

Notice of Intent

Mt Lindsay Tin-tungsten-magnetite mine Project



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1. Introduction

Venture Minerals Limited (Venture Minerals) is proposing to develop a tin-tungsten-magnetite mine near Mount Lindsay in north western Tasmania. Venture Minerals proposes to extract tin, tungsten, magnetite and copper bearing ore through an initial conventional open pit mine, progressing to an underground mine to access deeper sections of the ore zones.

The Mt Lindsay deposit is situated within granted exploration licence (EL21/2005) owned 100% by Venture Minerals. The deposit is hosted within a series of north-north-west striking skarns which have been metasomatised by the Meredith Granite enriching the skarns with tin, tungsten, iron and copper mineralisation.

To date Venture Minerals has drilled more than 70,000 m of diamond core drilling, targeting the high grade tin and tungsten zones. Drilling recently culminated in the definition of a world class, high grade tin/tungsten resource containing over 120,000 tonnes of metal.

2. Notice of Intent

This Notice of Intent (NOI) has been developed in accordance with the Tasmanian Environment Protection Authority NOI guidelines and the requirements of Section 27B of the *Environmental Management and Pollution Control Act 1994*.

The project was referred (EPBC 2011/6178) to the Commonwealth under the *Environment Protection and Biodiversity Conservation Act 1999* (EPCA Act) in November 2011.

The Commonwealth Department of Sustainability, Environment, Water, Population and Communities, under delegated authority from the Minister, determined (8 December 2011) that the project is a controlled action requiring assessment under the EPBC Act. The controlling EPBC provisions are listed threatened species and communities (section 18 and 18A of the Act) and listed migratory species (section 20 and 20A of the Act).

The species nominated by the Commonwealth as being of interest to them were the Tasmanian devil, the wedge-tailed eagle, the spotted-tailed quoll, the Australian grayling, the Tasmanian azure kingfisher and the white-bellied sea eagle.

This NOI incorporates the matters of interest to the Commonwealth Minister.

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2.2 Project Name and Location

The project is known as the Venture Minerals Mt Lindsay Tin-tungsten-magnetite Mine Project. Figure 1 shows the local setting of the mine project.

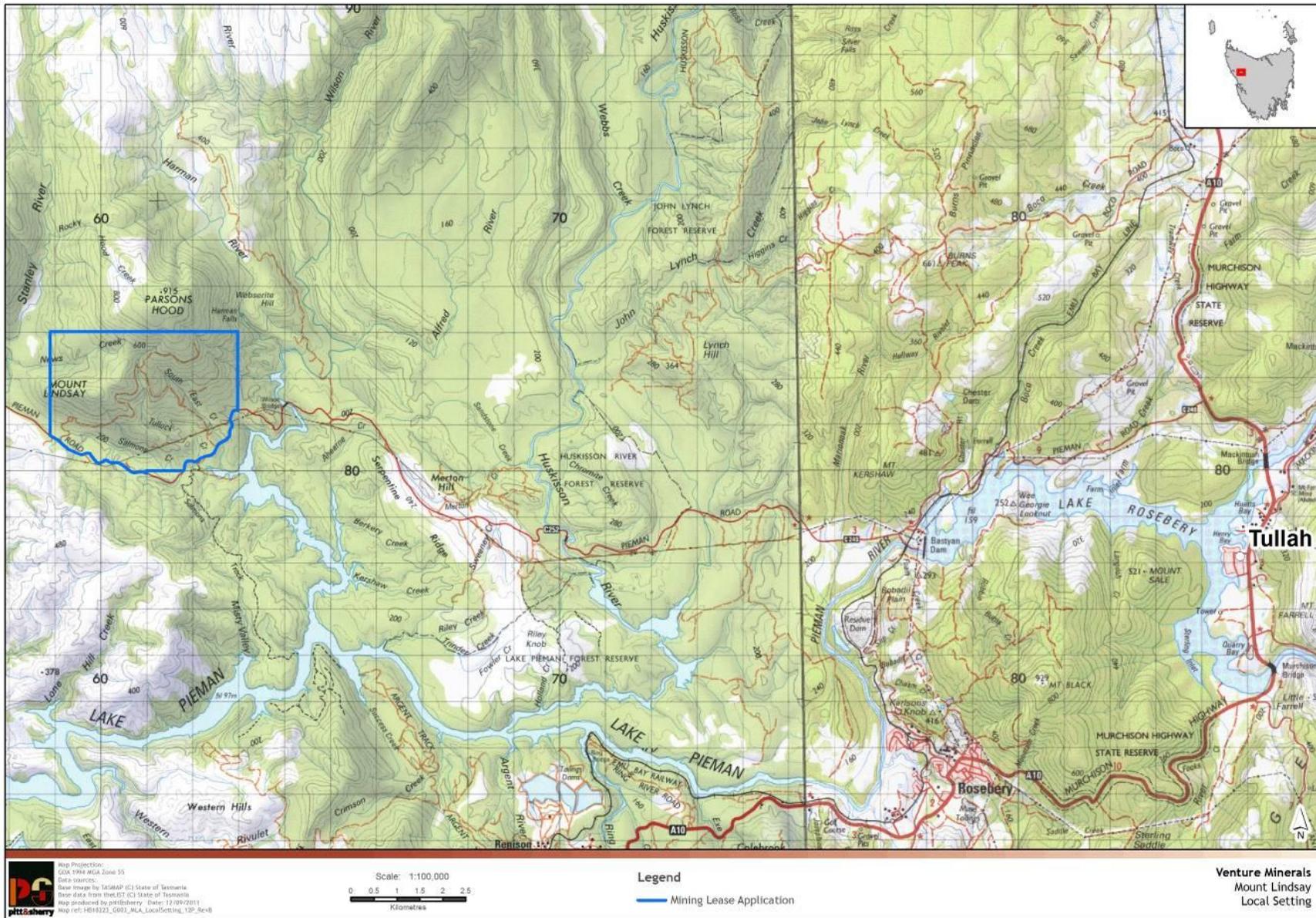


Figure 1 - Local setting of the mining lease application area

The project is located approximately 25 km west of the township of Tullah (approximately 37 km by road), in north western Tasmania. The site is located approximately 125 km southwest of Burnie. Road access from the Tullah township is via the Murchison Highway and then the Pieman Road.

2.3 Proponent’s Background

Venture Minerals was incorporated in Western Australia on 12 May 2006 and listed on the ASX on 22 September 2006.

The primary objective for the Company is to discover and develop world class mineral deposits. As a consequence the Mt Lindsay Project has been the focus for Venture Minerals over the last 4 years, with over \$25 million having been spent to date. The company has so far delineated the first two ore bodies and it is the company’s intention to make this proposed development extend over a much longer mine life than is currently designed, as it strives to realise the full economic potential of the project.

2.4 Project Description

2.4.1 General Description

The proposed tin-tungsten-magnetite mine near Mount Lindsay in north-western Tasmania is situated within minerals exploration licence (EL21/2005), which is held by Venture Minerals. A mining lease has been applied for. The application area is shown in Figure 1. Venture Minerals proposes to extract tin, tungsten, magnetite and copper bearing ore through an initial conventional open pit mine, progressing to an underground mine to access deeper sections of the ore zones.

Key features of the project are summarised in Table 1.

Table 1 - Project summary

Aspect	Description
Life of project	10 years
Resource	Tin, tungsten, magnetite and copper
Mining method	Open cut mining progressing to underground to access deeper section of the ore bodies
Mine operation	Continuous day and night shifts
Average depth of pit	Single open pit 220 m
Depth to water table	Variable (from 0 m to 50 m across the project site)
Total area of disturbance	Approximately 194 hectares (ha)
Total mined ore tonnage	10.8 million tonnes (Mt)
Strip ratio (rock:ore)	8:1
Total rock	76.2 Mt
Total material mined (ore plus rock)	87.0 Mt
Processing rate	1.3 million tpa
Power supply	Via Transend power line
Product rates (approximately)	Tin concentrate: 4,500 tpa

Aspect	Description
	Tungsten concentrate: 2,800 tpa Magnetite concentrate: 220,000 tpa Copper concentrate: 2,500 tpa
Product transport (approximately)	20 loads (40 trips) per day, 5 days per week, or 15 loads per day 7 days per week.
Mine operating hours	24 hours (hrs) per day, 7 days per week
Plant operating hours	24 hrs per day, 7 days per week
Construction duration	15 to 18 months
Commencement production	2013 Quarter 4 (Q4)

Note that the estimates provided in Table 1 are based on information available at this time. Some of this information may evolve or change as the detailed design of the proposed action and further investigations are carried out.

The deposit is hosted within a series of north-north-west striking skarns which have been metasomatised by the Meredith Granite enriching the skarns with tin, tungsten, iron and copper mineralisation.

The two ore bodies (Main Skarn and No.2 Skarn) are proposed to be accessed through a single open pit, designed using the Whittle optimisation program and Mine 2-4D software and based on a preliminary geotechnical study, which shows generally good ground conditions.

Underground designs for accessing deeper sections of the ore bodies are planned to be based on an up-hole retreat mining method.

Conventional open pit mining equipment is proposed to be used, including 75-100 tonne (t) trucks and 20-25 cubic metre (m³) capacity excavators. The site will operate continuously (i.e. 24 hours per day, 7 days per week). A rock storage facility will be established adjacent to the open pit.

Underground operations are planned to be accessed from within the open pit by a decline and level development established where required. Ventilation would be through the decline and dedicated ventilation rises. Venture Minerals' present intention is that all underground equipment will be trackless. Mining will probably be undertaken by a contractor. The underground operation would occur towards the end of the mine life.

Preliminary mine schedules have been completed to define rock removal requirements to achieve the required ore production from the open pit, and development requirements for underground mining.

The mined ore will be processed on site with concentrates exported through Burnie or Port Latta (although magnetite ore may alternatively be trucked to Grange Resources' Savage River Mine for processing). Product transport will require approximately 20 truck loads (40 trips) per day, 5 days per week (or 15 loads per day 7 days per week).

Figure 2 shows the conceptual mining and processing operation layout. Table 2 shows the areas of disturbance of the various mine elements under the current conceptual mine design.

This design may change as further planning work is undertaken.

Table 2 - Estimated areas of disturbance

Infrastructure	Area (hectares)
Mine offices, contractor workshop & lay down area, processing mill	12.1
Open pit	40.3
Rock Storage Facility	77.2
Tailings storage facility	48.3
Cut off drains	1.9
Internal roads & link to external network	14.3
Total	194

2.4.2 Mining Methods

Mining of the near surface ore resources of Main Skarn and No.2 Skarn will be done by open pit mining and ore below these levels will be mined by underground methods. A resource block model developed by Venture Minerals was used to complete pit optimisation studies for Main Skarn and No.2 Skarn using Mine 2-4D and Whittle Four-X (Whittle) optimisation software.

Open pit mining

From the completed Whittle optimisation runs, a pit shell containing 9,315,103 t of ore and 78,928,236 t of rock (which gives a rock to ore ratio of 8.47) was selected because it gave an acceptable return per tonne of ore mined. From this shell, a conceptual mine design and production schedule was developed with 9,473,370 t of ore and 76,112,957 t of rock, which gives a rock to ore ratio of 8.0.

Figure 3 shows the conceptual pit design proposed for the mining of Main Skarn and No.2 Skarn resources. Further resources at depth are currently under investigation.



Figure 2 - Proposed site layout

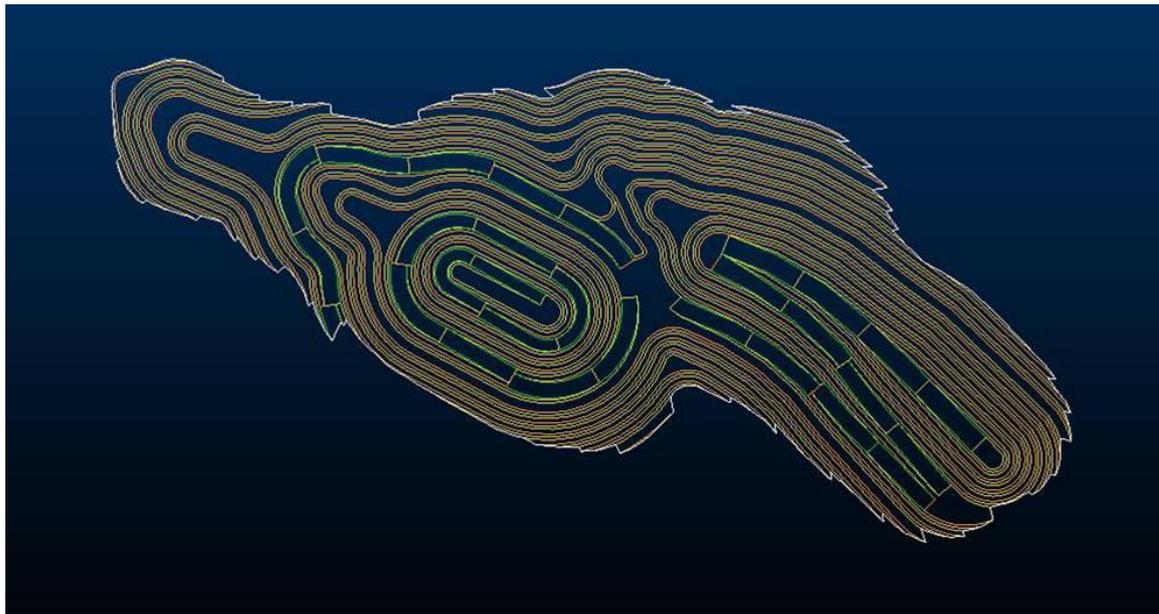


Figure 3 - Plan of view of conceptual pit design

Underground mining

A preliminary underground mining method has been selected to extract the resources below the Main Skarn and No.2 Skarn pit. From this, a mine design has been completed and appropriate development and mining schedules prepared, with 1,355,306 t of ore to be extracted. It is proposed to use a method of bench stoping with unconsolidated and consolidated fill which provides high resource recovery, mechanisation and the ability to maintain a moderately high production rate.

Underground access is planned by a decline from the open pit mine at a 1:7 gradient (Figure 4). Ore will be trucked to the surface via the decline and transported to the Run-of-Mine (ROM) pad. Ore will be broken in the stopes using 25 m long blast holes and then recovered by front end loaders and loaded into trucks. Each haul truck will carry approximately 60 t.

An indicative underground schedule has been developed which commences underground mining towards the end of open pit mining. This schedule is based on the following assumptions:

- a maximum of 120 m per month in any development heading
- vertical development 4 m per day
- production drilling 200 m per day and
- maximum stoping rate 1,400 t per day.

The indicative production schedule is based on the following production assumptions:

- 10 m of long hole drilling per stope tonne of ore
- 80% of drill metres charged
- no stoping dilution
- recovery of 95% for all stope and development ore, and
- 1 m of diamond drilling per 200 ore tonnes.

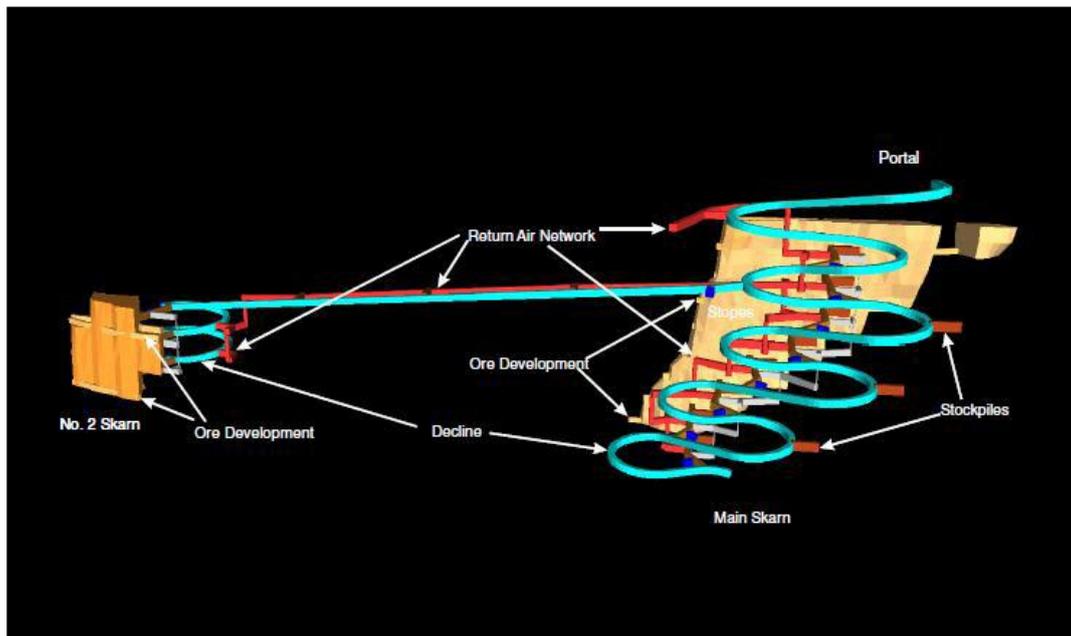


Figure 4 - Isometric view of underground mine layout

Haulage Ore and rock

Where possible, the alignment of existing tracks will be used to create haul roads and site access roads of an appropriate width and surface to facilitate use by mine vehicles. The main haul road on the site will be from the mine areas to the processing area, from the mine areas to the rock storage facility and from the processing plant to the external access road.

2.4.3 Ore Processing

The Mt Lindsay ore contains the following valuable mineral fractions:

- Cassiterite (tin);
- Scheelite (tungsten);
- Magnetite (iron);
- Chalcopyrite (copper).

These minerals are associated in an ore matrix with gangue minerals such as silicates, sulphides, calcite, fluorites, carbonates and others. The process flowsheet has been designed to process Main Skarn and No.2 Skarn ore, and preliminary equipment sizing has been undertaken to cope with the mineralogical differences between the two ore sources.

The concept is to crush and grind the ore to a p80 size of 120 microns and produce a magnetite concentrate via low intensity magnetic separation (LIMS). This magnetic concentrate will then be refined by regrinding to p80 of 45 microns to liberate the magnetite, followed by a secondary or cleaner LIMS stage. The final magnetic concentrate will undergo a sulphide float to remove the magnetic monoclinic pyrrhotite and reduce the sulphur content of the magnetite concentrate.

For the non-magnetic stream, the process has an initial sulphide float that will remove chalcopyrite and bulk sulphide minerals in preparation for the gravity tin and cassiterite/scheelite flotation circuits.

Following production of a small, saleable chalcopyrite concentrate, there will be two concentrates produced from the non-sulphide stream for sale:

- High Grade Gravity Tin concentrate which is blended with the Low Grade Tin Flotation concentrate for sale to smelters, and
- Scheelite concentrate suitable for sale as an intermediate product through the operation of an APT (Ammonium Para Tungstate) plant.

The main process plant will include:

- Crushing Plant
- Grinding Plant with primary milling, rougher magnetic separation, chalcopyrite and sulphide flotation
- Magnetite Plant with magnetite regrind mill, cleaner magnetic separation, sulphide flotation, filtration and stockpiling
- Scheelite/Calcite Plant with a primary calcite flotation, GZRINM LG and HG Scheelite Flotation and APT Plant, and
- Tin Plant, with gravity circuit including a MIMS and gravity regrind mill, pre-tin flotation scavenger flotation (for residual calcite and sulphides) and tin flotation.

A simplified process flow sheet is shown in Figure 5.

2.4.4 Rock management

Venture Minerals has undertaken Net Acid Generation (NAG) potential testing of 33 ore/rock and 49 rock samples from the Mt Lindsay project. This testing indicates the following:

- The 33 ore/ rock samples show a wide range of NAG values. The NAG of six of the samples was characterised as uncertain, with 30% of the remainder being characterised as Non Acid Forming (NAF), and 60% as Potentially Acid Forming (PAF).
- The NAG of only one of the 49 samples of rock was characterised as uncertain, with 35% of the remainder being characterised as PAF and 65% as NAF.
- Nine of the 82 samples tested for acid drainage potential were also leach tested using the Toxicity Characteristic Leaching Procedure (TCLP). All except one (ore/rock) sample were rock samples. Ten of the 14 analysed metals were not detected in the leached solutions. Of the remaining four, only traces of metals were present: barium (0.3 - 2.8 mg/L), lead (<0.1 - 5.6 mg/L), manganese (0.2 - 2.9 mg/L) and zinc (<0.1 - 0.9 mg/L).

NAF rock and PAF rock will be managed separately but within an integrated rock storage facility.

Further acid generating tests are underway to provide a comprehensive description of the overall net acid account balance for the operations, which will inform the further development of measures for the management and mitigation of acid generation risks. These management and mitigation measures will be described in the DPEMP (it would be premature to describe tentative measures in this NOI).

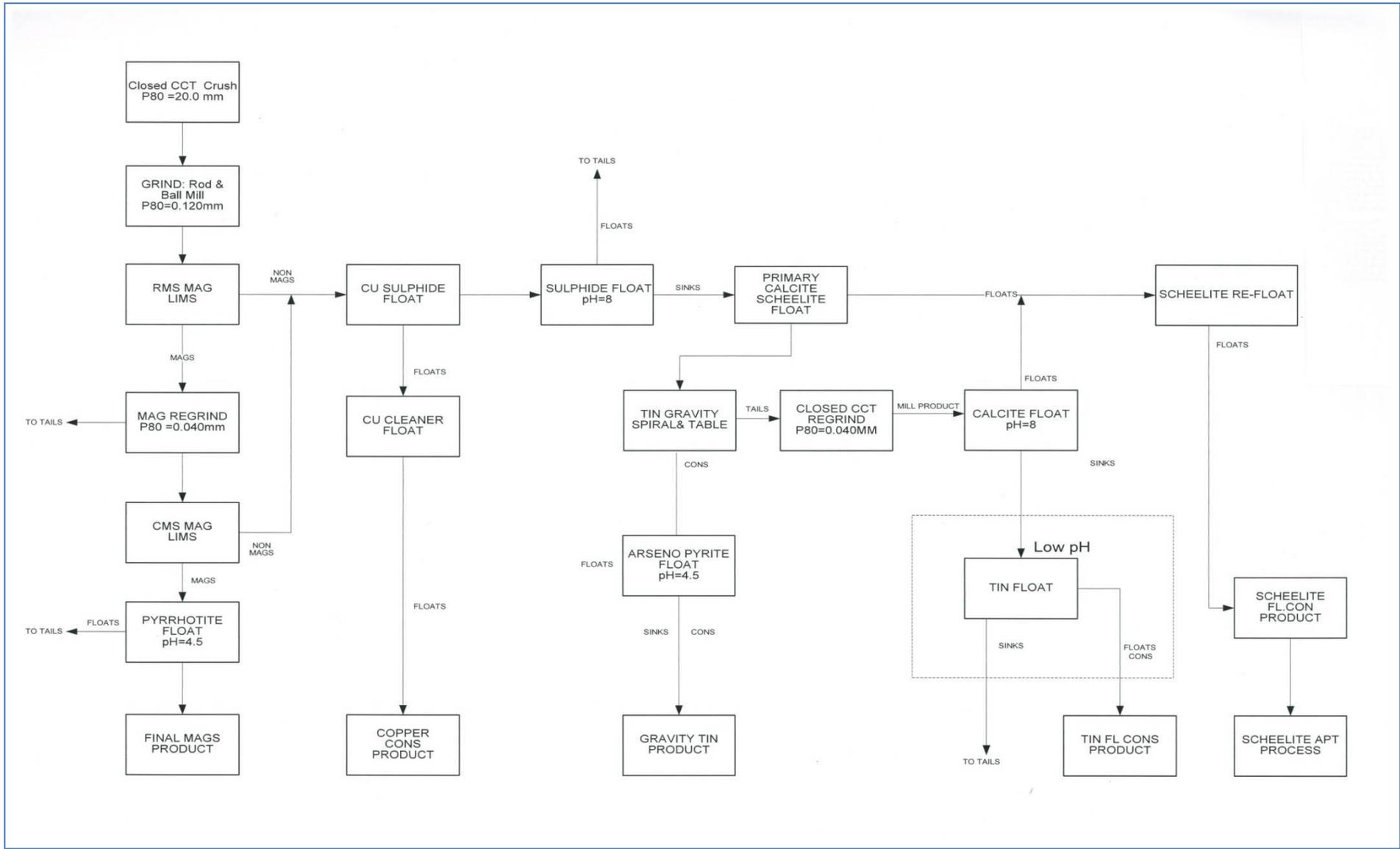


Figure 5 - Simplified process flow sheet

Rock storage facility location

The proposed rock storage facility (RSF) is located to the west of the open pit on Mt Lindsay in the News Creek catchment. Figure 6 shows the initial layout and Figure 7 shows the arrangement at the end of mining. Alternative sites (Tulloch and South East Creeks) have been considered but topography and proximity to the pit favour the News Creek option.

The RSF has been located close to the pits, and has been designed to the following parameters:

- located in an area to minimise the clearing of *Nothofagus - Atherosperma* rainforest and hence reduce the impact on the foraging habitat of the spotted-tailed quoll
- located in an area where the potential for future mining is minimal
- located in an area that will minimise visibility from the Pieman Road (being on the far side of Mt Lindsay rather than on the side facing the road)
- minimum haulage distance
- fit within the natural terrain
- integrated management of PAF and NAF material
- prevention of oxidation of PAF material.

The RSF location has been carefully selected to achieve an optimum balance of proximity to the pit, minimising impacts on flora and fauna, minimising the number of affected catchments and minimising visibility.

The original proposed location was on the south-eastern flank of Mt Lindsay, within the same catchment as the pits.

However, being on the mountain flank that directly faces south to Pieman Road, this site would have been readily visible from that road and would have been wholly within *Nothofagus* forest. Also, the fauna survey found some potential Tasmanian devil and quoll dens in that area, although there was no evidence of recent active denning. While the presence of dens can be managed through appropriate habitat enhancement measures elsewhere (see section 2.6.1), the combination of visibility, the extensive *Nothofagus* forest, and the presence of potential dens led to Venture Minerals identifying an alternative, preferred, location on the northern-western flank of Mt Lindsay.

The preferred location has a reduced visibility (it faces west towards a more distant Pieman Road) and also few potential dens.

The preferred location of the RSF achieves the best balance of sometimes competing objectives.

It lies in the News Creek catchment, which is separate to the mine pit catchment. News Creek flows into Stanley River. Venture Minerals' preference is to avoid introducing an additional catchment to its operations. Subject to engineering considerations, it may be possible to divert runoff from the RSF into the Salmons Creek catchment, the same catchment where the tailings storage facility is currently proposed to be located. However, even if this is not possible the RSF will be managed to ensure that runoff and hence the News Creek catchment is not affected by acid drainage.

The feasibility and details of this potential diversion, including the potential lengths of impacted stream sections, remain to be developed and will be described in the DPEMP if this is proceeded with.

Directing drainage from the RSF to the tailings storage facility would also contribute to the process water supply through recycling of tailings dam water to the mill.

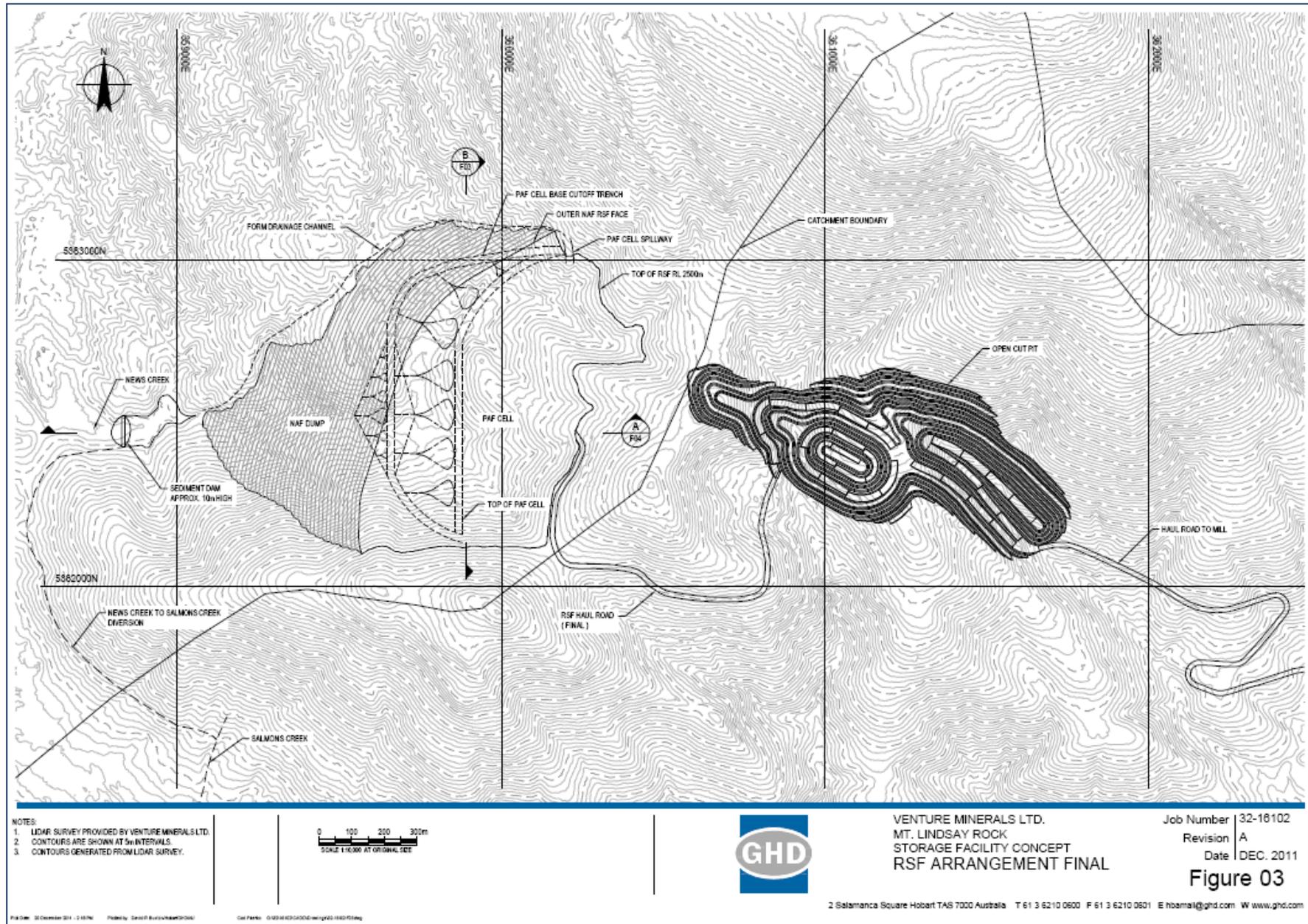


Figure 7 - Rock storage concept - end of mining

PAF rock encapsulation

The Mt Lindsay deposit has been geochemically classified as containing 5.8 Mm³ of PAF (potentially acid forming) materials, which is 20% of the total material scheduled for removal from the pit. Some of this material is ore, which will be processed and shipped off site, or tailings, which will be disposed of in the TSF. The proposed RSF concept design conservatively assumes there will need to be sufficient storage for the full AF/PAF rock materials identified in the deposit.

AF/PAF rock will be identified in the pit and managed separately to NAF rock.

The management of PAF rock will be a major focus in the mine operations. During mining, regular visual inspections by the mine geologist and rock assays will be undertaken to characterise the acid generation potential of the product of each blast.

PAF rock will be segregated from NAF rock and removed from the pit to be taken to the dedicated PAF rock storage area.

Venture Minerals has examined a number of options for storage locations, including storage inside the pit, storage adjacent to the NAF rock or storage within the NAF rock dump.

In-pit storage opportunities are limited because the available area could only take a small portion of the anticipated PAF material. Although in-pit storage of some PAF material has not been dismissed, it is only a partial solution and its benefits are therefore questionable.

Storage adjacent to the NAF dump would be possible but it does not provide the close-out opportunities that storage within the NAF dump provides. A properly designed and constructed PAF storage facility incorporated within the NAF dump was selected as the optimal solution.

PAF rock removed from the open pit will be taken to be encapsulated in dedicated clay cells within the rock dump. This encapsulation will be designed to minimise oxygen and water ingress and hence to inhibit oxidation of pyritic material and consequential acid formation.

The conceptual design being developed is based on the encapsulated PAF (ie. AF and PAF) rock being stored in layered clay cells behind what will effectively be a dam constructed from NAF rock and clay. The clay will be won from the open pit.

The design of the RSF is based on the fundamental strategy of isolating PAF rock from atmospheric oxygen and achieving geochemical and geotechnical stability.

The concept design of the RSF features a separate cell for PAF rock where it will be encapsulated in a saturated state to minimise the risk of sulphide oxidation and subsequent generation of AMD. The PAF cell will be constructed in the upper parts of the overall RSF. The NAF dump will be benched on the downstream side to provide stability and water impoundment. Water will accumulate behind the NAF embankment and back up to cover the PAF cell, isolating the PAF rock from contact with atmospheric oxygen.

The PAF cell starter embankment will be constructed with 2H:1V slopes having a minimum 10 m thick upstream clay zone. The initial embankment will be designed as a water storage dam. A cross section of the RSF showing the PAF cell and surrounding NAF material is shown in Figure 8.

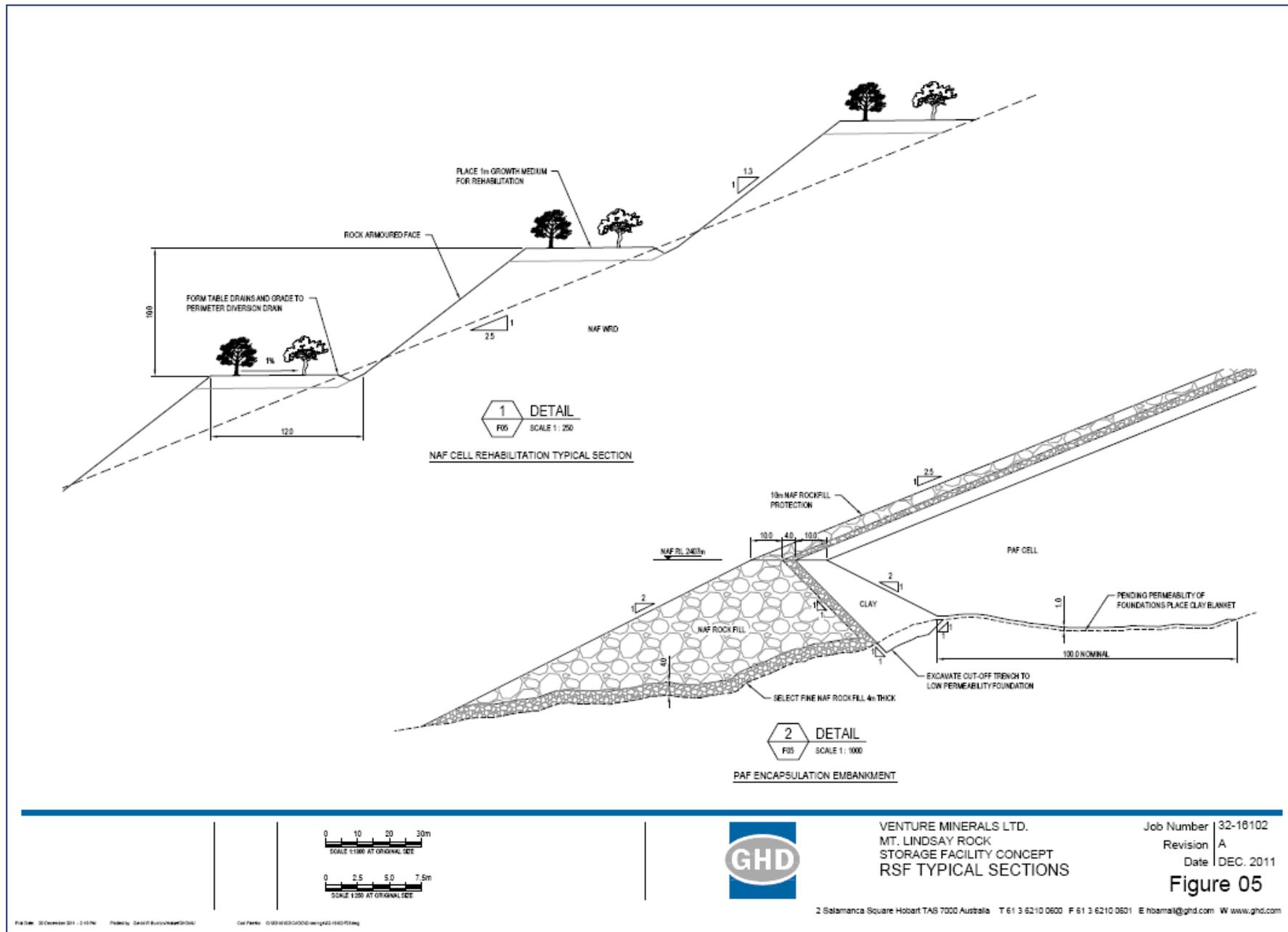


Figure 8 - Cross section of RSF showing PAF cell and NAF embankment

The clay zone within the starter embankment will be backed by a 4 m wide finer rockfill (NAF) zone to provide a transition to the coarse downstream rockfill (NAF) zone, which will provide a transition zone to minimise the risk of piping. Above the starter embankment level (nominally 30 m high), a 10 m thick layer of NAF rock armouring will protect the PAF cell from weathering and erosion prior to the placement of downstream NAF materials.

On the downstream side, NAF rock will be dumped at its angle of repose (1.3H:1V) in 12 m wide benches to provide an overall dump slope of 2.5H:1V. The NAF benches will be constructed to the face of the PAF cell to provide additional stability to the overall RSF.

It is envisaged that the PAF material will be paddock dumped and spread in 1 m lifts. They will be maintained in a saturated state, with the water table being kept to a maximum of 0.5 m below the top of the PAF materials.

Once the storage area created by the PAF cell starter embankment has been filled with PAF rock, the clay, rockfill transition zone and a 10 m wide coarser rock zone will be raised simultaneously with the placement of PAF material, always being higher than the PAF material itself.

The low permeability clay zone will be founded on a cut-off trench excavated to a low permeability foundation and backfilled with compacted clay. Above the crest level of the starter embankment, the cut-off trench will be progressively extended up to the abutments to the full height of the PAF cell. The spillway will also be progressively raised. The conceptual spillway location (on the northern abutment) has been selected to take advantage of favourable topography which will allow the spillway flows to be separated from the rest of the RSF catchment if required.

The cut-off drains will be managed to direct some water into the RSF area, where it will accumulate behind the embankment. By this means, the phreatic zone surrounding the PAF cells will be progressively raised as the height of the cells increases.

Apart from the upper working face, which necessarily will be open to the air as it is being filled, the encapsulated cell will be submerged in water, preventing oxidation of PAF material. On mine closure, the PAF cell will be covered with clay and allowed to flood also, achieving a permanent passive solution to preventing acid generation. Closure and rehabilitation of the PAF cell will include the extension of the low permeability clay zone to 5 m above the final level of the PAF cell and the placement of a 5 m layer of NAF rock on top of the PAF materials. The extension will form a dam to allow the 5 m NAF layer to be maintained in a saturated state above the PAF material.

Over this saturated NAF layer, a 3 m thick coarse free-draining NAF layer will be constructed as a capillary break and then a 2 m thick NAF soil layer on top of that will provide the medium for revegetation.

During mining operations, rock and ore will be visually and geochemically classified *in situ* from drill chips returned from drilling of blasting holes. As rock is excavated from the pit, checks will be done by a geologist and materials hauled to the appropriate area designated for that material type (NAF, PAF or AF) within the RSF.

When the mining moves underground, PAF rock from those operations will remain underground where it will be used for the cemented backfilling of stopes. The cement matrix will provide a neutralising agent and this PAF rock will become flooded on mine closure, which will prevent acidification.

The above strategies will mean that potential acid drainage from the mine's RSF will be effectively managed during the mine's operations and will be permanently prevented by flooding on mine closure.

2.4.5 Water Management

Water management of the RSF facility is critical to its operation and performance. The RSF is being placed in a valley and it is proposed to be constructed from the base up. It will therefore have runoff from the valley catchment flowing into the active dump area. Local creek diversions will be constructed to divert much of this water away from the RSF but, as described above, controlled amounts of water will be directed into the dump to raise the phreatic zone as the PAF cells rise.

Surface runoff from the storage area will also be retained to contribute to the raising of the phreatic zone but there will need to be an overflow discharge of excess runoff water. This will be directed to a sediment dam prior to discharge. Subject to engineering feasibility, a drain is proposed to be constructed from this dam into the Salmons Creek catchment.

At this stage of mine planning, a broad water management system for the mine site has been identified (Figure 9) but a more comprehensive system will be developed and described in the DPEMP, which will be prepared and submitted for approval by the Environment Protection Authority under the Environmental Management and Pollution Control Act 1994.

The key principles of the system are to:

- minimise the potential for acid generating conditions to develop, both during operations and after closure
- maximise the reuse of water through the mill, including the recycling of tailings water
- minimise the number of discharge points (due to the hilly terrain, it will be difficult to have only one discharge point)
- minimise the impacts on natural streams.

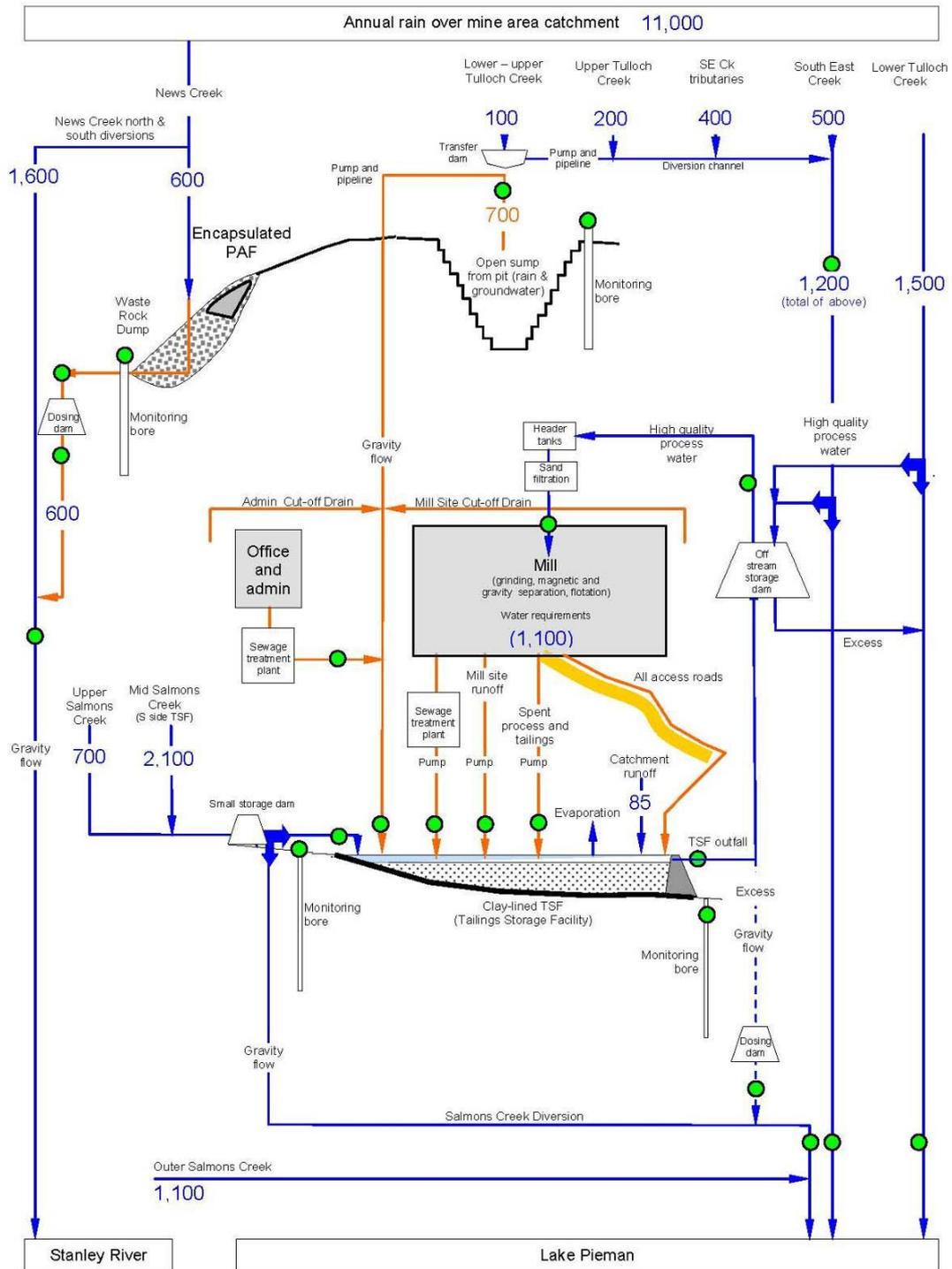
Sediment dam

The initial construction of the RSF will generate sediment laden water through mobilisation of fines from disturbance in the storage facility footprint and from fines contained in the rock. To manage sediment it is proposed that the first stage of the RSF construction will involve gaining access to the base of News Creek in order to construct a Sediment Dam. The Sediment Dam will need regular clean out to remove the settled sediment in the first few years of the dumping, these materials can be placed in the TSF or returned back to the dump. The need for clean out maintenance of the dam will decrease in latter stages of the RSF once a significant depth and surface area of rock has been placed in the valley, as some of this sediment load will be removed as water infiltrates through the dump providing a self-filtering effect.

This dam could also be used to dose dump runoff if it shows signs of acidity.

Diversion drains

To minimise runoff from the catchment flowing into the PAF cell, catchment drains are proposed to be cut upslope of the PAF cell to divert flow around the perimeter of the RSF. This will assist in minimising any potential contamination from the PAF cell.



Key

- 1,000 Est. mean annual volume (ML); high quality water
- 200 Est. mean annual volume (ML); lower quality water
- Water sampling location

To simplify this flow chart, components of the water budget have been omitted – groundwater make up of surface streams, and surface water recharge to groundwater. Numbers therefore do not balance.

All water volumes are net: ie estimated evaporation and transpiration have been deducted

Figure 9 - Water management system

Rock Storage Facility rehabilitation

The external storage facility geometry results in an overall 3H:1V slope, which is envisaged to give sufficient overall stability, based on previous projects of similar scale. However, the overall storage facility stability will need to be confirmed through investigations in the next phase of the RSF design.

The concept for the RSF rehabilitation is to armour the batter slopes with coarser rock. The RSF benches (and top of the RSF) will be used to encourage revegetation with local species. The RSF benches will be graded sloping back into the dump, with table drains formed to take drainage to the dump perimeter drains. This will be to minimise the risk of erosion on the dump batters from flow concentrations. The conceptual design of the News Creek WRD is to have sufficient capacity to store rock produced for the life of mine and importantly sufficient storage for the expected AF/PAF rock.

2.4.6 Tailings Management

A component of the tailings (from the sulphide float) will be PAF. PAF tailings will be stored separately to the NAF tailings, either in a separate compartment within the TSF or as a separate adjacent TSF. These options will be developed further as part of the DPEMP preparation. In either case, the final close-out strategy will be to permanently flood the PAF tailings, so that oxidation is prevented.

The above strategies will mean that potential acid drainage from the PAF tailings component will be effectively managed during the mine's operations and will be permanently prevented by flooding on mine closure.

A preliminary review of possible tailings storage facility (TSF) sites within a 5 km radius of the process plant has been undertaken, with many sites considered. Options were considered in the Stanley River catchment (6 options), the Salmons Creek catchment (3 options), the Lake Pieman catchment (2 options), the Wilsons River catchment (4 options), the Harman River catchment (2 options), the Alfred River catchment (3 options) and the Ahearne Creek catchment (4 options). This review will be further supplemented with additional information as it becomes available during the preparation of the DPEMP.

Currently, the conceptual location is in a portion of the Salmons Creek valley formation west of the pit but this option may be superseded by another as design considerations progress. The final location will be determined on the basis of a wide range of criteria. For some of these criteria, investigations are either ongoing or have yet to commence and there is currently insufficient information to allow a definitive site selection to be made. The necessary information will only become available during the preparation of the DPEMP as those studies progress and conclude. The design of some of those studies will be informed by the DPEMP guidelines that are provided by the EPA in response to this NOI.

The DPEMP will include a comprehensive description of the TSF sites considered and their environmental and engineering values, attributes and risks. The DPEMP will describe the rationale for choosing the selected site.

Unless and until that additional information determines otherwise, the TSF location is as shown in Figure 2.

For the current conceptual location, Salmons Creek would be diverted around the tailings dam. Refer to Figure 2 for the location. The TSF would be approximately 48 ha in area.

The PAF tailings component will be stored separately to NAF tailings, either in a coffer dam within the main tailings dam or as a separate adjacent dam.

Although identified in the current conceptual design, there are some significant constraints with the Salmons Creek site, such as the proximity of the transmission line, which limit the horizontal extent of the facility and may make the separate storage of PAF and NAF tailings problematic. These constraints will be further examined as part of the DPEMP development. This examination may lead to one of the other dam locations options becoming favoured. Many of these are outside the current mining lease application area and if one of these is adopted, the mining lease application area will be revised accordingly.

The TSF will be designed, constructed and managed in accordance with the Australian National Committee on Large Dams (ANCOLD) standards¹ and will be subject to design approval by the Tasmanian Assessment Committee for Dam Construction.

The TSF would be designed to have a positive water balance and a full water cover (apart from the tailings beach), and will be able to be maintained at all times to minimise the potential for oxidation of any sulphides in the tailings stream.

Decant from the TSF will be recycled to the process plant as part of the overall mine site water management strategy.

On mine closure, the surface water diversions around the TSF would be redirected back into the head of the dam to ensure that a permanent cover of water is passively maintained. This will ensure that the tailings will remain permanently submerged by a minimum 1 m of water, permanently preventing the acidification of sulphides in the tailings.

2.4.7 Mine Infrastructure and Equipment

Mine site infrastructure will consist of the following (refer to Figure 2 for locations of key elements):

- open pit, with later underground workings
- rock storage facility
- crushing and processing plant
- stockpile areas (topsoil, run-of-mine ore and processed product)
- tailings dam
- water storages
- lay down yard, workshops, laboratory and offices
- access road network
- water pipelines, and
- cut off and diversion drains.

The proposed mining equipment at the site has been based on the required production targets, cost structure, mining dilution factors and working terrain. The type of equipment proposed is conventional haul trucks and excavators with a truck capacity of 75 to 100 t and excavators with a bucket capacity of 20 to 25 m³.

¹ ANCOLD (November 2010) *Guidelines on Planning, Design, Construction, Operation and Closure of Tailings Dams*

Diesel powered drill rigs with capacity of up to 200 mm diameter blast holes drilled in a single pass will be used. Proposed equipment includes:

- Excavators - 2
- Trucks - 6
- Drills - 4
- Dozers - 2
- Water cart - 1
- Service truck - 1
- Stemming loader - 1
- Light Vehicles - 10
- Lighting plants - 4.

2.5 Stakeholder Consultation

Venture Minerals has undertaken consultation with key stakeholders, including:

- Municipal councils and organisations:
 - West Coast Council
 - Waratah-Wynyard Council
 - Burnie City Council
 - Tullah Progress Association
 - Cradle Coast Authority.
- State and Federal Members of Parliament.
- State Government Departments:
 - Department of Infrastructure, Energy and Resources (including Mineral Resources Tasmania)
 - Department of Primary Industries, Parks, Water and Environment (including Aboriginal Heritage Tasmania)
 - Department of Economic Development, Tourism and the Arts.
- Commonwealth Government Departments:
 - Department of Sustainability, Environment, Water, Populations and Community.
- State Authorities:
 - Tasrail
 - Tasports
 - Forestry Tasmania.
- Other mining companies:
 - Grange Resources
 - Minerals and Metals Group (MMG)
 - Metals X
 - Shree Minerals
 - Bass Metals
 - Tasmanian Magnesite.
- Other organisations:
 - Save the Devil Program.

2.6 Physical Environment

2.6.1 Existing Environment

Topography

The proposed mining lease encompasses Mount Lindsay and the topography is sloping throughout, with typical gradients over most of the lease being in the order of 20 to 30%.

Geology

The Mt Lindsay tin-tungsten-magnetite-copper skarns are hosted by the Neoproterozoic Success Creek Group and Crimson Creek Formation within the southern contact metamorphic aureole of the Meredith Granite. The Meredith Granite is part of a suite of Devonian granites which is very important to tin-tungsten mineralization in Tasmania.

The western part of the Mt Lindsay project includes the Success Creek Group. Generally four formations are recognised in the Success Creek Group for a combined thickness of 950 m. These comprise:

- basal conglomerate with sandstone lenses
- overlying quartz sandstone with minor siltstone and conglomerate (Dalcoath Formation)
- black mudstone, siltstone and minor quartz sandstone, and
- red chert and mudstone with minor quartz sandstone, conglomerate and dolomite (Renison Bell Formation).

Most of the eastern part of the project area is underlain by the Crimson Creek Formation. This formation is approximately 5,000 m thick and comprises mainly volcanogenic sandstone and siltstone with scattered laminated felsic tuffites, carbonate horizons and rare tholeiitic basalt.

The Meredith Granite underlies the central northern part of the Mt Lindsay project area. The margin of the Meredith Granite dips at a modest angle away to the south beneath the Success Creek Group and Crimson Creek Formation but is highly irregular in detail with numerous dykes and apophyses which appear to stope the meta-sedimentary units. Large rafts of skarn and hornfels also occur within the margins of the main granite body. Preliminary interpretation suggests several phases of granite intrusion culminating in late stage quartz-tourmaline veining and the localised development of quartz-tourmaline greisen.

Two potentially economic tin-tungsten-magnetite skarns are currently identified within the Mt Lindsay MLA area, namely the Main and No.2 Skarns hosted by calcareous sandstone horizons within the Crimson Creek Formation. Geological mapping, prospecting and magnetic surveys suggest the presence of several more skarns which have not been, or are inadequately, drill tested. At this stage magnetite, tin, tungsten and copper resources are estimated for only the Main and No.2 Skarns.

Climate

A new weather station was installed at the Mt Lindsay site in March 2011. Data being collected includes rain, evaporation, humidity, temperature and wind speed. The aim of the station, in addition to accumulating longer-term climatic records, will be to provide shorter-term, site specific information to assist in hydrogeological water balance assessments and management issues such as stream flows, diversions and mine dewatering.

The closest Bureau of Meteorology (BOM) station is located at Rosebery (HEC substation). This site operated from 1979 to 1993, when it closed. This site is approximately 18 km southeast of the mine site at an altitude of 165m.

The rainfall and temperature data (from the Rosebery site) are summarised as follows:

- Mean annual rainfall 1949.4 mm/year
- Maximum mean monthly temperature 16.4 °C
- Minimum mean monthly temperature 7 °C

The prevailing winds at the site are north westerly to south westerly. Table 3 shows the monthly rain and temperature statistics for the Rosebery station.

Table 3 - Monthly rainfall, temperature and pan evaporation

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall													
Highest (mm)	291	190.2	187.4	306.3	318	291.2	315.7	424.4	500.9	500.6	221	277.9	2189
Mean (mm)	129.5	81.6	102.8	150.7	172.7	199.9	208.7	211.1	233.2	189.7	147.0	134.5	1949.4
Median (mm)	120.1	62.5	96.3	140.3	167.7	207.8	229.8	193.4	214.8	149.8	146.3	106.1	1943.7
Lowest (mm)	53	27.6	42	66	96.6	94	96.4	114.4	106	82.2	45.4	36.4	1561.4
Temperature													
Mean maximum (°C)	21.0	21.9	20.1	17.0	14.1	11.3	11.0	12.1	13.3	16.4	18.6	20.5	16.4
Mean minimum (°C)	10.1	9.7	9.2	7.7	6.2	4.3	3.5	4.3	5.0	6.4	7.7	9.6	7.0

Catchments

William C. Cromer Pty Ltd was commissioned to develop a hydrogeological model for the project to aid in mine design and management, which included surface water hydrology and groundwater hydrology. Previous to this investigation, Coffey Environments undertook baseline water quality monitoring during 2008 and 2009.

Surface catchment divisions are shown in Figure 10.

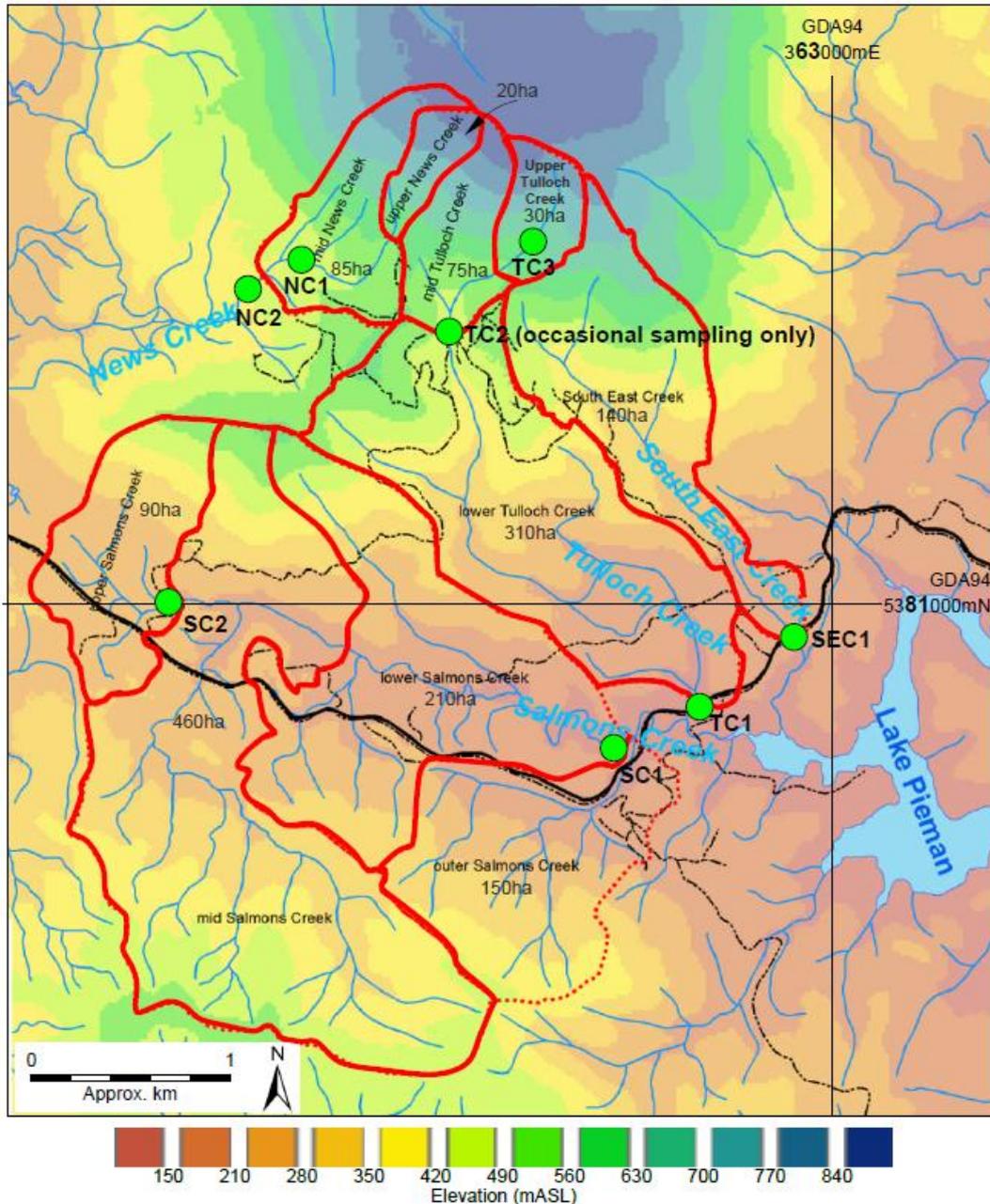


Figure 10 - Surface water catchment divisions (from Cromer 2010 report- water sampling sites are also shown)

Surface water

The preliminary water quality monitoring undertaken by Coffey involved three surface stream and two groundwater monitoring points, sampled at four quarterly intervals, in October 2008 and January, April and July-August 2009.

This preliminary testing indicated that the surface waters were very low salinity, slightly acidic sodium chloride types with traces of zinc, aluminium and copper. The average pH for surface streams was 6.5.

The baseline surface water sampling was recommenced in late 2010 with the additional sites in News and Salmons Creek. There are currently eight surface water sampling points. Figure 11 shows the location of the surface water monitoring sites. Sampling has occurred in January, April and June 2011.

A summary of the results is included below.

South East Creek

Neutral sodium+potassium chloride water of very low salinity and bicarbonate alkalinity. Sulphate is low. Dissolved metals are very low but are dominated by iron and aluminium, with traces of zinc, cobalt and chromium.

Tulloch Creek

Slightly alkaline sodium+potassium chloride water of very low salinity and bicarbonate alkalinity. Sulphate is low. Dissolved constituents except aluminium increase downstream. Dissolved metals are very low but are dominated by iron and aluminium, with traces of zinc.

Salmons Creek

Neutral to slightly alkaline sodium+potassium chloride water of very low salinity and bicarbonate alkalinity. Sulphate is low. Dissolved metals are very low but are dominated by iron and aluminium, with traces of zinc.

News Creek

This stream drains granite. Acid sodium+potassium chloride water of very low salinity, no alkalinity and low acidity increasing downstream. Sulphate is low. Dissolved constituents except aluminium increase downstream. Dissolved metals are very low but are dominated by iron and aluminium, with traces of zinc.

Groundwater

Groundwater at Mt Lindsay is contained in single, unconfined, fractured rock aquifer which at a regional scale drains towards Lake Pieman but at a local scale to watercourses. The water table fluctuates by up to several metres annually, and responds within about 2 days to rain events exceeding about 10 mm/day.

As for the surface water monitoring, baseline sampling was undertaken during 2008 and 2009. William C. Cromer completed a drilling program at Mt Lindsay in March 2010 with ten new bores installed at six locations. Figure 11 shows the groundwater bore locations.

In the short term, the hydrogeological investigations are focussing on local groundwater systems centred around the Main and No.2 Skarn ore bodies, including the catchment areas of Tulloch Creek and South East Creek (both of which may require diversion when open pit mining proceeds).

The standing water levels in the bores ranged from 1.8 m (bore GWC1) to 27.6 m (bore GWE1). Groundwater was analysed from six bores in March 2010. A summary of observations are provided below:

- The groundwaters are alkaline, mixed sodium and magnesium bicarbonate waters of low electrical conductivity
- Chemically the groundwaters are different from the sodium+potassium chloride surface waters
- Groundwaters are of higher electrical conductivity than surface waters
- Groundwater pH is in the range 6.5 - 8.5, except for an usually high pH of 10.7 from bore GWE1

- The water from GWB1 is unusual in that it contains elevated carbonate alkalinity (as a consequence of the high pH) but also dissolved aluminium and chromium
- The water from bore GWC is unusual for its elevated bicarbonate alkalinity, sulphate, dissolved aluminium, iron and manganese.

Land systems

There are three land systems mapped within the proposed project area. The land systems of the area, as mapped by Richley², are as follows.

841351 Mt Heemskirk

This land system covers only the northwest corner of the project area. Jointing has resulted in a parallel arrangement of steep-sided rocky ridges. The soils are mainly organic and peat forms a surface layer even on those profiles dominated by the mineral fraction. The granitic soils are typically highly erodible on steep slopes.

824241 Huskinson River

This land system covers the majority of the project area. It has Cambrian greywacke turbidite sequences and some basic-intermediate volcanic rocks. Soils on the steeper slopes vary greatly in depth with profiles from less than half to greatly in excess of two metres. Soils on side slopes have formed on gravelly colluvium. The steep topography of this land system means a high sheet erosion hazard exists on the steep slopes with the consequent danger of siltation along the flowlines.

824141 Pieman River

This land system runs along the southern boundary of the project area. It is characterised by low hills on Cambrian greywacke turbidite sequences. Gradational soils with a thin surface layer of peat cover the system. The soils are deepest in the swales, where profiles are mottled and are shallowest on the crests and upper slopes, where they are reddish brown in colour. Gravelly yellowish brown profiles typify the soils on the mid and lower slopes. There is moderate potential for soil erosion.

² Richley, LR. 1978. *Land Systems of Tasmania Region 3*. Tasmanian Department of Agriculture.

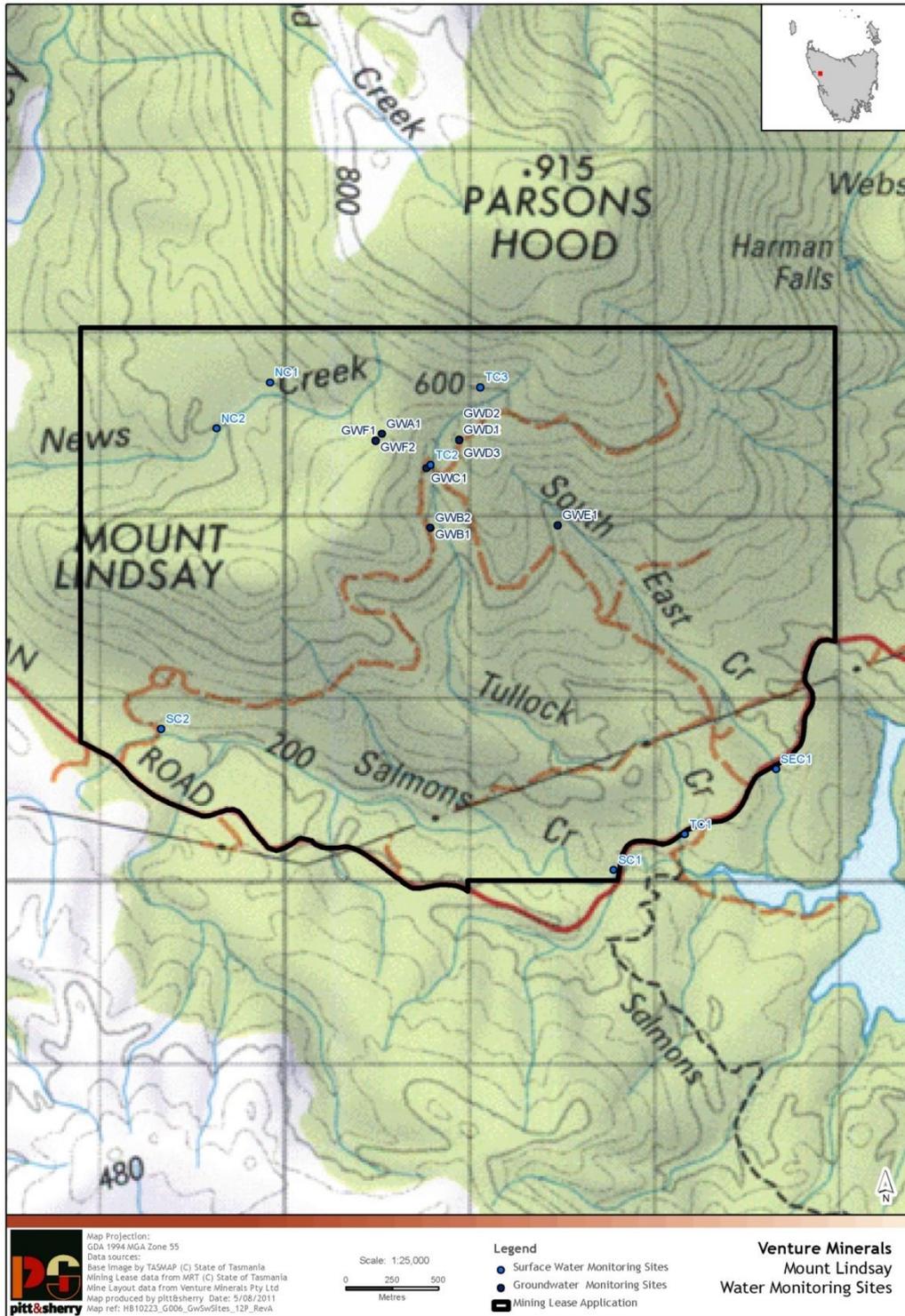


Figure 11 - Surface water and groundwater monitoring locations

Land capability

There has been no land capability survey of the area undertaken.

Land Tenure and land values

All of the project area is located within the Meredith Range Regional Reserve (Crown Land), which is vested in the Department of Primary Industries Parks Water and Environment (Parks & Wildlife Service). To our knowledge, there is no Management Plan in existence for the Meredith Range Regional Reserve (<http://www.parks.tas.gov.au/index.aspx?base=5957>). Consultation will be undertaken with the Parks & Wildlife Service during the preparation of the DPEMP to determine protection requirements for the reserve’s values.

There are two small areas on the southern boundary of the Mining Lease which are vested in Hydro Electric Corporation.

Flora and Fauna

A flora and fauna habitat assessment of the proposed mining area was undertaken in 2010 by North Barker Ecosystem Services³, supplemented by additional investigations by Nick Mooney⁴.

Vegetation

Vegetation communities within the lease area are shown in Figure 12 (this map also shows threatened fauna observations).

All site vegetation is native vegetation and it includes the three TASVEG communities shown in Table 4.

Table 4 – Conservation status of vegetation communities

TASVEG Community	State Wide Conservation Status	Bioregional Conservation Priority
<i>Acacia melanoxylon</i> on rises NAR	18,700 ha intact 5,500 ha reserved Not threatened Well reserved	6,300 ha intact 4,000 ha reserved Not threatened Well reserved
<i>Nothofagus - Atherosperma</i> rainforest RMT	606,400 ha intact 432,200 ha reserved Not threatened Well reserved	378,600 ha intact 339,000 ha reserved Not threatened Well reserved
<i>Leptospermum scrub</i> SLW	76,200 ha intact 45,000 ha reserved Not threatened Well reserved	41,700 ha intact 35,500 ha reserved Not threatened Well reserved

³ North Barker Ecosystem Services, (October 2011) *Mt Lindsay Mine – Infrastructure Options - Botanical Survey and Fauna Habitat Assessment*.

⁴ Mooney, N. (October 2011) Survey of Select Threatened Fauna for Venture Minerals’ Proposed Rock Storage Facility between Mount Lindsay and Parson’s Hood, Tullah.

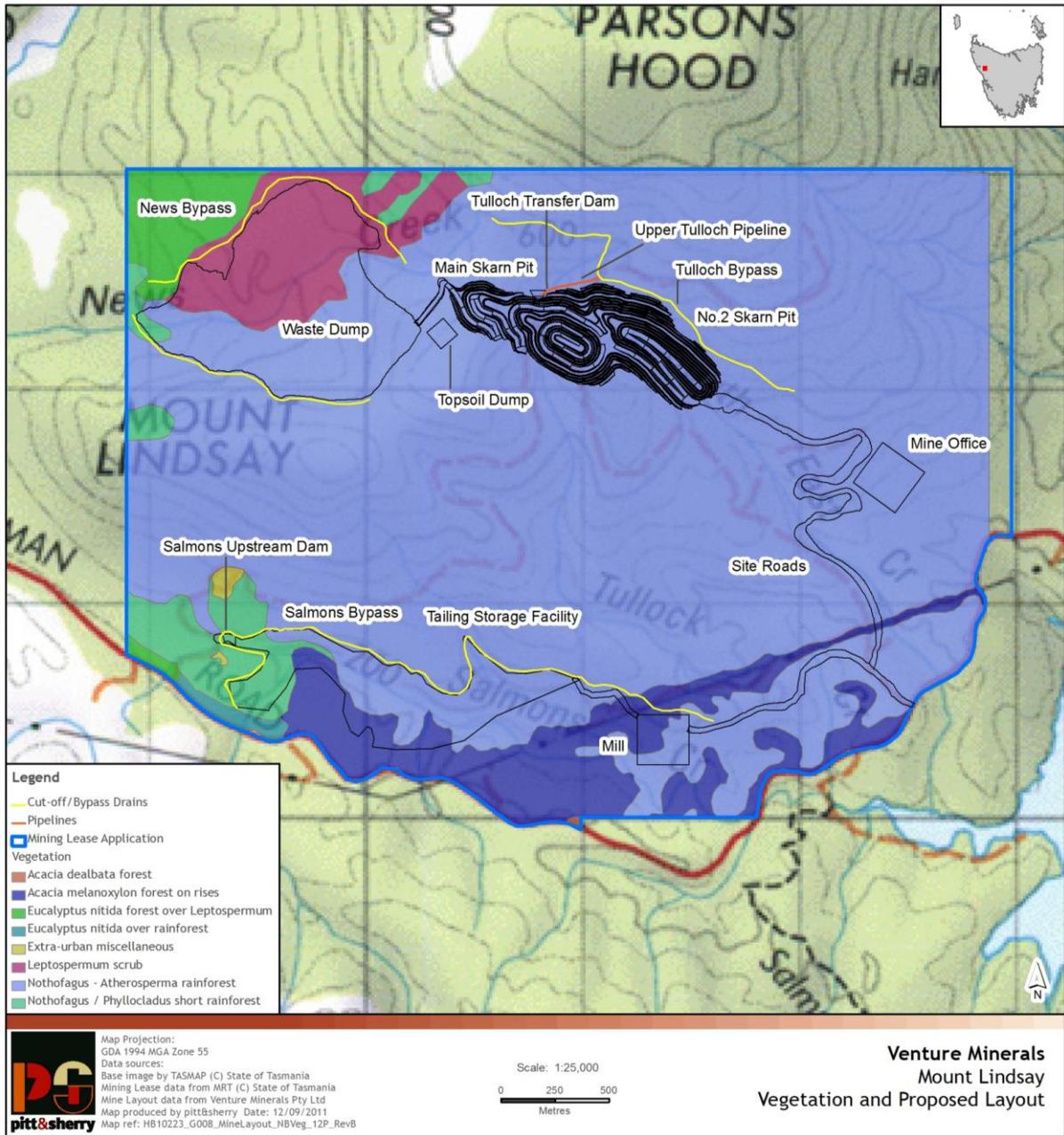


Figure 12 - Vegetation communities and threatened fauna observations in the proposed lease area

There are no vegetation communities of national (*Environment Protection and Biodiversity Conservation Act 1999*) or State (*Nature Conservation Act 2002*) significance within the proposed mine footprint nor within the wider mining lease.

Flora

No threatened vascular plant species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) or the *Threatened Species Protection Act 1995* (TSPA) were recorded from any of the proposed mine or associated infrastructure areas.

Table 5 lists threatened plant species previously recorded within a 5 km radius of the study area. Notes on the habitat and the likelihood of the species being in the study area are included. Of the previously recorded species only *Senecio velleioides* (forest groundsel) would be likely to occur in the study area but it was not encountered.

Table 5 - Threatened flora species previously recorded in the vicinity (within 5km)⁵

Species Name	Conservation Status ⁶		Previous records, preferred habitat and other observations. ⁷
	TSPA/EPBC	Potential to occur	
<i>Epacris curtisiae</i> northwest heath	Rare/-	NONE	This species is endemic to Tasmania with its stronghold in the NW, and it occurs in peaty soils or undulating terrain in association with heathlands, graminoid heaths and buttongrass scrub in the northwest. It occurs in altitudes below 300 m. One previous record occurs approximately to the SW of the study area. In the refined study area there is no suitable habitat as the mine and associated infrastructure supports forest.
<i>Micranthemum serpentinum</i> western tridentbush	Vulnerable/-	NONE	This species is restricted to Cambrian serpentinite substrate, typically on rocky hillsides at approximately 170 to 480 m above sea level. Habitat includes heathy shrubland, shrubby <i>Eucalyptus nitida</i> woodland, and moist, shaded gullies or creek banks. 50 previous records occur to the east of the study area, with the closest being 2.5 km away. As the Cambrian serpentinite substrate does not occur in the study area it is highly unlikely that it would occur.
<i>Senecio velleioides</i> forest groundsel	Rare/-	VERY LOW in intact forest MODERATE in disturbed areas	This species is widespread and is found in moist places on hills particularly after disturbance by fire. One previous record exists outside 500 m but within 5 km of the study area and its precision is low. This species is unlikely to be found in the study area in areas of mature, intact native vegetation, however it could be found in areas that have been recently disturbed by events such as vegetation clearance or along tracks. It was not observed. As this is a widespread ephemeral species the localised loss of some potential habitat will not adversely impact the species.

⁵ Natural Values Report 15/11/2010, DPIW

⁶ Tasmanian *Threatened Species Protection Act 1995/ Environmental Protection and Biodiversity Conservation Act 1999*.

⁷ Tasmanian State Government 2008

Fauna

The study area is primarily rainforest within an altitudinal range from approximately 130 m asl to about 560 m asl. The complex structure of the predominantly mature rainforest provides suitable habitat for a range of bush birds and mammals. The absence of old growth eucalypt trees means a lack of nesting and roosting habitat for hollow using fauna and eagles. However, logs and hollowed bases in mature myrtle are potential habitat for mammals and deep litter is prevalent on the ground which is favourable for invertebrates.

Table 6 lists threatened fauna species previously recorded from within 5 km of the study area.

Table 6 - Fauna species of conservation significance previously recorded, or which may potentially occur, within 5 km of the lease area⁸

Species	Status TSPA/EPBCA	Likelihood of occurrence ⁹	Preferred Habitat ¹⁰ and Observations ¹¹
BIRDS			
Azure kingfisher <i>Ceyx azurea diemenensis</i>	Endangered/ Endangered	LOW	Inhabits tree-lined waterways, lakes, ponds and other wetlands with dense streamside vegetation, in particular in western and north-western Tasmania ¹² . It is historically also known from eastern Tasmania. No known nest sites or records occur within 5km of the study area. Suitable habitat is considered to be marginal. The most likely stream is Salmons Creek that is included in the water storage dam as it has relatively open sections of slow moving water but the banks are generally unsuitable for nesting as they are predominantly sheer rock rather than sediments. Visual and auditory searches did not locate any azure kingfishers.
Grey goshawk <i>Accipiter novaehollandiae</i>	Endangered/-	MODERATE	Inhabits large tracts of open wet mixed forest and rainforest particularly favouring mature blackwood. No known nest sites or records occur within 5 km of the study area. No prime nesting habitat (mature blackwood) occurs within the study area; however, the open tall rainforest is occasionally used for nesting and this species will forage there particularly in the riparian areas.
Swift Parrot <i>Lathamus disolor</i>	Endangered/ Endangered	VERY LOW - only as fly over	Requires tree hollows for nesting and feeds on nectar of blue gum (<i>E. globulus</i>) and black gum (<i>E. ovata</i>) flowers. Three records of this species have been recorded within 5km of the study area. The survey area is not considered suitable nesting habitat, nor would it provide suitable foraging habitat during the species annual migration from and back to the Australian mainland. May be a temporary visitor to the site for short periods of time as a fly over area.

⁸ Natural Values Report 25/11/08, DPIW, Natural Values Report 15/11/2010

⁹ For broad ranging species such as eagles and devils this refers to breeding structures such as nests or dens.

¹⁰ Bryant & Jackson (1999)

¹¹ Natural Values Report 25/11/08, DPIW, Natural Values Report 15/11/2010

¹² Higgins (1999)

Species	Status TSPA/EPBCA	Likelihood of occurrence ⁹	Preferred Habitat ¹⁰ and Observations ¹¹
Wedge-tailed eagle <i>Aquila audax</i>	Endangered/ Endangered	LOW	Requires large eucalypts trees in sheltered locations for nesting and is highly sensitive to disturbance during the breeding season. Two nest site records of this species have been recorded within 5 km of the study area - both a little more than 3 km away. The survey area is considered unlikely to contain nests as there are no mature eucalypts within any of the proposed elements of the mine or associated infrastructure. The survey area is likely to be utilised for foraging but not for breeding. The DPIPWE model of potential nesting habitat does indicate a number of areas that may require a nest search if disturbance is to occur within 500 m or 1 km line of sight. These habitat areas are however not considered suitable for eagle nests or are not within line of site of the impact area.
White-bellied Sea-eagle <i>Haliaeetus leucogaster</i>	Vulnerable/-	LOW	This species nests and forages mainly near the coast but will also live near large rivers and inland lakes, often moving on a seasonal basis. The nearby Lake Pieman is considered potential habitat for this species. No records of this species have been recorded within 5km of the study area. The study area is considered unlikely to contain nests as there are no mature eucalypts within any of the proposed elements of the mine or associated infrastructure. The survey area is possibly utilised for foraging but not for breeding.
MAMMALS			
Spotted-tailed quoll <i>Dasyurus maculatus ssp. Maculatus</i>	Rare/ Vulnerable	HIGH	This naturally rare forest-dweller most commonly inhabits rainforest, wet forest and blackwood swamp forest. It forages and hunts on farmland and pasture, travelling up to 20 km at night, and shelters in logs, rocks or thick vegetation. No records of this species have been recorded within 5km of the study area. It is highly likely to be present although considered to be outside the core northern lowland habitat.
Tasmanian devil <i>Sarcophilus harrisii</i>	Endangered/ Endangered	MOD - HIGH	Inhabits a range of forest types, usually within extensive tracts of remnant native vegetation. Three records of this species have been recorded within 5km of the study area. Is highly likely to be present and devil scats was found during this survey at a number of locations.
FISH			
Australian grayling <i>Prototroctes maraena</i>	Vulnerable/ Vulnerable	NONE	Inhabits the middle and lower reaches of rivers and streams that open to the sea. The survey area is above the Reece dam and so it is no longer possible for the sea dependant breeding cycle of this species to function.

There are two listed fauna species for which the habitat at the site could be considered relevant. These are described below.

Tasmanian devil

The study area supports devils. However, they are very likely to be at a low density due to the predominance of rainforest habitat, which has a low density of prey animals. The mature tall rainforest has the potential to support devil dens in the hollows at the bases of large myrtles or in shelters created under fallen logs but site investigations found little evidence of denning activity.

The Tasmanian devil is generally nocturnal and during the day it will retire to a cave/den, hollow log or thick scrub. At night it forages over a range of 10 to 20 hectares. The animal is solitary but not territorial and foraging areas may overlap considerably.

The species is not currently threatened by habitat loss and has proven to be tolerant of habitat modification by breeding successfully in human domestic environments, such as under houses and sheds. However, due to the reduction in numbers caused by devil facial tumour disease (DFTD), increasing importance is placed upon the protection of maternal dens so that breeding opportunities and successes are maximised.

Removal of native vegetation (disturbance footprint approximately 194 ha) for the proposed mine development will reduce the local foraging area for devils but any impacts on foraging will be indirect. Potential direct impacts from vegetation removal would be related to the loss of denning opportunities.

The other relevant impact is the potential increase in roadkill through increase in traffic volumes on the areas roads and within the mine site itself.

Habitat and dens

For the Tasmanian devil, good quality habitat encompasses a combination of year round food supply, enough den sites for breeding and daily movements, and structural features for refuge and foraging.

Habitat requirements include the following¹³:

- Places to hide and shelter during the day (such as dense vegetation, hollow logs, burrows or caves);
- Areas with an open understorey mixed with dense patches of vegetation which allow hunting; and
- Soil suitable for burrowing for the purpose of maternal dens.

The combination of these features within a habitat is more important than a particular vegetation community or habitat type.¹⁴

Devils occupy several different dens, changing them every 1 to 3 days, and they travel an average nightly distance of approximately 9 km (occasionally recorded up to 50 km); a typical home range across a two to four week period is estimated to be 13 km², equivalent to 1300 ha, (ranging from 4 to 27 km²)¹⁵.

¹³ Department of Primary Industries, Parks, Water and Environment (2010) Recovery Plan for the Tasmanian devil (*Sarcophilus harrisii*). Department of Primary Industries, Parks, Water and Environment, Hobart.

¹⁴ Department of Primary Industries, Parks, Water and Environment (2010) Recovery Plan for the Tasmanian devil (*Sarcophilus harrisii*). Department

¹⁵ http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=299

Given the area of their home ranges, the area of the vegetation clearance required for the mine is likely to be only a small proportion of any given devil's range.

Although devils apparently change non-maternal dens often, female adults are thought to remain faithful to their maternal dens for life, so maternal den disturbance can be destabilising to populations.¹⁶ The significance of any destabilisation that might be caused by vegetation clearance would be related to the number of maternal dens disturbed or lost through vegetation clearance and the availability of replacement dens in surrounding areas.

The proposed mine area is a potential foraging habitat and site surveys have found scats which show that the area is used by devils. However, site surveys undertaken in 2009 and 2010 and by NorthBarker and in 2011 by Nick Mooney, a recognised devil expert, have found no active dens and only one site that shows evidence of prior use as a den.

Mr Mooney considers the rainforest (*Nothofagus*) community likely to contain approximately 0.5 devils per square kilometre and the *Leptospermum* scrub to contain approximately 1 devil per square kilometre. The area of vegetation to be cleared for the mine is 194 ha. One square kilometre is 100 ha, so at these densities, 1 to 2 devils might be affected.

If any devils are displaced by the presence of the mine, it is therefore only likely to be 1 or 2 animals.

This conclusion is supported by the direct observations of the site undertaken by Mr Mooney.

Nevertheless, because of the possibility for the species to be occupying dens within vegetation to be cleared for the mine, pre-clearing surveys for occupied dens would be undertaken. The appropriate time for these surveys is immediately before each stage of clearing to ensure the temporal relevance of the surveys to the clearing activity.

Any den opportunities lost through the vegetation clearing would be replaced by the creation of compensatory new opportunities.

Devil facial tumour disease (DFTD)

Like all devil populations, the local devils will be vulnerable to population loss due to DFTD.

The location of the proposed mine site in the northwest is one of the only remaining regions supporting high densities of Tasmanian devil where DFTD has not yet been detected.¹⁷

DFTD has not been recorded in the vicinity of the proposed mine despite regular local checks of road kills and trapping. The most recent trapping by the Save the Tasmanian Devil Program (from 26/10/10 to 19/11/10) was a search for the disease front and found no disease west of the Murchison Highway (DPIPWE unpublished data) which is some 25 km east of the proposed mine site¹⁸.

The current western-most location of the disease front is located to the east of the Murchison Highway close to Oonah.¹⁹ The spread of DFTD is continuing, with the disease front moving 15 km west since 2008. It is possible that DFTD will reach the

¹⁶ http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=299

¹⁷ Department of Primary Industries, Parks, Water and Environment (2010) Recovery Plan for the Tasmanian devil (*Sarcophilus harrisii*). Department

¹⁸ Nick Mooney pers. comm.

¹⁹ Department of Primary Industries, Parks, Water and Environment (2010) Recovery Plan for the Tasmanian devil (*Sarcophilus harrisii*). Department

northwest in 3-10 years. However, it is not known whether mortality will be as high in the western populations or whether these populations will react to the disease in the same way that eastern populations have.²⁰

Based on the understanding of DFTD, the project area, which lies within the northwestern devil population, will not introduce any changes to the environment that would increase the risk of DFTD entering the area or facilitate the intermixing of devil populations.

The study area has long been an area of mineral prospecting with human activity in the project area since the late 1800s. Because the area has already been subject to a level of human activity in the past, the mine proposal is considered unlikely to accelerate the spread of DFTD into the area.

It is therefore very unlikely that the proposed mine could increase the risk of introduction of DFTD. The only conceivable way in which this could occur was if diseased or dead individuals (for example, retrieved road kill picked up at least 25 km east of the site) or equipment that has come in contact with diseased individuals was brought into the site²¹. The likelihood of this occurrence is negligible, and as an added safeguard this issue will be addressed during staff and contractor inductions.

Roadkill

An increase in traffic volume to and from the site has the potential to result to in a higher incidence of road kill or injury to the species. The scavenging diet of the species, their occasional reluctance to leave food, and their dark colour make them particularly vulnerable to being killed on the road. As a source of carcasses, and as a means of dispersion, roads attract the species and puts them at risk of being killed themselves.²² In 2008, it was suggested that over 3000 individuals are killed on Tasmanian roads each year.²³

Roadkill rates of Tasmanian devils peak in summer, impacting relatively heavily on young animals just out of the den and migrating males which may have been driven out by dominant adults. Roadkill can have a substantial impact on even non-DFTD local populations in areas of high traffic (e.g. Cradle Valley, Freycinet before DFTD), being responsible for many premature deaths of both sexes and all ages, and could have an even more serious impact on depleted populations such as those affected by DFTD.

While the study area continues to have a DFTD-free population of the species, roadkill impacts on devil populations will be less significant than they would if DFTD ever becomes established in the area, when the effects of roadkill and DFTD would be combined.

The Save the Tasmanian Devil Program Roadkill Project has identified several key findings in relation to the impact of road kill on the species²⁴:

- There are high roadkill densities along the Murchison Highway in the northwest of Tasmania and on the Forestier Peninsula in the south east of Tasmania.
- The number of roadkill incidences reported to the project showed a clear temporal trend, with numbers peaking in summer and being relatively low in winter.

²⁰ Department of Primary Industries, Parks, Water and Environment (2010) Recovery Plan for the Tasmanian devil (*Sarcophilus harrisii*). Department

²¹ Nick Mooney pers. comm.

²² http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=299

²³ Lawrence, C. & Donnelly, C. (2010) *Save the Tasmanian Devil Program Roadkill Project*. Report prepared for the Save the Tasmanian Devil Program.

²⁴ Lawrence, C. & Donnelly, C. (2010) *Save the Tasmanian Devil Program Roadkill Project*. Report prepared for the Save the Tasmanian Devil Program.

- Of the 100 roadkill reports in which speed limit was provided, 91 involved stretches of road with speed limits greater than 80 kph. This suggests that higher speeds are a factor in the species roadkill rates, as seen in other Tasmanian roadkill studies (this does not take into account the relative prevalence or frequency of travel on roads with different speed limits).

The mean night-time detection distances for the species from a car with headlights on high beam is 60.8 m; this corresponds to a maximum speed of 54 kph at which a driver could stop safely to prevent collision with the species. This is an important speed relationship for any roadkill mitigation measures. A prudent risk minimisation measure would therefore be to transport product at low speeds, which is likely anyway due to the local topography of the area.

Traffic volumes along the Pieman Road section of the transport route is currently unknown and will be determined during the traffic impact assessment study for the project (which will take place over the coming summer). However, it is likely that traffic to and from the proposed mine site area will increase the traffic volumes along the Pieman Road. During this traffic assessment, roadkill statistics will also be collected, which will provide a baseline description of current roadkill rates.

Roadkill risk is primarily a night time occurrence, with the risk during daylight hours decreasing to approximately 25% of the night time risk²⁵. A prudent risk minimisation measure would therefore be to avoid product transport at night. Venture Minerals has therefore committed to daytime only product transport.

Venture Minerals is considering the establishment of an accommodation facility in Tullah to house mine workers. If this is proceeded with, the company is likely to also provide a bus service to and from the mine site for workers. Alternatively, the company will encourage car pooling by workers. Either of these measures will minimise the additional traffic on Pieman Road, thereby mitigating potential increases in roadkill risks due to worker vehicles. The likely net number of worker vehicle movements will be determined and described in the DPEMP.

Spotted-tailed Quoll

The spotted-tailed quoll has been recorded within 5 km of the study area. The spotted-tailed quoll is most abundant in areas containing rainforest, wet forest and blackwood swamp forest. The core range for the quoll is lowland forested areas of the north bounded by Wynyard, Gladstone and the central and northeastern highlands. Lower densities of animals occur elsewhere in suitable habitat throughout Tasmania.

The mine and associated infrastructure areas are likely to be part of a home range for this species, albeit outside of the core range. However, the comments above about the low densities of devils apply similarly to quolls.

Aboriginal Cultural Heritage

An Aboriginal heritage survey and assessment of the project area has been undertaken by Cultural Heritage Management Australia²⁶. No archaeological sites or areas of archaeological potential were identified.

The frequent steep sided slopes of the area are not conducive to camp site occupation and the landscape generally indicates little potential for Aboriginal heritage sites to be present.

²⁵ Nick Mooney pers. comm.

²⁶ CHMA (December 2010) An Aboriginal Cultural Heritage Assessment of the Proposed Mount Lindsay Mine Development, West Tasmania

The study concluded with a high level of confidence that the negative results of the field survey assessment are an accurate reflection of the very limited extent of Aboriginal heritage values within this area.

The overall interpretation of the findings of the field survey assessment was that site and artefact densities within the study area are very low, reflecting sparse Aboriginal activity within this area in direct relation to the nature of the terrain.

Historic Heritage

A historical heritage survey and assessment of the project area has been undertaken by Austral Tasmania²⁷.

The investigations found that the evolution of the site can be divided into three key phases: the 1909-1923 workings of the Mount Lindsay Mining Company; the 1923-1941 small scale operations from tribute mining; and, from 1941 to the present, exploration and investigation of the site.

The field survey identified 22 sites, whose origins would strongly appear to relate to the initial operations of the Mount Lindsay Mining Company. The feature types can be broadly divided into sites related to historic occupation and sites related to historic mining activity. Although previously impacted, the landscape has some ability to demonstrate a small scale, lode tin mining operation from the early to mid-twentieth century.

The level of preservation of sites across the landscape is variable. The main mining area has been impacted by both natural collapse and more recent road and earth works, while to the west, most of the test trenches appear to have been filled in.

An assessment of the potential historic heritage values of Mount Lindsay and the individual features concluded that the Mount Lindsay is a place of historic heritage significance, and that this significance exists at the Local level.

The report recommended management prescriptions for the site and these will be implemented as appropriate.

2.7 Key Issues

As described above, a substantial amount of site investigations have already been undertaken. Conceptual mine planning has also been undertaken.

These investigations and planning activities have identified the following as being key project issues. As with all relevant issues, these will be addressed in the DPEMP.

2.7.1 Environmental Issues

The proposed mine has only a low potential to impact on matters of ecological significance.

The mine lease does not contain threatened vegetation communities or plant species.

The only matters of potential conservation significance are the presence of Tasmanian devils and spotted-tailed quolls but for both these species only 1 or 2 animals might be affected by vegetation clearance and even these low impacts will be mitigated by the creation of denning opportunities from cleared vegetation. The implementation of monitoring and also roadkill mitigation measures will further mitigate potential impacts.

²⁷ Austral Tasmania (June 2011) Mount Lindsay, Tullah, Historic Heritage Assessment

The key environmental issues are the management of potential acid generating materials and the management of surface, pit and process water. This will be described in detail in the DPEMP.

2.7.2 Health Issues

There are no significant public health issues associated with the proposed mine.

Health issues are confined to the normal occupational health and safety issues relevant to an operating mine and minerals processing facility.

2.7.3 Economic and Social Issues

The proposed mine is located in a region where mining is the principal economic activity and the project will be consistent with the existing social fabric of the region.

The mine will provide a social and economic stimulus for the township of Tullah, which is likely to be the primary residential location of the mine workers. Venture Minerals is considering establishing a worker accommodation facility in Tullah to provide residential facilities for its staff.

The mine will be located in an area subjected to more than a century of previous mining and exploration activities and will therefore be consistent with established land use.

Elements of the mine are likely to be visible from the Pieman Road but this visibility will not be incongruent with the character of the area, which already has substantial mining activity. A viewshed analysis will be provided in the DPEMP.

The mine lies within a broad region that has been nominated for inclusion on the National Heritage List, primarily due to claimed wilderness values. This nomination is currently the subject of an assessment by the Australian Heritage Council. Venture Minerals has provided detailed submissions about the site and its past mining activities to the Council to support an excision of the proposed mining lease and its surrounding areas from any listing, should any such listing be recommended.

2.8 Survey and Studies

Surveys and studies undertaken to date have been identified throughout this document, and include:

- North Barker Ecosystem Services (October 2011) *Mount Lindsay Mine Infrastructure Options, Botanical Survey and Fauna Habitat Assessment*.
- Mooney, N. (October 2011) *Survey of Select Threatened Fauna for Venture minerals' Proposed Rock Storage Facility between Mount Lindsay and Parson's Hood, Tullah*.
- CHMA (December 2010) *An Aboriginal Cultural Heritage Assessment of the Proposed Mount Lindsay Mine Development, West Tasmania*.
- Cromer, W. C. (2010) *Pre-feasibility hydrogeological report, Mt. Lindsay Project*.
- Austral Tasmania (November 2010) *Mount Lindsay, Tullah, Historic Heritage Desktop Assessment*.

- Austral Tasmania (June 2011) *Mount Lindsay, Tullah, Historic Heritage Assessment.*

Additional studies and investigations to come include:

- A continuation of the surface and ground water monitoring;
- The implementation of a baseline roadkill monitoring program
- Further determination of the characteristics of potential acid generating materials
- Further development of the mine plan.

The findings and outcomes of the studies and investigations will be described in the DPEMP.

2.9 Proposed Timetable

A DPEMP will be prepared and submitted in early 2012. Construction work is planned to be commenced late 2012 and production is scheduled to commence in the fourth quarter of 2013.