site will be rehabilitated, with all infrastructure removed from site. ▪ Increased traffic on the Plenty Highway will come from light vehicles as well as supply trucks. The use of aircraft to transport employees to site will reduce the traffic generated by the project.

ENVIRONMENTAL FACTOR	PROJECT COMPONENT	POTENTIAL ENVIRONMENTAL IMPACT	ENVIRONMENTAL MANAGEMENT
Decommissioning & Rehabilitation	<ul style="list-style-type: none"> ▪ Rehabilitation and closure of the mine and associated infrastructure 	<ul style="list-style-type: none"> ▪ Rehabilitated areas with minimal vegetation growth ▪ Erosion of landforms ▪ Invasion by weeds ▪ Landform instability 	<ul style="list-style-type: none"> ▪ Detailed rehabilitation and closure plan has been developed by Thor. This includes: <ul style="list-style-type: none"> ▪ Only use local native plant species. ▪ All hardstand or compacted areas or other disturbed areas no longer required will be deep ripped and direct seeded. ▪ All buildings and structures removed, all concrete footings and concrete banded areas broken-up and buried and all surface cables and pipelines removed. The underground cables and pipelines are only to have the first 30 cm below ground cut off with the remainder remaining underground. ▪ Rehabilitated areas will be monitored which will include monitoring for weed invasion