2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 OBJECTIVES

Thor Mining PLC ('Thor') is planning to develop a tungsten (Wo) - molybdenum (Mo) open pit operation at the Molyhil Prospect northeast of Alice Springs in the Northern Territory.

The main objective of the proposed facility is to produce scheelite (tungsten) and molybdenite concentrate for sale. Approximately 300,000 tonnes of ore is expected to be treated annually from the mine.

It is envisaged that around 100 personnel will be employed on site during construction/pre-strip and 60-65 personnel during the operational phases.

The project has an expected life of approximately 4 years.

Existing access roads and river crossings will be upgraded as necessary to provide an acceptable facility consistent with the amount of traffic to be handled and the design mine life. Road works comprise a significant portion of the capital cost for the project.

Current access is via a graded existing track which requires widening and creek crossings for road construction.

Production is anticipated to commence in late 2007.

This document is intended to specifically address the topics and impacts associated with the design, construction, maintenance and operation of the mining operation.

2.2 LOCATION

The Molyhil deposit is located 240 km northeast of Alice Springs (320 km by road) at latitude 22^{o} 45' S, longitude 135^{o} 45' E, on the Huckitta (SF 53-11) 1:250 000 and Jinka (6052) 1:100,000 scale maps, in the Northern Territory (NT). Molyhil is serviced from Alice Springs (population approximately 25 000), a modern city with full amenities and infrastructure.

The mine site is located off the Plenty Highway, approximately 25 km north from the turnoff to Jinka Station along a single lane unsealed road (Figure 1).

2.3 OWNERSHIP AND TENURE

Thor owns 100% of the Molyhil Project.

An exploration licence EL22349 covers the project area. These exploration leases are held by Molyhil Mining Pty Ltd (formerly Sunshpere Pty Ltd), a wholly owned subsidiary of Thor.

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 (N.T.) Pty Ltd and Molyhil Mining Pty Ltd (formerly Sunshpere Pty Ltd) Pty Ltd (Figure 2). Molyhil Mining Pty Ltd is the beneficial holder of these mining lease applications. The Molyhil deposit lies on MLA23825 which lies within EL22349.

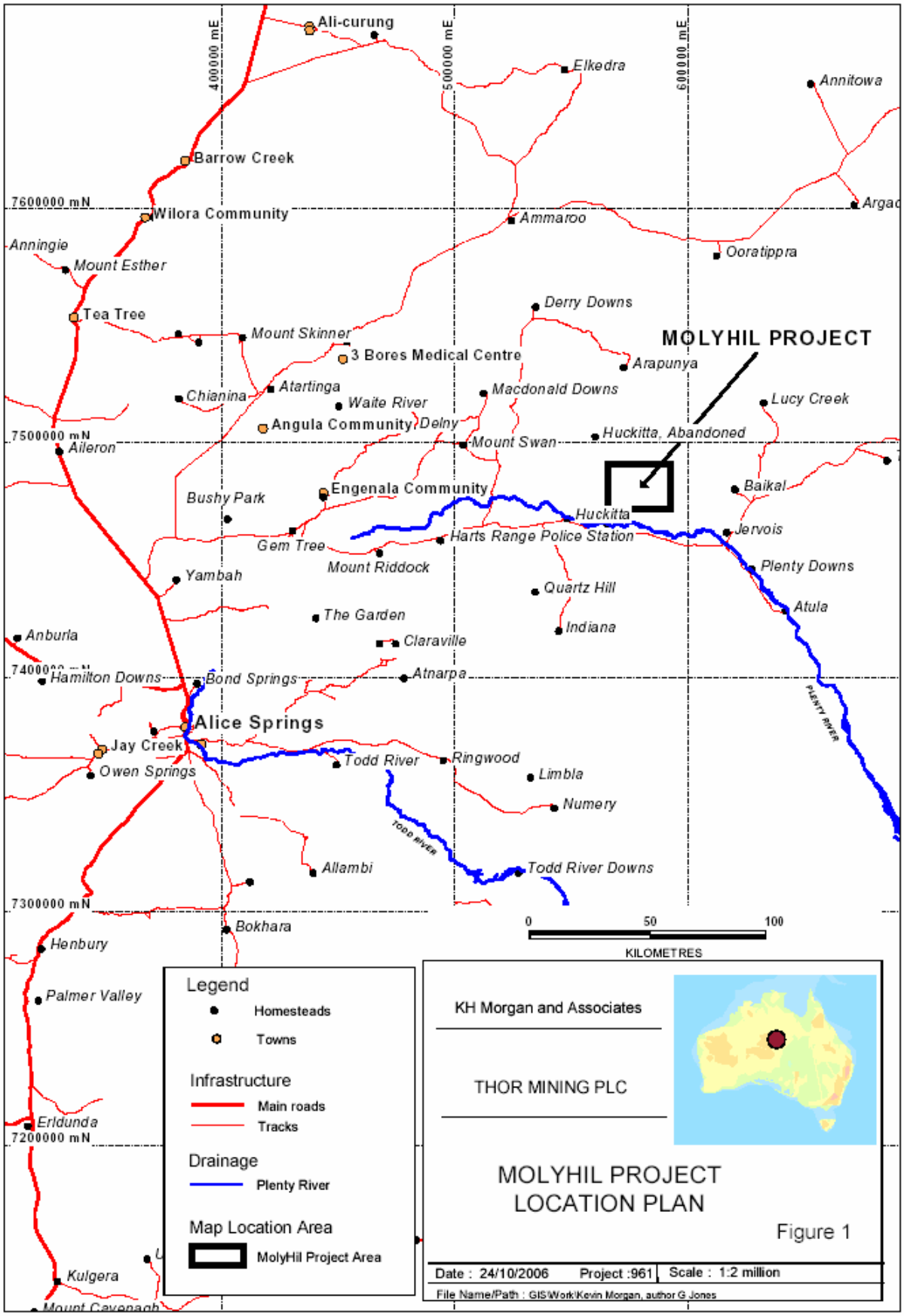

Figure 1 - Molyhil Project location plan

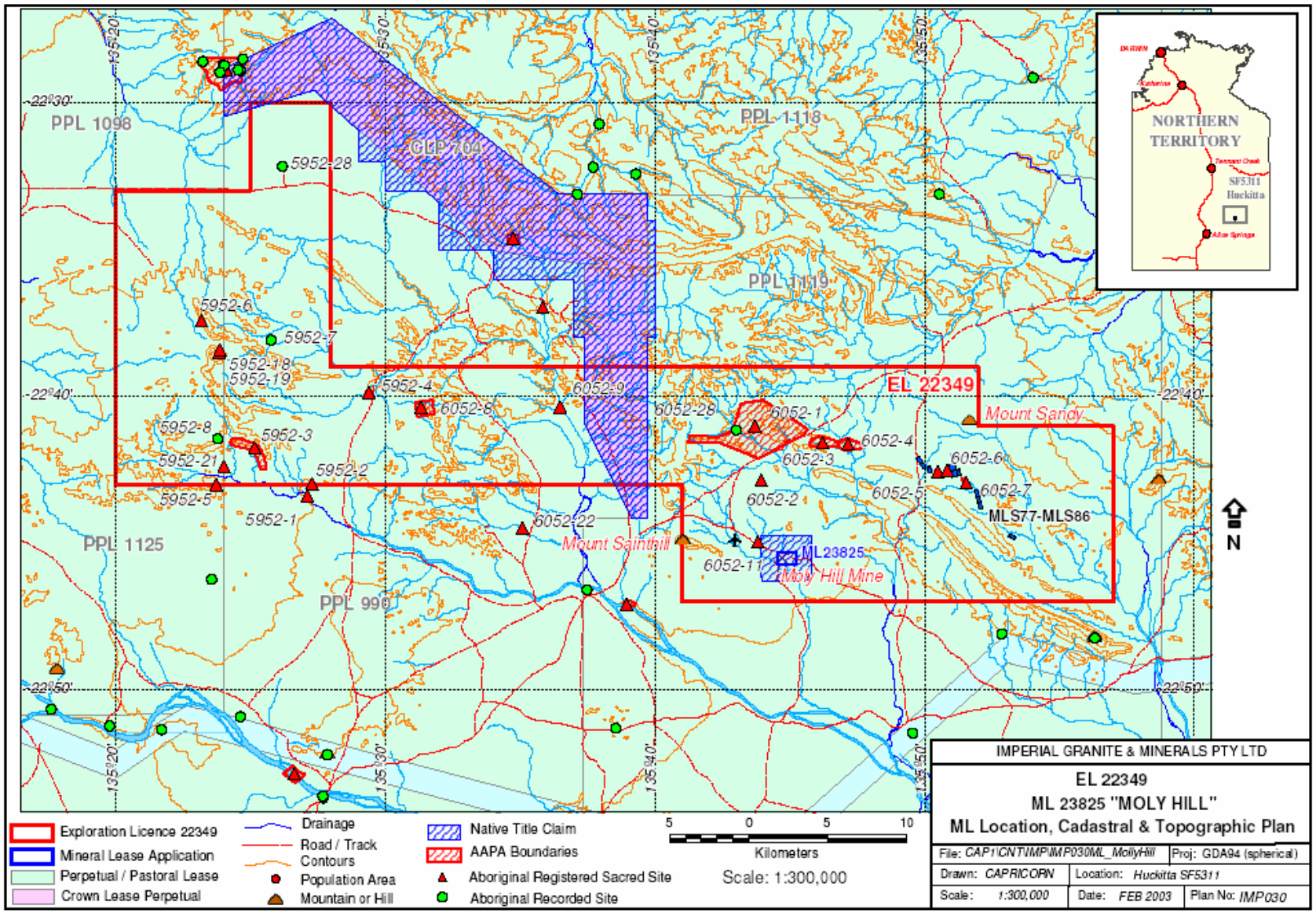

Figure 2 - Tenement plan

2.4 HISTORY

Petrocarb Exploration NL (Petrocarb) acquired the Molyhil leases in 1978, upgraded the mining and processing plant and commenced mining the Southern ore body. Nicron Resources NL acquired a major shareholding in Petrocarb in 1980, improving the mining and processing operations and completed a major drilling program in 1981 (Woodhill, 1981). Although production records are incomplete, it is estimated that approximately 900,000 t (272,000 m^3) of material (ore and waste) has been extracted from the open pit (Plate 1). Mining ceased in 1982 and the leases placed on care and maintenance.

The lease was purchased by Normandy Woodcutters Ltd (Normandy) in the mid 1980s.

The existing open pit, from previous operations, has approximate dimensions of 150 x 120 m and is approximately 13 metres deep.

The process plant was rehabilitated in 1998, with all infrastructure, scrap metals, water tanks and machinery and rubbish removed from site. Existing holes and sumps were backfilled with oxide waste.

The waste dump covers an area of approximately two hectares, with a height of eight metres with angle repose faces. Investigation of the waste dump in 1998 indicated that the landform was stable and vegetation had begun to establish itself (Fawcett Mine Rehabilitation Services, 1998). Rehabilitation work undertaken after the inspection included: levelling of truck heaps on upper surface, minor reprofiling of the angle of repose batters where vegetation had not established and direct seeding of freshly disturbed areas. No signs of acid rock drainage were observed during the 1998 site visit.

The previously used ROM, located immediately north of the existing pit, has an average height of four metres with a total surface area of 1.5 hectares. To the west of the pit are a number of ore stockpiles of ROM and over size material. The 1998 site inspection estimated that 6500 m^3 is contained in the ROM and stockpiles (Fawcett Mine Rehabilitation Services, 1998).

The previously used tailings dam, located southeast of Molyhil, covers an area of one hectare and has a height of four metres. Inspection of the landform in 1998 indicated that the tailings dam walls are stable and show no signs of erosion (Fawcett Mine Rehabilitation Services, 1998). Rehabilitation work undertaken on the tailings dam in 1998 included: levelling of the surface, covering of the surface with 400mm of oxide material sourced from the rock stockpiles, direct seeding and fertilising and construction of a stock-proof fence around the tailings dam. The rehabilitated tailings dam appears to be a stable structure and vegetation has re-established (Plate 2).

The old camp site, located one kilometre south-west of Molyhil, was rehabilitated in 1998. All buildings and associated infrastructure and water material were removed. All that remains at the site are concrete slabs (Plate 3).

General site rehabilitation undertaken in 1998 included: backfilling of the rubbish bunker, collection and disposal of all scrap, machinery, drums, reshaping of the pad immediately north of the processing plant, direct seeding and fertilising where required and capping of all drill holes.

In 1998 Normandy completed the required lease closure rehabilitation and surrendered the Mining Lease in 1999. The ground was subsequently applied for by Imperial Granite and Minerals Pty Ltd (IGM) and was granted in 2002. In 2002 Tennant Creek Gold (NT) Pty Ltd (TCGNT) signed an option to purchase agreement with IGM for specified work requirements on the lease which when completed would have complete ownership of the tenements. The work was completed and TCGNT applied for the transfer of tenements in 2003. In 2004 Hallmark Consolidated Limited purchased the Molyhil tenements from TCGNT and renamed the company Tennant Creek Gold Limited (TNG).

In early 2005, the Molyhil tenements were vended by TNG Limited into Thor Mining PLC (Thor) via its wholly owned subsidiary Molyhil Mining Pty Ltd (formerly Sunsphere Pty Ltd) Pty Ltd (SPL). Thor Mining PLC was successfully listed on the London AIM on 29 June 2005 and subsequently listed on the ASX on the 27 September 2006.

Plate 1 – General view of existing pit

Plate 2 – Rehabilitated tailings dam used during previous operations

Plate 3 – Previously used residential area

2.5 EXISTING FACILITIES

There are no facilities remaining at site from previous mining.

A temporary exploration camp exists at site.

The site was decommissioned and rehabilitated in 1999 to the satisfaction of the NT government.

2.6 PROJECT DESCRIPTION

A description of the project is summarised in Table 2.

Table 2 – Summary of the Molyhil Project

Element	Description
Life of project (mine production)	4 years
Size of ore body Measured resource Indicated resource Inferred Resource	 370,000t at 0.52% WO_3 and 0.32% 1,750,000t at 0.52% WO_3 and 0.26% MoS_2 250,000t at 0.7% WO_3 and 0.2% MoS_2
Reserve Estimate	1,100,000t at 0.21% Mo and 0.62% W
Surface RL	410mRL
Top level of orebody	400mRL
Lowest level of orebody	290mRL
Depth of pit	120m (floor elevation 290 mRL)
Water table depth	~7.3 metres
Area of disturbance including access (ha)	74 ha
Ore processing rate • maximum	 300,000 tpa
Solid waste rock materials • maximum	 8.2 Mt
Water supply • source	 Borefield
Power generation	Diesel fired power station

The general layout of the Molyhil Project is displayed in Figure 3.

2.6.1 *Site Preparation*

Earthmoving activities are planned to commence in 2008, at the commencement of the dry season. These activities will be undertaken by experienced earthmoving contractors.

The access roads across the Plenty River will require some upgrade to enable them to be used by road trains. Construction of borrow pits is not required as waste material from the open pit will be suitable for construction of access road, ROM pad, and pads for plant, workshops, offices and the tailings dam.

2.6.2 *Mining*

2.6.2.1 Mining Reserves and Schedule

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).

The mining schedule has been developed to provide continuous mill feed of 25,000t per month. Planning and scheduling has established a two-staged approach to mining. Key

aspects of each stage are shown in Table 3 below:

Table 3 - Mining Stage 1 and 2 summary statistics

	Pit Design Stage 1	Pit Design Stage 2
Ore Tonnage (t)	201,621	892,237
Waste Tonnage (t)	1,622,361	6,576,683
Mo Grade (%)	0.26	0.20
W Grade (%)	1.28	0.47
Mo Contained Metal (t)	515	1,802
W Contained Metal (t)	2,576	4,220
Stripping Ratio (waste t:ore t)	8.0:1	7.4:1

A cross section of the pit expansion is shown in Figure 4. Geotechnical characteristics of the pit are described in Section 4.2.2.

Processing of Stage 1 ore is scheduled over months 1 to 8 and Stage 2 ore from months 9 to 44 (Figure 5). Stage 1 could be undertaken on a 'stand alone' basis.

The mine life is currently projected to be 4 years.

Material movements vary over the project life. This variation is to be accommodated by changing shift arrangements and maintaining a fixed equipment fleet.

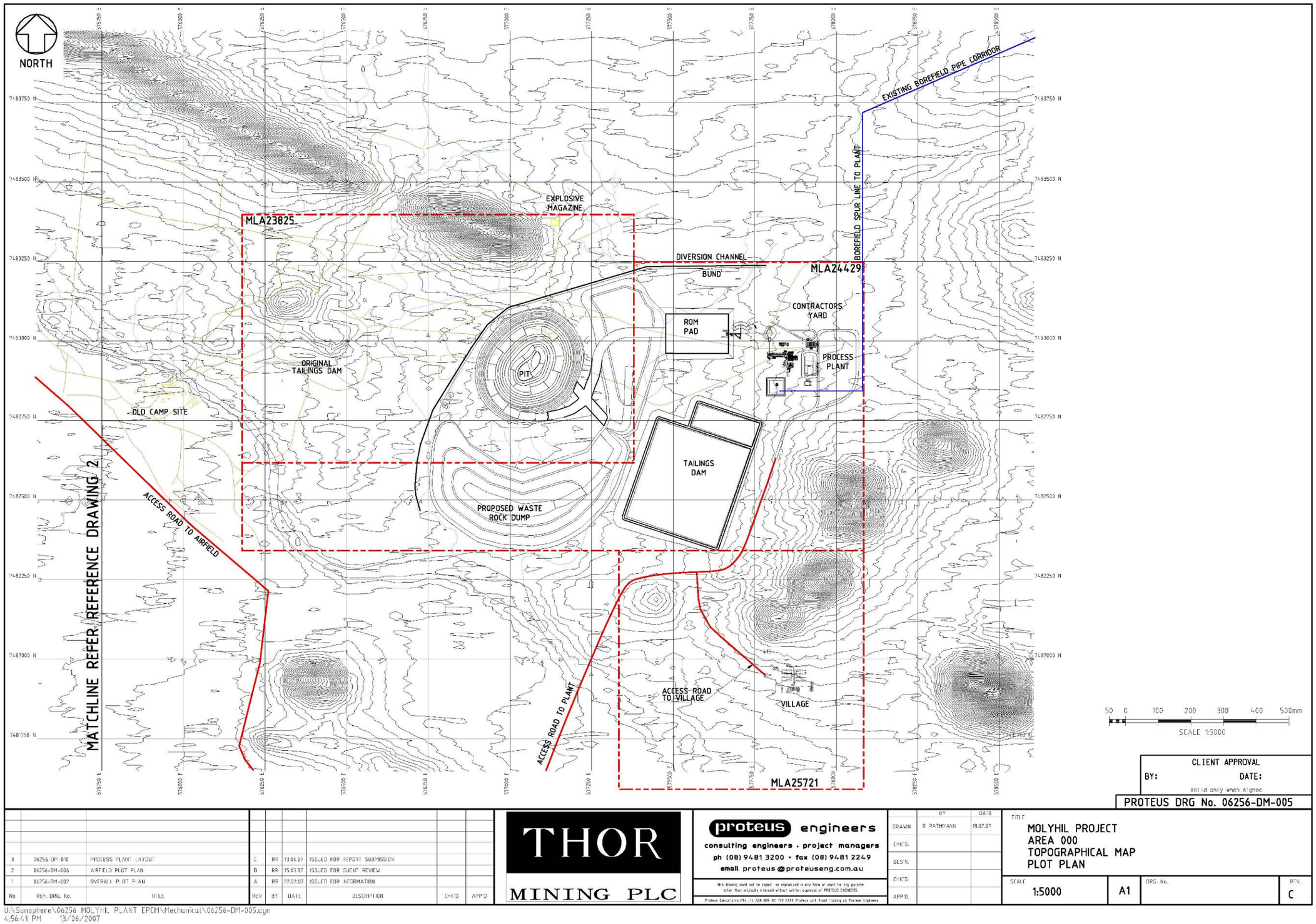

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Figure 3 - Site layout of the Molyhil Project

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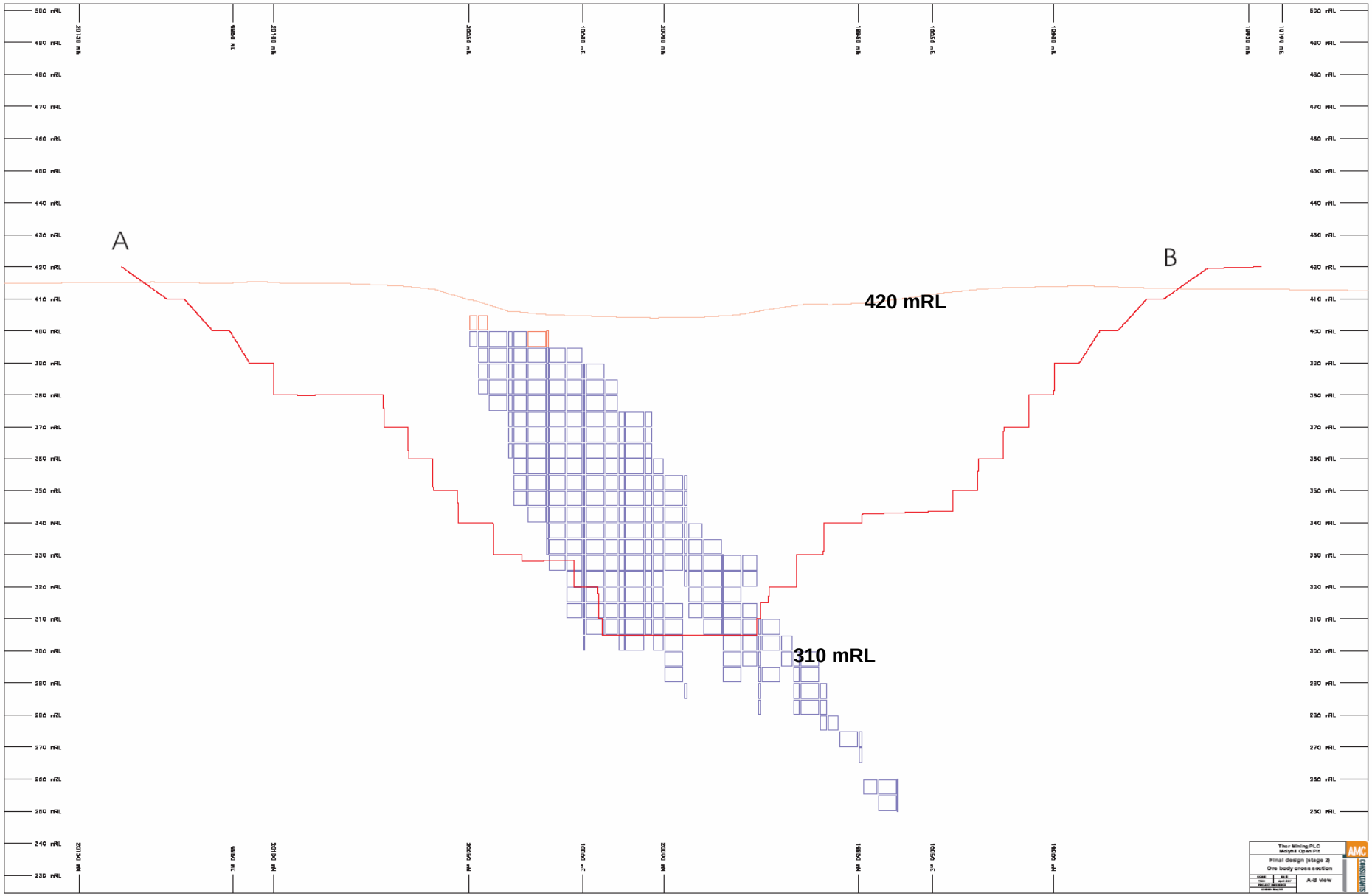

Figure 4 - Cross-section of open pit

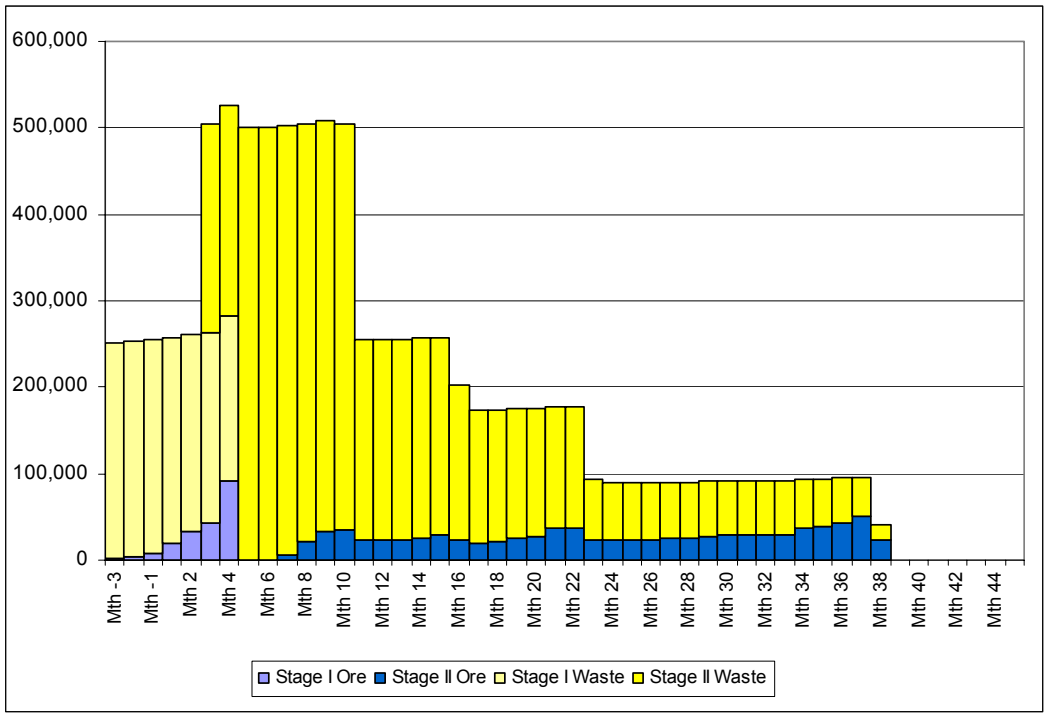

Figure 5 - Stage 1 and 2 material movement (tonnes/month)

2.6.2.2 Mining Methods

Mining is to be undertaken by conventional truck and shovel operations under contract mining arrangements. Principal mining equipment includes a 100t hydraulic excavator and three 90t trucks.

All material will be drilled and blasted (except waste rock from previously mined that is contained within the footprint of the proposed pit). Blasting will occur every third day. The magazine will be located in the north-east corner of ML23825.

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.

Exploration is continuing in the area.

2.6.3 *ROM*

The ROM pad will be constructed during the initial stages of mining. Construction material will be the waste rock from the pit.

The ROM pad will be located approximately 100 metres west of the process plant and in close proximity to the pit to minimise the haul distance (Figure 3). It will have a profile of 250m long by 200m wide and 6m high and contain approximately 300,000m^3 of material.

The ROM will provide storage and blending capability for at least one month's supply of ore feed. The ore will be either arranged into fingers to facilitate blending and reclaim by front end loader or direct dumped into the crusher feed bin. A 21 day emergency stockpile will be constructed by dozing off the fine ore stockpile.

2.6.4 *Ore Processing*

The process plant is designed to treat 300,000 tpa of Molyhil ore (Plate 4). A process flow sheet for the Molyhil Project is shown in Figure 6.

The process plant comprises a crushing circuit and fine ore stockpile, milling and

classification, flotation plant for molybdenum recovery, gravity plant comprising spirals and tables for tungsten recovery, concentrate filtering, drying and handling facilities and associated infrastructure.

The crushing circuit has a nameplate capacity of 300,000 tpa with a maximum continuous treatment rate of 91.3 t/h based on a single 12 hour shift operation. A mobile crushing plant is to be installed during construction to process the existing waste stockpiles to generate material for road construction.

The molybdenite rougher/scavenger flotation circuit consists of two banks of cells. The first bank of four cells is split equally between the rougher and scavenger duty whilst the second bank of cells is dedicated to scavenger flotation. The rougher flotation cells are designed to recover the coarse, liberated and fast floating molybdenite minerals. The rougher concentrate is generally of relatively high grade and readily upgraded to final concentrate. Approximately 80% of the recoverable molybdenite is recovered in rougher flotation.

The scavenger flotation cells are designed to recover the slower floating molybdenite minerals. High stage recovery is achieved at the expense of concentrate grade. The scavenger concentrate is subjected to cleaner flotation. A four stage cleaning, and three stage re-cleaning/screening circuit is employed to produce final grade concentrate. The scavenger and cleaner scavenger tail are subjected to flotation using a strong collector to recover and remove any remaining sulphide minerals from the ore. The pyrite scavenger circuit consists of a single bank of four cells.

A filter feed tank is provided ahead of the molybdenite concentrate filter and provides 12 hour surge capacity between the flotation circuit and the pressure filter. The concentrate filter cake is dried in a diesel fired fluidised bed drier and packaged into one tonne bulker bags.

Tungsten recovery is via a wet spiral circuit comprising rougher, cleaner and scavenger stages made up of multiple banks of triple start spirals to provide the duty. The spiral circuit is designed to treat the whole pyrite scavenger tail. The spiral cleaner concentrate is cleaned using a total of 10 rougher and 5 cleaner shaking tables. Cleaner table concentrate is filtered and then dried for secondary processing. Secondary processing involves drum and rare earth magnetic separation followed by high tension separation.

The milling, classification and flotation sections of the plant will be located in a structural steel process building, with the equipment arranged to utilise gravity as much as possible for material transfer, minimising pumping. The gravity plant and concentrate handling will be in separate buildings.

Tailings will be collected in a Tailings Collection Tank and pumped to the tailings dam. Decant water will be collected via a decant well and pump and returned to the process water tank.

The plant will have a name plate design of 889 tpa of molybdenite concentrate and 1,511 tpa of tungsten concentrate. A quantity of magnetite concentrate is produced as a secondary product. This magnetite concentrate has no economic value to the project.

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 will be dried and subjected to magnetic and high tension separation to produce a final tungsten concentrate and a secondary magnetite product.

Plate 4 - Location of proposed plant

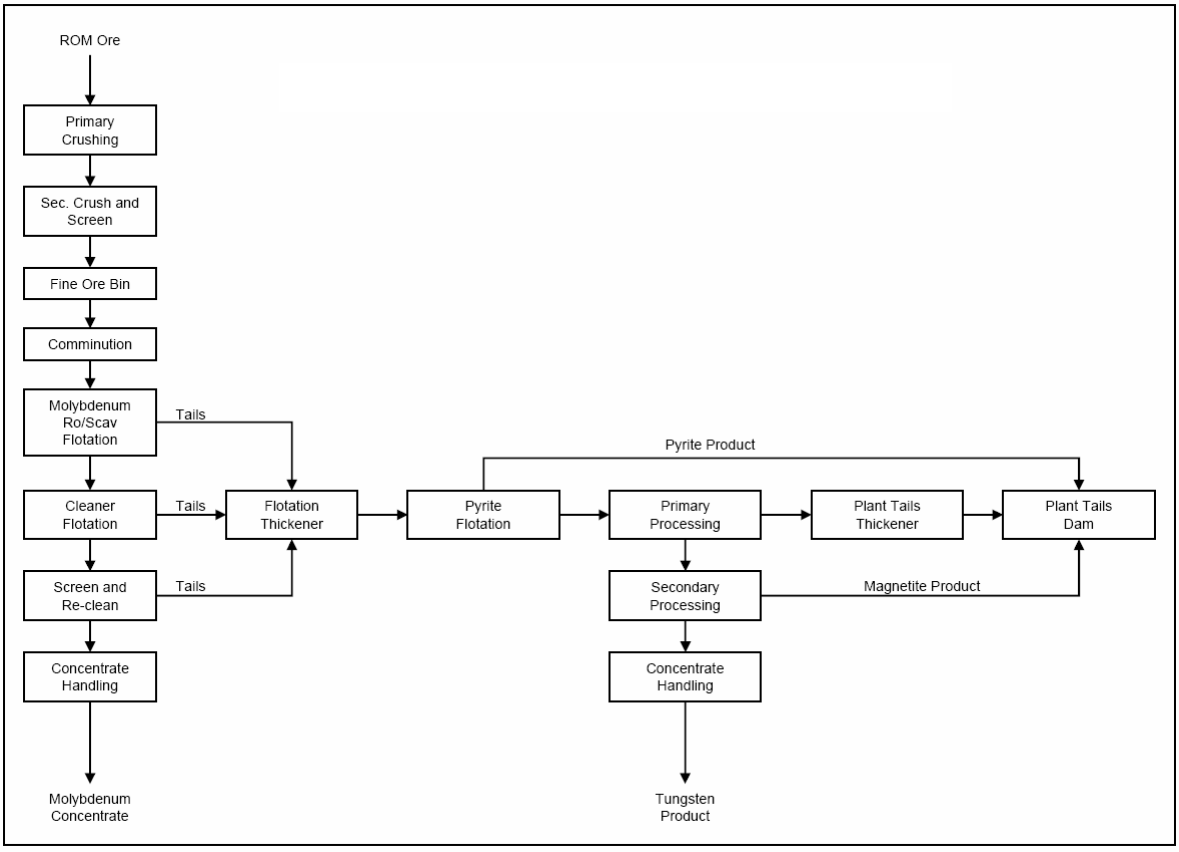

Figure 6 - Process flow sheet for the Molyhil Project

2.6.5 *Waste Rock Disposal*

Benign waste rock generated from the mining of the open pit will be used to construct the ROM pad, the TSF and possibly 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 (Plate 5, Figure 7). Waste will be scheduled by each 10m lift alternating between the South and East dumps. The outer faces will be established first and contoured to a maximum slope of 18% to assist in early stabilisation and minimise erosion. The waste will then be dumped along the inside faces advancing towards the pit starting with the longest hauls first while accessing the upper material.

Anecdotal information indicates that some potential acid generating material was mined as waste material during the 1990's. It is believed that this material has been encapsulated within the waste rock dump during the rehabilitation phase in 1999. The location of the encapsulation cell, the type of cell and the volume of material is unknown. No evidence of acid rock drainage was identified during the site assessment undertaken by Fawcett Mine Rehabilitation Services Pty Ltd in 1998 or has been identified since.

It is possible that the existing, small waste rock dump may be retreated through the new (proposed) processing plant. If this is the case, any potential sulphidic waste will be identified and either relocated or treated through the plant. If the existing waste dump is not retreated, then a watching brief will be maintained on the waste rock dump to identify any acidic seepages that may be generated from the dump.

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.

Plate 5 - Location of eastern waste dump

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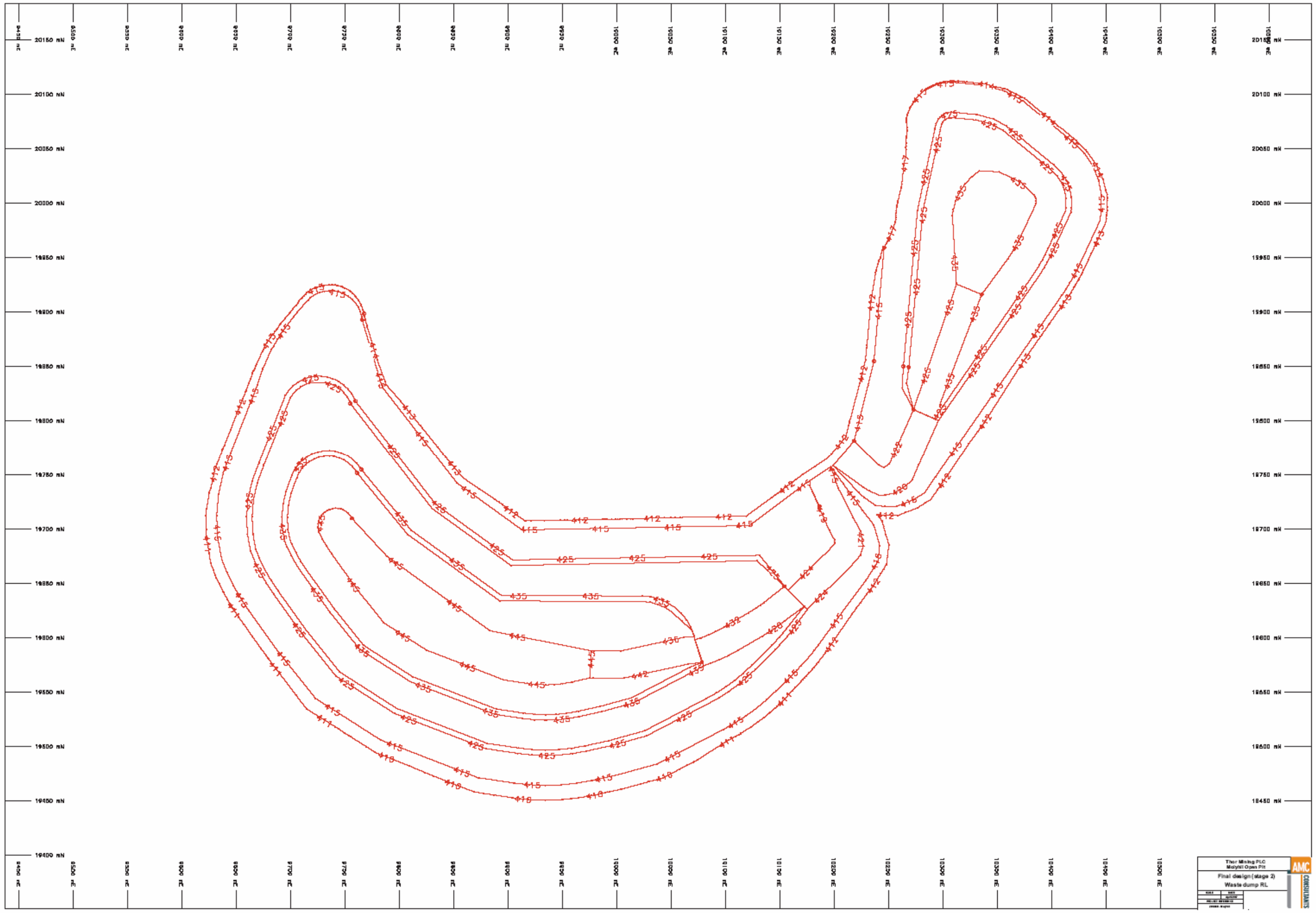

Figure 7 - Design of proposed waste dumps

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2.6.6 *Mine Dewatering*

Some ground water flows may be expected once mining takes place at depths of greater than 30m below surface. Inflows are expected from geological structures exposed in the walls.

Groundwater inflows (and rainfall) are anticipated to be low in volume and high in salinity (based on previous mining information) 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.

2.6.7 *Tailings Storage Facility (TSF)*

The following design and operational information of the Tailings Storage Facility (TSF) at the Molyhil Project was taken from "Report on Molyhil Project, Tailings Storage Facility, Definitive Feasibility Study" by Golder Associates (2006) which is attached as Appendix 1.

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

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 magnetite concentrate tailings and the general plant tailings will be combined at the plant and pumped to the TSF as slurry at a design solids content of 34% by mass. The combined tailings will be deposited into the conventional, rectangular shaped paddock-type (above ground) TSF.

The pyrite concentrate disposal area will be located adjacent to the combined magnetite and general plant tailings TSF.

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.

A small southerly flowing tributary creek lies approximately 30 to 40 m to the west of the proposed western embankment of the TSF (flow will be diverted – refer Section 2.6.7). The ground on which the TSF will be located has been heavily grazed and at the time of the field investigations had sparse ground cover with some thin stands of medium shrub and the occasional tree. A few stunted trees grow along the margins of the creek. Within the footprint of the TSF, the ground surface falls gently westwards towards the creek line at a gradient of between 1.1% and 1.3%. This gradient will give rise to a height differential of 3.5 m between the eastern and western TSF perimeter embankment.

There is little evidence of sheet run-off from the area of the plant and TSF although there are a few small drainage lines that cross the area of the TSF. The site access road will pass to the east and up-gradient of the TSF and drains on the eastern side of the access road will divert any surface run-off to the south and into the drainage lines the drain into Molyhil Creek.

The soil profile across the proposed site of the TSF generally extends to depths within the range of 0.25 m to 1.0 m before intersecting decomposed or extremely weathered granitic bedrock and backhoe refusal at depths between 0.65 m and 1.1 m. The average depth of soil profile is approximately 0.65 m thick and comprises an upper zone of red brown fine

silty sand grading into a low to medium plasticity clayey sand. Depths of soil cover generally increase towards the location of the creek to the west of the TSF.

2.6.7.1 TSF Design Parameters

The TSF will have a footprint area of approximately 12.8 ha and functional storage area of approximately 9.9 ha (Plate 6). The perimeter starter embankment will be raised periodically to provide a life of mine storage for approximately 890,000 t of pyrite and general plant tailings.

There will be potential for increasing the storage capacity of the TSF by further embankment raises in the event that the mineral resource is increased. Assuming an average tailings dry density of 1.6 t/m^3 and beach slope of 1.3%, the maximum height of the perimeter embankment required to store the estimated 0.89 Mt of combined tailings will be approximately 11 m and final crest elevation will be at approximately RL422 m.

2.6.7.2 Foundation Preparation

The footprint of the TSF will be cleared of vegetation. A nominal 100 mm depth of topsoil will be stripped from the footprint of the TSF and placed into stockpiles for later re-use in rehabilitation works. A nominal 3.5 m wide keyway will be excavated into the underlying weathered granitic bedrock. Material from keyway excavation will be placed into the outer embankment zone, conditioned and compacted. The keyway excavation will be such that clayey fill can be placed, conditioned and rolled into the keyway to form a tight bond with the underlying bedrock horizon. The keyway excavation will then be backfilled in 250 mm layers with selected sand/clay, with each layer of moisture conditioned and compacted to the required compaction density.

A sediment collection trench, nominally 300 mm deep, will be excavated around the outer toe of the perimeter embankment to contain any material washed off the outer embankment slope.

2.6.7.3 TSF Construction

The civil construction for the Molyhil combined pyrite and general plant TSF will involve the clearing and stripping of the TSF footprint and excavation of a cut-off keyway, construction of a zoned perimeter embankment and decant access causeway, construction of a central pump-out decant and installation of slurry delivery and distribution pipework and return water pipework.

2.6.7.4 TSF Operation

The pipework will access the embankment at the north eastern corner of the TSF, where the flow will be split into two distribution pipelines which will encompass half the perimeter of the TSF and be located at the upstream crest margin.

The active area of deposition will then be systematically cycled around the pond, depositing a layer approximately 200 mm thick on each rotation.

As the level of tailings approaches the minimum beach freeboard level, defined as 300 mm below the lowest point of the crest of the perimeter embankment, and preliminary to embankment raising, tailings deposition will take place along only one of the distribution pipelines in order to push the pond as far as possible off centre without losing flow to the decant.

Plate 6 - Proposed TSF location

2.6.8 *Diversion Channel*

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 (Figure 3).

The diversion will be constructed with substantial bund walls between the channel and the pit. The diversion will be permanent. The diversion will direct the water back to Molyhil creek via Dam creek.

2.6.9 *Transportation Corridors*

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 8m width of the site access road allows for a six metre running surface, passing bays which will be established at regular intervals and windrows.

The existing access road (which will be widened for access/haulage to site) crosses two main rivers, Plenty River and Marshall River (Figure 8).

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.

A number of roads will be constructed around the mine site including to the Air Strip, Camp, TSF and Bore Fields (Figure 3).

All road base will be produced from crushed waste rock that will be sourced from the pit during mining.

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. A new access road has been provided between the village and the airstrip, and between the village and the process plant.

A parking area will be constructed at the project offices, process plant administration buildings and warehouse. Hardstand areas will be located at the process plant, mining contractor's area, the village and the airstrip.

All roads will be gravel surfaced to a minimum construction standard consistent with Thor's requirements for durability during and/or following wet weather.

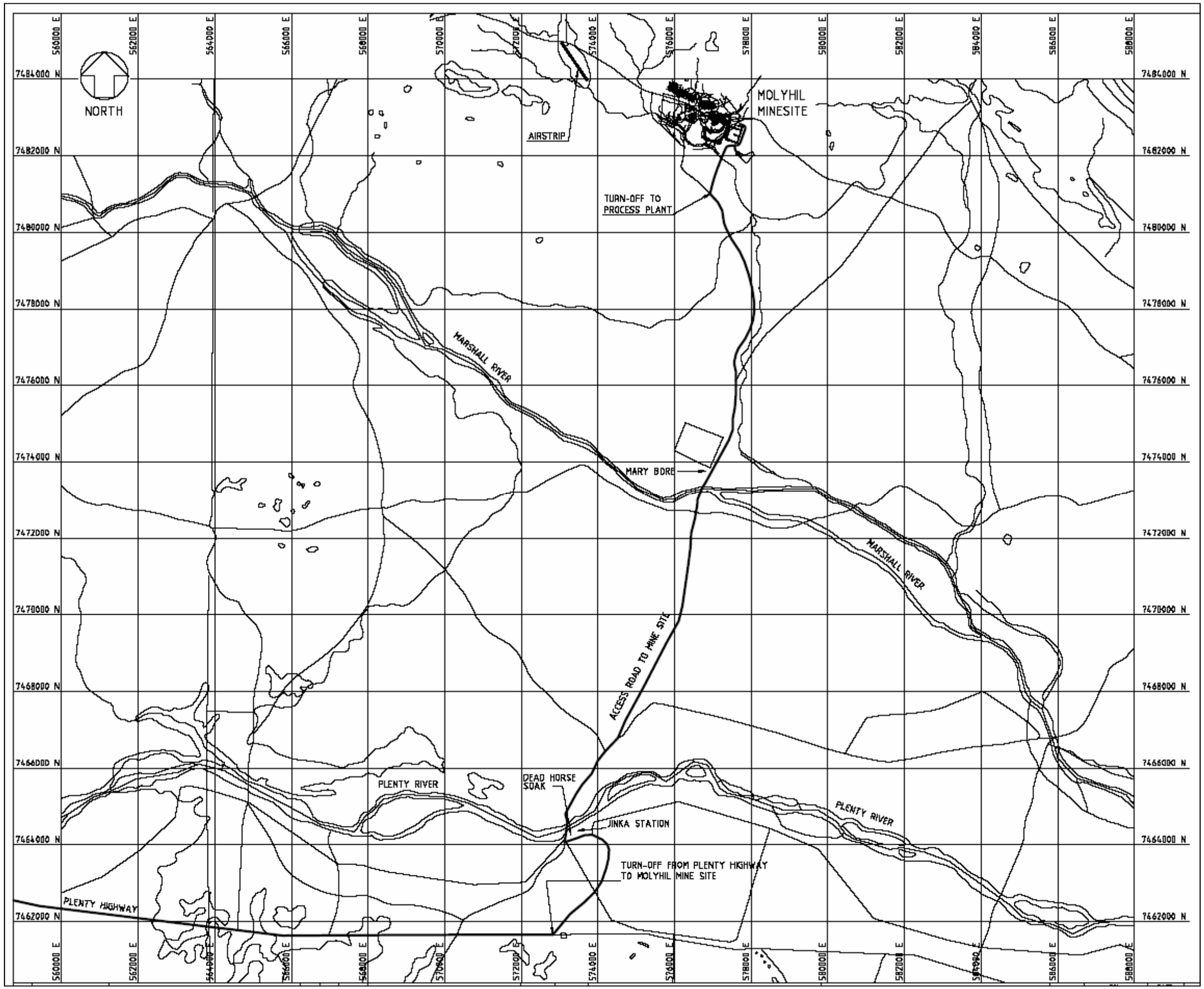

Figure 8 - Access haulage route from Plenty Highway to site

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2.6.10 *Support facilities*

2.6.10.1 Power Station

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.

A separate standby emergency diesel generator rated approximately 350 kVA will be provided at the power station to supply back-up power at 415V for essential services at the plant. At the accommodation camp, a standby emergency diesel generator rated approximately 500 kVA will be provided to supply local back-up power for the camp site only.

Remote from the plant and camp, local 415V diesel generator sets will be provided to supply power for the bore pumps, water transfer station and airstrip.

2.6.10.2 Airstrip

The existing airstrip, 2 km to the 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 (Plate 7, Figure 9).

A contour trench will be constructed on the northern side of the runway to minimise the flow of water onto the runway. The trench will direct the surface flow to the creek south east of the runway.

Plate 7 - Existing airstrip which will be upgraded

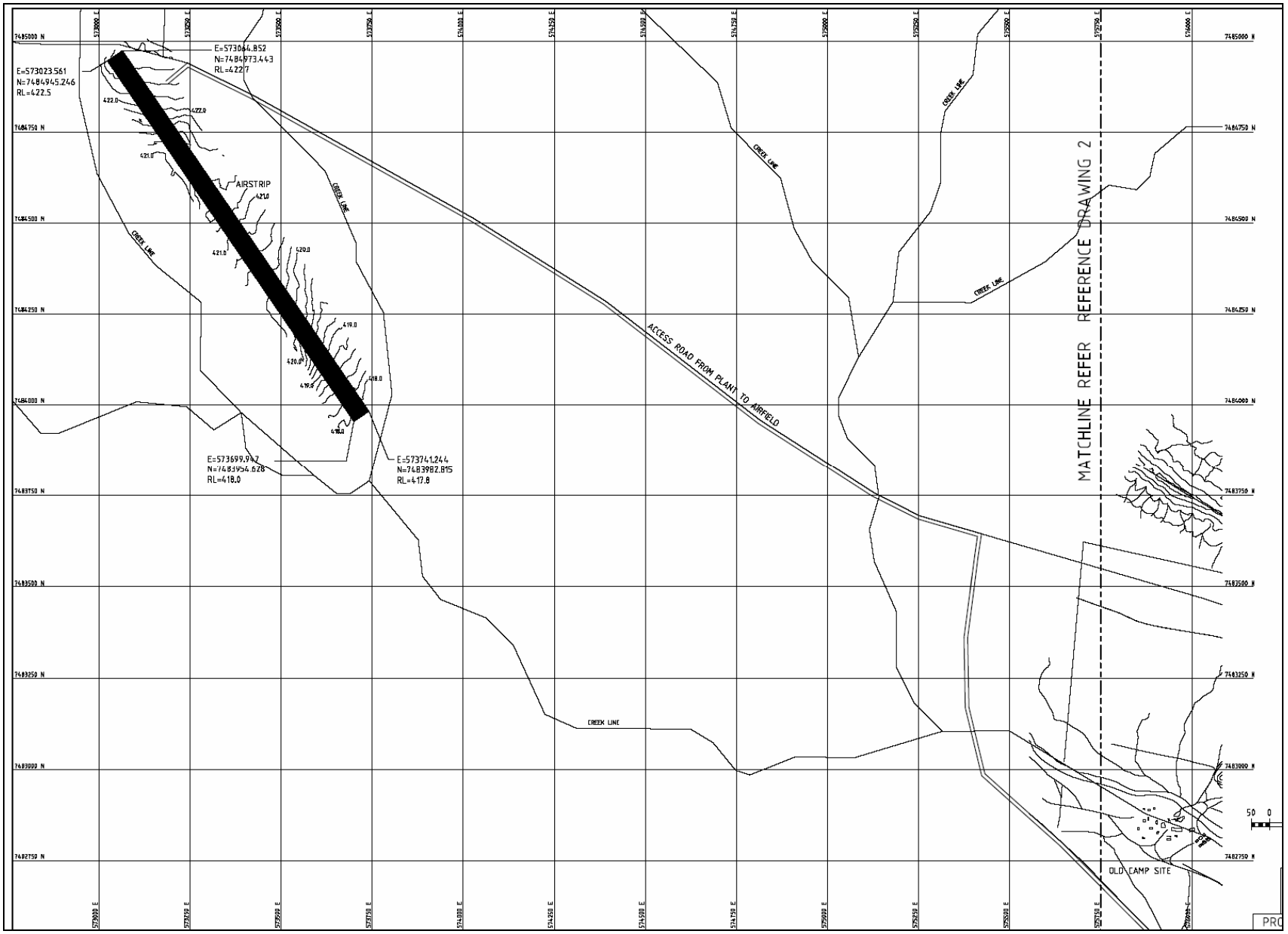

Figure 9 - Location of airstrip and access road

2.6.11 *Infrastructure*

2.6.11.1 Offices

For on-site management and administration requirements, an office building will be provided complete with Satellite Telephone and Broadband Internet services.

2.6.11.2 Workshop

An on-site Workshop/Store facility will provide for the day to day Mechanical and Electrical Maintenance of the processing plant, accommodation camp, and mobile equipment.

The Stores will be responsible for the ordering and issuing of spare parts and consumables including chemicals and reagents also the loading and shipment of Concentrates from site.

2.6.11.3 Magazine

The magazine will be located in the north east corner of ML23825.

2.6.12 *Resource requirements*

2.6.12.1 Water

The water requirements for the Molyhil project are shown in Table 4.

Raw water will be sourced from four production bores: Prices Bore, TMRC037, TMRC040 and TMRC042 that are located approximately 6-7 km north-east of the plant site (Figure 10).

A six kilometre, 160mm diameter HDPE pipeline will be constructed from Prices Bore to the plant. Pipelines from bores TMRC037, 040 & 042 will consist of a 90mm HDPE pipeline which will feed the main pipeline. The pipeline will be placed in a v-trench for ease of inspection and will run predominantly along an existing track (Plate 8).

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 m^3 per annum. Potable water quality will comply with the National Health and Medical Research Council Australian Drinking Water Guidelines.

Process water will also be returned to the process from the tailings dam via a decant water pump installed in a decant well at the tailings dam. The quantity of process return water from the tailings dam has been estimated at 100,000 m^3. Decant water is returned to the plant process water tank.

Table 4 - Water requirements for the Molyhil Project

USE	AMOUNT (m^3 per annum)
Process	403,000
Potable	5,600
Dust suppression	Sourced from pit dewatering
TOTAL	**408,600**

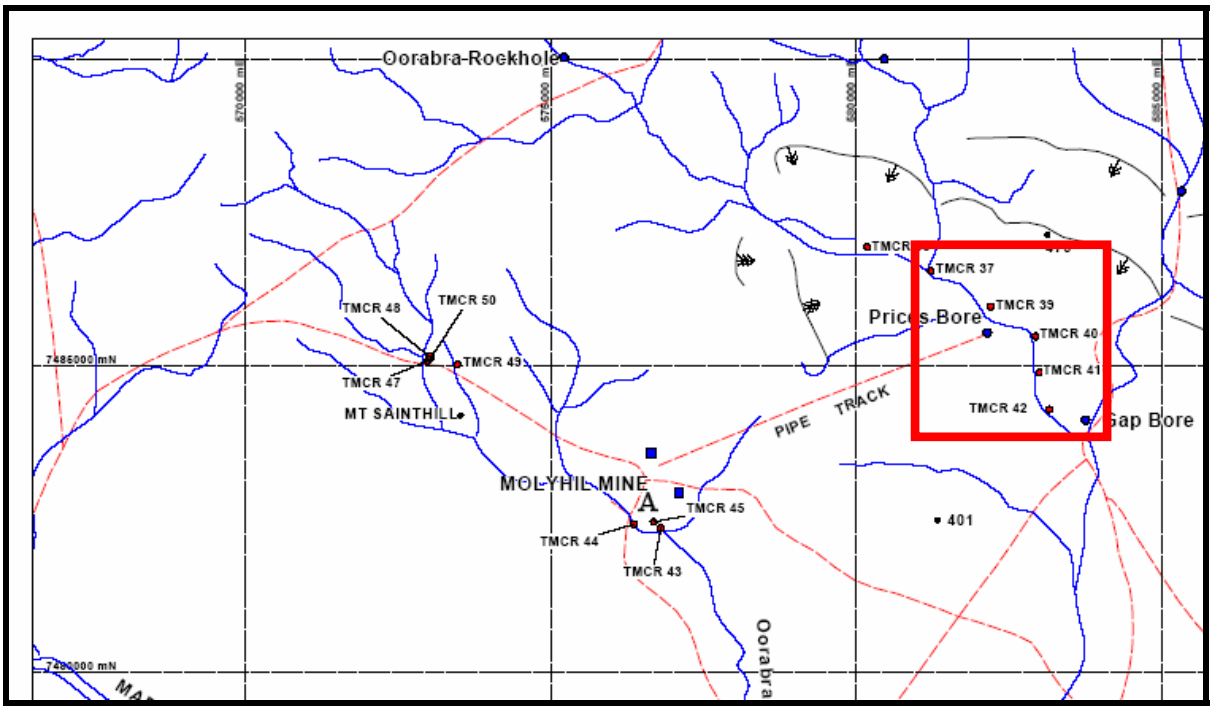

Figure 10 – Location of production bores for Molyhil Project

Plate 8 - Pipeline route from Prices Bore to the plant located predominantly along an existing track

2.6.12.2 Reagents & Dangerous Goods

The major materials to be utilised in ore processing and concentrate production are:

- Lime
- Frother (DSF001/IF50),
- Sulphide collector (PAX),
- oxide collector (AM2)
- depressant (NaCl).

A bulk reagent storage of 21 days has been allowed for, the bulk reagent storage requirements are shown in Table 5.

Table 5 - Reagent storage requirements

Reagent Type	Delivery Size	No Required	No Allowed
Grinding Media	200 Lt drums	26.0	35.0
Oil of Pine	200 Lt drums	13.00	16.00
Kerosene	200 Lt drums	18.00	20.00
Aero 7260	200 Lt drums	3.00	4.00
PAX	0.85 t bulker bag	3.00	4.00
NaHS	1.0 t bulker bag	1.00	2.00
Flocculant	25 kg bags	6.00	12.00

2.6.13 *Fuel*

This facility will be provided by the Fuel Supply Contractor. Diesel will be contained within self bunded, double-skinned storage tanks.

2.6.14 *Communications*

A permanent communications link to the site will be a dedicated satellite system designed to provide reliable telecommunications service. Site services will include a PABX telephone system, emergency and 2-way radio systems, MATV system for the village, internet services and IT systems.

2.6.15 *Workforce*

A workforce of around 62 personnel will be employed in both construction/pre-strip and operational phases on a 2 weeks on, 1 week off FIFO roster (Figure 11).

Approximately 100 personnel will be required during construction.

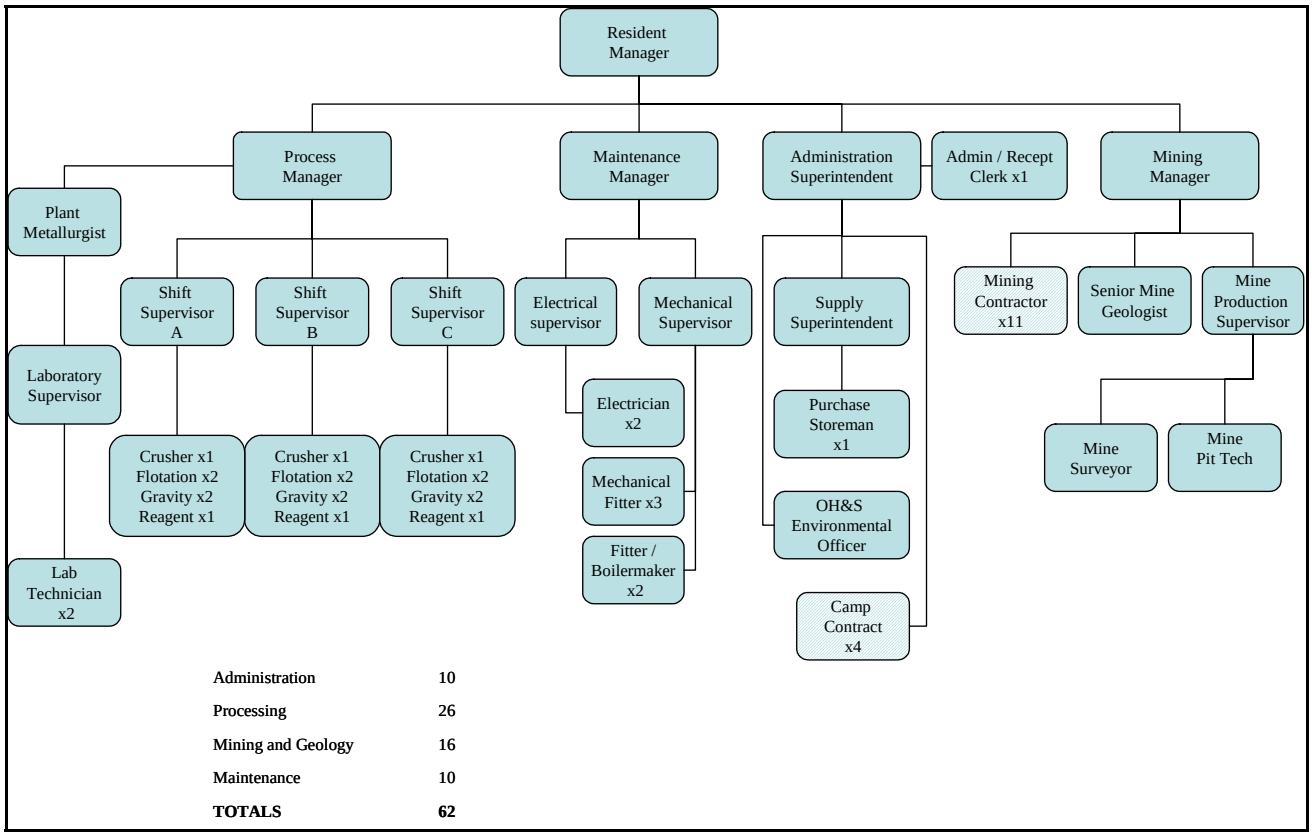

Figure 11 - Workforce for Molyhil Project

2.6.16 *Housing and Accommodation*

The camp is located south of the project area.

The accommodation village will be provided by a separate contractor. Design, manufacture, supply, installation and commissioning of the village facilities will be the responsibility of the Contractor.

The camp will include:

- Camp managers office/linen/store;
- 16 of 4 person air-conditioned ensuited rooms and two Manager/VIP quarters;
- Dining room;
- Laundry;
- Car park;
- Potable water treatment; and
- Sewage treatment facilities.

The layout of the camp is shown in Figure 12.

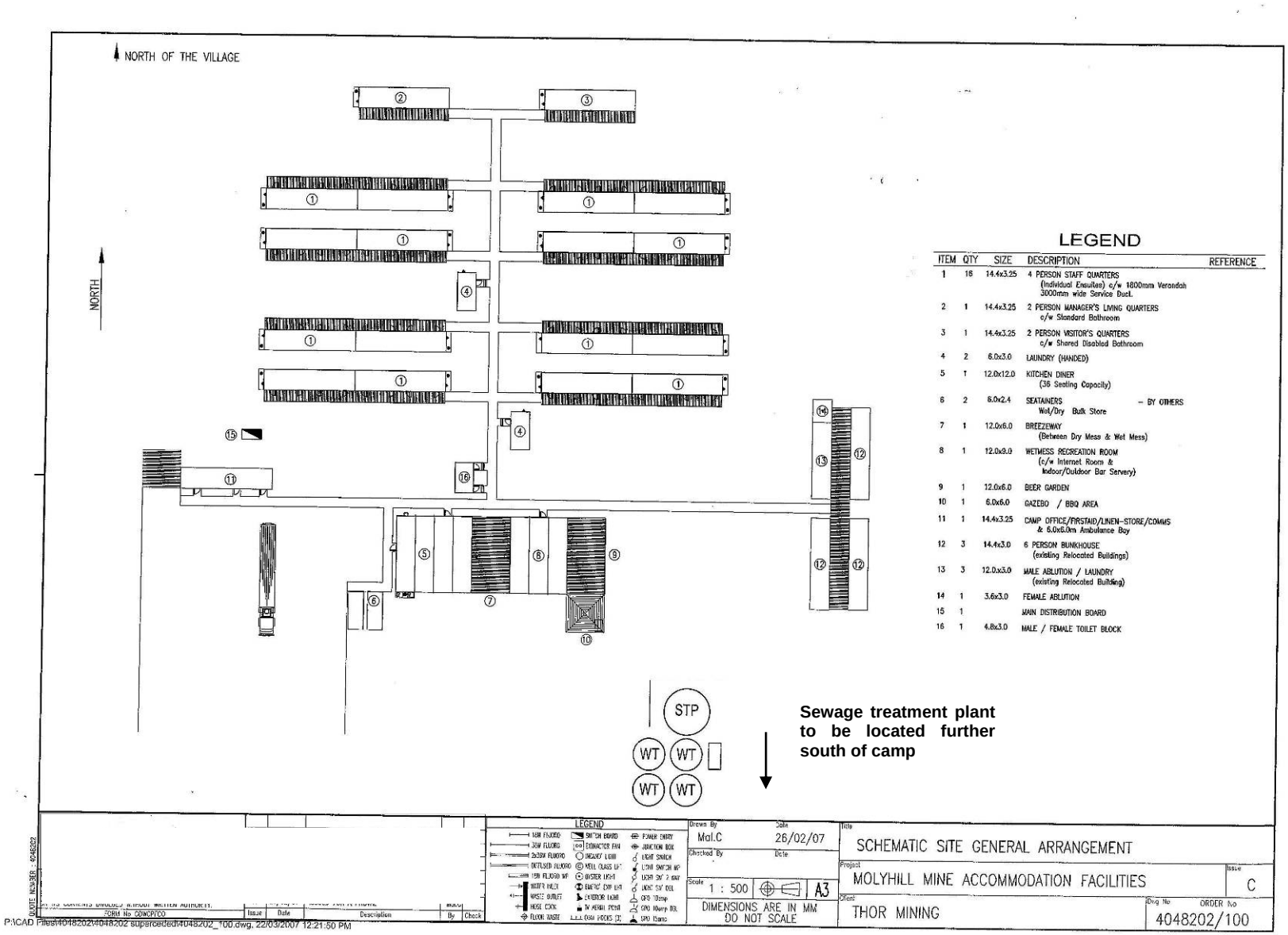

Figure 12 - General arrangement of Molyhil camp

2.6.17 *Sewage Treatment Plant*

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.

Incoming water is stored in the balance tank, transferred to aeration tanks and decanted via the final MBR process.

The treatment process is a natural biological process and requires no chemicals other than chlorine to treated effluent.

The system is controlled by a programmable logic controller (PLC) which provides reliable control of the various stages of the treatment process.

2.6.18 *Waste disposal/landfill*

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.

2.6.19 *Transport*

2.6.19.1 Construction Workforce

The construction workforce will be housed on-site in the accommodation camp and will commute daily by mini-bus or light vehicle to the construction, mine site or other work site. Short term construction workers may commute as required from Alice Springs but may spend some time in the camp.

Construction 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.

2.6.19.2 Operations Workforce

The operations workforce will be housed on-site and will commute daily by mini-bus or light vehicle to the mining and plant sites or other work site. Short term maintenance workers may commute as required from Alice Springs but may spend some time in the camp.

There will be minimal light vehicle usage of the highways because of the FIFO program.

Operations worker changeover will use light commuter aircraft direct from Alice Springs to and from the site airstrip.

There will be an estimated 12 light vehicles on site.

2.6.19.3 Materials, Reagents and Dangerous Goods to Molyhil

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.

A list of reagents is listed in Section 2.6.12.2.

2.6.19.4 Concentrate (Product) Transport

Molybdenum and tungsten concentrate will be placed in one tonne bulk bags and transported by road train from the mine site to the Port of Darwin for export. The trucks will use the Plenty and Stuart Highways to and from the mine.

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.

2.6.20 *Rehabilitation and Decommissioning*

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. This will ensure that viable plant propagules will be utilised to re-vegetate these rehabilitated areas.

2.6.20.1 Post Mining Land Use

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.

2.6.20.2 Objective

The objective of the rehabilitation program at the Molyhil Project is to rehabilitate the affected areas to ensure that soil erosion and subsequent sedimentation is minimised and endemic plant species are re-established.

It is anticipated that the rehabilitation program will result in establishment of a self-sustaining vegetation complex into which local fauna will be able to return and re-establish. It is not anticipated that the site will ever be suitable for sustainable livestock grazing.

2.6.20.3 Waste Rock Dump

As decommissioning approaches, waste rock will continue to be stockpiled on the top surface of the waste dump in sufficient volume to be used to cover the TSF surface to the designed depth. The waste rock dump is anticipated to contain blocky competent rock with few fines. Therefore, the dump will be quite porous with large voids. The outer slopes of the dump will be shaped to an angle of less than 20^{o} from the horizontal.

Initially, no topsoil will be applied to the side slopes of the dump but will be applied to the top surface if fine material has consolidated and filled the voids. However, if topsoil does remain after all other sites are rehabilitated, remnant topsoil will be applied to the waste dump side slopes commencing with the western and then the southern followed by the remaining sides.

Any available stockpiles of vegetation removed during the clearing process will be spread back over the waste rock dump.

2.6.20.4 Tailings Storage Facility (TSF)

The TSF embankments will be constructed using downstream techniques, utilising non acid forming (NAF) mine waste. Topsoil removed from the tailings storage facility prior to construction will be redeployed on downstream slopes of the final embankments of the facility to assist with rehabilitation. Any remaining topsoil will be stockpiled in an adjacent location for use in later rehabilitation.

At completion of the processing operation and after consolidation of the tailings material, heavy earthmoving equipment will push waste rock over the surface to cover the tailings material. If sufficient fines are available and the rock voids are closed, then topsoil will be spread over the rock cover and seeded with local native plant species.

In summary, the rehabilitation of the TSF will include:

- Removal of all pipelines, powerlines and other materials associated with the operational stage of the storage

- Filling the decant towers and surrounding decant pond with waste rock
- Covering the surface of the TSF with a designed “store and release” cover
- Reinforcing the “freeboard” around the crest of the TSF embankment to ensure runoff cannot flow over the TSF embankments
- Providing reinforced (steel) lockable caps to all monitoring bores.

Similarly to all other disturbed areas being rehabilitated, all stockpiled vegetation removed during the clearing phase will be respread over the surface and walls of the TSF.

2.6.20.5 Processing Plant

The processing plant will have all buildings and structures removed, all concrete footings and concrete bunded areas broken-up and buried and all surface cables and pipelines removed. The underground cables and pipelines will only have the first 30 cm below ground cut off with the remainder remaining underground.

With removal of the crusher and mills, the large concrete footings of these structures will be covered to a minimum depth of 1.0 m with benign waste material from the ROM pad.

The western side of the ROM will be contoured and blended into the waste dump at approximately RL 420. The outer faces will be shaped to a gradient of 18 degrees to stabilise and minimise soil erosion during significant rainfalls.

The plant area will be sampled (where required) for the presence of hydrocarbon contamination and if present, the contaminated soil will be removed and treated in a bioremediation area set aside on the surface of the waste rock dump.

All plastic liners in ponds and bunded areas will be removed and buried and the walls pushed in. All electric powerlines, transformers and poles will be removed. The area will then be reshaped, deep ripped, seeded and any stockpiled vegetation (removed during the clearing phase) respread.

Disturbed areas will be contoured to restore natural drainage and the surface ripped to alleviate compaction and encourage re-growth of native vegetation, and seeded with local provenance species.

2.6.20.6 Accommodation Camp

All buildings and infrastructure will be removed from the accommodation camp. All above ground pipelines or cables, electrical power lines and posts will be removed from site or buried. Above ground cables and pipelines (including fire services) will be cut-off no less than 30 cm below the ground surface with the underground sections remaining *in situ.*

All concrete footings and paths will be broken up and buried.

All exotic trees and shrubs that may be planted at the camp during construction and operation will be removed and disposed off into the bottom of the open pit.

All buildings and infrastructure will be removed from the sewage treatment plant. Any liquid still contained in the system will be pumped out and disposed offsite.

Where required, the disturbed areas will be reshaped by dozer to return the site to near the original contours. All disturbed areas will be deep ripped on the contour, topsoiled and seeded with local provenance seeds.

2.6.20.7 Other Disturbed Areas

Local native (provenance) seed will be collected and used for all revegetation purposes at Molyhil. All hardstand or compacted areas or other disturbed areas no longer required will be deep ripped and direct seeded.

All drill holes not previously rehabilitated will be plugged below ground level using a gypsum

or concrete plug. All trenches and holes directly caused by this project will be filled in, reshaped (if necessary) and seeded.

All tracks will be deep ripped and seeded when necessary. Where required, soil erosion control banks will be constructed on tracks and roads or other large bare areas where excess runoff may concentrate and there is a potential for soil erosion.

3.0 PROJECT ALTERNATIVES AND JUSTIFICATION

3.1 ALTERNATIVES CONSIDERED

The following alternatives have been considered by Thor during project development:

Not proceeding with the project

If the project were not to proceed, the value of the project would be lost as well as a loss of employment opportunities and economic benefits. The demand for molybdenum/tungsten would be met by projects outside of the Northern Territory, and as such, the state would lose associated benefits associated with the project. Similarly the economics are based on the current strong commodities prices, thus, any delay in the approval process may not allow the project to proceed in the event the current prices are not sustained.

Infrastructure Location

The location of project infrastructure has taken into account the existing environment and potential environmental impacts. It has also taken into account the wishes of the traditional owners who requested that no infrastructure be located between Molyhil and the pit.

Raw materials

Extraction of ore is restricted to the geographical location where it occurs. Water sourced from pit dewatering and bores is the most practical option.

Transport Corridor

The access road from the Plenty Highway to site is currently along an already existing track that passes the Plenty River and Jinka Station. The proposed access/haul route from site to the Plenty Highway has been designed to ensure that the traditional owners and the local pastoralist are not impacted. The traditional owners requested that larger trees be left untouched and as a result an alternative route in a section of large trees was proposed. The pastoralist requested that all mine traffic be directed away from Jinka station and the route has been designed to satisfy this requirement.

The location of the access route to site along an existing track reduces the need for additional disturbance.

Processing

There are no alternative options for construction of a processing plant at site.

Workforce Accommodation

The construction of an onsite camp was considered the only option given the distance from Alice Springs. The site is isolated from surrounding towns and communities so daily commuting from a local town is not an option.

3.2 PROJECT BENEFITS

Benefits resulting from the Molyhil project are:

- 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;
- Thor intends 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;
- The supply of goods and services will be extended to local businesses;
- The project contributes to the economy of the Federal and Territory government through tax and royalties generated.

4.0 EXISTING ENVIRONMENT

4.1 CLIMATE

The climate of the area is semi-arid with the average annual rainfall between 1966 and 2003 being 299.6 mm (Table 6). Approximately 70% of rain is received between November and April, and annual evaporation averages about 3000 mm (Slatyer 1962). The strong seasonality of the rainfall results in relatively wet humid conditions for 3-6 months of the year and progressively drier conditions through winter and spring, except for occasional winter rainfall depressions (Low and Strong 1985). Rainfalls in the wet season can exceed 200 mm resulting in locally inundated depressions, which could be a problem for several sections along the haul road.

Monthly climate averages at Jervois between 1966 and 2003 are provided in Table 6.

4.2 GEOLOGY

4.2.1 *Site Geology*

The following section is taken from CRM (2006).

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). Both units are iron-rich (>18%) and often contain pyrite and/or chalcopyrite along with molybdenum and tungsten. Occasional blebby (primary) molybdenum can be seen in the pink granite matrix that suggests the granite is the source of the mineralization.

The Molyhil scheelite-molybdenite deposit is estimated to contain a Measured Resource of 370,000t at 0.52% WO_3 and 0.32% MoS_2, an Indicated Resource of 1,750,000t at 0.52% WO_3 and 0.26% MoS_2, and an Inferred Resource of 250,000t at 0.7% WO_3 and 0.2% MoS_2. This resource has been estimated to a depth of 150m (RL250m). The Measured Resource is to a depth of 45m (RL 355m).

The resources were estimated by geostatistical interpolation using the inverse distance squared method. Block sizes were 5m x 5m x 5m for the Southern body and 15m x 5m x 5m for the Yacht Club body.

The resources are summarised in Table 7.

Table 6 - Climatic data of Jervois station from Bureau of Meteorology

Element	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual
Mean maximum temperature	38.3	36.8	34.6	30.5	25.3	22.1	21.9	25	29.7	33.2	36	37.8	30.9
Highest temperature	47.5	46.1	42.5	40.6	36.6	33.8	33	36.1	41.1	43.6	45.5	47.2	47.5
Lowest maximum temperature	24.3	21	19.4	13.2	12.2	10.9	10	12.5	15.9	13.9	12	20.8	10
Mean minimum temperature	22.4	22.1	19.1	14.2	9.8	6.5	5.2	6.9	11.1	15.5	18.8	21.3	14.4
Lowest temperature	8.1	12.1	8.8	3.1	-0.2	-3.5	-5	-2.8	0.5	3	3.5	10.5	-5
Highest minimum temperature	32.9	30.5	29.2	26.6	21.1	17.9	19.8	22.6	26.9	30.9	30.9	32.4	32.9
Mean rainfall (mm)	44.9	57.6	30.6	17.9	19.9	11.1	13.2	8.1	6	16.2	23	39.1	288.8
Highest rainfall (mm)	240.7	285	188.3	190.8	157.5	91.2	146.6	117.9	38.7	49.6	80.2	288.2	775.6
Date of Highest rainfall	1974	1991	1983	2000	1968	2005	1986	1966	1975	2005	1981	2000	1976
Lowest rainfall (mm)	0	0	0	0	0	0	0	0	0	0	0	0	106.8
Date of Lowest rainfall	1985	2007	2003	2007	2005	2006	2004	2006	2006	2004	1996	2004	2003
Highest daily rainfall (mm)	81.6	139.2	71	87.2	63.2	40.4	100.2	53.8	24	39.8	47.5	97.6	139.2
Mean 9am relative humidity (%)	35	42	39	41	51	56	52	41	32	29	29	32	40
Mean 9am wind speed (km/h)	13.9	12.2	12.2	11	9.7	8.7	9.1	11.5	14.5	15.5	15.5	14.3	12.3
Mean 3pm relative humidity (%)	22	28	24	25	31	32	29	22	18	19	19	20	24
Mean 3pm wind speed (km/h)	13.5	13.1	13.2	12	11.7	11.7	12.6	12.7	13	13	12.8	13.1	12.7

Table 7 - Summary of rounded resource estimates - no lower cut

Note: Totals may differ from sum of individual items due to rounding

Body	Classification	Resource (t)	MoS_2 (%)	WO_3 (%)	Cu (%)	Fe_2O_3 (%)
Southern	Measured	370,000	0.32	0.52	0.088	31
Southern	Indicated	1,300,000	0.21	0.30	0.051	26
Southern	Inferred	50,000	0.15	0.3	0.04	25
Yacht Club	Indicated	460,000	0.39	1.15	0.10	35
Yacht Club	Inferred	200,000	0.25	0.8	0.1	37
Total	Measured	370,000	0.32	0.52	0.088	31
Total	Indicated	1,750,000	0.26	0.52	0.060	28
Total	Inferred	250,000	0.2	0.7	0.1	35

With a lower block cut of 0.10% Mo-equivalent (Mo-equivalent% = Mo% + (0.25 x W%) the deposit is estimated to contain a Measured Resource of 340,000t at 0.57% WO_3 and 0.35% MoS_2, an Indicated Resource of 1,200,000t at 0.70% WO_3 and 0.34% MoS_2, and an Inferred Resource of 150,000t at 1.1% WO_3 and 0.3% MoS_2."

4.2.2 *Geotechnical*

The following section is taken from George, Orr and Associates (2006).

Interpretations from the results of the geotechnical investigations carried out at the deposit are:

- Pit walls will be mined in a mixed granite, hornfels and skarn rock mass.
- The depth of rock weathering at Molyhil is limited, with fresh rock occurring at an average depth of around 20 m below surface (around 390 mRL).
- Fresh rocks classify as "strong" to "very strong", with unconfined compressive strengths falling within the range of 50 MPa to 200 MPa.
- Wall rocks are expected to be well jointed, giving rise to a "blocky" and "wedgy" rock mass.
- Overall rock quality within the weathered and fresh wall rocks is expected to range locally from "poor" quality (in the weathered rock occurring to a depth of 20m from surface) to "good" quality (within underlying fresh rock). The "blocky" and "wedgy" nature of the rock mass is expected to result in potential for future rockfalls.
- Some ground water flows may be expected once mining takes place at depths of greater than 30m below surface. Inflows are expected from geological structures exposed in the walls.
- A staged pit mining approach is strongly recommended for the deposit, with an initial (say 60 m deep) Stage 1 Pit and a final (120 m deep) Stage 2 pit incorporating limited bench face heights and "wide' berms in an attempt to minimise the impact of rockfalls (and other part-bench scale wall failures) on future mining activities.
- Mining to the recommended "base camp" wall design parameters will result in overall slopes being formed at angles of 50º (for a 60 m deep, Stage 1 pit) and 52º (for a 120 m deep, Stage 2 Pit). These overall wall angles refer to measurements between pit crests and wall toes at the respective ultimate depths of mining and exclude haul ramp passes.

- Some reinforcement of local berm crests and ramp crests (using shear pins) may be required, in addition to good quality pre-split blasting of final walls mined in fresh rock, to maintain walls to design parameters.
- All pit walls will require ongoing stability monitoring over their working lives.

4.2.3 *Geochemical*

Geochemical characterisation of the tailings and product was undertaken by Graeme Campbell & Associates (2007) and their report is attached as Appendix 2. The results of the testing program are outlined below.

4.2.3.1 Geochemistry of Process-Tailings and Pyrite-Concentrate Samples

The testwork shows that the acid-base chemistry:

- Of the general plant-tailings-solids is classified as Non-Acid Forming (NAF) due to trace sulphides (chiefly pyrite) in a gangue with trace/accessory-calcite
- Of the pyrite-concentrate-solids is classified as Potentially-Acid Forming (PAF)
- Of the combined tailings solids is classified as PAF due to accessory sulphides (chiefly pyrite) in a gangue containing trace-calcite.

If the sulphide minerals are not atypically unreactive, then the pyrite concentrate solids may be further classified as PAF [short lag].

Although it is difficult to project accurately, the surface zone of the tailings in the TSF may acidify where the tailings beaches have previously reached the shrinkage limit. The window of such lag-phase weathering should amount to several weeks following cessation of tailings discharge to the active deposition areas.

If the sulphide minerals are not atypically reactive, then the combined tailings solids may be classified as PAF [long lag].

This means that the tailings surface may remain circum-neutral for months to years.

To confirm both of these estimations, kinetic testwork (weathering columns) is required to refine these estimations. This work will be undertaken when tailings from the operating plant become available.

4.2.3.2 Ex-Mill Process Water Quality

The analysis of the mill tailings water exiting the plant indicates that they should be mildly alkaline (pH8+/-) with near potable salinity and low concentrations of minor elements.

4.2.3.3 Geochemistry of Magnetite Concentrate Sample

The magnetite concentrate solids are classified as PAF die to minute/trace pyrite in a gutless gangue in terms of circum-neutral buffering (i.e. devoid of carbonate minerals). Minor element enrichment is restricted to WO and Mo.

The element contents of water extractable solutes in fresh Magnetite concentrate solids are low and reflect both low total element contents and a mildly alkaline state.

Management of the tailings based on this work is described in Section 5.11.

4.3 REGIONAL SETTING

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.

4.4 LAND SYSTEMS

Land systems are defined as an area in which there is a recurring pattern of climate, geology, topography, soils, and vegetation (Perry *et al*. 1962). Five land systems are present within the Molyhil project and associated infrastructure: Dinkum (LS 53); Jinka (LS 78), Hann (LS10), Singleton and Sandover (Perry *et al.* 1962).

The following sections are taken from Moon et al. (2007).

4.4.1 *Dinkum Land System*

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 cilaris* with a small variety of herbaceous plants such as Bogan flea burr *Calotis hispidula* in the ground layer.

4.4.2 *Jinka Land System*

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*).

4.4.3 *Hann Land System*

This land system covers 5% of the mine lease in the north-east and incorporates the borefields. This land system consists of sandstone and quartzite ridges and uplands with shallow soils, dominated by spinifex. The production bores, 6 km east of the Molyhil pit, are within the alluvial fans and erosional slopes of this land system which consist of red clayey sands and coarse alluvial soils.

4.5 SOILS

The surface soils at Molyhil are both physically and chemically infertile. In particular, the surface horizons are sandy and highly erosive. This means that replacement of the sandy topsoil by itself for rehabilitation is an erosion risk because of the coarse texture and lack of structure in the material. However, it is recommended that all topsoil resources be scavenged and retained wherever possible because of the organic content in those topsoils.

The proposed TSF and waste dump are found on flat plains with calcareous red earths (Moon et al., 1987) and loamy sands.

The proposed camp site is located on skeletal soils of an alluvial slope (Moon et al., 2007).

The airstrip is found on a raised alluvial fan with soils consist of deep (>1m) fine red sands mixed with coarse quartz grains from the river system to the west of the site (Moon et al., 2007).

Results of soils collected in April 2007 from the proposed plant, east waste dump and TSF at the Molyhil Project are shown in Table 8.

Table 8 – Soil analyses results

ELEMENT	UNIT	Plant site	East waste dump	TSF
Colour		BR	BR	BR
P	**mg/kg**	4	18	13
K	**mg/kg**	635	285	365
S	**mg/kg**	3.2	3.3	3.2
COND	**dS/m**	0.041	0.021	0.022
pH CaCl2	**pH**	6.1	6	6
pH H2O	**pH**	7.1	6.7	6.7
Cu	**mg/kg**	0.59	0.58	0.75
Zn	**mg/kg**	0.05	0.3	0.21
Mn	**mg/kg**	5.88	5.5	6.35
Fe	**mg/kg**	10.93	7.12	8.11
Exch Ca	**meq/100g**	1.81	2.22	2.52
Exc Mg	**meq/100g**	1.22	1.23	1.62
Exc Na	**meq/100g**	0.05	0.05	0.06
Exc K	**meq/100g**	1.53	0.72	0.86
C.Sand	**200-2000**	32.3	25.5	18.1
F.Sand	**20-200**	50.3	57.4	63.4
Silt	**>2 - <20**	1.6	4.7	3.1
Clay	**<2**	15.8	12.4	15.4
Sand	**20-2000**	82.6	82.9	81.5

4.6 HYDROLOGY

4.6.1 *Surface Hydrology*

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 site access road will pass to the east and up-gradient of the TSF. Drains on the eastern side of the access road will divert any surface runoff to the south and into the drainage lines and Molyhil Creek.

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.

4.6.2 *Groundwater Hydrology*

Some minor ground water inflows may be expected once mining takes place at depths greater than 30 m below the natural surface. Inflows are expected from geological structures exposed in the walls. Further work is planned by Thor to assess likely pit dewatering requirements.

A Groundwater Investigation for the Molyhil Project undertaken by Kevin Morgan & Associates is attached as Appendix 3.

4.6.3 *Groundwater Quality*

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 for waters of this high salinity, suggesting either poor release or ready reabsorption from, or into, the parent rock (Kevin Morgan & Associates, 2007).

The Molyhil region contains sparse distribution of stock bores, the closest being Gap Bore which 7 kilometres to the northeast of the mine (7483463N/0583655E) near a confluence of a tributary of Ooraba Creek where it crosses Cambrian dolomite. This bore has a salinity of approximately 2000mgL^{-1} TDS. It is equipped with a four metre windmill and is located approximately 30 metres from an abandoned steel cased bore.

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 metres northwest from the pit. These bores have been drilled to intersect a prominent west-northwest ridge of pelitic and arenite sediments of the Grant Bluff Formation. In addition fourteen holes were drilled, six to ten kilometers from the mine, to locate the principal process water source (Figure 13).

Samples from four drillholes that were identified during testing as potential production bores were submitted for analysis. A summary of the results is shown in Table 9.

The waters are low in chloride relative to the ratio of chloride in sea water suggesting addition of other ions. This conclusion is further suggested from the calcium plus magnesium ratio which is much higher than sea water and shows that these ions have been added by dissolution of carbonate rocks. Sulphates are also much higher than in sea water, apart from indicating maturing arid conditions, this amount of sulphide is almost certainly the result of sulphide oxidation. The sulphide source is unknown and requires investigation. 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.

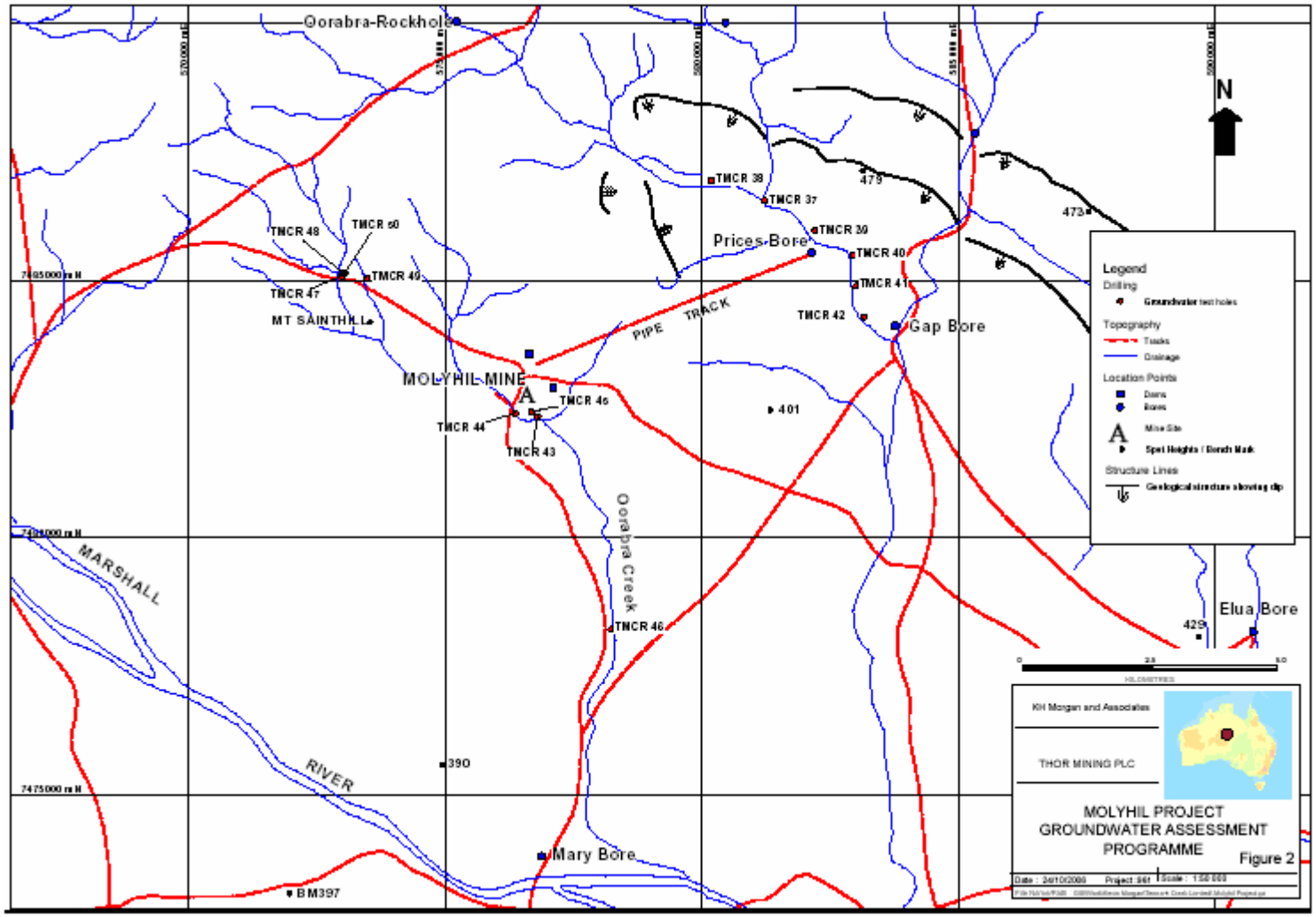

Figure 13 - Location of bores drilled for groundwater assessment

Table 9 - Groundwater analysis of water supply source

Chemical component 12.10.2006	LOR	TMRC39	TMRC40	TMRC41	TMRC42
Analyte grouping/analyte	Client Sample ID (Secondary):				
EA005P: pH by PC Titrator					
pH value (pH Unit)	0.01	8.1	7.99	7.75	7.84
EA015: TDS					
TDS @ 180°C	1	340	550	1460	1970
ED037P: alkalinity by PC Titrator					
Hydroxide alkalinity as $CaC0_3$	1	<1	<1	<1	<1
Carbonate alkalinity as $CaC0_3$	1	<1	<1	<1	<1
Bicarbonate alkalinity as $CaC0_3$	1	255	307	318	384
Total alkalinity as $CaC0_3$	1	255	307	318	384
ED040F: Dissolved major anions					
Sulphate as SO_4 2-	1	15	61	360	548
Sulphur as S	1	5	20	120	183
Silica	0.1	-	13.4	18.1	-
ED045G: Chloride discrete analyser					
Chloride	1	7.5	180	439	653
ED093F: Dissolved major cations					
Calcium	1	46	85	120	126
Magnesium	1	31	72	107	156
Sodium	1	15	65	254	414
Potassium	1	15	8	11	26
EG005T: Total metals by ICP-AES					
Iron	0.05	0.14	1.57	2.97	-
EG020F: Dissolved metals by ICP-MS					
Aluminium	0.01	<0.01	<0.01	<0.01	-
Antimony	0.001	0.003	0.008	0.021	-
Arsenic	0.001	<0.001	0.014	0.073	-
Beryllium	0.001	<0.001	<0.001	<0.001	-
Barium	0.001	0.226	0.117	0.078	-
Cadmium	0.0001	<0.0001	<0.0001	<0.0001	-
Chromium	0.001	<0.001	<0.001	<0.001	-
Copper	0.001	<0.001	<0.001	<0.001	-
Lead	0.001	<0.001	<0.001	<0.001	-
Manganese	0.001	0.037	0.22	0.112	-
Molybdenum	0.001	0.013	0.015	0.004	-
Selenium	0.01	<0.010	0.027	0.025	-
Silver	0.001	<0.001	<0.001	<0.001	-
Strontium	0.001	0.228	0.428	0.916	-
Tin	0.001	<0.001	<0.001	<0.001	-
Uranium	0.001	0.005	0.242	0.066	-
Zinc	0.005	0.01	0.012	0.024	-
Boron	0.05	0.13	0.16	0.24	-
Bromine	0.1	<0.1	0.9	1.4	-
Tungsten	0.001	0.063	<0.001	<0.001	-

Analysis expressed as mg/L except where shown

Chemical component 12.10.2006	LOR	TMRC39	TMRC40	TMRC41	TMRC42
Analyte grouping/analyte	Client Sample ID (Secondary):				
EG035F: Dissolved mercury by FIMS					
Mercury	0.0001	<0.0001	<0.0001	<0.0001	-
EK040P: Fluoride by PC Titrator					
Fluoride	0.1	1.4	1	1	-
EK057G: Nitrate as N by discrete analyser					
Nitrate as N	0.01	<0.010	<0.010	<0.010	-
EK058G: Nitrate as N by discrete analyser					
Nitrate as N	0.01	0.01	0.07	0.01	-
EK059G: NOX as N by discrete analyser					
Nitrite + Nitrate as N	0.01	0.01	0.07	0.01	-
EK067G: Total phosphorous as P by discrete analyser					
Total Phosphorous as P	0.01	<0.01	0.05	0.15	-
EN055: Ionic balance					
Total anions (meq/L)	0.01	5.61	12.5	26.2	37.5
Total cations (meq/L)	0.01	5.89	13.2	26.2	37.7
Ionic balance(%)	0.01	2.44	2.96	0.16	0.27

Analysis expressed as mg/L except where shown

4.7 VEGETATION AND FLORA

Low Ecological Services Pty Ltd undertook environmental surveys in 2004 and 2006-2007 to record baseline flora data for the Molyhil Project. A copy of their report is attached as Landscape, Flora and Fauna assessment undertaken by Low Ecological Services Pty Ltd for the project is attached as Appendix 4.

4.7.1 *Vegetation*

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 (Moon et al, 2007).

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.

4.7.2 *Flora*

The flora surveys undertaken at the project recorded a total of 95 flora species.

The dominant species within the Dinkum and Jinka LS were dominated by Georgina Gidgee (*Acacia georginae*) and Ironwood (*A. estrophiolata*) in the overstorey, *Senna* and *Acacia* shrubs, and heavily grazed Buffel Grass (*Cenchrus ciliaris*), *Calotis hispidula* and *Fimbristylis dichotoma* in the ground layer.

Riparian zones were dominated by Red River Gums (*Eucalyptus camaldulensis*) in the overstorey, a tall shrub layer of Mimosa Bush (*A. farnesiana*), and a ground layer of Buffel Grass and *Zygochloa paradoxa*.

Vegetation within the Borefields was dominated by Spinifex (*Triodia basedowii* and *T.*

pungens) on skeletal soils (such as rocky slopes or calcrete outcrops on flat plains), River Red Gums in creeks and open woodlands of Ironwood in the alluvial plains.

Grass cover on the floodplains and alluvial fans were dominated by heavily grazed native Woolybutt (*Eragrostis eriopoda*) and Buffel grass (Moon et al, 2007).

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 and Wildlife web site).

4.7.3 *Weeds and Plant Disease*

Currently, Buffel Grass is the main introduced species throughout the area and region. Control of this widespread exotic species is not viable.

An abundance of Ruby Dock at Molyhil Mine was observed by Mines and Energy in June 2006. This "outbreak" was a resultant climax population from significant rainfall in preceding months (36.2mm in March and 28.4mm in April recorded at Jervois Station). Although these populations were not observed during the August 2006 and December/January 2006/7 surveys they probably persist and will reappear following suitable late-summer rainfall (Moon et al., 2007).

4.8 FAUNA

Low Ecological Services Pty Ltd undertook environmental surveys in 2004 and 2006-2007 to record baseline fauna data for the Molyhil Project. A copy of the report is attached as Appendix 4.

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.

A total of 84 species were recorded during the 2004 and 2006-2007 fauna surveys undertaken at the project (Moon et al., 2007). This included: 16 mammals (three were feral animals), 20 reptiles and 48 bird species. An additional seven species of bat were also recorded.

No threatened species listed under the TPWC ACT or the NT Fauna Atlas records were recorded during the surveys or have been recorded from literature searches (Moon et al., 2007).

One threatened species listed under the EPBC Act 1999, Rainbow Bee Eater (*Merops ornatus*) was recorded during the survey.

Two additional species listed under the EPBC Act (1999) could potentially occur 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.

No evidence of current occupation of either of these species was recorded during the surveys.

4.9 ABORIGINAL HERITAGE

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. These locations were

marked with coloured tape for ease of identification of sites. The mining infrastructure plan presented was agreed upon by the traditional owners with some minor road adjustments.

Traditional Owners require and have requested a change in the main access route to the mine/village site to avoid the sacred site at Molyhil (Plate 9). The site of significance (Molyhil) has been fenced at the request of the traditional owners.

The Traditional Owners have also requested a minor variation (of a few metres) to avoid some significant trees at the creek crossing near the village on the new main access road.

Similarly, the route of the main access has been amended to avoid the buildings and the soak at Jinka homestead.

The Traditional Owners have requested that all the Gidgee trees removed from the southern waste rock dump be stockpiled and made available to the Owners for traditional uses. Thor will make these trees available.

No other sites have been identified in the project area or along the access road.

A Triparitite Deed exists between Molyhil Mining Pty Ltd (Thor), 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 (Figure 14). Aside from Molyhil, there do not appear to be any aboriginal sacred sites in the project area.

A search of the Australian Heritage database was undertaken for the project with the co-ordinates -22°40'—22°50' and 135°40'— 135°50'. No sites were identified within the search area. The Dulcie Range, listed as an indicative place on the Register of National Estate, is located northeast of the project area and will not be impacted by the project (purple area in Figure 13).

4.10 EUROPEAN HERITAGE

Several pieces of old equipment have been left on site which may be viewed as historic artefacts of previous mining activity (Moon et al., 2007). These are located outside of the area to be impacted by the project and thus will not be impacted.

Plate 9 - Molyhil site of significance has been fenced to protect the site from unnecessary access.

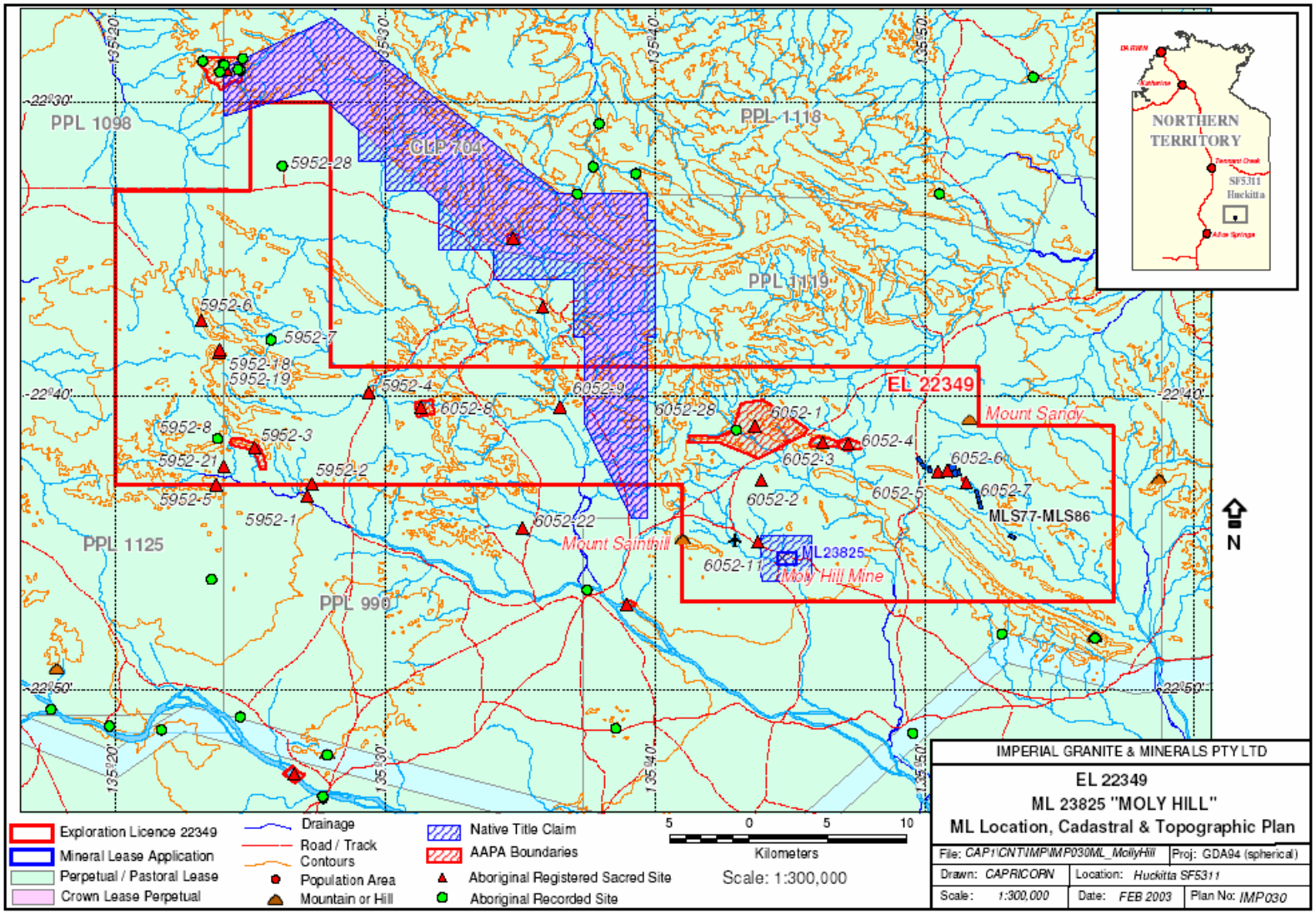

Figure 14 - Recorded aboriginal sites within and in the vicinity of the Molyhil project

5.0 ENVIRONMENTAL MANAGEMENT

5.1 ENVIRONMENTAL MANAGEMENT PLAN

Environmental management procedures will be documented in the Environmental Management Plan (EMP). A draft operational EMP is attached to the PER as Appendix 5. The draft EMP covers all mining and processing practices associated with Thor's operations and will be reviewed and updated biennially. The draft EMP contains a range of Management Plans.

Thor has documented policies authorised by the Chief Executive Officer, and these policies commits the Company to:

- Protect and manage the environment in a responsible manner during the currency of the Molyhil Operation
- Meet all regulatory and legislative requirements;
- Meet and develop the requirements of interested parties;
- Seek continual improvement in environmental performance;
- Recognise conservation and heritage values;
- Maintain a good working relationship with Indigenous people;
- Establish and maintain a safe and healthy work environment for all employees without compromising employee job safety.

Copies of the following Thor policies are attached as Appendix 6:

- Thor Corporate Environmental Policy;
- Molyhil Site Environmental Policy;
- Indigenous People's Policy;
- Occupational Health & Safety Policy.

5.2 LAND CLEARING

Aim

The aim is to minimise disturbance to, and encourage regrowth of, vegetation.

Potential Impact

Disturbance to ground surface can initiate land degradation if control mechanisms are not implemented.

Impact Assessment & Management

Clearing for the Molyhil project is of 74.85 ha of native vegetation (Table 10).

Table 10 - Disturbance area at Molyhil Project

DISTURBANCE	AREA (ha)
Pit	9.6
Waste dump	22.0
TSF	20.0
Access road	7.5
Camp	1.0
Admin/offices/workshops	6.25
ROM	5.0
Pipeline	3.5
TOTAL	**74.85**

Clearing of vegetation for the Molyhil Project will be guided by the following principles:

- 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;
- 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;
- Induction of employees to ensure disturbance is confined to areas identified clearly in the field;
- 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.

A Vegetation Clearing Management Plan has been developed by Thor and is attached as Appendix 7.

5.3 SOIL AND LAND SYSTEMS

Aim

Minimise disturbance to soil, minimise wind and water erosion and conserve soil for future rehabilitation works.

Potential Impact

Compaction of soils due to heavy machinery and vehicles.

Increased erosion.

Contamination of soils by hydrocarbons or other chemicals.

Disturbance to restricted land systems.

Impact Assessment & Management

All land systems within the mine lease are represented elsewhere on the Jervois station and in southern NT. The conservation value, area covered by these land systems, extent they were reserved elsewhere was assessed by Low & Strong (1985), They concluded that the land systems present on Jervois station were a low priority for reservation (with the exception of Dulcie Range area in the north of Jinka).

The land systems are widely represented outside of the project area.

As mentioned in the previous section, all areas of proposed infrastructure will have the top 300mm of topsoil removed and stockpiled for use in later rehabilitation works. These topsoil stockpiles will not exceed two metres to ensure viability of the topsoil.

During rehabilitation works at the completion of the project, all disturbed areas will be ripped to reduce soil compaction and encourage establishment of vegetation.

All rehabilitated landforms have been designed and will be controlled to minimise erosion.

5.4 VEGETATION AND FLORA

5.4.1 *Vegetation*

Aim

To avoid or minimise impacts to areas of significant vegetation. Maintain the abundance, species diversity, geographic distribution and productivity of vegetation communities.

Potential Impact

Disturbance to threatened ecological communities (TEC) (none are located at the Molyhil Project).

Impact Assessment & Management

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. In general, dominant species for the area are wide spread and their persistence is not dependent on the Molyhil area.

Although the flora and vegetation of the Molyhil site are not unique locally, regionally or nationally, every effort will be made to reduce and control the area of disturbance (and thus the cleared area). Larger trees and shrubs will be retained whenever possible. Only flora found in the local area will be used in rehabilitation programs.

5.4.2 *Native Flora*

Aim

No impact on the conservation significance flora. Protect Declared Rare flora (DRF) listed on N.T. list of threatened species.

Potential Impact

Removal of DRF species.

Impact Assessment & Management

No DRF or species listed on the N.T. list of threatened species were recorded during the flora survey of the project area.

5.4.3 *Weed Species*

Aim

Prevent introduction and spread of weed species.

Potential Impact

Introduction of weed species as a result of clearing activities as well as machinery and vehicle movements. Spread of weed species through soil and vehicle movements, in particular, *Emex australis*.

Impact Assessment & Management

Buffel Grass and to a lesser extent Ruby Dock are the main introduced species throughout the area. Disturbed areas are highly susceptible to weed invasion and Thor will implement management measures to ensure that the development of the Molyhil Project does not lead to weed establishment. These management measures are documented in the Weed Management Plan and include:

- Conduct inspections during construction and operation to identify potential weed establishment;
- Thor will train their personnel in the identification of the main weeds that could potentially occur in the area;
- In the event that a particular weed species infestation is identified, targeted management measures will be developed and implemented in consultation with the Department of Natural Resources, Environment and the Arts (DNRETA);
- Application of hygiene measures such as vehicle blowdown prior to accessing project;
- Liaison with DNRETA regarding weed control activities; and
- Ensure seed collected for use in rehabilitation is free of weeds.

The Weed Management Plan is attached as Appendix 8.

5.5 FAUNA

Aim

To protect all fauna species.

Potential Impact

Loss of fauna species of conservation significance.

Loss of fauna habitat.

Road kill.

Impact Assessment & Management

The mine lease is situated upon land that has been previously disturbed by mining activities which may have influenced the diversity and abundance of species recorded during the survey. The presence of the House Mouse is indicative of previous disturbance to native animal communities. However, remaining native animal populations appear to be

recolonising previously disturbed areas. Reptiles especially seemed adapted to the modified mine site environment with Long-nosed dragons (*Amphibolurus longirostris*) and Geckoes (*Gehyra variegata*) found in cast iron pipes and in an old septic tank (Moon et al., 2007).

The fauna species recorded during the survey have a widespread distribution and their continued persistence is not dependent on the Molyhil lease area (Moon et al., 2007).

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 (Moon et al., 2007). It is commonly found in Central Australia during the warmer months of the year and commonly nests in burrows built into the banks of creeklines means it is often found in riparian woodlands (such as River Red Gum forests) and is not uncommon in towns and communities (Moon et al., 2007). 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).

Two other species listed under the EPBC Act (1999), Mulgara and Black-footed Rock Wallaby, could potentially occur in the project area. Although evidence was found of prior occupation of the Black-footed Rock Wallaby within the mine lease area, there was no evidence of current activity or an existing population recorded during the fauna surveys.

Mulgara are known to occur in Spinifex dominated sand plains and dune fields as well as lateritic plains of which the closest were on the haul road in the Singleton land system approximately 12 km away from Molyhil (Moon et al., 2007). There is no record of the Black-footed Rock Wallaby or Mulgara in the surrounding Jervois Station (Low and Strong 1985) and it is unlikely that these species are present within the mine lease or close surrounds (Moon et al., 2007).

Development of the proposed camp site will require clearance of predominately undisturbed habitat that supports higher fauna species diversity than found at disturbed sites, however as clearing for the camp site is limited to 1.0 ha, Thor does not believe there will be a significant impact to fauna species. Previous development within the Borefields does not pose concern to existing wildlife as development is contained and has resulted in minimal disturbance to habitat (Moon et al., 2007).

To minimise the impacts on fauna present in the project area:

- existing cleared areas will be utilised for the mine, associated infrastructure and transport corridors as much as possible;
- all bore holes being utilised will be securely capped to ensure that fauna do not become trapped,
- old, unused bore holes will be permanently plugged below ground level,
- animal egress means will be provided in all dams/ponds;
- all personnel will be prohibited from bringing pets, firearms, or traps into the camp or project area.

Thor will fence off the site to prevent cattle from the pastoral lease entering the project site and posing a hazard to themselves and mine vehicles.

The rehabilitation program for the site will include fauna habitat reconstruction, including the replacement of dead timber, creation of rock piles and litter establishment.

The landfill will be covered regularly to prevent encouragement of feral animals and vermin. If sightings of feral animals indicated an increase in population numbers, Thor will conduct humane trapping of feral animals in liaison with DNRETA.

During the site induction all employees and contractors will be advised to report all feral animal sightings to the OHS&E Manager and feeding or sheltering of animals will be prohibited.

Potential impacts on fauna from the TSF are discussed in Section 5.11.3.

5.6 WASTE ROCK DUMP POTENTIAL FOR ACID MINE ROCK DRAINAGE

Aim

Prevent contamination to surrounding environment resulting from PAF waste rock.

Potential Impact

Acid development of soils.

Contamination of surface water or groundwater.

Impact Assessment & Management

Waste rock with sulphur levels in excess of 0.5% may have the potential to generate acid rock drainage (ARD) if exposed to oxygen and water. It is anticipated that sulphidic waste rock will not be generated by the proposed mining operation. Only small traces of sulphides have been identified in waste rock.

If PAF rock is identified during mining activities, it will be encapsulated in the waste dump.

It is possible that the existing, small waste rock dump may be retreated through the proposed processing plant. If this is the case, any potential sulphidic waste will be identified and either relocated or treated through the plant. If the existing waste dump is not retreated, then a watching brief will be maintained on the waste rock dump to identify any acidic seepages that may be generated from the dump.

5.7 GROUNDWATER

Aim

Maintain or improve the quality of groundwater to ensure that existing and potential uses, including ecosystem maintenance are protected.

Potential Impact

Lowering of localised groundwater levels.

There are potential impacts to groundwater quality resulting from mining activity relating to migration of pollutants from the surface into the groundwater system through infiltration

Impact Assessment & Management

Preliminary assessment of mine water abstraction indicates that the aquifer will not be depleted or impacted by the program. Some ground water flows may be expected once mining takes place at depths of greater than 30m below surface. Inflows are expected from geological structures exposed in the walls.

Further testing and review will be undertaken by Thor.

The small scale of the project and short mine life involves minimal quantities of groundwater abstraction and groundwater levels are expected to recover within a short period following mining.

5.8 BOREFIELD & PIPELINE

Aim

Maintain the quality of groundwater to ensure that existing and potential uses, including ecosystem maintenance are protected.

Potential Impact

Lowering of localised groundwater levels.

Deterioration of local groundwater quality.

Impact Assessment & Management

The borefield, located to the northeast of the plant, and associated pipeline will provide both potable and process water for the project.

The pipeline will be constructed in a v-trench, which allows fauna egress.

Flow meters will be fitted to production bores to enable monitoring of groundwater abstraction. Standing water levels will be recorded monthly for the duration of the project.

The water pipeline will be fitted with telemetry and flow meter systems to ensure their integrity.

The water is of potable quality and in the event of a spill, there is expected to be minimal impact to the surrounding vegetation.

5.9 SURFACE WATER DRAINAGE

Aim

Maintain integrity of stream flows, water flows and water quality to protect riparian ecological systems.

Potential Impact

Diversion of surface water flow causing increased sediment loads to downstream environments.

Reduction in surface water volume to ephemeral creeks.

Contamination of surface water.

Flooding.

Impact Assessment & Management

A diversion bund 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. Part of this bund may double as the abandonment bund at pit closure.

Following heavy rainfall the diversion bund will be monitored to ensure its integrity and potential erosion. There will be regular maintenance of the diversion channel during operations.

Open drains and pipe/culvert systems will control localised surface runoff around project infrastructure. All rainfall runoff falling on the plant structures will be collected and retained in bunds and pumped into the process system by sump (spindle) pumps.

All hydrocarbons and chemicals (Section 5.13) will be stored in adequately bunded facilities that minimise potential for contamination of surface water.

All mobile equipment and light vehicle servicing activities including wash down bays will be

done on impermeable surfaces. A washdown facility will be constructed with collection sumps. Any hydrocarbons and chemicals collected will be pumped into suitable containers for collection and sent of site to Alice Springs for disposal.

5.10 ACCESS ROAD – CREEK CROSSINGS

Aim

Access across the Plenty and Marshall Rivers will have no adverse impacts on the flow, sediment load and characteristics of the rivers.

Potential Impact

Increased sediment loads to downstream environments.

Impeding flows.

Contamination of surface water.

Flooding.

Impact Assessment & Management

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

As described in Section 2.6.8, running surface of the access road across these rivers will be sheeted with road base material that will be placed at the level of the river bed to avoid silting.

Thor has chosen to undertake ongoing maintenance of the creek crossings following heavy rainfall and flows, thus reducing impacts to the rivers with no impediments to surface flow or diversions that can result in erosion and silting.

The creek crossings are not expected to have any adverse impacts on the flow conditions of the Marshall and Plenty Rivers.

5.11 TSF

Aim

The construction and operation of TSF to have no adverse impacts on the surrounding environment.

Impacts

Contamination of groundwater from leaks in TSF pipelines or structure.

Impact Assessment & Management

5.11.1 *Operations*

During the early stages of operation of the TSF, tailings deposition will be managed to obtain early control of the released supernatant water, collect it into a single pond and move the pond towards the decant location. The pond will be maintained at the decant at a depth of 0.5m to allow the recovery of clear water. Water on the TSF will be pumped from the decant to the plant process water pond for recycling to the plant. 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.

The principle objective in pond management will be to minimise the quantity of water held on the TSF at any one time. The area of pond should not exceed 15% of the storage area under normal conditions. However, a 15% area exceedance is likely to occur following major storm events. Under these circumstances, the water on the TSF will be drawn down as soon as practicable by reducing make-up water drawn from the borefield.

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 falling in the catchment of the TSF itself.

A sediment collection trench/sump will be constructed around the outer wall to collect any runoff. This trench will also intercept potential seepage. If evidence of seepage is identified, Thor will consider installing abstraction bores to reduce the groundwater levels and reduce potential for contamination. A keyway will be excavated down into the compact weathered bedrock zone beneath the perimeter embankment of the TSF and will be backfilled with compacted low permeability material to reduce the potential for seepage movement at the base of the TSF embankment.

A sediment collection trench will be excavated at the toe to retain material washed off the outer embankment slopes.

A Fault mode and effect analysis was undertaken by Golder Associates to determine the risk of potential failure mechanisms (Table 11). Golder concluded that the risk of a dam break and subsequent release of tailings is therefore considered to be low and more detailed assessment of the potential for a flow failure was not considered to be required.

Table 11 - Failure mechanisms considered in Fault mode and Effect Analysis on TSF

Failure Mechanism	Likelihood of Occurrence	Potential to Result in a Flow Failure	Product
Overtopping of an external embankment	2	1	2
Slope failure of the external embankment	1	1	1
Piping erosion failure through external embankment	1	1	1
Progressive sloughing due to seepage	1	1	1
Erosion of the embankment due to pipe breakage	2	1	2

Regular monitoring of the monitoring bores located around the perimeter of the TSF will detect any impacts to groundwater. Monitoring to be undertaken of the TSF is described in Section 7.4.

The tailings pipeline will be contained within a v-trench to contain potential pipeline spills.

5.11.2 *TSF Tailings*

Based on the testwork outlined in Campbell (2007), geochemical implications for management of the process tailings streams are outlined below and the sections in italics are as reported in the reference.

5.11.2.1 General Plant Tailings and Pyrite Concentrate

Due to insufficient calcite in the general plant tailings, there would seem limited geochemical benefit to be gained by generating a combined tailings stream since this stream is classified as PAF [long lag].

Production of a combined tailings stream means that infiltration control via a store and release cover system would need to be effected over a maximum surface area compared with the area required for the pyrite concentrate alone and this has economic implications.

As the indications are that the general plant tailings solids should be hospitable to plant growth, a final cover for the general plant tailings section of the TSF at closure should only need to comprise a thin veneer of topsoil mixed with gravely/cobbly regoliths and/or benign waste rock for both erosion control and to prevent dust generation.

Engineering and agronomic advice will be obtained to assess the cover design options.

A dedicated (separate) facility to contain the pyrite concentrate will be constructed on the northern side of and attached to the TSF. This structure will be lined with plastic and will be designed to minimise the overall height of the structure to control runoff (and prevent scouring of the cover material) and not overload the store and release cover needed for this PAF [short lag] material. It is believed that the cover will need to be in excess of 1 m in depth.

5.11.2.2 Magnetite Concentrate

The by-product magnetite concentrate will be handled as a slurry and co-disposed with the general plant tailings. This material does not have any adverse implications for management of the general tailings. In fact, the concentrate is so benign that it could be used as a basal layer on the tailings surface if it was available as a solid, rather than as a slurry.

To confirm both of these estimations, kinetic testwork (weathering columns) is required to refine these estimations. This work will be undertaken when tailings from the operating plant become available.

5.11.3 *Fauna*

TSF often encourage fauna, particularly birds, to site.

Several Waterbirds recorded during the fauna survey (White-faced Herron, Australasian Grebe and Banded Lapwing) could potentially be attracted to the TSF.

As described in Section 5.11.1, the principle objective in pond management will be to minimise the quantity of water held on the TSF at any one time. Thor has committed to the areas of the pond not exceeding 15% of the storage area and this will reduce visitation of bird species and their exposure to toxicity. In storm events, the water on the TSF will be drawn down as soon as practicable by reducing make-up water drawn from the borefield to reduce the level.

To discourage fauna from the TSF Thor will, in line with “Best Practice Guidelines – Reducing Impacts of TSF on Avian Wildlife in the Northern Territory”:

- Avoid the formation of shallow beach habitats;
- Avoid construction of the TSF with an uneven floor so that islands (favoured roosting sites) do not form as tailings are deposited;
- Remove carcasses so as not to attract raptors or carnivores;
- Where use of the TSF by birds is observed, Thor will have regular patrols of the TSF by staff with bird deterrants (bird frite ammunition). Given the size of the TSF this is a practical measure;
- Be aware of high risk periods during migratory seasons and dry periods;

- Remove all nearby roosting trees to the TSF.

Thor will compile an identikit of susceptible bird species (particularly those recorded at site) and will display and distribute to all personnel who undertake daily monitoring of the TSF. Thor will undertake this monitoring in the morning.

Thor will have a 'Wildlife Mortality Sheet' to record mortalities and visitation.

5.12 INDUSTRIAL AND DOMESTIC WASTE

Aim

To develop waste reduction and re-use of resources to protect the environment.

Potential Impact

Contamination of soil and groundwater.

Introduction of feral animals.

Various wastes will be generated by the project. These include:

- General domestic and office refuse
- Industrial wastes
- Hydrocarbon wastes
- Sewage effluent.

Impact Assessment & Management

The principal objective of waste management for the Molyhil Project is to minimise the impacts on air, water, and land resources, as well as on the local community, and to manage waste in a manner that avoids any direct or indirect impacts on the health of people working at the mine.

The landfill, which will be located in the waste dump footprint, will contain only inert and putrescible waste materials and will be designed and operated in accordance with the applicable regulations.

The principle procedures for management of the landfill will include:

- Regular covering of refuse (a minimum of once per week and more often during summer) for putrescible waste materials;
- No burning of refuse at any time;
- No disposal of hydrocarbons or hydrocarbon contaminated materials;
- No disposal of hazardous goods.

Thor will reuse and recycle construction materials, scrap metals, equipment and tyres to minimise disposal into the landfill.

All industrial wastes that cannot be recycled will be disposed of at a designated and fenced landfill site. In accordance with the Mining Management Plan (MMP) all waste will be placed within a defined trench or within an area enclosed by earth bunds.

The Sewage Treatment Plant (SWTP) process is a natural biological process and requires no chemicals other than chlorine to treated effluent. The system is controlled by a PLC which provides reliable control of the various stages of the treatment process. Odour emissions from the SWTP system are low due to aerobic treatment process. All tanks are sealed. SWTP will be regularly monitored to ensure its operating effectively.

5.13 DANGEROUS GOODS AND HAZARDOUS SUBSTANCES

Aim

Minimise the potential for hazardous goods used on the project to have an effect on the environment.

To prevent disposal/discharge of any hydrocarbon or chemicals to the environment.

Potential Impact

There is the potential for incorrect storage of dangerous and hazardous substances to result in the contamination of soil, surface water, groundwater and death of vegetation and fauna.

Impact Assessment & Management

All 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: *"The storage and handling of flammable and combustible liquids"* and AS1692: "Tanks for flammable and combustible liquids".

Spill containment kits will be provided at the workshops and areas where chemicals and hydrocarbons are stored.

All hazardous and dangerous goods and materials will be transported by road and will be used and stored in accordance with the relevant statutory requirements.

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.

Appropriate storage and handling measures in accordance with industry standards and practices will reduce the potential for adverse impacts that present a hazard or cause environmental harm.

In the unlikely event of an accidental spillage, the spillage will be mitigated by the Molyhil safety and emergency services. The spill will be contained as much as possible by the use of earthen bunds. All surface oil will be collected and recycled. The contaminated soil will be removed, collected and removed.

Spill response equipment will be stored in all workshops and on maintenance/service vehicles. If an inadvertent spillage of hydrocarbon occurs, the spill will be contained as much as possible by the use of the spill response equipment. In the event of a large spill, earthmoving equipment will construct earthen bunds to contain the spill.

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. A bulk tank will be used to collect waste oil and removed from site.

Oil-filters will be thoroughly drained of oil before disposal into a bin which will then be removed and transported to Alice Springs for disposal.

5.14 GREENHOUSE GASES

Aim

Ensure that gaseous emissions do not adversely affect the environment or health, welfare and amenity of nearby land users.

Potential Impact

Mobile equipment emissions from engine exhausts.

Increased greenhouse gas emissions.

Decomposition of cleared vegetation and release of carbon from the soil.

Combustion of diesel fuel for mobile equipment.

Combustion of diesel fuel for power supply to the project.

Impact Assessment & Management

The annual carbon dioxide equivalent emissions for the project, based on diesel usage, have been estimated as 13,190 tonnes per annum (Table 12).

In addition land clearing, landfill (waste disposal) and camp activities contribute 1890 t of CO_2 equivalent (Table 13).

The calculation for the emissions has been derived from the Australian Greenhouse Office (AGO) 2005 workbook and confirmed by Greenbase Pty Ltd during preparation of reports for mining operations in 2007.

As part of the National Pollutant Inventory (NPI), quantities of air emissions will be estimated or measured and reported annually. This will include emissions from various activities on-site including blasting, processing, combustion, vehicle movements and wind erosion.

All vehicles and machinery will be regularly serviced to minimise the emissions of combustion gases.

Only 9.6 ha for the open pit will remain permanently disturbed at completion of the project. Following revegetation of these areas, carbon sequestration over time will offset the net production of $CO_{2\text{-}e}$ for clearing activities.

All employees will be encouraged on energy efficient practices that can be used in their daily activities and the site induction will include a section on this issue.

Given that the projects remoteness, it is not anticipated that green house gases produced from the project will impact on local or regional air quality. The short mine life of the project ensure that these emissions will be minimal on a regional and state basis.

Table 12 - Estimated greenhouse gas emissions for the Molyhil Project

	Make	Model	Qty	Fuel consumption (L/hr)	Annual utilisation	Annual consumption diesel (t)	CO_{2-e} produced (t) Per annum
Power generation	Cummings	KTA50G3	3	180	8050	3,634	9791.3
	Cummings	KT19	1	90	250	19	50.7
	Perkins		2	10	1000	17	45.0
Mining	777D	Cat	3	65	3600	587	1581.2
	D10	Cat	1	70	1800	105	283.8
	14H	Cat	1	40	1800	60	162.2
	WT	Ford	1	15	1500	19	50.7
	966G	Cat	1	40	2500	84	225.2
	EX1200	Komatsu	1	90	3600	271	729.8
Process	Cat	938G	1	25	1400	29	78.8
	Franna	15t	1	20	1400	23	63.1
		Skid Steer	1	10	1400	12	31.5
		Fork Lift	1	5	1400	6	15.8
Light Vehicles	Toyota	Landcruiser	10	3000 L per annum		25	67.6
	Toyota	Hilux	2	3000 L per annum		5	13.5
						TOTAL	**13190.2**

Table 13 - Greenhouse gas emissions for the Molyhil Project

Source	Unit	Qty	CO_{2-e} per unit (t)	CO_{2-e} produced (t)
Land clearing (ha)	Ha	74.68	22	1643.0
Waste	t	50	0.9 - 2.5	85.0
Refridge/aricon (mobile)	kg/unit	25	0.2	5.0
Refridge/aircon (fixed)	kg/unit	65	0.039	2.5
Wastewater	person	40	0.03	1.2
Explosives	t	900	0.17	153.0
			TOTAL	**1889.7**

5.15 DUST

Aim

Ensure that dust does not adversely affect the environment or health, welfare and amenity of nearby land users.

Potential Impact

Generation of dust from mining operations, vehicle movement and during ore transport.

Impact Assessment & Management

Dust generated during the construction and operations phases will be mitigated by regular water sprays from water truck(s). Water trucks using dribble bars will be utilised on site roads to control dust on an as required basis.

All vehicles will be limited to designated access tracks where dust control measures can be used.

Fine mist sprays will be installed at the crusher and screens to reduce dust.

At the completion of mine operation, the site will be rehabilitated to prevent dust generation.

5.16 NOISE

Aim

Ensure that noise generated by the project has no adverse impacts on local residents or communities.

Potential Impact

Excessive noise generated by mining and haulage activity.

Noise will be generated by mobile equipment and machinery, power generator and open pit blasting.

Impact Assessment & Management

Noise impacts are expected to be minimal due to the remote location of the project and absence of nearby residential facilities.

All plant and equipment has been designed to meet occupational health noise standards and meet environmental noise standards. All mining equipment will be fitted with the required noise attenuation equipment.

Hearing protection will be provided for all personnel.

5.17 TRANSPORT

Aim

Ensure that noise and dust levels meet acceptable standards and that an adequate level of service, safety and public amenity is maintained.

Potential Impact

Dust.

Road traffic noise.

Increased maintenance requirements of Plenty Highway.

Third party entry to mine.

Impact Assessment & Management

Signs will be erected at the turnoff to site off the Plenty Highway, advising that road trains are entering and leaving the site to travel on the Highway.

Licensed road vehicles will be used for haulage and standard axle loadings will be complied with.

Road train drivers will use radio communications to co-ordinate safe passing.

The project will not result in a significant increase in traffic as staff will be flown to site, thus reducing the commuting along the Plenty Highway.

Ore haulage and supply trucks will increase the traffic on the highway, which is used by tourists. Warning signs will keep the impact manageable.

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.

5.18 BITING INSECTS

Aim

Ensure the health and safety of the Molyhil workforce and minimise the impact of biting insects.

Potential Impact

Increase in adult mosquito populations (potentially to pest population sizes).

Transmission of mosquito carried diseases (i.e. malaria).

Production of additional mosquito breeding sites.

Impact Assessment & Management

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 highway will be regularly monitored to assess potential breeding sites and biting insect populations.

5.19 BUSHFIRES

Aim

Ensure the health and safety of the Molyhil workforce and ensure that the operations do not contribute to the frequency of bushfires at site.

Potential Impact

Increased frequency of fires.

Injury to personnel.

Damage to project infrastructure.

Impact Assessment & Management

Bushfires are a natural hazard throughout the arid regions, especially in summer when electrical storms may occur. The operations area will be protected from wildfire by the various bare areas that surround the minesite infrastructure. Where necessary, fire breaks will be constructed around the camp and the plant.

A Fire Management Plan is attached as Appendix 9. Management measures include:

- Fire extinguishing equipment (extinguishers and hoses) available throughout the project area and regular maintenance of this equipment
- Emergency drills will be conducted at a minimum of once every six months;
- Maintain firebreaks;
- Maintain an effective communication system, incorporating a 'call-out' system;
- A Mutual Aid Agreement shall be used in circumstances where the nature of an emergency, such as fire, is such that the resources immediately available may be insufficient to maintain an effective response;
- Maintain education of fire awareness.

5.20 PUBLIC HEALTH

Aim

Ensure the health and safety of the Molyhil workforce.

Potential Impact

Health issues in the workforce.

Impact Assessment & Management

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 National Health and Medical Research Council (NH&MRC) Australian Drinking Water Guidelines.

6.0 MANAGEMENT OF SOCIAL IMPACTS

6.1 COMMUNITY CONSULTATION

Thor has a policy of keeping nearby communities fully informed of their future activities, especially those which may have an impact on the environment.

To this end, Traditional Owners have been involved in the development of the plans for the site.

6.2 HERITAGE ISSUES

6.2.1 *Aboriginal Heritage*

Aim

No negative impacts on the socio economic environment.

Potential Impact

Damage to identified aboriginal sites.

Impact Assessment & Management

The mining infrastructure plan presented was agreed upon by the traditional owners with some minor road adjustments.

The Traditional Owners have requested that all the Gidgee trees being removed from the southern waste rock dump be stockpiled and made available to the Owners for traditional uses. Thor will make these trees available.

No other sites have been identified in the project area or along the access road. Prior to mining operations commencing, Thor will obtain an Authorisation Certificate from the AAPA. Thor will comply with all conditions on the certificate.

The CLC and DNRETA will notified immediately if sites of potential significance are discovered.

A Triparitite Deed exists between Molyhil Mining Pty Ltd (Thor), CLC and the Traditional owners that forms a mining agreement between all parties at the Molyhil Project.

The lessee will comply with the provisions of the Aboriginal Land Rights (Northern Territory) Act 1976 and the Northern Territory Aboriginal Sacred Sites Act.

Molyhil, the sacred aboriginal site has been fenced at the request of the traditional owners. No access to the site is available and all employees and staff will be advised of the importance of this site during the site induction. The induction will also include information on the importance of cultural environment and protection artefacts and archaeological sites and the correct procedures to follow if a potential aboriginal site is identified during mining activity.

6.2.2 *European Heritage*

There are no sites of European heritage located on the project tenements.

6.3 SOCIO ECONOMIC

Aim

The project to have no negative impacts on the socio economic environment.

Potential Impact

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.

Impact Assessment & Management

Priority will be placed on sourcing labour from the local area and then from within the national mining industry.

Thor intends 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.

7.0 MONITORING

7.1 CLIMATOLOGY

Official Bureau of Meteorology recording stations are located at Jervois. Climatic data from this station is considered to be comparable to that which would be recorded at the Molyhil project.

Daily rainfall for project purposes will be recorded at the site during the construction and operation phases.

7.2 AIR QUALITY

As part of the National Pollutant Inventory (NPI), quantities of air emissions will be estimated or measured and reported annually. This will include emissions from various activities on-site including blasting, processing, combustion, vehicle movements and wind erosion.

7.3 WATER QUALITY

Potable water sampling and analysis will be undertaken to ensure that the potable water is of a suitable standard for human consumption.

Water samples will be delivered to a NATA certified commercial testing laboratory and analysed.

Monitoring of groundwater related to extraction, process and potable consumption and around the TSF, will be undertaken as stipulated in the MMP.

7.4 TSF

A regular program of inspections and monitoring of the TSF will be carried out to measure TSF performance against design assumptions and environmental benchmarks.

Personnel will conduct routine daily inspections of the TSF embankments (signs of movement and/or seepage), decant pond (to ensure only clean water is being returned), tailings and return water pipelines during operation.

Monitoring of groundwater will be undertaken using monitoring bores located around the TSF. Monitoring bores will be sampled prior to commencement of operation of the TSF and then quarterly for water analysis during operation.

The monitoring procedures will include:

- Inspections each shift of tailings delivery lines, return water lines and tailings deposition when operating, pond formation on the TSF, internal embankment freeboard and external embankment slopes of the TSF;
- regular inspections of the TSF for fauna or flora mortality, signs of seepage, dusting, and erosion;
- regular monitoring of water levels in piezometer standpipes that may be installed in the TSF embankment;
- monitoring of supernatant water pond level and pond location; and
- measurement of water levels and water quality in the monitoring bores surrounding the TSF.

7.5 FLORA

Regular inspections will be made of the Molyhil site to ensure weed species do not establish on site.

7.6 FAUNA

Staff will monitor on a daily basis the use by fauna of the TSF and appropriate action taken (if safe) to remove trapped fauna.

Thor will compile an identikit of susceptible bird species (particularly those recorded at site) and will display and distribute to all personnel who undertake daily monitoring of the TSF. Thor will undertake this monitoring in the morning

Thor will have a 'Wildlife Mortality Sheet' to record mortalities and visitation observed.

7.7 DECOMMISSIONING AND CLOSURE

A 12 month rehabilitation plan and a life of mine decommissioning and closure plan are being developed and will be submitted as part of the MMP. The plan will include the EMP, integration of the requirements for rehabilitation, decommissioning and abandonment of the site during the project operations phase to reduce the work required and costs at site closure.

8.0 HAZARDS AND RISKS

A systematic identification and ranking of environmental aspects and risks had been undertaken as part of this PER and the EMP. The environmental risk assessment was undertaken in accordance with Australian / New Zealand Standard 4360:1999 Risk Management.

8.1 RISK ANALYSIS AND ISSUE PRIORITISATION

To maximise the return of investment in pro-active management of environmental issues, it is important that manpower and other resources are allocated on priority issues. It is normally accepted that the highest risk issues receive the highest priority.

The generally accepted measure of risk is the product of the likelihood of an event occurring and the consequence of the event. For example, an event that has a high likelihood and moderate consequence may be considered to have similar risk as an event that has a moderate or low likelihood and high consequence. The process, however, has a high degree of subjectivity.

The methodology used in the Molyhil risk assessment rated both likelihood and consequence on a scale of 1 to 5. These numbers were assessed in the matrix shown in Table 14 to provide an indicator to the degree of risk associated with the issue and relative priority of the issue. Historical data from similar operations based on experience was used to assess the likelihood of an environmental risk occurring (Table 15). The consequence of an environmental issue was assessed by determining the severity of the effect, the area/population to be affected, the permanence of effects and the capacity of the area to recover. The resulting consequence descriptions are presented in Table 16. Table 17 and Table 18 show the prioritisation matrix used in the risk assessment and the definitions of the risk levels respectively.

Table 19 is the risk assessment undertaken for the Molyhil Project.

Table 14 - Qualitative Risk Analysis Matrix

	CONSEQUENCE				
LIKELIHOOD	1	2	3	4	5
5	M	S	S	H	H
4	L	M	S	H	H
3	L	M	S	S	H
2	L	M	M	S	H
1	L	L	M	S	H

H = High Risk, S = Significant Risk, M = Moderate Risk, L = Low Risk

Table 15 - Qualitative Measures of Likelihood

LEVEL	DESCRIPTOR	DESCRIPTION
1	Rare	Environmental issue has not occurred in the past and there is a low probability that it may occur in exceptional circumstances.
2	Could Occur	Environmental issue may have occurred in the past and there is a moderate probability that it could occur at some time.
3	Should Occur	Environmental issue may have arisen in the past and there is a high probability that it should occur at some time.
4	Likely to Occur	Environmental issue has been a common problem in the past and there is a high probability that it will occur in most circumstances.
5	Will Occur	Environmental issue will occur, is currently a problem or is expected to occur in most circumstances.

Table 16 - Qualitative measures of Consequence

LEVEL	DESCRIPTOR	DESCRIPTION (and *example)*
1	No Impact	Technical breach of environmental requirements with no environmental effect. *Licence requiring a toe drain around TSF to receive any seepage. The drain is yet to be installed but there is no seepage.*
2	Minor	Minor non-recurrent issues. *Isolated incidences of pollution standards that are exceeded.*
3	Limited	Issues of a continuous nature but with limited environmental effect. *Groundwater pollution with limited biological damage and no contamination of a potentially usable groundwater resource.*
4	Significant	Issues of a significant nature (medium term impact). It also includes incidents that could politically, legally or economically affect Western Areas regardless of extent of environmental impact. *Groundwater pollution with potential serious biological damage and/or contamination of a potentially usable groundwater resource.*
5	Major	Major issues with potentially serious public health and/or environmental consequences. *Major hydrocarbon spill to a land area, major tailings wall failure with extensive surface and water pollution.*

Table 17 - Prioritisation of Risks

	CONSEQUENCE				
LIKELIHOOD	1	2	3	4	5
5	16	11	8	3	1
4	21	15	10	5	2
3	22	18	13	9	4
2	24	20	17	12	6
1	25	23	19	14	7

Table 18 - Risk Definitions (AS/NZ 4630:1999)

High	Immediate action required.
Significant	Senior management attention required.
Moderate	Management responsibility must be specified.
Low	Manage by routine procedures.

Table 19 - Risk Assessment for the Molyhil Project

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
CLEARING	Lack of awareness of requirement to stockpile available topsoil. Topsoil mixed with or contaminated by other soil materials or saline water.	Loss of topsoil. Insufficient topsoil available for rehabilitation.	2	3	17	M	Stockpiling of topsoil for rehabilitation.
	Removal of topsoil when too dry.	Production dust - Air Pollution (particulates).	2	3	17	M	Avoid topsoil stripping in very dry and windy conditions.
	Inappropriate stripping and storage of topsoil.	Damage to structure and viability of topsoil during stripping or storage.	2	3	17	M	Follow site procedure for topsoil management
	Hydrocarbon spills during topsoil stripping operation.	Soil contamination.	2	3	17	M	All vehicles and equipment will contain spill equipment. All hydrocarbon contaminated soils are collected and removed offsite.
	Location of topsoil and vegetation stockpiles near watercourses.	Loss of topsoil required for rehabilitation works.	2	3	17	M	Follow site procedure for topsoil management. All stockpiles will be located away from watercourses.
	Uncontrolled removal of vegetation.	Clearing of significant vegetation or habitat. Habitat destruction. Fauna loss. Vegetation loss.	2	3	17	M	The area to be cleared will be clearly marked prior to the commencement of clearing activities. Area of disturbance minimised where possible. Disturbance avoided, if possible, in areas of significance or with large habitat trees.
	Removal of rare flora	Increased conservation significance of the species. Reduced population numbers.	1	4	14	S	No rare flora has been identified.
	Clearing of restricted fauna habitat	Reduction in available fauna habitat. Fauna loss.	1	4	14	S	Significant fauna habitat has not been identified.
	Machinery infected with pathogens or weed seeds	Weed or pathogens spread in topsoil.	2	3	17	M	Follow weed management procedure (i.e. wash or blow down machinery

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
	used to clear topsoil.						prior to entry to site).
PIT DEVELOPMENT	During a significant rainfall event, surface runoff above pit could wash into the open pit.	Erosion of pit walls. Floodwaters and surface runoff entering pit operations.	2	3	17	M	Drainage diversion north of pit will be constructed to divert water away. Routine inspections of drainage diversion bunds, especially after significant rainfall.
	Combustion emissions from vehicles and equipment.	Combustion products from exhaust pipes. Air emissions.	5	1	16	M	Regular servicing of vehicles and equipment.
	Pit dewatering.	Reduction in groundwater levels and quality. Impact to aquifer.	1	3	19	M	Groundwater flows into pit are expected to be minimal. The small scale of the project and short mine life involves minimal quantities of groundwater abstraction and groundwater levels are expected to recover within a short period following mining.
PIPELINES	Water leak caused by a pipeline fracture or leaking valves.	Soil erosion. Land contamination. Vegetation loss/damage. Failure of dewatering pipelines	2	3	17	M	Trenched pipeline. Daily inspection of pipelines. Water is of good quality and will have minimal adverse impacts if a spill occurs.
TSF	Seepage.	Increase in groundwater table. Soil contamination Groundwater contamination.	1	4	14	S	A sediment collection trench/sump will be constructed around the outer wall to collect any runoff. This trench will also intercept potential seepage Network of monitoring bores around TSF to measure groundwater levels, quantity and quality.
	Embankment failure of the TSF	Soil contamination Groundwater contamination.	1	5	7	H	The TSF has been designed by Golder Associates and operation will be in accordance with their operation

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
							guidelines.
	Appropriate freeboard not maintained.	Overflow of TSF. Land contamination.	1	4	14	S	TSF has been designed to manage the expected throughputs and any rainfall events. Routine inspections of TSF. Final freeboard is 0.3m.
	Spillage of tailings during transfer to TSF.	Soil contamination Groundwater and surface water contamination.	2	3	17	M	Daily inspections of pipeline to detect failures. Pipelines contained within v-trench.
	Generation of acid rock drainage from TSF	ARD. Soil contamination Groundwater and surface water contamination.	1	4	14	S	Sufficient store and cover release will be constructed at completion of mining operations.
	Tailings facilities becoming fauna traps	Fauna death or injury.	2	3	17	M	Daily inspection of TSF by employees.
	Structural damage to TSF wall	Soil contamination Groundwater and surface water contamination.	1	4	14	S	Creek diversion will divert potential flood waters away from the TSF. Fault mode and effect analysis undertaken by Golder Associates. Golder concluded - that the risk of a dam break and subsequent release of tailings is considered to be low and more detailed assessment of the potential for a flow failure is not considered to be required.
CONCENTRATE LOADING & HAULAGE	Spill of concentrate.	Groundwater contamination. Land contamination.	2	4	12	S	Molybdenum and tungsten concentrate will be placed in one tonne (1) bulk bags for transport.
	Combustion emissions from vehicles and equipment.	Combustion products from exhaust pipes. Air emissions.	5	1	16	M	Regular servicing of vehicles and equipment.

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
	Dust produced by road traffic on unsealed roads.	Dust generation on ore haulage route (public unsealed road). Air Pollution (particulates). Public nuisance/traffic hazard.	3	2	18	M	Use of water trucks along haulage route.
	Dust produced from uncovered loads.	Air Pollution (particulates).	2	2	20	M	Concentrate stored in bags - covered load.
	Increased road train traffic on Plenty Highway.	Damage to road surface (public road). Public nuisance/ complaints	3	2	18	M	Three trucks every two weeks will be used for transport of concentrate, this is not considered a significant increase to traffic. Signs will be erected at the turnoff to site to advise of road trains entering.
	Road kill.	Fauna deaths on roads.	2	3	17	M	Staff educated to be alert for wildlife (especially at night).
WASTE DUMP	ARD generation of waste rock.	Groundwater contamination. Land contamination.	2	4	12	S	It is anticipated that sulphidic waste rock will not be generated by the proposed mining operation. Only small traces of sulphides have been identified in waste rock. If PAF rock is identified during mining activities, it will be encapsulated in the waste dump.
	Dust produced during dumping and loading of waste rock.	Dust generation from material handling (dumping/loading). Air Pollution (particulates).	4	3	10	S	Water cart will be used as required during stockpiling and removing operations.
	Erosion and inadequate drainage on and around the waste dump	Surface water runoff into surrounding vegetation Sediment deposition. Water ponding. Vegetation damage.	2	3	17	M	Creek diversion north of waste dump. Rehabilitation of waste dump.

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
WORKSHOP FACILITIES	Ruptured or damaged containers in workshop or fuel farm.	Hydrocarbon spillage (workshop)	2	3	17	M	Concrete bunds are located around bulk hydrocarbon storage tanks. Hardstand area surrounding refuelling areas. All hydrocarbons spilled in workshop areas will be cleaned up. Diesel storage tanks will be self bunded with double skinned walls to meet Australian Standards.
	Ruptured or damaged containers on vehicles. Vehicle rollover or other road accident.	Spillage of hydrocarbons during bulk transport to site. Contamination of soil, groundwater and surface water. Loss of resources.	2	4	12	S	Ensure that transport company has adequate spillage controls and inspection schedule. Emergency Management Plan addresses the actions required to deal with a road accident.
	Spillage while transferring, using or transporting hydrocarbons onsite.	Hydrocarbon spillage while onsite. Contamination of soil, groundwater and surface water. Loss of resources.	2	3	17	M	Fuel will be stored in compliance with the Australian Standards. Concrete bunded areas are located around all other bulk hydrocarbon storage tanks. All hydrocarbons spilled in workshop and other bunded areas at the workshop are collected and the area cleaned up.
	Clearing of vegetation leaving exposed land. Disturbance of surface soils.	Excessive dust from unsealed areas. Dust.	3	2	18	M	Water truck services both open areas and the workshop area
	Spillage during transfer from one container to another. Damaged containers or hoses.	Hazardous material spills. Contamination of soil, groundwater and surface water.	2	2	20	M	Solvent recycling facilities at all workshops. Spillages will be cleaned up and disposed of as per appropriate MSDS and any other relevant environmental and safety guidelines.
	Combustion emissions from vehicles and equipment.	Combustion products from exhaust pipes. Air emissions.	5	1	16	M	All vehicles and machinery will be serviced regularly and maintained.

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
EXPLOSIVE FACILITIES	Spillage whilst transporting and unloading. Ruptured tanks.	Spillage of ammonium nitrate emulsion (on and offsite). Contamination of soil, groundwater and surface water. Fire.	2	3	18	M	Has appropriate HAZCHEM information to clean up spills.
	Spillage whilst transporting and unloading. Ruptured or damaged containers.	Hydrocarbon spillage. Contamination of soil, groundwater and surface water.	2	3	15	M	Fuel will be stored in compliance with the Australian Standard.
WASTE MANAGEMENT	Disposal and frequency of waste collection	Odours, vermin and litter generated from putrescible wastes. Increase in feral animals and vermin. Unpleasant odour Leachate Windblown litter.	2	2	20	M	Putrescible wastes contained with the putrescible landfill at site. The landfill is covered regularly and operated in accordance with the EMP.
	Bins and storage areas not available or inaccessible. Procedures not known and understood.	Loss of resources. Land Contamination. Contaminants from some wastes entering soil, groundwater or surface water. Recyclable materials or hazardous goods disposed of in general waste	2	2	20	M	Batteries are stored temporarily in a bunded area and sent offsite for recycling. Tyres are returned to suppliers by contractors. Recycling scrap metal and other re-usable wastes.
	Inappropriate storage, handling and disposal of wastes.	Spillage of hydrocarbon wastes. Contamination of soil, groundwater and surface water.	2	2	20	M	Waste oil tanks utilised and bunded facilities provided for waste hydrocarbons in the processing plant and workshops. Removed off-site for recycling.
	Sewage treatment plant.	Generation of odour, noise.	2	2	20	M	System designed to produce low noise emissions with equipment within shed fitted with noise reduction equipment. Odour emissions are low due to aerobic treatment process. All tanks are sealed.

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
TRANSPORT	Crossing of Plenty and Marshall Rivers by vehicles.	Impacts to flow and increased erosion in these rivers.	2	4	12	S	Running surface for access road will be constructed at creekbed level to reduce potential for silting. Ongoing maintenance of river crossings over project life.
	Transport of staff and freight to site.	Increased traffic on Plenty Highway.	3	2	18	M	Transport to site for employees will be by air thus reducing traffic travelling to site. Concentrate trucks will backload freight and other goods to site to reduce traffic.
	Road kill.	Fauna deaths on roads.	2	3	17	M	Staff educated to be alert for wildlife (especially at night).
	Ruptured or damaged containers on vehicles. Vehicle rollover or other road accident.	Spillage of hydrocarbons during bulk transport to site. Contamination of soil, groundwater and surface water. Loss of resources.	2	4	12	S	Ensure that transport company has adequate spillage controls and inspection schedule. Emergency Management Plan will address the actions required to deal with a road accident.
REHABILITATION	Insufficient rainfall or heavy rainfall washing away seed and topsoil. Inappropriate species used.	Rehabilitated areas with minimal vegetation growth. .Air Pollution (particulates). Lack of rehabilitation. Visual impact (aesthetics). Erosion of landform.	2	3	17	M	Use local plant species which are suitable for revegetation. Ensure topsoil is handled and stored appropriately. Direct placement of topsoil wherever possible.
	Insufficient revegetation of slopes to help stabilise batter. Lack of stormwater diversion systems. Wind erosion. General surface instability. Lack of surface water (runoff) control.	Erosion of battered faces on waste rock dumps. Build up of sediment in stormwater drains and surface water systems. Air Pollution (particulates). Lack of rehabilitation. Visual impact.	2	3	17	M	Retention of stormwater on top of waste dump. Deep ripping to encourage rainfall infiltration. Development of native plant cover.

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
	Establishment of weeds.	Invasion and spread of weeds on rehabilitated structures and project area. Reduction on germination and growth of required native species.	3	3	13	S	Monitoring of weed establishment. Follow machinery hygiene guidelines to minimise weed spread. A Weed Management Plan has been developed.
GENERAL	Molyhil – aboriginal site	Unauthorised access. Impact on traditional owners.	1	4	14	S	Molyhil has been fenced off to prevent access to the sacred site. All Thor employees will be advised in the site induction that access to Molyhil is prohibited.
	Lightning strike. Sparks from grinding equipment. Uncontrolled fire on-site.	Bushfire. Vegetation damage. Infrastructure damage.	1	2	23	L	Firebreaks constructed and maintained. Staff education on fire prevention techniques (inductions). Fire Management Plan has been developed.
	Flooding.	Impacts to stability of waste dump and TSF. Safety risk for Thor staff.	2	4	12	S	Creek diversion will be constructed immediately north of the pit, waste dump and TSF to divert water away from these structures. Thor will regularly monitor the Bureau of Meteorology website during the wet season. Mining activity is to cease and personnel vacated from the pit and other exposed areas when heavy rain is threatening.
	Complaints regarding noise.	Excessive noise generation associated with the construction and operation Public nuisance/ complaints.	1	2	23	L	Site is remote from any residences. No noise impact anticipated.

ACTIVITY	ASPECT	ENVIRONMENTAL IMPACT	LIKELIHOOD	CONSEQUENCE	PRIORITY	RISK	CURRENT CONTROL
	Biting insects	Increase in adult mosquito populations (potentially to pest population sizes). Transmission of mosquito carried diseases (i.e. malaria). Production of additional mosquito breeding sites.	2	3	17	M	If mosquito populations cause a significant issue, Thor will liaise with the Medical Entomology Branch (MEB). All personnel will be advised of the relevant personal protective measures to protect themselves from biting insects. The dam located north of the pit and the crossing across the Plenty highway will be regularly monitored to assess potential breeding sites and biting insect populations.
	Lack of baseline data. Unaware of requirements. Procedures not followed.	Licence non-compliance. Environmental monitoring data not collected or poor quality data collected.	2	4	12	S	All baseline information has been collected and documented. Monitoring requirements will be well documented and carried out on a routine basis.
	Changes in natural topography due to roads, drains, infrastructure, and sediment build-up due to increased erosion of surrounding areas.	Flooding of surrounding areas causing change in ecology. Vegetation loss/damage.	2	2	20	M	Progressive rehabilitation.

RISK	ASPECT	PRIORITY
7	Embankment failure of the TSF	H
10	Dust produced during dumping and loading of waste rock.	S
12	Spill of concentrate during loading.	S
12	ARD generation of waste rock.	S
12	Ruptured or damaged containers on vehicles. Vehicle rollover or other road accident.	S
12	Crossing of Plenty and Marshall Rivers by vehicles.	S
12	Ruptured or damaged containers on vehicles. Vehicle rollover or other road accident.	S
12	Flooding.	S
12	Lack of baseline data. Unaware of requirements. Procedures not followed.	S
13	Establishment of weeds.	S
14	Removal of rare flora	S
14	Clearing of restricted fauna habitat	S
14	Seepage from TSF.	S
14	Appropriate freeboard in TSF not maintained.	S
14	Generation of acid rock drainage from TSF	S
14	Structural damage to TSF wall	S
14	Impact to Molyhil – aboriginal site	S
15	Spillage whilst transporting and unloading hydrocarbons. Ruptured or damaged containers.	M
16	Combustion emissions from vehicles and equipment.	M
16	Combustion emissions from vehicles and equipment.	M
16	Combustion emissions from vehicles and equipment.	M
17	Lack of awareness of requirement to stockpile available topsoil. Topsoil mixed with or contaminated by other soil materials or saline water.	M
17	Removal of topsoil when too dry. Production dust - Air Pollution (particulates).	M
17	Inappropriate stripping and storage of topsoil. Damage to structure and viability of topsoil during stripping or storage.	M
17	Hydrocarbon spills during topsoil stripping operation. Soil contamination.	M

RISK	ASPECT	PRIORITY
17	Location of topsoil and vegetation stockpiles near watercourses. Loss of topsoil required for rehabilitation works	M
17	Uncontrolled removal of vegetation.	M
17	Machinery infected with pathogens or weed seeds used to clear topsoil.	M
17	During a significant rainfall event, surface runoff above pit could wash into the open pit.	M
17	Water leak caused by a pipeline fracture or leaking valves.	M
17	Spillage of tailings during transfer to TSF.	M
17	Tailings facilities becoming fauna traps	M
17	Road kill.	M
17	Erosion and inadequate drainage on and around the waste dump	M
17	Ruptured or damaged containers in workshop or fuel farm.	M
17	Spillage while transferring, using or transporting hydrocarbons onsite.	M
17	Road kill.	M
17	Insufficient rainfall or heavy rainfall washing away seed and topsoil. Inappropriate species used.	M
17	Insufficient revegetation of slopes to help stabilise batters of waste dump. Lack of stormwater diversion systems. Wind erosion. General surface instability. Lack of surface water (runoff) control.	M
17	Biting insects	M
18	Dust produced by road traffic on unsealed roads during.	M
18	Increased road train traffic on Plenty Highway.	M
18	Clearing of vegetation leaving exposed land. Disturbance of surface soils.	M
18	Spillage during transfer of chemicals.	M
18	Spillage whilst transporting and unloading explosives.	M
18	Transport of staff and freight to site. Increased traffic on Plenty Highway.	M
19	Pit dewatering. Reduction in groundwater levels and quality. Impact to aquifer.	M
20	Dust produced from uncovered loads.	M
20	Disposal and frequency of waste collection. Odours, vermin and litter generated from putrescible wastes. Increase in feral animals and vermin.	M

RISK	ASPECT	PRIORITY
20	Bins and storage areas not available or inaccessible. Procedures not known and understood. Loss of resources. Land Contamination.	M
20	Sewage treatment plant. Generation of odour, noise.	M
20	Changes in natural topography due to roads, drains, infrastructure, and sediment build-up due to increased erosion of surrounding areas.	M
23	Lightning strike. Sparks from grinding equipment. Uncontrolled fire on-site.	L
23	Complaints regarding noise.	L

9.0 HEALTH AND SAFETY

9.1 WORKFORCE INDUCTION AND TRAINING

Training will commence prior to commissioning and will be incorporated into ongoing operations. Progress through the training programme will be locked in with wage rates in recognition of the higher skill level achieved through training.

All personnel will be required to participate in a site specific induction when they commence employment. Occupational, health, safety and environment issues associated with the project will be addressed in the induction.

Continuous staff training will involve environmental input at “tool-box” meetings and specific environmental courses as required.

9.2 SAFETY

It is Thor’s policy that each of its employees is provided with a safe and healthy place in which to work. In conjunction with this policy, a series of policy statements covering specific safety and health matters will be maintained as required.

A Safety Management System will be developed for the project.

9.3 EMERGENCY RESPONSE

Emergency response plans have been developed for the operation and management of the TSF. Similar procedures will be developed for other aspects of operations associated with this project and will be detailed in the Emergency Response Plan which will be included in the MMP.