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# ALLISON'S LODE
# MINING RESERVE STUDY

# for

# OCEANIA TASMANIA PTY LTD

**January 2006**

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# 1. EXECUTIVE SUMMARY

This Mining Reserve Study of the Allison's Lode zinc/lead/silver deposit was commissioned by Oceania Tasmania Pty Ltd (Oceania) as the basis for The Minserve Group Pty Ltd (Minserve) to provide a statement of the Ore Reserves compliant with the Australasian Code for the Reporting of Mineral Resources and Ore Reserves, 2004 Edition (JORC Code).

The study has collated information from a number of third party studies and information provided by Oceania Tasmanian Pty Ltd and Zeehan Zinc Limited (ZZL), its 100% parent company.

Alllison's Lode deposit is amenable to opencut mining and is seen as the first stage of a business plan by Oceania and ZZL to recommence mining of zinc/lead/silver on their leases located near to the town of Zeehan in north western Tasmania. The deposit is situated 4km west of Zeehan and lies within Mining Lease 123m/1947, held by Oceania Tasmania Pty Ltd, which covers an area of 146ha surrounding the old Comstock Mine.

An opencut in situ geological resource for the Allison's Lode deposit of 98,000t at grades of 5.0% zinc, 1.2% lead and 24.9g/t silver was prepared by SMG Consultants Pty Ltd (SMGC) in November 2005 and a stockpiled ore resource from the 2000/2001 trial mining was estimated by Cotlco Pty Ltd in 2005 to be 3,300t grading 21.5% Zn, 14.5% Pb and 540g/t Ag.

The geological modelling of the resource and the mining block reserve used for this study have been done by Simon Tear of SMGC. An opencut mine design was superimposed on the mining block reserve based on slope angles consistent with previous mining.

The mineralised zone dips sub-vertically with ore limits defined by the Balstrup Fault to the north and the Bendall's Fault to the south. It has well defined geological and visual limits at its eastern and western boundaries. There is a definite boundary between the mineralised zone and waste rock. The ore is harder and denser than the waste. The waste is capable of being free-dug by a backhoe excavator without prior drilling and blasting and this is likely to occur for the full extent of the opencut. This allows waste to be easily excavated up to the boundary with the ore with minimal loss and added dilution during mining.

A selective mining approach is envisaged with the small tonnage well suited to contract mining based around a small sized excavator and truck operation removing ore and waste in 4m flitches from the top of the deposit downwards.

The presence of talc (Mg0) with the mineralisation causes problems if the mine gate product exceeds 1% talc. To overcome this potential problem ZZL have decided to build a pre-concentration plant in which the ore would be crushed to 8mm sizing followed by gravity separation (Jig Plant) to produce a mine gate product with less than 1% talc in the product. This is capable of being sold to Rosebery Mill as mill feed which is the point of sale for the product.

Advice from ZZL and their metallurgical consultant is that all ROM ore will be crushed onsite to 8mm processed in the gravity pre-concentration plant with a plant recovery of 85% of feed (dry/dry tonnes). Product moisture has been assumed to be 9%. The pre-concentrated product will be trucked to Rosebery Mill, a one-way haul distance of 34km. Tailings from the pre-concentration process will be disposed of as backfill with the mine waste in the Old South Comstock opencut and Swansea Dump.

Pyrite in the ore and waste has the potential to be acid forming when mined and placed indiscriminately in waste dumps. The current plan is to encapsulate pryrite and other potentially acid forming material in engineered waste dumps and tailings dams.

A costing study was undertaken based on contract mining of the ore followed by crushing and pre-concentration with the mine gate product trucked to Rosebery Mill where it is sold as a mill feedstock.

The small tonnage allows the project to be completed within twelve months and this enables costing to be done in constant dollar terms.

Cost data provided by Oceania Tasmania Pty Ltd. has been used unaudited by Minserve.

A contract mining cost of $14.50 per tonne has been used (this is equivalent to $12.75 per bcm) and a pre-concentrate treatment cost of $10.08 per tonne has been used. After allowing for a plant recovery of 85% and site management and on costs, a mine gate cost of $32.66 per tonne was derived.

All money spent on plant and equipment by ZZL and Oceania Tasmania on their involvements with the Comstock area prior to January 2006 has been treated as a sunk cost, in line with the ZZL Business Plan, 2005. The same Business Plan estimates a capital cost of $600,000 to complete the pre-concentration plant and plant commissioning.

Contract road haulage to Rosebery Mill has been costed at $0.12 per tonne per kilometre and a realised sales price of 50% of the contained metal value delivered to Rosebery Mill has been used.

Corporate and management costs of $500,000 have been used and a royalty payment of 5% of the nett revenue has been used.

The above costing exercise was done separately for the Allison's Lode opencut ore and the stockpiled ore. Revenue was calculated based on commodity prices published for the London Metals Exchange for 25 January 2006. These are:

- Zinc US$2,269 per tonne
- Lead US$1,409 per tonne
- Silver US$9.54 per ounce.

The Australian dollar, US dollar exchange rate used was AUD = US$0.75.

Both cases gave substantial operating cash surpluses.

Whilst the Allison's Lode Reserve Study has been undertaken to support The Ore Reserve Statement for Allison's Lode, it is not a rigorous financial evaluation of the project. However, it does show that the mining reserve is a viable opencut mining proposition likely to generate a cash surplus of some $3.5M after capital and operating costs, as described in this report, are taken into account.

A summary of the Allison's Lode Reserves based on all the assumptions stated in this report is shown in Table 1.1. Reserves have been reported to two significant figures.

**Table 1.1**
**Summary of Reserves**

| Source | Class | Volume ($m^3$) | Tonnes | Zn % | Pb % | Ag g/t |
|---|---|---|---|---|---|---|
| Opencut to RL 272m | Probable | 27,642 | 95,581 | 5.15 | 1.25 | 25.50 |
| Stockpiled Ore | Probable | | 3,300 | 21.5 | 14.5 | 5.40 |
| **Total** | | | **98,881** | **5.46** | **1.93** | **42.67** |

# 2. INTRODUCTION

## 2.1 GENERAL

This report has been commissioned by Oceania Tasmania Pty Ltd to extend the work completed by SMG Consultants Pty Ltd (SMGC) in November 2005 by providing a mining reserve study for the Allison's Lode deposit in West Tasmania based on the JORC Resource Statement for the deposit.

The study is based on the Surpac geological model developed by SMGC and the Surpac Mine Plan created in this study. This report is to be read in conjunction with the report "JORC Resource Statement for the Allison's Lode Zeehan – West Tasmania" by SMG Consultants Pty Ltd, November 2005. The basis and accuracy of the information used to create the geological model is discussed in the report by its author Simon Tear of SMGC. This subsequent report has relied upon and assumed without verification the accuracy and completeness of all the information contained in the model.

The Allison's Lode deposit is seen as the first stage of a business plan by Oceania Tasmania to recommence the mining of zinc/lead/silver in the area with custom milling and treatment of the ore at Zinifex's nearby Rosebery Mine.

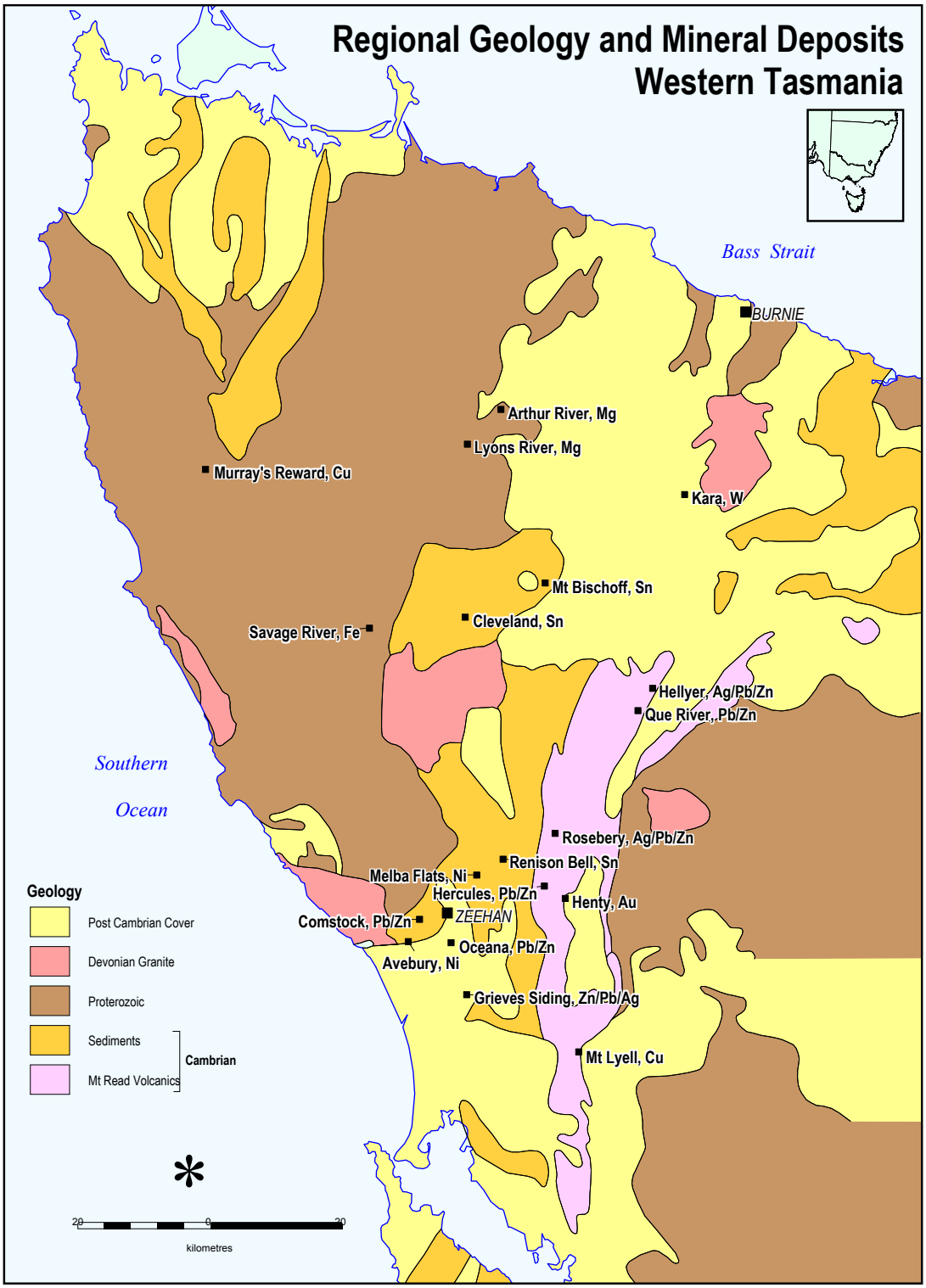
## 2.2 LOCATION

The Allison's Lode zinc/lead/silver deposit is located 4km west of the town of Zeehan in Western Tasmania as shown in Figure 2.1. It comprises one of the resource areas of the Comstock Mine which is 3km northeast of the Avebury nickel deposit owned by Allegiance Mining NL. Zeehan was the centre of major base metal mining in the late nineteenth and early part of the twentieth centuries. It is the residential and service centre for the nearby Renison Tin Mine and is adequately equipped to serve the needs of Comstock Mine.

The area was a focus for mining activity between 1887 and 1913 when lead, zinc and silver were extracted from pits and shallow underground workings.

Zinc ores were, however, generally avoided as recovery of the metal was unattractive. Lead smelters operated south of Zeehan and the residual slag heaps contain a significant proportion of zinc.

**Figure 2.1**
**Allison's Lode Location**



## 2.3 TENURE AND HISTORY

The Allison's Lode deposit lies within Mining Lease 123M/1947 held by Oceania Tasmania Pty Ltd as shown on the Minerals Resources Tasmania (MRT) Mine Lease map dated 16 January 2006, Figure 2.2.

The Allison's Lode deposit lies within Mining Lease 123M/1947 held by Oceania Tasmania Pty Ltd:

- Mining Lease 123M/1947
- Area 146ha
- Lease Owner Oceania Tasmania Pty Ltd
- Locality McIvor Hill
- Status Pending – Renewal letter submitted 29 September 2005.

Oceania Tasmania Pty Ltd is a fully owned subsidiary of Zeehan Zinc Limited an unlisted public company formed to mine and process mineral deposits located in the Zeehan region. ZZL holds three other mining leases (ML 43M/1985, ML9M/1995 and ML 9M/202) in the area and three nearby exploration licences EL 20/2002, EL 30/2002 and EL 18/2003. Two mining leases are under application with Mineral Resources Tasmania, they are 2M/2005 and 5M/2005.

Opencut mining of Allison's Lode was last carried out by Oceania Tasmania in 2000/01 with 10,000t of ore stockpiled onsite for later processing. The company is currently finalising approvals to mine 200,000t of zinc/lead/silver ore annually.

Mining leases in the area cover 250ha at the Comstock Mine. EL20/2002 covers the Oceana Mine 4km to the southeast of Allison's Lode and EL30/2002 covers prospective area around ML123M/1947.

The Comstock mining lease area was mined between the 1880s and 1950s by small shallow subsurface operations mainly for lead and silver and latterly also for zinc The many small companies operating in the area invariably lacked capital to install adequate pumps to control the heavy inflow of water, making mining at depth difficult. The deepest mine near Zeehan was 63m, however, most were less than 10m.

In the early years, zinc ore was of no commercial value and was not mined. The main target was silver, which occurred in association with lead ore which was often found in narrow deposits along the footwall of mineralised zones. Substantial widths of zinc ore were often left untouched by early mining operations.

In 1989, a total of 7,334t of ore was mined at South Comstock and trucked to the Rosebery Mill for treatment. The average grade of this ore was 14.8% Zn, 3.6% Pb and 62g/t Ag.

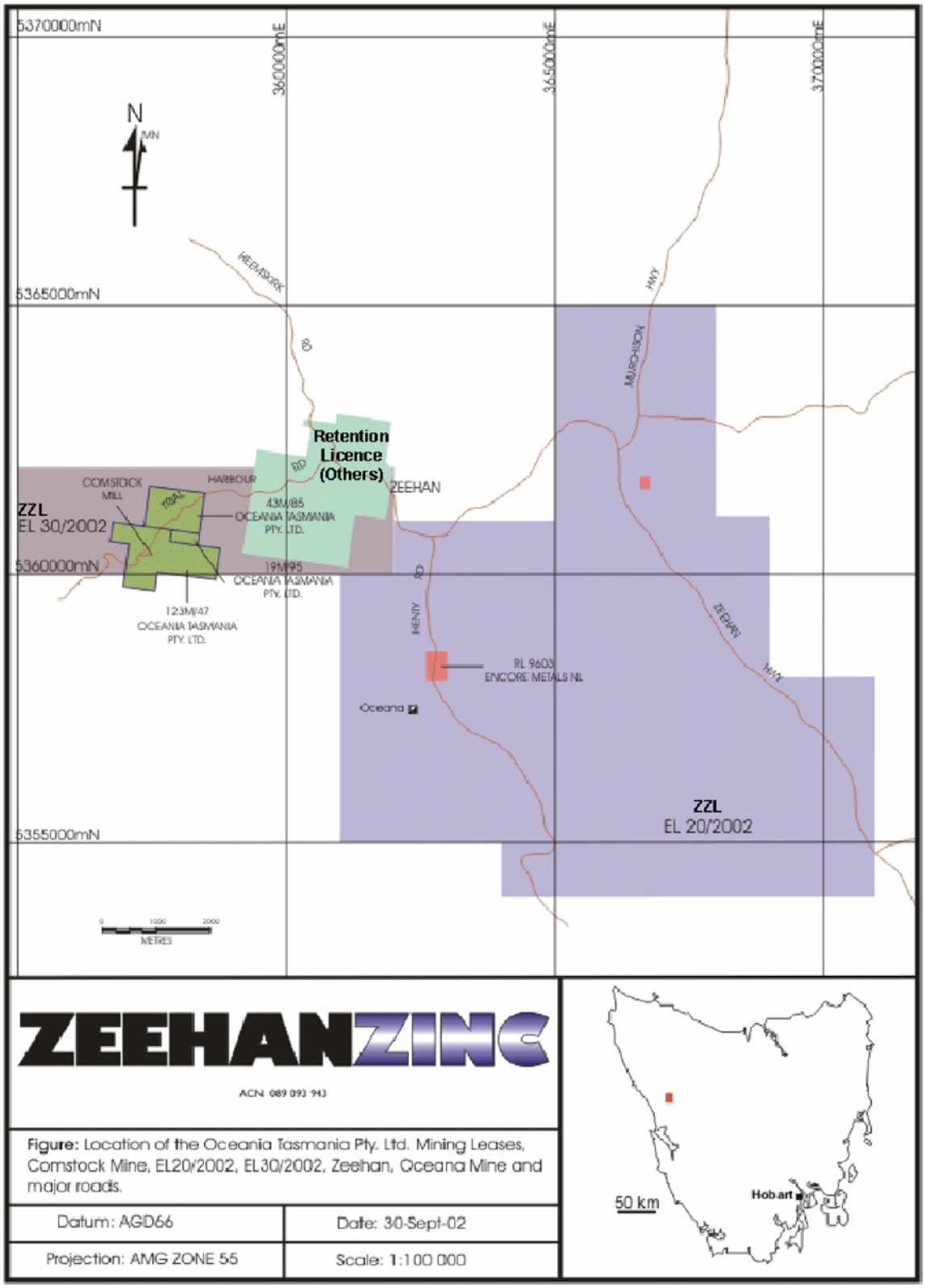
In 1990, Renison Goldfields Consolidated Limited (RGC) carried out an extensive exploration program that included the drilling of 16 holes along the strike of the Balstrup Fault. A resource of over 6Mt of zinc/lead/silver ore was inferred which RGC concluded was too small and did not meet corporate objectives.

Trial mining of Allison's Lode by ZZL in 1997 extracted 1,240t of ore averaging 14.5% Zn, 2.4% Pb and 45g/t Ag. All the ore was processed at Pasminco's nearby Rosebery Mill.

In 2000/2001, ZZL mined an opencut on Allison's Lode which removed 75,000t of material, including 10,000t of ore which has been stockpiled.

Metallurgical testing of this ore identified that it contained talc which is detrimental to the Rosebery Mill flotation circuit. Further testing showed that treatment in a Jig Plant onsite would remove talc and produce higher grade concentrates for transport to Rosebery (zinc) and shipping to Port Pirie (lead). A decision has been made to proceed with this option and install a gravity separation plant onsite to pre-concentrate the ROM ore.

**Figure 2.2**
**Leases and Licences**



## 2.4 SCOPE OF WORK

The Minserve Group Pty Ltd (Minserve) was commissioned by Oceania Tasmania Pty Ltd to provide a mining reserve study for the Allison's Lode deposit based on the JORC Resource Statement and modelling completed by SMGC in November 2005.

The mining reserve study uses the results of mineralogical examination (H.W Fander) and flotation test work (Optimet) reported in ZZL Business Plan, February 2003 and the Business Plan, October 2005. These studies developed a process flowchart and recoveries for a site pre-concentration (Jig Plant) gravity separation process of the ROM ore mined to provide a suitable mine gate product that can be trucked to Zinifex's Rosebery Mill, the point of sale of the concentrated ore by Oceania Tasmania to Zinifex.

## 2.5 DISCLAIMER

This report has been prepared at the request of Oceania Tasmania Pty Ltd to assist them to evaluate the feasibility of opencut mining of the Allison's Lode deposit. The SMGC geological model provided by the client relates to the latest geological interpretation of the Allison's Lode and mining resources. The model has not been audited by Minserve and has been used by SMGC to provide quantities for this study.

In addition, the results of metallurgical test work and investigations commissioned by Oceania Tasmania have also been used un-audited. These results have been taken at face value as being representative of past and present practice for the treatment of the Allison's Lode ore at the nearby Rosebery Mill. Due to the limited opencut ore tonnage of Alison's Lode, Oceania Tasmania have nominated that all ore will be pre-concentrated onsite and thence trucked to the Rosebery Mill to be sold as mill feed to Zinifex Limited, the owner of the Rosebery Mill.

Minserve has relied on Oceania Tasmania's advice for commercial arrangements for contract mining, pre-concentration costs, haulage of ore to Rosebery Mill and the price achieved at the point of sale.

The studies reviewed and the data available are considered to be adequate for this study. Projections contained in the study are representations of future matters based on assumptions that are subject to uncertainties and contingencies outside the control of Minserve. No representation is made that any forecast or projection will be achieved. No member of Minserve makes any representation or warranties to the accuracy, reliability or completeness of matters in this study beyond those stated in the study.

# 3. GEOLOGY

## 3.1 GENERAL

The geology and geological modelling information presented is a selective summary of information in the report "JORC Resource Statement for Allison's Lode, November 2005" by Simon Tear of SMG Consultants Pty Ltd.

## 3.2 REGIONAL GEOLOGY

The geology of the West Coast of Tasmania comprises a complexly folded series of late Pre-Cambrian to Ordovician-aged sediments and volcanics intruded by Late Devonian-aged granites (Figure 3.1). Structurally there have been many overprints that have produced a complexly folded and faulted sequence of rocks. Thrust faulting e.g. the Tenth Legion Fault, has substantially dislocated rock sequences whilst even later, ESE-striking normal faulting e.g. the Balstrup Fault and Bendall's Fault, has further complicated the picture.

In the southern half of the Oceania Tasmania mine leases a flat lying interbedded sequence of dolomite and phyllite units occurs (locally graphitic) belonging to the late Pre-Cambrian Oonah Formation. These rocks lie in the hanging wall of the Tenth Legion Fault. Whilst in the northern half there is a mixed sequence of volcanoclastics and arenaceous rocks of the Lower Cambrian-aged Crimson Creek Formation butted against the Oonah by the Balstrup Fault.

The structure of the area is complicated by having flat lying beds being gently folded and disjointed by normal, wrench and possibly reverse faulting. The presence and effect of shallow dipping structures, perhaps parallel to or splays off the Tenth Legion Fault is not known and can only be inferred to exist at this point. In addition flexural slip on major bedding planes is an unknown quantity.

Just southwest of the leases, in the footwall of the Tenth Legion Fault, lies the mafic and ultramafic rocks of the McIvor Complex. To the west of the leases lies the Heemskirk Granite, which has been thought responsible for substantial amounts of mineralization in the area.

The Comstock Mineral field consists of a series of lead/zinc vein-like, 'fissure-fill' structures mainly hosed by the Oonah Formation, which were the subject of substantial mining efforts in the late 19$^{th}$ Century.

The Avebury Nickel deposit lies a further 3km southwest of the Comstock area, whilst the recently suspended operations of the Renison Bell Tin Mine lie 16km to the northeast.

## 3.3 LOCAL GEOLOGY

The Allison's Lode appears to be an axial planar sub-vertical 'fissure-fill' structure located in the anticlinal hinge of an upright, north to north-northwest striking open fold. Host lithologies comprise silicified dolomites, which can be friable when weathered, underlain by locally silicified carbonaceous phyllites, all belonging to the Upper Oonah Formation. Sporadic lineations infer a possible shallow plunge direction to the north.

The exposed lode comprises a north to north-northwest sulphide vein system/structure that many be up to 200m long by a maximum width of 20m, with the first 5m of overburden regarded as totally weathered, barren, sandy material. A series of parallel, semi-continuous sulphide zones consist of coarse grained sphalerite, galena and pyrite with a quartz (+calcite) gangue. Some individual sulphide veins are discontinuous and poddy in nature. The vein system appears to have a silicification envelope up to several metres away from the sulphide bodies, particularly evident in the carbonaceous phylilites. Trace levels of chalcopyrite are associated as inclusions within the sphalerite.

At the southern margin of the vein system a broadening of the ore structure may be associated with the Bendall's Fault, a west-northwest mineral-bearing structure that truncates the Allison's Lode structure and is parallel to the Balstrup Fault (Figure 3.2).

The likely mode of ore formation is via a significant fracture within the axial plane of the flat lying, gently folded sediments acting as host to zinc and lead mineralization sourced from the Heemskirk Granite. However where the vein cuts across carbonate units there has been more substantial replacement of the carbonate (dolomite) host giving a much thicker mineralised zone relative to the underlying (and overlying?) phyllite units. Pb-isotope data for the Allison's Vein confirms a Devonian lode style whilst the sulphur source is thought to be magmatic but modified and enriched by another source.

Weathered brown sandy/clay material is found in the carbonate unit, peripheral to and within the zinc mineralisation and has been identified as talc (Wong, 2000). This material forms an alteration halo to the main mineralisation.

The geological interpretation by SMGC has defined the following geological units for Allison's Lode deposit. Solid shapes and surfaces of these units have been created in a Surpac model.

**Ore Zone**

The ore zone is a distinct mineralised zone based on geology and a combination of zinc and lead assay grades (notionally a 1% Zn cut-off); the mineral vein zone usually comprises massive sulphide in the form of coarse grained pyrite, sphalerite and galena. The mineralisation consists of variable amounts of sulphide sometimes as discrete massive pods, and at other times as a stockwork of veining.

Vugs were initially ignored when defining the ore shape. They have been interpreted as old mine workings that once contained mineralisation. Subsequently a mined-out area solid shape has been created from the aircore drilling to represent old workings.

Talc alteration has been identified in the drillholes but no solid volume was created for it due to the drillholes often beginning in the alteration zone. The talc forms on the immediate margin to the mineralised zone and locally within the ore zone.

**Feeder Zone**

This solid comprises anomalous zinc zones (notional 0.5% Zn) representing low grade material and the vein in the underlying phyllite. It is a much narrower zone than that in the overlying dolomite.

**Carbonate Contact**

This DTM surface represents the lower contact of the flat-lying, ore-hosting, carbonate unit with the underlying phyllite unit. Undulations in this shape may indicate effects of later folding and/or faulting.

**Bendall's Fault**

This DTM surface was generated from its surface trace in the geological mapping draped over the post-mining topography and projected 500m downdip. This fault at the carbonate contact provides a southern boundary to the Allison's Lode mineralisation.

Mineralisation associated with the footwall of Bendall's Fault has not been modelled due to there being insufficient information. The mineralisation is thought to be related to Allison's Lode but has been rotated by sinistral shearing on Bendall's Fault (see Tear's Reports 2000a, 2000b, 2001 and 2005).

**Balstrup Fault**

The fault provides a northern boundary to the Allison's Lode mineralisation. The dimensions and style of the fault are likely to be of a complex fault zone rather than a discrete plane.

This DTM surface was generated from its interpreted surface trace in the geological mapping draped over the pre-mining topography and projected 1,000m downdip. There is diamond drillhole evidence for this fault projection to have validity, although this data has not yet been incorporated into the faults final interpretation.

**Weathering Zone**

This surface occurs in the northern half of Allison's Lode resource over an area relatively untouched by recent mining and indicated as barren from the recent RC drilling.

**Figure 3.1**
**Comstock Mineral Field and Regional Geology**

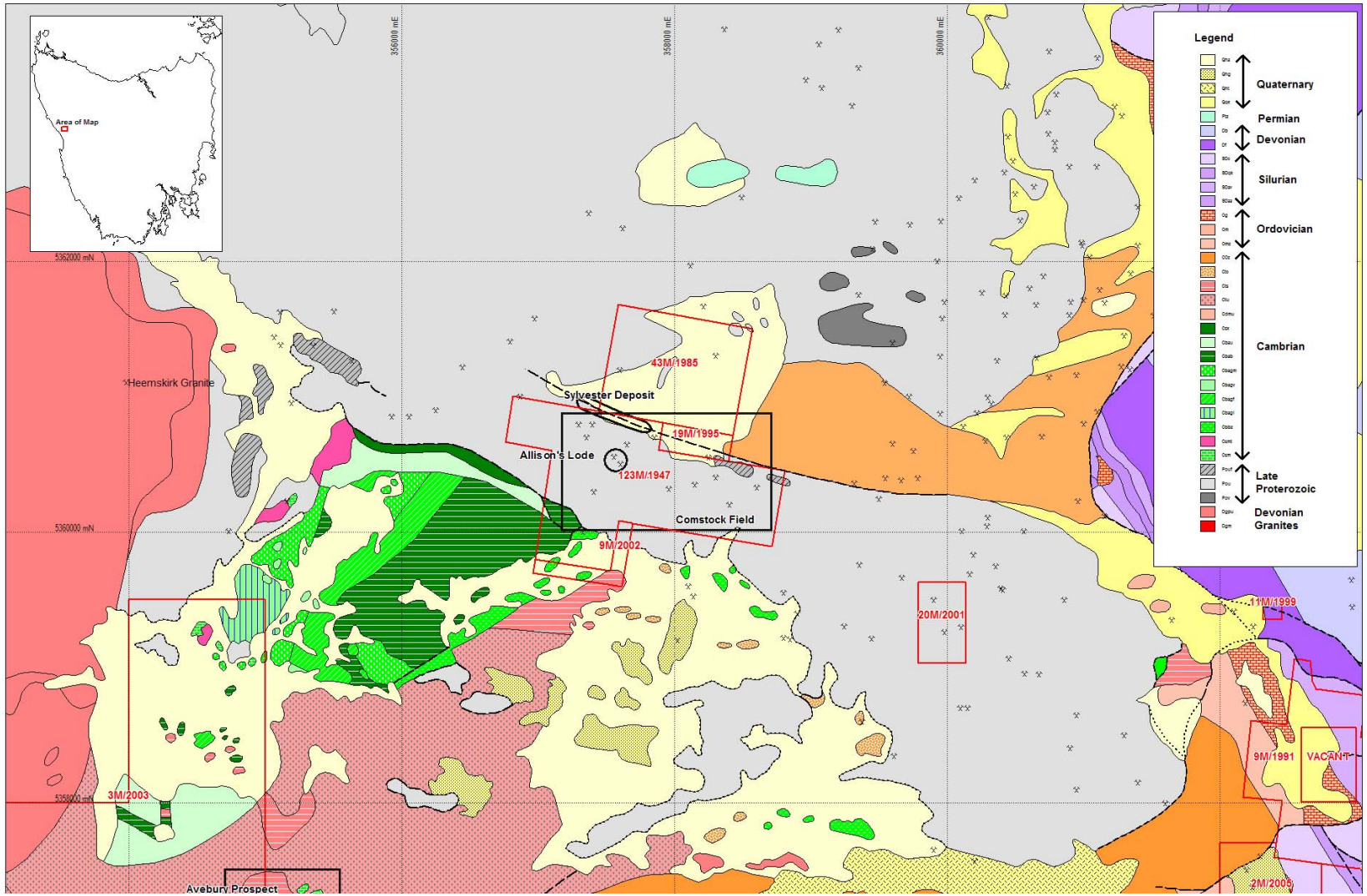
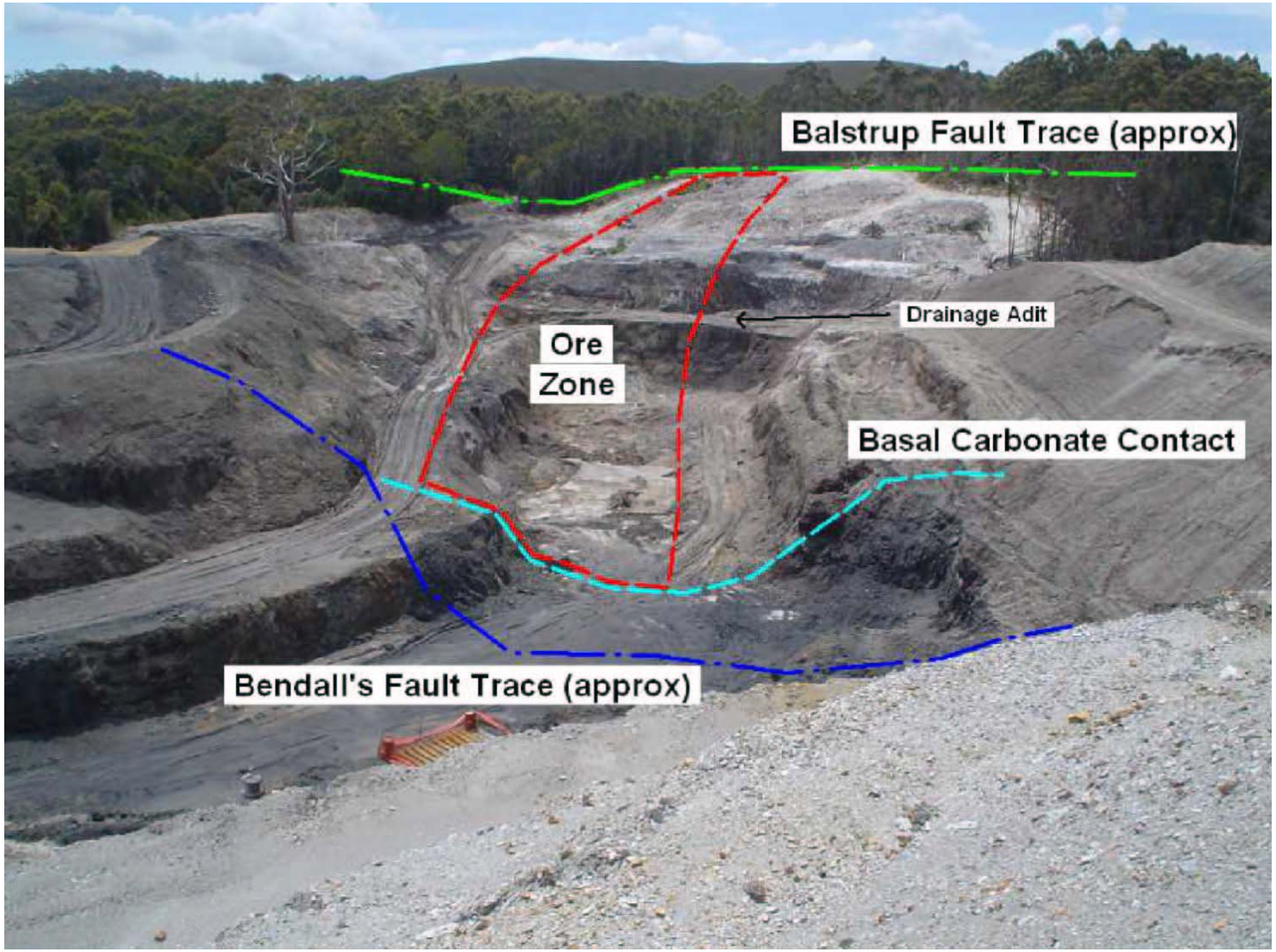


**Figure 3.2**
**Photo showing the Extent of Allison's Lode and Major Features**



## 3.4 GEOLOGICAL MODELLING

The Allison's Lode resource is bounded at depth by the carbonate contact with the underlying phyllite unit. Its upper boundary is a combination of the current pit floor and the base of the weathered zone for the northern half of the deposit.

The deduced resource dimensions are 193m long by an average of 13m wide (range of 5.3m to 19.7m) by an average 12m deep (range of 0m to 20.6m).

The northern boundary of the mineralisation is likely to be the Balstrup Fault, although this fault has not been exactly delineated in this northern area. The fault's current inferred position is based on a combination of topographic change and electromagnetic geophysics.

The southern boundary of the resource is determined by the base of the carbonate contact which outcrops at the south end of the pit in conjunction with Bendall's Fault.

The SMGC 3D mineralisation shape is based on a notional 1% zinc cut-off outline blended with the geology, as defined in the drillholes and in the surface mapping, into a coherent geological shape.

Initially a 3D geological interpretation was produced as a mineralised solid volume based on the aircore drilling, channel sampling and trial pit mapping using Surpac software subsequently a block model was created for the Allison's Lode using an inverse distance squared interpolation technique to generate block grades. This was considered the most suitable method based on the relatively low number (126) of aircore samples available.

Details of the modelling method are described in the JORC Resource Statement Report, November 2005. Bulk density and block grade estimation used for the 10m x 10m x 10m block size with subcelling to 2.5m are discussed relative to the source data used for the model and the modelling scenarios evaluated.

## 3.5 RESOURCE STATEMENT

There is a good geological understanding of the nature of the mineralisation of Allison's Lode which has been tested by various suitable geological methods including aircore drilling, channel sampling, trial mining and geological mapping.

Sample density and mapping details have allowed for the construction of a potential ore shape with a high degree of confidence.

Inverse distance squared was the resource estimation technique used.

A conservative estimate of the remaining in situ resource of the Allison's Lode is:

| Classification | Volume | Tonnes | Zn % | Pb % | Ag ppm |
|---|---|---|---|---|---|
| Measured | 9,375 | 32,028 | 5.86 | 1.46 | 29.0 |
| Indicated | 18,734 | 62,637 | 4.74 | 1.12 | 23.2 |
| Inferred | 1,125 | 3,563 | 2.25 | 0.67 | 17.1 |
| Mineralisation | 0 | 0 | 0.00 | 0.00 | 0.0 |
| Grand Total | 29,234 | 98,228 | 5.01 | 1.21 | 24.9 |
| **Values Corrected for Degree of Accuracy** | **29,200** | **98,000** | **5.0** | **1.2** | **25** |

Based on aircore results only with a 25m search radius, a top cut of a 30% Zn and a base density of 2.6g/cm$^3$.

Constraints for resource reporting are the SMGC ore shape below the current topographic surface and excluding material associated within the collapsed stope(s). Additional constraints for the measured resource category include a shape based on the continuity of the channel sampling and surface mapping data.

In addition to the work done by SMGC a resource estimate of ore stockpiled from the 2000/2001 trial mining has been prepared by Cotlco Pty Ltd in 2005.

The Cotlco Pty Ltd Resource Estimation and Classification Update,2005 report classified the stockpiled ore in the measured category as follows:

**Table 3.1**
**Allison's Lode – Estimated Stockpile Resource (Cotlco)**

| Classification | Tonnes | Zn % | Pb % | Ag % |
|---|---|---|---|---|
| **Measured** | | | | |
| Stockpiled Ore | 3300 | 21.5 | 14.5 | 540 |

# 4. MINING

## 4.1 GENERAL

Opencut mining of the Allison Lode is restricted in depth by the basal carbonate contact with the underlying phyllite unit. An ore resource of some 98,000t of in situ ore has been defined. This quantity of ore is ideal for contract mining similar to previous operations. Mining should be completed as a stand-alone contract in well under twelve months, dependent on this size of equipment and contract sales arrangements. The study has assumed that ore mined will be pre-concentrated onsite using a gravity separation process to remove talc from the ore. The pre-concentrated ore is then trucked to the nearby Rosebery Mill where it will be sold at an agreed price as mill feed to Zinifex.

Other options available to Oceania Tasmania include the inclusion of Allison's Lode with other adjacent opencut resources owned by Oceania Tasmania or ZZL as part of a large long term project to maximise exploitation of these resources. Such a project has been outlined in the ZZL 2003 and 2005 Business Plans but has not been pursued in this study due to the lack of well defined and documented resource bases for all the other sources of ore.

## 4.2 MINE DESIGN

The mine setting is such that the ore limits are defined by the Balstrup Fault to the north and the Bendall's Fault to the south. The mineralised ore zone dips near vertically and has well defined visual geological limits for the east and the west ore boundaries.

The existing opencut shows that mining benches from previous mining operations have generally been mined with face slopes around 50° with a steepest face slope of 60° as determined from the existing Surpac topography pick-up.

The mining operations are well drained by a drainage adit that will also drain the remaining opencut operations. Under these circumstance and with the short time frame for mining it has been deemed acceptable to use a face slope angle of 60° for mine design.

The following mine design parameters have been used:

- Bench face slope angle 60°
- Spoil angel of repose 35°
- Catch bench interval 16m
- Catch bench width 4m
- Shovel and truck flitch height 4m
- Swell of S/T waste after placement 120% of in situ volume
- Relative density of ore (typical) 3.3t/$m^3$
- Relative density of waste 2.63t/$m^3$
- Access Ramp gradient 1 in 10
- Access Ramp width 6m

## 4.3 MINING METHOD

The small tonnage of the Allison's Lode deposit is well suited to contract mining using local contractors based around a small sized excavator and truck operation removing the ore and waste in 4m flitches from the top of the deposit downwards. Such an operation would be an extension of the most recent mining carried out by ZZL in 2000/2001.

There is a definite boundary between the mineralised ore zone and waste rock. The ore is harder and denser than the waste and dips near vertically. The waste is capable of being free-dug by a backhoe excavator without blasting and exploration drilling indicates that this is likely to occur for the full extent of the opencut. Ripping of waste by dozer can be used to assist the backhoe if needed. No drilling and blasting of waste or ore is anticipated. This allows waste to be excavated easily up to the boundary with the ore.

A selective mining approach is envisaged with the backhoe generally loading a truck on the bench below it, wherever possible, to take advantage of the greater productivity this affords the operation. Mining would generally commence at the southern end of the bench and advance to the north.

The steep dip of the ore allows grade control practice to be readily transferred down to the bench below. Thus a high grade or low grade area can be selectively mined and the results used to delineate the zone on the bench(es) below. Similarly, mineralised areas with or without talc can be mined and stockpiled separately to allow suitable ore to bypass the pre-concentration gravity circuit wherever this is possible. Such a selective mining approach is possible and the extent to which it can be used will depend on the detailed knowledge and understanding of the mineralised zone and the turn around time on assay samples used to update mining plans.

Equipment size will need to match the degree of selectivity chosen. Previous experience with mining at Allison's Lode used a 35t to 50t backhoe size matched with suitable sized 10cu. yd. rear dump trucks and this is likely to be the preferred option for future work.

Waste mined will be trucked and used to backfill the South Comstock opencut, an average one-way haul of 0.5km from the mine.

An equipment fleet is likely to comprise the following:

- 1 x Excavator (35t - 50t)
- 1 x Grader
- 3 x 10 cu yard truck
- 1 x Small front end loader
- 1 x Roller.

The opencut mining layout is shown in Figure 4.1

A typical cross section through the pit is shown in Figure 4.2.

## 4.4 LOSS AND DILUTION

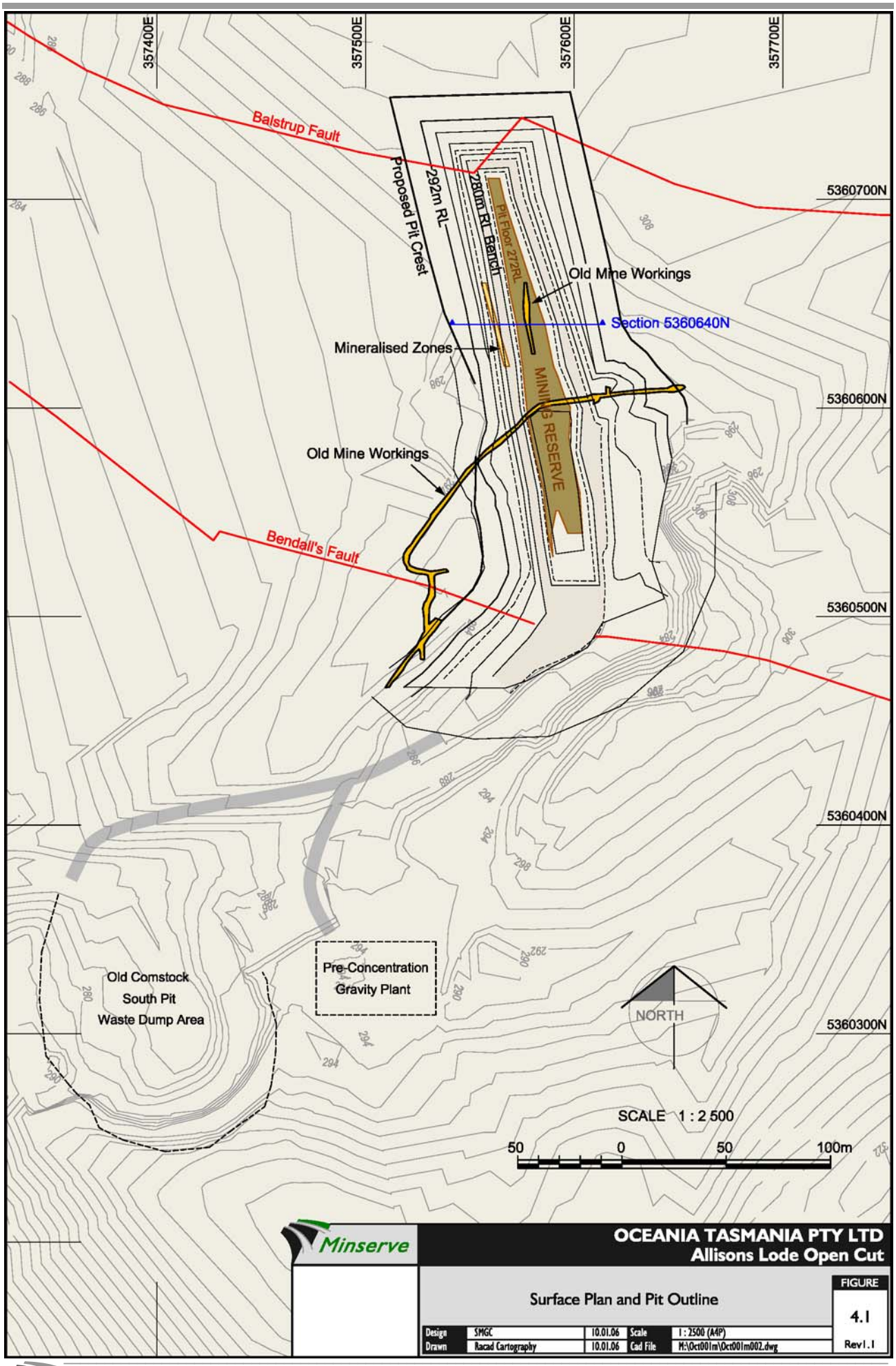
Selective mining of ore contained in a broad mineralised zone with reasonably well defined geological ore/waste boundaries in which the ore is harder than the waste will result in minimal loss if the waste is first mined to the ore boundary before the ore is mined. Added dilution is also kept to a minimum if this is the case.

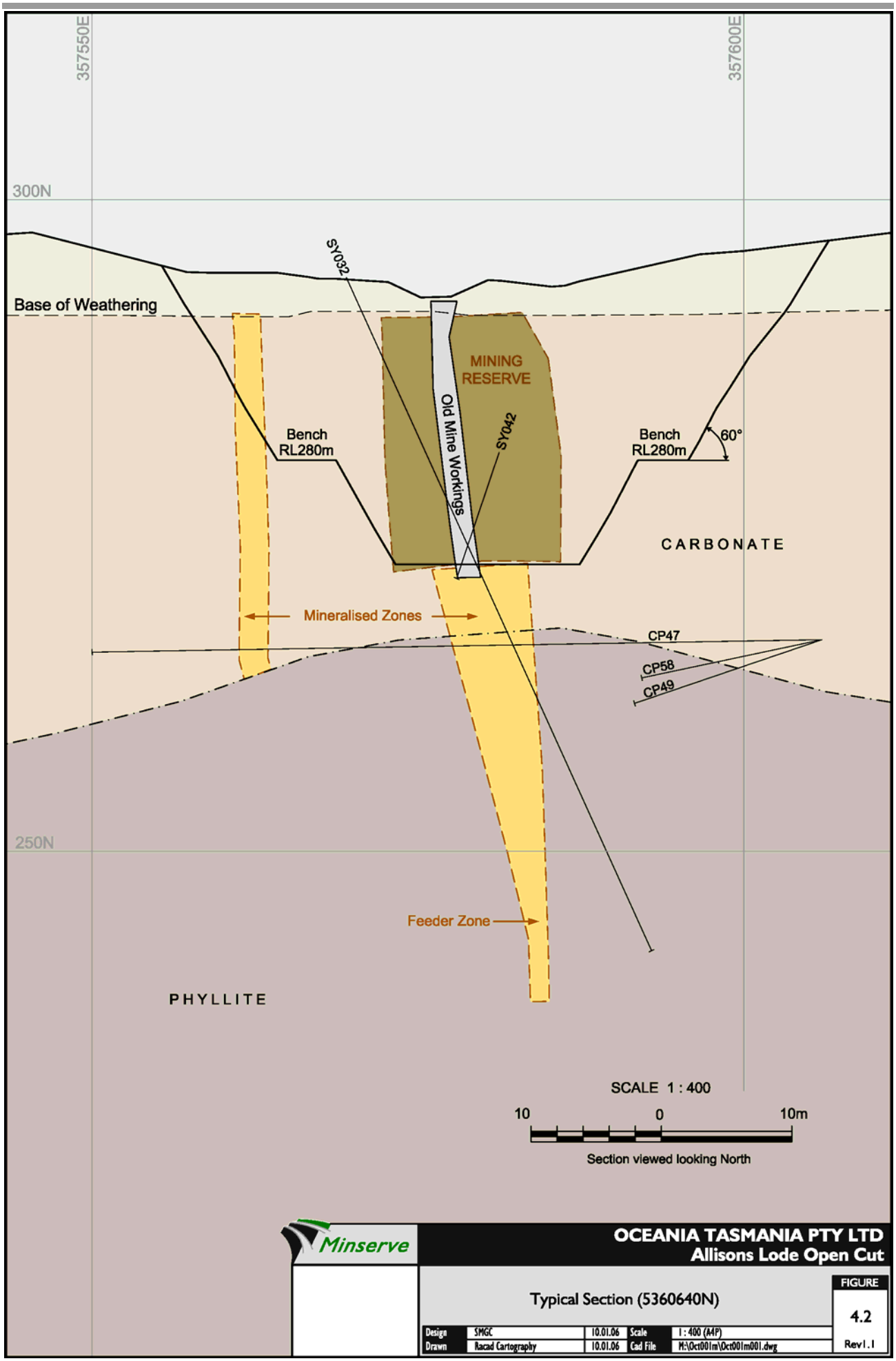
Because of the limited size of the resource emphasis is placed on maximising recovery rather than minimising dilution at the expense of losing ore. Table 4.1 details loss and dilution criteria applied based on the selective mining approach described.

**Table 4.1**
**Loss and Dilution Criteria**

| Factor | Value | Comment |
|---|---|---|
| Loss at ore/waste interface | 2% | Equivalent to 8cm loss at each boundary interface for an 8m ore zone. |
| Loss at flitch roof and floor | 1% | General mining loss. |
| Dilution at ore/waste interface | 3% | Equivalent to 12cm per boundary interface for 8m ore zone. |
| Grade of diluting waste | 0% | Some grade value likely but unknown at this stage. |
| Relative density diluting waste | 2.6t/$m^3$ | |

Whilst a nominal 4m flitch has been used, the size of the equipment selected by the mining contractor may not suit this flitch height. With a small sized backhoe around 35t to 50t a smaller flitch than 4m may be more suitable for the selective mining method described to maintain the mining loss and dilution criteria described.


357400E
357500E
357600E
357700E
5360700N
5360600N
5360500N
5360400N
5360300N
Balstrup Fault
Bendall's Fault
Proposed Pit Crest
292m RL
280m RL Bench
Pit Floor 272RL
MINING RESERVE
Old Mine Workings
Old Mine Workings
Section 5360640N
Mineralised Zones
Pre-Concentration
Gravity Plant
Old Comstock
South Pit
Waste Dump Area
NORTH
SCALE 1 : 2 500
50 0 50 100m
Minserve
OCEANIA TASMANIA PTY LTD
Allisons Lode Open Cut
Surface Plan and Pit Outline
FIGURE
4.1
Rev1.1
Design SMGC 10.01.06 Scale 1 : 2500 (A4P)
Drawn Racad Cartography 10.01.06 Cad File M:\Oct001m\Oct001m002.dwg


357550E
357600E
300N
250N
SY032
Base of Weathering
MINING RESERVE
Old Mine Workings
SY042
Bench RL280m
Bench RL280m
60°
CARBONATE
Mineralised Zones
CP47
CP58
CP49
Feeder Zone
PHYLLITE
SCALE 1 : 400
10
0
10m
Section viewed looking North
Minserve
OCEANIA TASMANIA PTY LTD
Allisons Lode Open Cut
Typical Section (5360640N)
FIGURE
4.2
Rev1.1
Design SMGC 10.01.06 Scale 1 : 400 (A4P)
Drawn Racad Cartography 10.01.06 Cad File M:\Oct001m\Oct001m001.dwg

## 4.5 METALLURIGICAL CONSIDERATIONS

### 4.5.1 General

Metallurgical considerations have been taken from the ZZL Business Plans February 2003 and October 2005 supplemented with updated information from Messrs Paul Heath, David Tanner ( ZZL) and Mr Nick Moony, their metallurgy consultant.

### 4.5.2 Mineralogy

Mineralogical examination (HW Fander) and flotation testwork (Optimet) indicate that the Comstock ore is coarse-grained and the sulphides float satisfactorily. The main minerals are galena, sphalerite and pyrite. Talc can be plentiful in the upper levels.

Details of the mineralogy are available as part of the Business Plan 2003 Supporting Documentation/References (Appendix 5).

### 4.5.3 Metallurgy

*Optimet carried out a series of over 15 flotation tests on Comstock and Rosebery ore during 2000/2001. Most of this work was strongly orientated towards co-treating Comstock ore in the Rosebery concentrator.*

*The most recent tests, carried out in August 2001, used hand-picked Comstock ore in an attempt to mirror the grades likely to be achieved from the proposed gravity treatment plant. The Comstock head grade assayed at 20% Zn and 2.2% Pb, while the Rosebery ore used in this test assayed at 12.7% Zn and 3.5% Pb.*

*The tests projected that processing the Comstock ore alone using flotation conditions similar to that for treating the Rosebery ore would be successful. In general the Comstock ore gave better performance in both the lead and zinc circuits than the Rosebery ore. It is estimated that on average a 52.5% Zn concentrate would be recovered, containing about 8.5% Fe, with the lead circuit producing concentrate at about 65% Pb and 1000g/t Ag.*

*A 90:10 mixture of Rosebery and Comstock ores also gave acceptable performance under the first set of conditions tested. In fact it was found that the performance of the Rosebery ore improved by mixing it with 10% Comstock ore.*

### 4.5.4 Sink-Float Tests

*In order to assess the potential for gravity separation of Comstock ore, a series of heavy liquid analyses (sink-float tests) were carried out on two samples of ore crushed to 12mm and 6mm.*

*Results were excellent in terms of separation, and talc (MgO) level reductions from about 10% to 1% were achieved. Little benefit was observed in these tests by crushing the ore from 12mm down to 6mm.*

*On the basis of these results, a decision was made to install a gravity separation plant to operate at an initial sizing of 8mm.*

### 4.5.5 Allison's Lode Considerations

The ZZL Business Plan looked at the broader picture incorporating Allison's Lode and other local resources that could be added to provide a project life in excess of 10 years.

This current study is confined solely to the Allison's Lode deposit and the opencut resource defined for it by SMGC of some 98,000t of ore. Under these circumstances Allison's Lode ore will be mined by contractors and pre-concentrated by crushing down to 8mm sizing followed by gravity separation (Jig Plant) to produce a mine gate product not exceeding 1% talc which is capable of being sold to Rosebery Mill as mill feed.

Under the broader picture with a 10 year project life ZZL were investigating a range of other options for pre-concentrated ore that included:

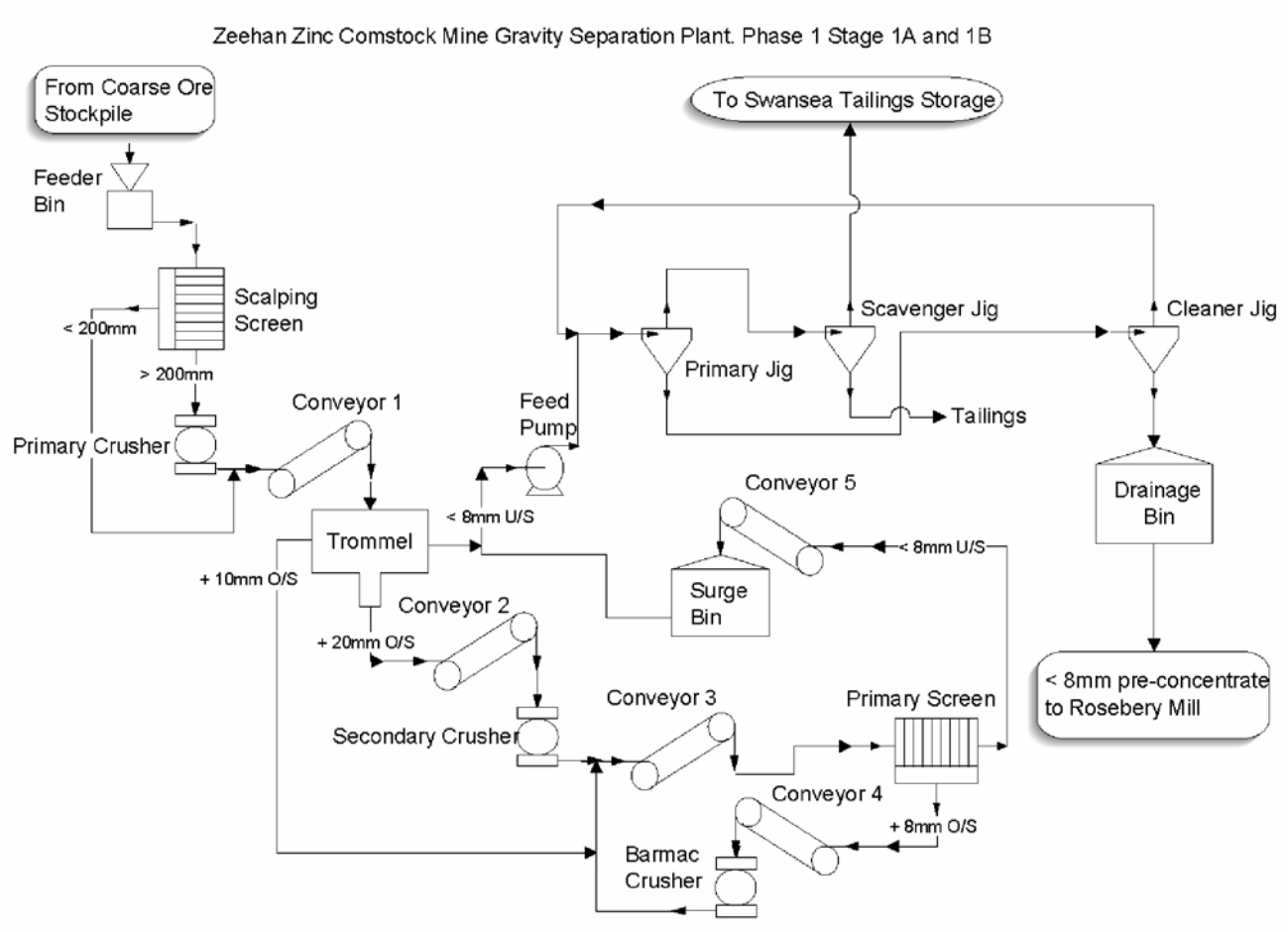
- Transport and toll treatment at Renison
- Transport and toll treatment at Helleyer
- Milling and flotation by ZZL to produce a final concentrate at their own regional mill.

For the stand-alone case being evaluated all the Allison's Lode opencut ore is contract mined, crushed and pre-concentrated onsite with the mine gate product trucked by contractor to Rosebery Mine where is it sold, under an agreed formula, based on the pre-concentrated grade and takes into account toll milling costs, plant recoveries, metal prices for zinc, lead and silver, smelter charges and Australian dollar exchange rates, as applicable.

The pre-concentration process flowchart is shown in Figure 4.3.

Advice from ZZL and their metallurgical consultant is that all ROM ore will be crushed onsite to 8mm and processed in the gravity pre-concentration plant which has a plant recovery of 85% of feed (dry/dry tonnes). Product moisture is assumed to be 9%. The pre-concentrated product will be trucked to Rosebery Mill, a one-way haul distance of 34km. Tailings from the pre-concentration process will be disposed of as backfill with the mine waste in the old South Comstock opencut.

**Figure 4.3**
**Process Flowsheet**



## 4.6 MINING QUANTITIES AND PRODUCTION SCHEDULE

### 4.6.1 Block Model

Geological modelling and the generation of mining bench quantities for this study was performed by Simon Tear of SMGC using Surpac software. The model is based on the work completed by SMGC contained in the report JORC Resource Statement for the Allison's Lode, Zeehan – West Tasmania for Oceania Tasmania Pty Ltd, November 2005. This has been checked and used to generate the current mining block model.

The Allison's Zinc Resource block model was constructed using the following parameters:

1. Inside the geologically defined ore shape.
2. Outside the interpreted cavity due to old workings.
3. Within the pit outline i.e. above the designed pit floor.
4. Below the current topographic surface.

**Block Model Report for the Ore**

Constraints used:

1. INSIDE 3DM allisonoremodified 510.
2. NOT INSIDE 3DM allisonoldworkcav 1.
3. ABOVE DTM modified_clipped_pit 1.
4. NOT ABOVE DTM topo_cleaned 509.

(Keep blocks partially in the constraint: False)

| Level (m) | Volume ($m^3$) | Tonnes | Zn25m (%) | Pb25m (%) | Ag25m (ppm) |
|---|---|---|---|---|---|
| 272.0-276.0 | 6,969 | 24,011 | 4.80 | 1.04 | 22.1 |
| 276.0-280.0 | 8,188 | 28,327 | 4.91 | 1.05 | 20.8 |
| 280.0-284.0 | 5,766 | 20,102 | 5.60 | 1.55 | 30.9 |
| 284.0-288.0 | 4,603 | 15,963 | 5.62 | 1.53 | 30.8 |
| 288.0-292.0 | 2,000 | 6,799 | 5.12 | 1.30 | 28.8 |
| 292.0-296.0 | 116 | 379 | 2.58 | 0.93 | 24.0 |
| **Grand Total** | **27,641** | **95,581** | **5.15** | **1.25** | **25.5** |

This is a slight reduction on the original resource, but does not account for any 'goodbye' cuts below the modelled pit floor. It is thought that the goodbye cuts will be much better than the poor return on the 292-296 flitch which occurs up at the northern end and may not be economic to mine.

The tonnage figure is based on a calculated density field reflecting the levels of sulphide mineral contents within the ore, based on the aircore drilling (this averages 3.3g/$cm^3$).

Shown below are the waste figures from the modelling. There is no grade attached to the waste, although there is a possibility of additional veins to the west. These veins have not been included as drilling information is too sparse.

**Block Model Report for the Waste**

Constraints used:

1. NOT INSIDE 3DM allisonoremodified 510.
2. NOT INSIDE 3DM allisonoldworkcav 1.
3. NOT ABOVE DTM topo_cleaned 509
4. ABOVE DTM modified_clipped_pit 1.

(Keep blocks partially in the constraint: False)

| Level (m) | Volume ($m^3$) | Tonnes |
|---|---|---|
| 272.0-276.0 | 3,075 | 7,995 |
| 276.0-280.0 | 4,863 | 12,643 |
| 280.0-284.0 | 14,491 | 37,676 |
| 284.0-288.0 | 14,503 | 37,708 |
| 288.0-292.0 | 16,100 | 41,860 |
| 292.0-296.0 | 16,088 | 41,828 |
| 296.0-300.0 | 9,819 | 25,529 |
| **Grand Total** | **78,938** | **205,238** |

A density of 2.6g/$cm^3$ was used to calculate waste tonnes. This is an estimated figure based on the mineralogy, competency and consistency of the anticipated waste material. Waste is generally expected to be partially rotted silicified dolomite, possibly with small cavities.

Combining to two gives the following total tonnage:

**Block Model Report for combined Ore and Waste**

Constraints used:

1. ABOVE DTM modified_clipped_pit 1.
2. NOT ABOVE DTM topo_cleaned 509.

(Keep blocks partially in the constraint: False)

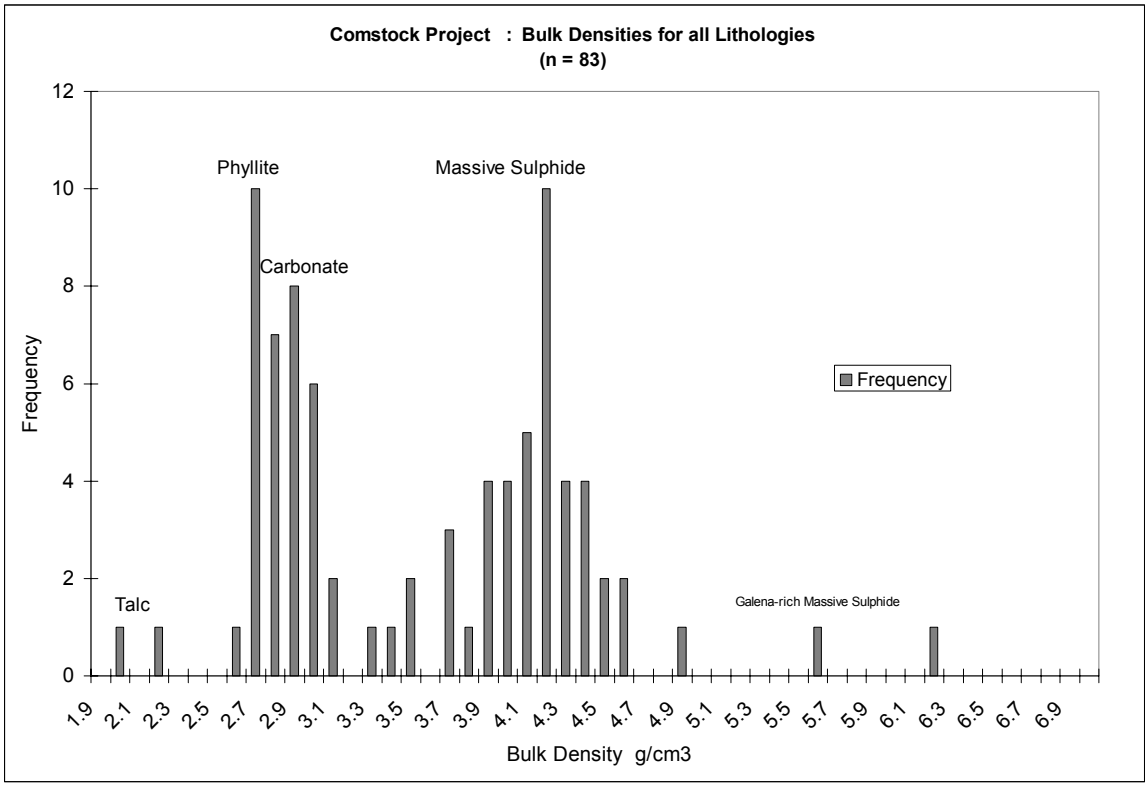
| Level (m) | Volume ($m^3$) | Tonnes |
|---|---|---|
| 272.0-276.0 | 10,234 | 29,066 |
| 276.0-280.0 | 13,328 | 37,852 |
| 280.0-284.0 | 20,516 | 58,264 |
| 284.0-288.0 | 19,381 | 55,043 |
| 288.0-292.0 | 18,363 | 52,150 |
| 292.0-296.0 | 16,234 | 46,106 |
| 296.0-300.0 | 9,819 | 27,885 |
| **Grand Total** | **107,875** | **306,365** |

An averaged density of 2.84g/$cm^3$ was used to calculate tonnage. The variation in the volume between the addition of the ore+waste total and the combined total is due to the inclusion of the cavity as removable material in the latter.

### 4.6.2 Relative Density

A conservative default density of 3.3g/cm$^3$ was assigned to the bulk density attribute in the block model; this matches the average of a series of measured densities of various relevant rock types (Figure 4.4).

**Figure 4.4**
**Allison Lode - Distribution of Measured Density Values**
**(Archimedes Method)**




However it is possible to calculate a more accurate density for each aircore sample based on its zinc, lead and iron assays. The complex calculation utilises the assay value of each element to calculate the amount of corresponding sulphide in the assay sample, assuming each element value is attributable to the main sulphide species for that element. Thus the zinc assays are used to estimate the amount of sphalerite (at a density of 4) present within the sample, lead is used to estimate the galena content (density 7.2) and iron is used to estimate pyrite amounts (density 5). The remaining percentage of the sample is ascribed a base density of either 2.6g/cm$^3$ in the first instance or 2.75g/cm$^3$ in the second.

The formula used for the calculation of bulk density from assay results with remaining material having a base density of 2.6g/cm$^3$ is as follows:

$$\text{Bulk Density} = (fe*0.1071)+(pb*0.0855)+(zn*0.0632)+((100-((fe*2.1413)+(pb*1.1547)+(zn*1.561)))*0.026)$$

The density of that remaining material is difficult to ascertain, hence the two values as in some instances it will be vuggy quartz (about 2.3-2.6), powdery talc (2-2.6) or partially weathered carbonate (2.6-2.9) as well as possibly fresher carbonate (2.8-3.1).

### 4.6.3 Mining Block Reserve

The Allison's block model described above was used to produce the Allison's Mining Block Reserve shown in Table 4.2. This shows ore and waste quantities contained within the opencut pit shell on 4m flitch intervals down to flitch level 272m RL.

**Table 4.2**
**Allison's Mining Block Reserve December 2005**

| | Total Volume | | Waste | | Ore Unmined | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Level | Volume | Tonnes | Volume | Tonnes | Volume | Tonnes | Zn | Pb | Ag |
| m | $m^3$ | t | $m^3$ | t | $m^3$ | t | (%) | (%) | g/t (ppm) |
| 296.0-300.0 | 9,819 | 27,885 | 9,819 | 25,529 | | | | | |
| 292.0-296.0 | 16,234 | 46,106 | 16,088 | 41,828 | 116 | 379 | 2.58 | 0.93 | 24 |
| 288.0-292.0 | 18,363 | 52,150 | 16,100 | 41,860 | 2000 | 6799 | 5.12 | 1.3 | 28.8 |
| 284.0-288.0 | 19,381 | 55,043 | 14,503 | 37,708 | 4603 | 15963 | 5.62 | 1.53 | 30.8 |
| 280.0-284.0 | 20,516 | 58,264 | 14,491 | 37,676 | 5766 | 20102 | 5.6 | 1.55 | 30.9 |
| 276.0-280.0 | 13,328 | 37,852 | 4,863 | 12,643 | 8188 | 28327 | 4.91 | 1.05 | 20.8 |
| 272.0-276.0 | 10,234 | 29,066 | 3,075 | 7,995 | 6969 | 24011 | 4.8 | 1.04 | 22.1 |
| **Grand Total** | **107,875** | **306,366** | **78,939** | **205,239** | **27,642** | **95,581** | **5.15** | **1.25** | **25.50** |

There will be some additional ore available to be taken as a "goodbye cut" below 272m RL. This has not been quantified or included in the mining block reserve.

The mining block reserve is based on the block model which has been calculated on a dry basis with no allowance for any inherent moisture content. The mining block reserve show that the model estimated a volume of 1,294$m^3$ for ore previously mined from old underground workings (Table 4.2).

### 4.6.4 Production Schedule

Allison's Lode opencut will be mined by contractors in less than twelve months. It has been assumed that mining will start at the highest bench and excavate benches in sequence from the top down to the final pit shell design.

A total volume of some 106,600$m^3$ of material will be excavated comprising 27,700$m^3$ of ore and 78,900$m^3$ of waste. Some 95,600t of in situ ore are estimated to be contained within the pit shell giving an in situ waste to ore ratio of 0.83$m^3$/t.

The Production Schedule, Table 4.3 shows details of mining for each bench level. Mining losses and added dilution are applied, bench by bench, to give a total of 94,870t of ROM ore and 213,650t of waste (82,170$m^3$).

The schedule assumes all the ROM ore is crushed and passes through the pre-concentration gravity plant.

In practice it may be possible for certain high grade ore and/or how grade talc sources to bypass the pre-concentration gravity plant which would improve the overall recoveries.

It has been assumed that all the added dilution is removed at the pre-concentration stage and the 85% plant recovery applies to the in situ ore recovered after mining.

The final mine gate product tonnes are adjusted to a product moisture of 9%.

All product tonnes are trucked 34km to Rosebery Mill for sale to Zinifex as mill feed.

**Table 4.3**
**Allison's Mining Production Schedule December 2005**

| | | Level | Level | Level | Level | Level | Level | Level | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | 296.0-300.0 | 292.0-296.0 | 288.0-292.0 | 284.0-288.0 | 280.0-284.0 | 276.0-280.0 | 272.0-276.0 | |
| **Total Volume** | $m^3$ | 9,819 | 16,234 | 18,363 | 19,381 | 20,516 | 13,328 | 10,234 | **107,875** |
| | t | 27,885 | 46,106 | 52,150 | 55,043 | 58,264 | 37,852 | 29,066 | **306,366** |
| **In situ Waste** | $m^3$ | 9,819 | 16,088 | 16,100 | 14,503 | 14,491 | 4,863 | 3,075 | **78,939** |
| | t | 25,529 | 41,828 | 41,860 | 37,708 | 37,676 | 12,643 | 7,995 | **205,239** |
| **In situ Ore** | $m^3$ | | 116 | 2000 | 4603 | 5766 | 8188 | 6969 | **27,642** |
| | t | | 379 | 6799 | 15963 | 20102 | 28327 | 24011 | **95,581** |
| Zinc | % | | 2.58 | 5.12 | 5.62 | 5.6 | 4.91 | 4.8 | **5.15** |
| Lead | % | | 0.93 | 1.3 | 1.53 | 1.55 | 1.05 | 1.04 | **1.25** |
| Silver | g/t (ppm) | | 24 | 28.8 | 30.8 | 30.9 | 20.8 | 22.1 | **25.50** |
| Mining loss | 3.0% | | | | | | | | |
| **In situ Ore Recovered** | t | | 367.6 | 6,595.0 | 15,484.1 | 19,498.9 | 27,477.2 | 23,290.7 | **92,713.6** |
| **Waste Mined** | t | 27,885 | 45,738 | 45,555 | 39,559 | 38,765 | 10,375 | 5,775 | **213,652.4** |
| Added dilution | 3.0% | | | | | | | | |
| Dilution RD $t/m^3$ | 2.6 | | | | | | | | |
| Dilution | t | | 9.0 | 156.0 | 359.0 | 449.7 | 638.7 | 543.6 | **2,156.1** |
| **ROM tonnes Mined** | t | | 376.7 | 6,751.0 | 15,843.1 | 19,948.7 | 28,115.9 | 23,834.3 | **94,869.6** |
| Preconcentrate Recovery | 85.0% | | | | | | | | |
| **Product Tonnes (dry)** | t | | 312.5 | 5,605.8 | 13,161.5 | 16,574.1 | 23,355.6 | 19,797.1 | **78,806.5** |
| Zinc | % | | 2.58 | 5.12 | 5.62 | 5.6 | 4.91 | 4.8 | **5.15** |
| Lead | % | | 0.93 | 1.3 | 1.53 | 1.55 | 1.05 | 1.04 | **1.25** |
| Silver | g/t (ppm) | | 24 | 28.8 | 30.8 | 30.9 | 20.8 | 22.1 | **25.50** |
| Product Contained Zinc | t | | 8.06 | 287.02 | 739.68 | 928.15 | 1146.76 | 950.26 | **4,059.9** |
| ProductContained Lead | t | | 2.91 | 72.88 | 201.37 | 256.90 | 245.23 | 205.89 | **985.2** |
| ProductContained Silver | oz | | 241.12 | 5190.53 | 13032.86 | 16465.40 | 15618.46 | 14066.20 | **64,614.6** |
| Product Moisture | 9.0% | | | | | | | | |
| **Product Tonnes trucked** | | | 340.6 | 6,110.3 | 14,346.0 | 18,065.8 | 25,457.6 | 21,578.8 | **85,899.1** |

### *Infrastructure*

Infrastructure considerations have been taken from the ZZL Business Plans for February 2003 and October 2005 supplemented with updated information from Messrs Heath and Tanner.

### *Access*

The site has established access roads linking it to Zeeham and the Rosebery Mine.

### *Water*

The existing operation has an adequate water supply for the operation based on pumping water from a pump station on Comstock Creek where the mine drainage adit discharges.

### *Power*

Power is currently provided to the site via a 22kV power line and substation.

### *Existing Gravity Treatment Plant*

The majority of plant items needed for the pre-concentration gravity treatment plant have been purchased, refurbished and installed. This includes the 22kV power supply.

The ore will be crushed, screened and passed through a series of gravity separation stages as described in the flow sheet (Figure 4.1).

A front-end loader will charge the feed bin, from which ore is then fed with a reciprocating feeder to a scalping screen and a 36 x 24 primary jaw crusher. The crushed ore is then conveyed to a rotary trommel where fine clayey material is broken up, washed and screened off, before the remaining 25mm oversize material is discharged into a 24 x 18 secondary jaw crusher.

All material over 8mm is then fed to a Barmac vertical shaft impact crusher and 8mm screen operating in a closed circuit, with the 8mm product being discharged into a 30t surge bin. The material then joins the trommel undersize flow and is pumped to a series of three Gekko in-line pressure jigs, where the heavy sulphides are separated from the remaining gangue.

This 8mm pre-concentrate will be held in concrete storage bins for drainage and will then be available for transport to the Rosebery Mill where it will be sold as mill feed before further grinding and differential flotation of lead and zinc concentrates completes its treatment process.

Some $2M has already been spent on the treatment plant and this has been regarded as a sunk cost which therefore has not been taken into consideration when looking at the mining of Allison's Lode opencut on a stand-alone basis.

Additional work is still required to complete the pre-concentration gravity treatment plant for the Allison's stand-alone mining case. This has been estimated in the 2005 Business Plan to be:

| | | |
|---|---|---|
| 1. | Completion of the gravity treatment plant | $400,000 |
| 2. | Plant commissioning | $200,000 |
| | **Total** | **$600,000** |

## 4.7 ENVIRONMENT

The presence of pyrite in the ore and waste has the capacity to be potentially acid forming when mined and placed indiscriminately in waste dumps. The current plan encapsulates pyrite and other potentially acid forming materials in engineered waste dumps and tailings dams.

There are no known social or government issues identified that affect the Reserve estimate.

The original DPEMP was submitted for approval in 2001 and a permit was issued by DPIWE and West Coast Council in July 2001 to mine 200,000tpa, with gravity tails initially being disposed of at the South Comstock Pit. The Thomson & Brett proposal for co-disposal of mine waste and tailings at Swansea Dump was submitted for approval in 2002, and later revised in December 2003 after lease boundaries had been extended by 100m to increase capacity for three years production.

The approval process with DPIWE and Council is still in progress.

# 5. COSTING

## 5.1 INTRODUCTION

The costing section is divided into capital and operating costs for the mining of Allison's Lode opencut, the pre-concentration of ore and the transport of product for sale at Rosebery Mill. All this occurs in less than a twelve month time period. As a result of this all costs are treated in constant dollar terms only.

Operating costs have been based on contractor mining, crushing and pre-concentration of the ore and trucking of the mine gate product for sale to Rosebery Mill, 34km away by road. Additional operating costs are incurred by Oceania Tasmania to manage the operation, provide site supervision, grade control, office support and administrative functions.

Capital costs include infrastructure costs directly associated with the operation but do not include sunk costs for plant and equipment purchased prior to January 2006.

All costs have been provided by Oceania Tasmania Pty Ltd and have not been audited by Minserve. This includes cost data and information sourced from the ZZL Business Plans for 2003 and 2005.

Commodity prices have been based on London Metals Exchange prices as at 25 January 2006. These are:

- Zinc US$2,269 per tonne
- Lead US$1,409 per tonne
- Silver US$9.54 per ounce.

The Australian dollar, US dollar exchange rate used is AUD = US$0.75.

## 5.2 OPERATING COSTS

Contract mining costs were provided based on the last contract to mine a bulk sample of Allison's Lode ore and the ZZL Business Plans, 2003 and 2005.

Contractor costs are based on the following costs per tonne of ROM ore mined for:

| | |
|---|---|
| Excavator | $4.68 |
| Grader | $0.23 |
| Roller | $0.23 |
| 3 x Truck (10cu.yd) | $6.24 |
| Loader | $2.66 |
| **Total** | **$14.04** |

Mobilisation and demobilisation for all equipment $10,000.

On this basis a contract mining cost of $14.50 per ROM tonne of ore mined was used. Note that this equates to $12.75 per bcm of material excavated which appears to be conservative.

Other non-contractor related site operating costs per tonne include:

| | |
|---|---|
| Site supervision, geology and grade control | $3.25 |
| Office, administration and services | $1.50 |
| Insurances and leases | $0.24 |
| **Total** | **$4.99** |

Contractor operating costs for the pre-concentration gravity treatment plant are based on the following cost per tonne of ROM ore mined.

| | |
|---|---|
| Milling and processing labour | $5.52 |
| Building hire | $0.03 |
| Equipment hire | $0.76 |
| Reagents and consumable | $0.96 |
| Power | $1.64 |
| Services | $0.74 |
| Engineering and stores | $0.43 |
| **Total** | **$10.08** |

Contract road haulage of mine gate product to Rosebery Mill, a 34km one way trip, has been estimated at $0.12 per tonne per kilometre based on truck loading from the pre-concentrate product bin.

Corporate and Management costs of $500,000 have been attributed to the project costs.

Royalty payments have been confirmed by MRT and are capped at 5% of Nett Revenue. This has been used. However, the actual calculation takes into account various profit and revenue factors which could result in royalty payments closer to 4% of Nett Revenue.

A realised sales price of 50% of the contained metal value delivered to Rosebery Mill has been used. It represents a conservative simplification of the Business Plan which was based on toll treatment of ore at a flat cost per tonne plus 20% of the nett smelter return.

Stockpiled ore of 3,300 tonnes and grades of Zn 21.5%, Pb 14.5% and Ag 540g/t are also available for treatment.

Table 5.1 shows operating costs for Allison's Lode opencut operations and the operating cash surplus generated upon the sale of the ore to Rosebery Mill.

## Table 5.1
## Allison's Lode Opencut Operating Costs

| | | Mine Total | Unit Op. Costs | Mine Cost $ | | | | |
|---|---|---|---|---|---|---|---|---|
| **Total Volume** | $m^3$ | **107,875** | | | | | | |
| | t | **306,366** | | | | | | |
| **In situ Waste** | $m^3$ | **78,939** | | | | | | |
| | t | **205,239** | | | | | | |
| **In situ Ore** | $m^3$ | **27,642** | | | | | | |
| | t | **95,581** | | | | | | |
| Zinc | % | **5.2** | | | | | | |
| Lead | % | **1.3** | | | | | | |
| Silver | g/t (ppm) | **25.5** | | | | Contract mining | | |
| Mining loss | 3.0% | | | | | $/bcm | | |
| **In situ Ore Recovered** | t | **92,714** | | | | $12.75 | | |
| **Waste Mined** | t | **213,652** | | | | | | |
| Added dilution | 3.0% | | | | | | | |
| Dilution RD $t/m^3$ | 2.6 | | | | | | | |
| Dilution | t | **2,156** | | | | | | |
| **ROM tonnes Mined** | t | **94,870** | | | | | | |
| **Contract Mining Costs** | $/t | | $14.50 | $1,375,610 | | | | |
| **Site Supervision & Grade Control** | $/t | | $3.25 | $308,326 | | | | |
| **Office & Admin** | $/t | | $1.50 | $142,304 | | | | |
| **Insurances & leases etc** | $/t | | $0.24 | $22,769 | | | | |
| **Contract Preconcentrate Costs** | $/t | | $10.08 | $956,286 | | AUD=US$ | 0.75 | |
| Preconcentrate Recovery | 85.0% | | | | | | | |
| **Product Tonnes (dry)** | t | **78,807** | | | | Zinc US$/t | 2269 AUD | $3,025.33 |
| Zinc | % | **5.2** | | | | Lead US$/t | 1409 AUD | $1,878.67 |
| Lead | % | **1.3** | | | | Silver US$/oz | 9.54 AUD | $12.72 |
| Silver | g/t (ppm) | **25.5** | | | | | | |
| Product Contained Zinc | t | **4,060** | | | $12,282,621 | AUD value | | |
| ProductContained Lead | t | **985** | | | $1,850,814 | AUD value | | |
| ProductContained Silver | oz | **64,615** | | | $821,897 | AUD value | | |
| Product Moisture | % | **9%** | | | | | | |
| **Product Tonnes trucked** | | **85,899** | | | | Mine gate | | |
| **Mine Gate Cost** | | | | **$2,805,295** | | Cost/tonne = | $32.66 | |
| Distance Trucked | km | 34 | | | | | | |
| Cost/tonne/km | $/t/km | | $0.12 | | | | | |
| **Trucking cost** | | | | $350,468 | | | | |
| **Cost Delivered to Rosebery** | | | | **$3,155,764** | | | | |
| **Royalties etc** | % | 5% | | $747,767 | | | | |
| **Corporate & Management Costs** | | | | 500,000 | | | | |
| **TOTAL OPERATING COST** | | | | **$4,403,530** | | | | |
| **Sales Price Received at Rosebery** ( 50% of contained metal value) | | | | **$7,477,666** | | | | |
| **Operating Surplus** | | | | **$3,074,135** | | | | |

Table 5.2 shows operating costs for Allison's Lode stockpiled ore and the operating cash surplus generated from the sale of ore to Rosebery Mill.

**Table 5.2**
**Allison's Lode Stockpile Operating Costs**

| | | Mine Total | Unit Op. Costs | Mine Cost $ | | | | |
|---|---|---|---|---|---|---|---|---|
| **Stockpile Ore** | t | **3,300** | | | | | | |
| Zinc | % | **21.5** | | | | | | |
| Lead | % | **14.5** | | | | | | |
| Silver | g/t (ppm) | **540.0** | | | | | | |
| Mining loss | 0.0% | | | | | | | |
| **Ore Recovered** | t | **3,300** | | | | | | |
| **Contract Mining Costs** | $/t | | $2.50 | $8,250 | | | | |
| **Site Supervision & Grade Control** | $/t | | $3.25 | $10,725 | | | | |
| **Office & Admin** | $/t | | $1.50 | $4,950 | | | | |
| **Insurances & leases etc** | $/t | | $0.24 | $792.00 | | | | |
| **Contract Pre-concentrate Costs** | $/t | | $10.08 | $33,264 | | AUD=US$ | 0.75 | |
| Preconcentrate Recovery | 85.0% | | | | | | | |
| **Product Tonnes (dry)** | t | **2,805** | | | | Zinc US$/t | 2269 AUD | $3,025.33 |
| Zinc | % | **21.5** | | | | Lead US$/t | 1409 AUD | $1,878.67 |
| Lead | % | **14.5** | | | | Silver US$/oz | 9.54 AUD | $12.72 |
| Silver | g/t (ppm) | **540** | | | | | | |
| Product Contained Zinc | t | **603** | | | $1,824,503 | AUD value | | |
| ProductContained Lead | t | **407** | | | $764,101 | AUD value | | |
| ProductContained Silver | oz | **48,698** | | | $619,438 | AUD value | | |
| Product Moisture | % | **9%** | | | | | | |
| **Product Tonnes trucked** | | **3,057** | | | | Mine gate | | |
| **Mine Gate Cost** | | | | **$57,981** | | Cost/tonne = | $18.96 | |
| Distance Trucked | km | 34 | | | | | | |
| Cost/tonne/km | $/t/km | | $0.12 | | | | | |
| **Trucking cost** | | | | $12,474 | | | | |
| **Cost Delivered to Rosebery** | | | | **$70,455** | | | | |
| **Royalties etc** | % | 5% | | $160,402 | | | | |
| **Corporate & Management Costs** | | | | $50,000 | | | | |
| **TOTAL OPERATING COST** | | | | **$280,857** | | | | |
| **Sales Price Received at Rosebery** ( 50% of contained metal value) | | | | **$1,604,021** | | | | |
| **Operating Surplus** | | | | **$1,323,163** | | | | |

These costs are based on sales price assumptions provided by ZZL.

## 5.3 CAPITAL COSTS

All money spent on plant and equipment for ZZL and Oceania Tasmania on their involvement with the Comstock area prior to January 2006 has been treated as a sunk cost in line with the 2005 Business Plan.

The same Business Plan estimates the following capital cost expenditure to be required for the Allison's Lode opencut operation:

- Completion of the gravity treatment plant $400,000
- Plant commissioning $200,000

**Total** **$600,000**

Therefore total capital costs estimated for the project are $600,000.

## 5.4 PROJECT VIABILITY

The Allison's Lode Reserve Study has been undertaken to support The Ore Reserve Statement for Allison's Lode. It is not a rigorous financial evaluation of the project. However it does show that the mining reserve is a viable opencut mining proposition likely to generate a cash surplus of some $3.5M after capital and operating costs, as described in this report, are taken into account.

# 6. ACKNOWLEDGEMENTS AND REFERENCES

## 6.1 ACKNOWLEDGEMENT

This report was completed by Alwyn Hyde-Page of The Minserve Group Pty Ltd.

Geology and geological modelling was provided by Simon Tear of SMG Consultants Pty Ltd.

Up to date commercial and technical information pertinent to the study has been provided by the following Oceania Tasmania Pty Ltd personnel:

- Paul Heath – Project Manager
- David Tanner – Director Zeehan Zinc Limited.

## 6.2 REFERENCES

This report is to be read in conjunction with three main supporting volumes. They contain the detailed backup information on which this study is based.

1. SMG Consultants November 2005, JORC Resources Statement for the Allison's Lode, Zeehan – West Tasmania prepared for Oceania Tasmania Pty Ltd.
2. Zeehan Zinc Limited Business Plan 2003 prepared by BDR Consulting Pty Limited, February 2003.
3. Zeehan Zinc Limited Business Plan 2005 prepared by BDR Consulting Pty Ltd, October 2005.

Additional reference is made to the following:

4. Coffey Geosciences Pty Ltd March 2002, Allison's Pit Redesign.