



**ANNUAL REPORT**

**EL 28/2004**

**GREAT PYRAMID**

**Andrew Drummond  
& Russell Fulton  
Perth  
September 2007**

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## **SUMMARY**

At the beginning of the year under review, the tin price was around US\$7,000/t and it was obvious that Great Pyramid; with a resource grade of no more than 0.2% was not economic.

Minemakers has concentrated upon:

- Collection of historic data from disparate sources.
- Initiation of re-processing of it and compilation of a GIS database.
- Modelling of capital and operating costs for 1.0Mtpa and 0.5Mtpa mills and mining operations so as to determine the threshold tin price for potential project go-ahead.

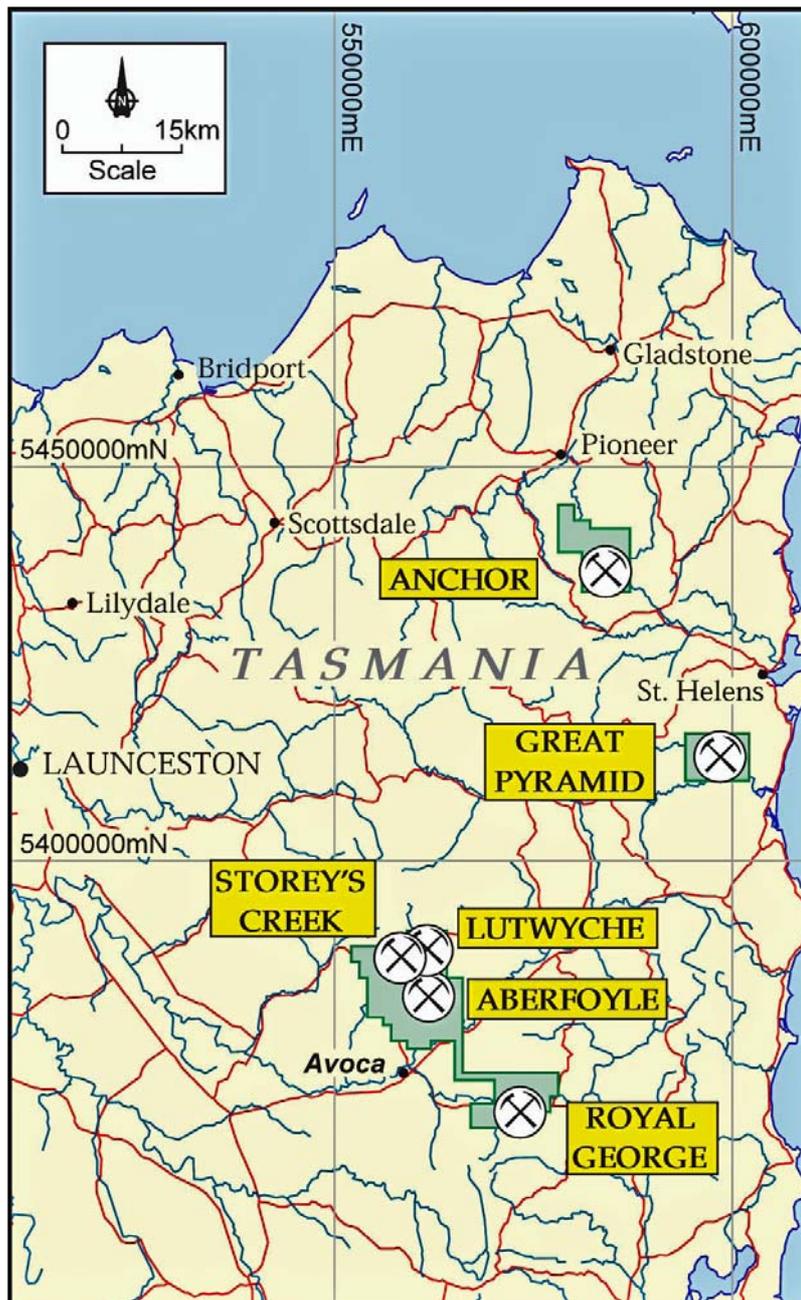
As the year progressed, tin price steadily increased, although so did Australian mine construction and operating costs. However, Minemakers is optimistic about the long-term tin price and is aiming to ready the project for commitment to feasibility when the necessary tin price has been attained.

## 1. BACKGROUND, OWNERSHIP AND TENEMENT STATUS

EL28/2004 was granted to Allstrong Investments Pty Ltd on 27 November 2004. Minemakers Limited (“Minemakers”) via its wholly owned subsidiary, Minemakers Australia NL, purchased Allstrong outright on 23 November 2006. Allstrong subsequently underwent a name change to Minemakers TTT Pty Ltd.

The Exploration Licence is 48 sqkm in extent and has an annual expenditure commitment of \$36,000.

**FIGURE 1: TENEMENT AND PROSPECTS LOCALITY PLAN**



## **2. WORK DONE**

### **2.1 OVERVIEW**

Several resource estimates had been made, mostly pre-JORC, but at least one which was done after adoption of the JORC Code. While each points out the deficiencies and uncertainties in the grade estimates, and several present that bulk samples consistently return higher grades than do drill samples, the resource estimates all tend to be around 0.2% tin at best.

At the beginning of the year under review, this price was insufficient to justify commitment to either a feasibility study or to any major elements of one.

However, during the year, the tin price has risen strongly to about double its low price of early 2006.

The key question for Minemakers is, “assuming no other untoward hurdles, what tin price is needed to justify commitment to a feasibility study and construction?”

The main thrust of the year’s work has been to acquire historic data, to begin compilation of a GIS database and seek an answer to that economic question.

## **2.2 DATA ACQUISITION AND GIS DATABASE**

MRT records are being reviewed at year's end. A particular aim will be to determine potential to increase the size of the deposit. Current understanding is that the limits of the deposit have been constrained laterally by the previous drilling, but that the mineralized system may be open at depth.

The data will be used to compile a GIS database, with the work beginning in October 2007.

### **2.3 SCOPING STUDY**

As discussed earlier, the key to a decision on project viability is obviously the potential return on investment and whether a mine can be run profitably.

Lycopodium Engineering Limited, a Perth based engineering and plant construction consultancy, has been engaged to provide a desk-top financial model for the project.

The final report is expected in November 2007 and will embrace two throughput scenarios of 0.5Mtpa and 1.0Mtpa.

The overall aim is to determine:

- Capital cost estimate.
- Operating cost estimate.
- The tin price necessary, under these cost estimates, for justification of commitment to a feasibility study.

A draft report, incorporating only the 1.0Mtpa option, is presented as Appendix 1.

## **2.4 OTHER PROSPECTS**

While a programme of assessment of the other prospects in EL 28/2004 was initiated, it was decided to defer that work until the acquisition and interpretation of the detailed aeromagnetic data which was acquired by MRT during the year, under its very welcome airborne geophysical initiative.

## **2.5 AIRBORNE GEOPHYSICAL INTERPRETATION**

Not knowing that MRT was to undertake a detailed geophysical survey of NE Tasmania in the latter half of 2007, Minemakers purchased an old data set and had it re-processed. The results were disappointing and provided no evidence of potential extensions to, or repetitions of, the Anchor mineralized system. The output is not provided as an appendix due to its inferior characteristics and the output from the new survey is awaited with great interest.

### 3. EXPENDITURE

Expenditure totalled \$46,066 as tabulated below.

Minemakers Australia NL PO Box 1704 WEST PERTH WA 6872			
<b>Job Profit &amp; Loss Statement</b>			
EL28/2004			
	Oct 06 to June 07	July 07 to Sept 07	Total
<b>Tenement Exploration</b>			
Geological – Consultants	\$9,287.66		\$9,287.66
Geological – Data	\$737.35		\$737.35
Geological – Conference/Seminar	\$0.00		\$0.00
Geochemical – Assay	\$0.00		\$0.00
Geophysical – Consultants	\$1,087.83	\$6,800.00	\$7,887.83
Surveying	\$0.00		\$0.00
Non-core – Drilling – RC	\$0.00		\$0.00
Supplies – Consumables – Field	\$145.27		\$145.27
Field Office & Supplies	\$62.32		\$62.32
Supplies – Safety	\$0.00		\$0.00
Supplies – Freight	\$0.00		\$0.00
Comp IT – Drafting & Consultant	\$0.00		\$0.00
Trav & Accom – Local	\$0.00		\$0.00
Trav & Accom – Interstate	\$1,694.52		\$1,694.52
Trav & Accom – Overseas	\$0.00		\$0.00
Trav & Accom – MV	\$1,350.69		\$1,350.69
Trav & Accom – Taxi	\$30.91		\$30.91
Land Access – Consultants	\$250.00		\$250.00
Rehab – Consultancy	\$0.00		\$0.00
Stat – Tenement – Appl. Fee	\$0.00		\$0.00
Stat – Tenement – Rates	\$0.00		\$0.00
Stat – Tenement – Rent	\$0.00	\$1,800.00	\$1,800.00
Mine Feasibility – Consultants	\$8,104.38		\$8,104.38
O/Heads – Assets <\$1,000	\$0.00		\$0.00
O/Heads – Salaries & Wages	\$8,675.92	\$833.30	\$9,509.22
O/Heads – Telecommunication	\$0.00		\$0.00
O/Heads – Technical Serv	\$4,706.00	\$499.98	\$5,205.98
O/Heads – Legal	\$0.00		\$0.00
<b>Total Other Expense</b>	<b>\$36,132.85</b>	<b>\$9,933.28</b>	<b>\$46,066.13</b>
			<b>\$46,066.13</b>



# ***MINEMAKERS LTD***

## **GREAT PYRAMID TIN PROJECT**

### **CONCEPTUAL STUDY**

**1406-STY-001**

**October 2007**

**Prepared By:**



<b>B</b>		<b>REVISED CLIENT COMMENTS</b>			
<b>A</b>	<b>03/04/07</b>	<b>ISSUED FOR CLIENT REVIEW</b>	<b>CW</b>	<b>AR</b>	
<b>REV NO.</b>	<b>DATE</b>	<b>DESCRIPTION OF REVISION</b>	<b>BY</b>	<b>DESIGN APPROVAL</b>	<b>PROJECT APPROVAL</b>

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# GREAT PYRAMID TIN PROJECT

## CONCEPTUAL STUDY

1406-STY-001

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# GREAT PYRAMID TIN PROJECT

## CONCEPTUAL STUDY

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## **DISCLAIMER**

This report has been prepared for Minemakers Limited (Minemakers) by Lycopodium Engineering Pty Ltd (Lycopodium) as an independent consultant and is based in part on information furnished by Minemakers and in part on information not within the control of either Minemakers or Lycopodium. While it is believed that the information, conclusions and recommendations will be reliable under the conditions and subject to the limitations set forward herein, Lycopodium does not guarantee their accuracy. The use of this report and the information contained herein shall be at the user's sole risk, regardless of any fault or negligence of Lycopodium.

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**SECTION 1.0**  
**INTRODUCTION AND SCOPE**

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## 1.0 INTRODUCTION AND SCOPE

### 1.1 Introduction

Minemakers Ltd (Minemakers) is undertaking a preliminary evaluation of a number of tin deposits in north eastern Tasmania. This report provides indicative (-20/+50%) capital and operating costs for the development of the Great Pyramid deposit.

Development of the Great Pyramid deposit is based on two throughput options:

- 500,000 tpa throughput.
- 1,000,000 tpa throughput.

In each case, the project will include a greenfield treatment plant utilising two stage crushing and a single stage ball mill followed by separate treatment of coarse and fine mill product using spirals and shaking tables to recover tin in concentrates. Lycopodium Engineering Pty Ltd (Lycopodium) has been commissioned to prepare a conceptual study comprising capital and operating cost estimates for development of the treatment plant.

Metallurgical data was derived from various reports provided by Minemakers, in particular "The Metallurgical Treatment of Blue Tier Mineralisation" by Cross and Selby (February 1983), as well as from Lycopodium's database and knowledge of Tasmanian tin operations. The data used as the basis of this report does not represent information based on a known resource or mineable reserve but can be considered as typical or indicative of an orebody of this type.

This report, together with the attached appendices, presents the results of the study.

### 1.2 Study Scope

The scope of the facilities covered by this study includes the following:

- Primary crushing and closed circuit secondary crushing to a fine ore bin.
- Single stage ball milling and classification by screening.
- Cyclone classification into coarse and fine streams.
- Separate treatment of the coarse and fine streams through banks of rougher, scavenger and cleaner spirals.
- Separate upgrading of the coarse and fine cleaner spiral concentrates using shaking tables.
- Final tailings thickening and disposal to tailings storage facility.
- Reticulation of process and raw water within the process plant.

- 
- Make-up water supply from bores adjacent to local rivers.
  - Potable water provided by treating a portion of the bore water supply.
  - Power supply from the 11 kV grid 0.5 km from the plant.
  - Site office, crib / ablution and workshop / warehouse buildings.
  - Minimal on-site graded roads.
  - Unlined, valley type tailings storage facility.

It should be noted that no site visit was conducted, nor was site specific information such as topographical data nor selected sites for facilities available. The scope of all infrastructure should therefore be considered conceptual and not site specific.

Deliverables for the study include:

- Indicative process flowsheets and mass balance.
- Indicative major equipment list.
- Capital cost estimate (-20%/+50%, 3Q07).
- Operating cost estimate (-20%/+50%, 3Q07).
- Basic cash flow model, incorporating mining costs by others, to estimate project cash flow excluding financing costs, royalties, taxes and other government imposts.

Battery limits for the study are:

- Mining by others. Minemakers has advised that they will use contract mining and has supplied a unit mining cost of \$3.75/tonne of material moved for both ore and waste.
- Ore introduced by others into the ROM bin. ROM pad preparation and FEL supply excluded.
- Tin concentrate drummed and ready for dispatch.
- Final tailings deposited into a valley style TSF.
- Power supply from the local grid at 11 kV, no standby power.
- Water supply from bores adjacent to nearby rivers.
- Access to site is by existing bitumen and formed gravel roads.

It should also be noted that the 1 Mtpa throughput case has been based on using the same flowsheet as developed for the 500,000 tpa case. Should the 1 Mtpa option be developed further it would be prudent to consider a number of possible process alternatives that may be appropriate at the higher throughput, particularly in relation to the requirement for a third stage of crushing and a higher level of automation for concentrate handling.

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**SECTION 2.0**  
**FACILITIES DESCRIPTION AND LAYOUT**

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## 2.0 FACILITIES DESCRIPTION AND LAYOUT

### 2.1 Study Basis

The following basis has been assumed for the study.

Ore feed rate	1,000,000	500,000	tpa	Client
	125	62.5	tph	Calculated
Operating hours per annum				
- crushing	6,570	6,570	hrs	Industry standard
- milling and tin recovery	8,000	8,000	hrs	Industry standard
Primary ore source	Great Pyramid	Great Pyramid		Client
Head grade	0.20	0.25	% Sn	Client
Overall tin recovery	80	80	%	Assumed
Grind size, P <sub>80</sub>	350	350	microns	Typical

### 2.2 Process Description

A conventional crush / mill / gravity recovery processing facility is proposed for the Great Pyramid Project.

In keeping with a plant of this size and limited complexity, instrumentation and control will be kept to a minimum and will be provided by a number of PLC based controllers and an operator interface panel. P&IDs are not required for a study of this level of detail. The following description relates to the 500,000tpa throughput flowsheet. The flowsheet for 1,000,000tpa does not differ materially except that the size and / or number of individual items of process equipment has changed.

#### 2.2.1 Crushing

Refer flowsheet 000-F-001.

ROM ore will be fed into the ROM bin by FEL. A static grizzly will be provided to prevent oversize ore reporting to the crusher. No fixed rock breaker is provided, oversize will be returned to the mine for breakage.

A vibrating feeder will draw ore from the ROM bin and discharge into a jaw crusher. Jaw crusher product will be conveyed to a double deck sizing screen.

Screen oversize will be conveyed to a secondary cone crusher. The crusher product will be combined with the jaw crusher product for screening.

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Final crushed ore (screen undersize) at minus 15 mm will report to a crushed product bin with limited surge capacity. The excess will overflow to a dead stockpile. During periods when the crushing circuit is off line the FEL normally used to feed the primary crusher will reclaim the dead stockpile to the crushed product bin.

### **2.2.2 Milling and Classification**

Refer flowsheets 000-F-001 and 000-F-002.

Crushed ore will be drawn via conveyor from the crushed product bin at a controlled rate and fed to a single stage ball mill. The ball mill will operate in closed circuit with a classification screen, to minimise over grinding of the cassiterite, to produce an 80% passing 350 micron product.

The classification screen underflow will be cycloned to achieve a nominal separation at 106 microns to provide coarse and fine streams for separate gravity treatment in spiral circuits.

### **2.2.3 Gravity Concentration**

Refer flowsheets 000-F-002 and 000-F-003.

The coarse and fine cyclone products will be treated separately in banks of rougher, scavenger and cleaner spirals.

Concentrates from the coarse and fine cleaner spirals will be treated separately on coarse and fine cleaner and retreat tables.

Concentrate from the cleaner tables will be dewatered and drummed prior to sale.

### **2.2.4 Tailings Disposal**

Coarse and fine scavenger spiral tails will report to the tailings thickener feed box to be recombined and dewatered prior to pumping to the tailings storage facility. It has been assumed that a tailings storage site will be identified within 1 km of the plant site and that the nature of the tailings is such that lining of the tailings storage facility is not required.

### **2.2.5 Reagents**

The only reagent required for the treatment plant will be flocculant for the tailings thickener. This will be purchased ready prepared in a bulk box and metered into the thickener feed well using a dosing pump as required.

### **2.2.6 Services**

- Power will be provided via a tie-in to the 11 kV grid which passes within 0.5 km of the treatment plant site. Step-down transformers will enable reticulation at 3.3 kV and 415 V within the treatment plant.

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- Raw water will be obtained from bores in sand beds adjacent to nearby rivers. 200 NB cased bores will be drilled within 1 km of the plant site and water delivered via a 200 NB pipeline.
  - Potable water will be provided by filtering and sterilizing a portion of the raw water.
  - Process and raw water storage will be provided at the treatment plant. Pumps will reticulate water within the plant.
  - A compressor will be provided for instrument and plant air. A suitable filter, drier and air receiver will be provided prior to reticulation within the plant.

### **2.3 Project Infrastructure**

- No allowance has been made for buildings to enclose the process facilities other than as noted below.
- A 400 m<sup>2</sup> demountable style administration building will be provided to accommodate up to 20 personnel.
- A 700 m<sup>2</sup> metal clad workshop / warehouse will be provided for the treatment plant.
- A 30 m<sup>2</sup> demountable style crib / ablution building will be provided inside the treatment plant.
- Allowance has been made for a sewage treatment facility at the site.
- A small sample preparation area comprising pressure filters and work bench will be provided. All exploration, grade control and plant samples will be sent off-site for analysis.
- A 2 m high cyclone fence will be provided around the treatment plant facilities. Double gates and boom gates will be provided at two locations.
- 500 m of graded site roads has been allowed in addition to the upgrading or extending of existing tracks to the TSF and borefield.
- An allowance has been made for the purchase of five houses in nearby communities to house key personnel. All other personnel will be responsible for their own accommodation in local towns.
- Mobile equipment for the treatment plant will comprise a 3 tonne all terrain boom forklift, 2 x 4WD station wagons, 3 x 4WD utilities, portable welder, 20 t yard crane and a Hiab truck with tray.

## 2.4 Major Equipment Items

For the purposes of comparison, major equipment items for the two throughput options have been presented below. The detailed design criteria, mass balances and equipment lists are presented in Appendix 1 and 3.

Ore feed rate: tpa	1,000,000	500,000
: tph	125	62.5
Primary crusher	1000 x 750 jaw	900 x 600 jaw
Secondary crusher	4 ¼ ft cone	4 ¼ ft cone
Mill feed bin	240 t	120t
Primary ball mill	4.3 m 5.5 m	3.6m x 5.0m
Ball mill power	1650 kW	1250 kW
Coarse spirals	36 x triple start	18 x triple start
Fine spirals	60 x triple start	30 x triple start
Coarse tables	8 x Holman 8000	4 x Holman 8000
Fine tables	14 x Holman 8000	7 x Holman 8000
Tails thickener	13 m diameter	9 m diameter

The ball mill selected for the 500,000 tpa case was determined by a requirement for a diameter adequate to provide impact breakage for the 15 mm mill feed, and an aspect ratio appropriate for the duty. This has resulted in the selected mill drive (at 1250 kW) being somewhat oversized for the duty. The selection is appropriate given the level of process definition available at the scoping study level.

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**SECTION 3.0**  
**CAPITAL COST ESTIMATE**

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### 3.0 CAPITAL COST ESTIMATE

#### 3.1 Capital Cost Estimate

The capital cost estimate has been prepared based on budget pricing of major equipment only and has been factored from that basis using rates typical for projects of this type. An overall contingency of 20% has been allowed. The cost estimate is believed to have an accuracy of -20% / +50% at this time. However, it should be noted that the construction market at present is volatile and any cost estimates should be treated with caution as the current rate of escalation in construction costs is significant.

Both estimates are based on pricing obtained in 1Q07 for the first draft of the 500,000 tpa report. A 5% escalation allowance has been included to bring the pricing in line with 3Q07 when the final draft of the report was prepared. No future escalation to cover the period of project implementation has been allowed.

**Table 3.1 Capital Cost Estimate (-20% / +50%, 3Q07)**

Area	Cost Estimate A\$000	
	1,000,000 tpa	500,000 tpa
<b>Throughput</b>		
<b>Direct Costs</b>		
Mining (allowance)	3,000	2,000
Const. Site Establish. and Indirects	1,904	1,474
Treatment Plant	31,712	21,678
Infrastructure and Services	4,722	4,082
<b>Subtotal Directs Costs</b>	<b>41,337</b>	<b>29,234</b>
<b>Indirect Costs</b>		
EPCM, Consultants, Vendors	7,181	5,183
Owners Costs	1,535	1,380
Allowance for Spare Parts	758	500
Plant Pre-Production Costs	677	625
<b>Subtotal Indirect Costs</b>	<b>10,150</b>	<b>7,688</b>
Contingency at 20%	10,297	7,384
Escalation 1Q07 to 3Q07 5%	3,089	2,215
<b>Project Total</b>	<b>64,873</b>	<b>46,521</b>
Future Escalation	Excluded	Excluded

#### 3.2 Capital Estimate Exclusions

Capital cost estimate qualifications / exclusions include:

- The allowance for mining capital costs assume contract mining will be employed. The allowance covers contractor mobilisation, haul road construction, mine pre-stripping and development, provision of fuel storage, explosives magazines and maintenance workshop with contractor facilities, and ROM pad preparation.

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- No abnormal site founding conditions are assumed to be present.
  - Costs associated with environmental impact assessments, and government permitting are excluded.
  - Owner's costs are an allowance of \$1.375m to cover the owners project management team, project insurances, specialist consultants and the recruitment of operating staff.
  - Pre-production costs have been included to cover labour costs prior to commissioning and first fill reagents and consumables. No allowance has been made for working capital.
  - Sunk costs, including future testwork and studies prior to commencement of project execution, are excluded.
  - Contingency has been globally applied at 20% to the estimate.
  - Escalation has been excluded from the estimate.
  - EPCM has been factored based on Lycopodium experience of projects of this size and complexity.

### **3.3 Capital Estimate Basis**

The estimate has been prepared on the following basis:

- Budget prices were obtained from vendors for major items of equipment including the crushing plant, mill and gravity concentration equipment for the 500,000tpa case.
- Some items of equipment were then factored for the 1,000,000 tpa case (crushing plant and mill).
- Other equipment pricing was extracted from Lycopodiums database.
- Installed costs were factored using known costs from previous projects.
- Architectural and infrastructure costs were based on Lycopodiums experience with similar facilities on other projects.
- Costs were escalated by 5% to move the basis of the estimates from 1Q07 to 3Q07.

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**SECTION 4.0**  
**OPERATING COST ESTIMATE**

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## 4.0 OPERATING COST ESTIMATE

### 4.1 Mine Operating Cost Estimate

Mine operating costs were provided by Minemakers and are based on contract mining.

The basis of the costs is an all-in allowance of \$3.75 per tonne of material moved, and strip ratios of 1:1 and 0.5:1, waste to ore, for the 1,000,000 tpa and 500,000 tpa cases respectively.

**Table 4.1 Mine Operating Cost Estimate (-20% / +50%, 3Q07)**

	1,000,000 tpa		500,000 tpa	
	Annual A\$000	A\$/t Ore	Annual A\$000	A\$/t Ore
<b>Total</b>	<b>7,500</b>	<b>7.50</b>	<b>2,813</b>	<b>5.63</b>

The cost includes:

- Geology, exploration and mining related costs including haul road maintenance.
- ROM stockpile rehandling costs including rehandling of mill feed when the crushing circuit is not operating.

### 4.2 Plant and Administration Operating Cost Estimate

The operating cost estimate has been prepared based on available typical costs from similar mining projects. The cost estimate has an accuracy of -20 / +50% and is summarised below.

**Table 4.2 Plant and Admin. Operating Cost Estimate (-20% / +50%, 3Q07)**

Cost Area	1,000,000tpa		500,000 tpa	
	Annual A\$000	A\$/t Ore	Annual A\$000	A\$/t Ore
Labour	5,467	5.47	5,233	10.47
Consumables	2,183	2.18	1,091	2.18
Power	1,958	1.96	1,330	2.66
Maintenance	1,071	1.07	714	1.43
General and Administration	930	0.93	790	1.58
Tailings Disposal	1,000	1.00	500	1.00
<b>Total</b>	<b>12,609</b>	<b>12.61</b>	<b>9,657</b>	<b>19.31</b>

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### **4.3 Operating Cost Estimate Exclusions**

Operating cost estimate exclusions include:

- Tin concentrate transport and downstream treatment charges.
- All head office costs and corporate overheads.
- Sustaining capital, other than an allowance of \$1/tonne for tailings disposal.
- Ongoing rehabilitation or closure costs.
- Licence fees, royalties, GST and Government monitoring / compliance costs.
- Project financing costs and interest payments.
- Escalation.
- Power costs of \$0.10/kWh have been assumed.
- Costs associated with areas beyond the battery limits of the study.

No contingency has been applied to the operating cost estimate.

### **4.4 Labour Costs**

Labour costs have been based on Lycopodiums data base for similar operations in relation to the manning requirements. An approach of "Multi Skilling" have been applied in the manning structure to allow operating personnel to be used for basic maintenance duties on processing equipment. Specialised or legislative duties i.e. electrical maintenance etc. has been separately allowed for in the manning structure.

Unit rates for labour have been based on similar projects from Lycopodium's database.

The labour cost for all mining related personnel is assumed to be included in the allowance in 4.1.

No laboratory or personnel has been allowed for.

### **4.5 Consumables**

Crusher and mill liners and grinding media consumption are based on data from similar ore types.

Thickener flocculent requirements are typical values not supported by testwork data.

The diesel requirements for the front end loader feeding the plant are excluded from the consumable as it is assumed part of the mining contract.

#### **4.6 Power**

Power costs are based on a supply rate of \$0.10/kWh. Power draw is based on the installed drives taken from the equipment lists with appropriate utilisation factors applied.

#### **4.7 Maintenance Materials Costs**

Maintenance materials costs for the operation have been estimated as a percentage of installed capital cost based on historical in-house data and covers mechanical spares, wear parts and general consumables. The maintenance costs exclude all payroll maintenance labour (covered in plant labour) and crusher and mill liners (covered in consumables).

#### **4.8 General and Administration Costs**

Administration costs have been based on historical in-house data.

#### **4.9 Tailings Disposal**

An allowance of \$1.00/t has been allowed for ongoing works, such as raising the dam wall, to provide storage capacity in the tailings storage facility. This is the only allowance for sustaining capital in the operating cost estimate.

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**SECTION 5.0**  
**PROJECT CASH FLOW**

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## 5.0 PROJECT CASH FLOW

Simple cash flow spreadsheets were developed for the two throughput scenarios. The spreadsheets were developed to provide an indication of potential project cash flow and provide an indication of the sensitivity of the project to cost and revenue variation. The spreadsheets are not fully inclusive financial models and as such should not be interpreted to be a statement of the economic viability or otherwise of the project. Any use of the results of these spreadsheets is undertaken at the users risk.

### 5.1 Spreadsheet Basis

The basis of the spreadsheets is as shown below:

Ore feed rate: tpa	1,000,000	500,000
: tph	125	62.5
Ore available:	8,000,000t	4,000,000t
Grade:	0.20%Sn	0.25%Sn
Tin recovery:	80%	80%
Tin price (AUD):	\$17,457	\$17,457
Concentrate grade:	50%Sn	50%Sn
Payable metal in concentrate:	85% contained Sn	85% contained Sn
Concentrate treatment charge:	\$350/t	\$350/t
Concentrate shipping costs:	\$100/t	\$100/t

Site operating costs used in the cash flow spreadsheets were as outlined in Section 4 of this study report.

Unless listed above as the basis for the spreadsheet calculations, all exclusions listed in Section 4 of this report apply equally to the calculated cash flows. In addition / particular it should be noted that the cash flow spreadsheet excludes all consideration of:

- Financing charges.
- Royalties, taxes and government charges.
- Sustaining capital.
- Head office costs.
- Rehabilitation or closure costs.

It should be noted that the 'ore available' tonnages quoted above are not based on, and do not constitute, a JORC compliant ore resource or reserve.

## 5.2 Project Cash Flow

The simple cash flow spreadsheets developed indicate positive annual cash flows, excluding capital repayment and/or payment of financing charges and interest, of \$2.19 million and \$1.47 million for the 1,000,000 tpa and 500,000 tpa scenarios respectively.

The base case spreadsheets are included at the end of this section.

## 5.3 Sensitivities

The simple cash flow spreadsheet was used to examine the sensitivity of the annual cash flow to changes in various inputs. This is shown in Table 5.1 below.

**Table 5.1 Cash Flow Sensitivity Analysis Summary**

Throughput	Annual Cash Flow A\$000	
	1,000,000 tpa	500,000 tpa
Base Case	2,192	1,471
Head Grade +10%	4,422	2,865
Head Grade -10%	(38)	77
Process Operating Cost +10%	1,022	586
Process Operating Cost -10%	3,362	2,356
Recovery +5%	3,307	2,168
Recovery -5%	1,077	774

The annual cash flows quoted in the above table exclude capital repayment and financing charges and are subject to the same exclusions on input data as are listed earlier in this report.

As expected for an operation processing a low grade deposit cash flow is sensitive to head grade and recovery.

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**SECTION 6.0**  
**RISKS AND OPPORTUNITIES**

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## 6.0 RISKS AND OPPORTUNITIES

During the course of completing the study the following risks and opportunities have been identified:

### Crushing and Milling

- The crushing and milling circuit has been conservatively sized on the basis of typical granite properties and assumes that a feed size of 15 mm to the mill can be ground without undue scuffing of the mill. The ore is weathered but its properties should be determined and the circuit modelled to confirm this.
- Surge capacity in the crushing circuit is based on an open air stockpile. Given this operation is in Tasmania, it may be necessary to review this assumption and provide storage with a level of weather protection.
- The estimate is based on a packaged crushing plant and assumes that for the 1 Mtpa case a 15 mm product size can still be achieved by 2-stage crushing. This will require validation.

### Gravity Spiral Circuit

- The spiral circuit design is based on splitting coarse and fine feeds which is generally good practice for gravity separation. This was not done for the original Selby / Cross study and may warrant further testing.
- Spiral capacity has been based on typical industry averages and should be confirmed.

### Gravity Tabling Circuit

- The table circuit design is based on splitting coarse and fine feeds which is generally good practice for gravity separation. This was not done for the original Selby / Cross study and may warrant further testing.
- Table capacity has been based on typical industry averages and should be confirmed.
- An additional step of kieving or high frequency vibration of the concentrates may offer some opportunity for upgrading the shipped concentrates.
- Other process routes have been developed for fine tin concentrates since the original work by Selby and this may warrant further investigation.
- Given the requirement for significant manual handling of concentrate at the 1 Mtpa throughput rate, there should be some consideration given to a filtration facility so this part of the operation can be automated.

### Tailings Disposal Facility

- A simple unlined starter dam has been assumed for the facility. Should there be sulphides present in the ore the dam may require lining to prevent the release of acid mine drainage.

- It has been assumed that a suitable site for the facility will be available in close proximity to the plant site. Should this not be the case both capital and operating costs for the facility could be significantly higher than those allowed.

**Reagents and Services**

- Power and water are assumed to be within close proximity of the site. Any requirements for either other than as described in this study could significantly affect capital cost.

**APPENDIX 1**  
**PROCESS DESIGN BASIS AND MASS BALANCE**

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# MINEMAKERS LTD

## GREAT PYRAMID TIN PROJECT

### PROCESS DESIGN BASIS

#### Scoping Study

Sep-07

Prepared By:



Job No: 1406

C	24/09/2007	Revised - Two throughput options	AR		CW
B	03/04/2007	Issued for Client Review	AR		
A	02/03/2007	Issued for Internal Review	AR		CW
REV NO.	DATE	DESCRIPTION OF REVISION	BY	DESIGN APPROVAL	PROJECT APPROVAL

Client	<b>Minemakers Limited</b>	Revision	<b>C</b>	Date			<b>24-Sep-07</b>
Project	<b>Great Pyramid</b>	Prepared	<b>AR</b>	Checked	<b>CW</b>		
Title	<b>Design Basis</b>	Job No.	<b>1406</b>				

Note All metallurgical balance assumptions are derived from the report by Selby and Cross (1983)

		Rev	Source
<b>SITE CHARACTERISTICS</b>			
Location		North East Tasmania	A Owner
		<b>500,000 tpa</b>	<b>1,000,000 tpa</b>
<b>ORE CHARACTERISTICS</b>			
Ore Type		<b>Sandstone/siltstone</b>	C Owner
Annual throughput	Operating Capacity	<b>500,000</b>	<b>1,000,000</b>
Ore grade Design	Sn %	<b>0.25</b>	<b>0.20</b>
Overall Tin Recovery	%	<b>80.0</b>	<b>80.0</b>
Bulk density	t/m <sup>3</sup>	1.62	1.62
Specific gravity	Ore	<b>2.70</b>	<b>2.70</b>
	Spiral Concentrate	<b>3.20</b>	<b>3.20</b>
	Table Concentrate	<b>3.50</b>	<b>3.50</b>
	Water	<b>1.00</b>	<b>1.00</b>
Ore Moisture content	Design	<b>5.00</b>	<b>5.00</b>
Crushing work index	Primary Ore - Design	<b>15.0</b>	<b>15.0</b>
Bond Rod Mill work index	Design	<b>18.0</b>	<b>18.0</b>
Bond Ball Mill work index	Design	<b>16.0</b>	<b>16.0</b>
Abrasion index	Design	<b>0.40</b>	<b>0.40</b>
<b>OPERATING SCHEDULE</b>			
<b>CRUSHING PLANT OPERATION</b>			
Operating hours per day	h	<b>24</b>	<b>24</b>
Operating days per year	d	<b>365</b>	<b>365</b>
Utilisation	%	<b>80.0</b>	<b>80.0</b>
Operating hours per year	h	7008	7008
Feed rate	Nominal dry t/h	71	143
<b>MILLING AND GRAVITY PLANT OPERATION</b>			
Operating hours per day	h	<b>24</b>	<b>24</b>
Operating days per year	d	<b>365</b>	<b>365</b>
Utilisation	%	<b>91.3</b>	<b>91.3</b>
Operating hours per year	h	8000	8000
Feed rate	dry t/h	63	125
<b>CRUSHING PLANT</b>			
<b>R.O.M. Ore</b>			
100% passing	mm	<b>500</b>	<b>500</b>
<b>ROM Bin</b>			
Capacity	tonnes	<b>25</b>	<b>25</b>
<b>Primary Feeder</b>			
Type		<b>Vibrating, Horizontal</b>	C Vendor
<b>Primary Crusher</b>			
Type		<b>Jaw</b>	<b>Jaw</b>
Size,	mm	<b>900 x 600</b>	<b>1000 x 750</b>
Crusher CSS	Nominal	<b>80</b>	<b>80</b>
Crusher Product size	Nominal P <sub>80</sub>	<b>75</b>	<b>90</b>
<b>Product Screen</b>			
Circulating load	%	<b>100</b>	<b>100</b>
Type		<b>Double Deck Vibrating</b>	C Vendor/Assume
Size	m x m	<b>1.80 x 6.10</b>	<b>1.80 x 6.10</b>
Number of screens		<b>1</b>	<b>2</b>
Bottom Deck Aperture	mm	<b>15</b>	<b>15</b>
Product P80	mm	<b>12</b>	<b>12</b>
<b>Secondary Crusher</b>			
Type		<b>Cone</b>	<b>Cone</b>
Size	mm	<b>41/4ft</b>	<b>41/4ft</b>
Throughput	Nominal	71	143
Crusher CSS	Nominal	<b>20</b>	<b>20</b>
<b>Crushed Product Feed Bin</b>			
Capacity	tonnes	<b>20</b>	<b>40</b>
<b>Fine Ore Stockpile (dead)</b>			
Capacity	tonnes	<b>120</b>	<b>240</b>

Client	<b>Minemakers Limited</b>	Revision	<b>C</b>	Date		<b>24-Sep-07</b>
Project	<b>Great Pyramid</b>	Prepared	<b>AR</b>	Checked	<b>CW</b>	
Title	<b>Design Basis</b>	Job No.	<b>1406</b>			

**GRINDING**

**Primary Mill**

			<b>500,000 tpa</b>	<b>1,000,000 tpa</b>		
New Feed Rate		dry t/h	63	125	C	Calc
Mill Feed	F80	mm	12	12	C	Calc
Mill Product	P80	micron	350	350	C	Selby
Type			<b>Ball Mill</b>	<b>Ball Mill</b>	C	Lyco
Size	Diameter (inside shell)	m (ft)	3.6	4.3	C	Calc
	EGL	m (ft)	5.0	5.5	C	Calc
Power	Installed	kW	1250	1650	C	Calc
Ball Charge	Nominal	% volume	35	30	C	Calc
	Critical Speed	%Nc	75	75	C	Calc

**Classifying Screen**

Circulating Load		%	150	150	C	Selby
Aperture		micron	500	500	C	Calc
Nominal cut size P <sub>80</sub>		micron	350	350	C	Calc

**GRAVITY CIRCUIT**

**Classifying Cyclones**

Diameter		mm	250	250	C	Lyco
Cut size		micron	106	106	C	Lyco
Number of cyclones			2	4		Lyco
Mass to underflow		%	50	50	C	Assumed
Pressure		kPa	75	75	C	Lyco

**Spiral Circuit**

**Coarse rougher spirals**

Feed density		% solids	40	40	C	Lyco
Stage Mass rec to conc		%	25	25	C	Assumed/Selby
Stage Sn rec to conc		%	90	88	C	Assumed/Selby
Stage Water rec to conc		%	20	20	C	Assumed/Selby
Spirals selected			<b>6 turn, triple start</b>		C	Vendor
Number of spirals			6	12	C	Vendor

**Coarse scavenger spirals**

Feed density		% solids	38	38	C	Calc
Stage Mass rec to conc		%	10	10	C	Assumed/Selby
Stage Sn rec to conc		%	60	60	C	Assumed/Selby
Stage Water rec to conc		%	8	8	C	Assumed/Selby
Spirals selected			<b>6 turn, triple start</b>		C	Vendor
Number of spirals			6	12	C	Vendor

**Coarse cleaner spirals**

Feed density		% solids	40	40	C	Lyco
Stage Mass rec to conc		%	20	20	C	Assumed/Selby
Stage Sn rec to conc		%	90	88	C	Assumed/Selby
Stage Water rec to conc		%	15	15	C	Assumed/Selby
Spirals selected			<b>6 turn, triple start</b>		C	Vendor
Number of spirals			6	12	C	Vendor

**Fine rougher spirals**

Feed density		% solids	34	34	C	Calc
Stage Mass rec to conc		%	25	25	C	Assumed/Selby
Stage Sn rec to conc		%	90	88	C	Assumed/Selby
Stage Water rec to conc		%	16	16	C	Assumed/Selby
Spirals selected			<b>8.5 turn, triple start</b>		C	Vendor
Number of spirals			10	20	C	Vendor

**Fine scavenger spirals**

Feed density		% solids	33	33	C	Calc
Stage Mass rec to conc		%	10	10	C	Assumed/Selby
Stage Sn rec to conc		%	60	60	C	Assumed/Selby
Stage Water rec to conc		%	8	8	C	Assumed/Selby
Spirals selected			<b>8.5 turn, triple start</b>		C	Vendor
Number of spirals			10	20	C	Vendor

**Fine cleaner spirals**

Feed density		% solids	40	40	C	Calc
Stage Mass rec to conc		%	20	20	C	Assumed/Selby
Stage Sn rec to conc		%	90	88	C	Assumed/Selby
Stage Water rec to conc		%	15	15	C	Assumed/Selby
Spirals selected			<b>8.5 turn, triple start</b>		C	Vendor
Number of spirals			10	20	C	Vendor

Client	<b>Minemakers Limited</b>	Revision	<b>C</b>	Date		<b>24-Sep-07</b>
Project	<b>Great Pyramid</b>	Prepared	<b>AR</b>	Checked	<b>CW</b>	
Title	<b>Design Basis</b>	Job No.	<b>1406</b>			

**Tabling Circuit**

**Coarse cleaner tables**

		500,000 tpa	1,000,000 tpa		
Feed density	% solids	<b>40</b>	<b>40</b>	C	Lyco
Stage Mass rec to conc	%	<b>4</b>	<b>3.3</b>	C	Assumed/Selby
Stage Sn rec to conc	%	<b>80</b>	<b>75</b>	C	Assumed/Selby
Stage Water rec to conc	%	<b>5</b>	<b>5</b>	C	Assumed/Selby
Stage Mass rec to mids	%	<b>20</b>	<b>20</b>	C	Assumed/Selby
Stage Sn rec to mids	%	<b>10</b>	<b>10</b>	C	Assumed/Selby
Stage Water rec to mids	%	<b>17</b>	<b>17</b>	C	Assumed/Selby
Tables selected		<b>Holman 8000 table</b>		C	Vendor
Number of tables		<b>3</b>	<b>6</b>	C	Vendor

**Coarse retreat table**

Feed density	% solids	43	43	C	Calc
Stage Mass rec to conc	%	<b>6</b>	<b>5.5</b>	C	Assumed/Selby
Stage Sn rec to conc	%	<b>50</b>	<b>45</b>	C	Assumed/Selby
Stage Water rec to conc	%	<b>15</b>	<b>15</b>	C	Assumed/Selby
Tables selected		<b>Holman 8000 table</b>		C	Vendor
Number of tables		<b>1</b>	<b>2</b>	C	Vendor

**Fine cleaner tables**

Feed density	% solids	<b>40</b>	<b>40</b>	C	Lyco
Stage Mass rec to conc	%	<b>4</b>	<b>3.3</b>	C	Assumed/Selby
Stage Sn rec to conc	%	<b>80</b>	<b>80</b>	C	Assumed/Selby
Stage Water rec to conc	%	<b>5</b>	<b>5</b>	C	Assumed/Selby
Stage Mass rec to mids	%	<b>20</b>	<b>20</b>	C	Assumed/Selby
Stage Sn rec to mids	%	<b>10</b>	<b>10</b>	C	Assumed/Selby
Stage Water rec to mids	%	<b>17</b>	<b>17</b>	C	Assumed/Selby
Tables selected		<b>Holman 8000 table</b>		C	Vendor
Number of tables		<b>6</b>	<b>12</b>	C	Vendor

**Fine retreat table**

Feed density	% solids	43	43	C	Calc
Stage Mass rec to conc	%	<b>6</b>	<b>5.5</b>	C	Assumed/Selby
Stage Sn rec to conc	%	<b>50</b>	<b>50</b>	C	Assumed/Selby
Stage Water rec to conc	%	<b>15</b>	<b>15</b>	C	Assumed/Selby
Tables selected		<b>Holman 8000 table</b>		C	Vendor
Number of tables		<b>1</b>	<b>2</b>	C	Vendor

**FINAL TAILS**

**Tailings thickener**

			High Rate	High Rate		
Type					C	Lyco
Solids loading	Flux Rate	t/h.m <sup>2</sup>	<b>1.00</b>	<b>1.00</b>	C	Assumed
Diameter	calculated	m	9	13	C	Calc
Flocculant addition		g/t	<b>15</b>	<b>15</b>	C	Assumed
Feed	solids	t/h	<b>62</b>	<b>124</b>	C	Calc

**WATER SYSTEMS - USAGE**

**Water Usage**

Process		Milling, Dilution, Hoseup, Spray Water	C	Lyco
Raw Water		Tables, Gland Water	C	Lyco
Bore Water		Raw water supply, Potable water supply	C	Lyco

**WATER SYSTEM**

**Potable Water - pumping**

**Total Process Water Demand**

**Raw Water Demand**

Potable Water - pumping		m <sup>3</sup> /h	<b>5</b>	<b>5</b>	C	Assumed
Total Process Water Demand	Average	m <sup>3</sup> /h	<b>120</b>	<b>235</b>	C	Calc
Raw Water Demand	Average	m <sup>3</sup> /h	<b>45</b>	<b>71</b>	C	Calc
Process Water Pond Capacity		m <sup>3</sup>	<b>120</b>	<b>240</b>	C	Lyco
Raw Water Pond capacity		m <sup>3</sup>	<b>50</b>	<b>80</b>	C	Lyco



**MINEMAKERS LIMITED**

**GREAT PYRAMID STUDY**

**MASS BALANCE**

**Key data**

**J/N 1406  
REVISION**

**B**

Annual feed	<b>500000</b> tpa	Crusher recirc	<b>100%</b>
Crusher Operating hours	<b>7008</b> hrs	Milling density	<b>70%</b> % solids
Crusher feedrate	<b>71</b> tph	Milling recirc	<b>150%</b> ref Selby
Milling Operating hours	<b>8000</b>	Oversize % solids	<b>75%</b>
Milling feed rate	<b>63</b> tph	Trommel water	<b>10</b> m3/h
Feed moisture	<b>5%</b>	Screen undersize	<b>45%</b> % solids
Feed grade	<b>0.25%</b> Sn		

**Crushing and Milling**

Stream No	1	2	3	4	5	5a	6	7	8	9	10	11
	ROM Feed	Product Screen Feed	Product Screen Oversize	Cone Crusher feed	Product Screen Undersize	Ore to stockpile	Ball Mill feed	Mill water	DSM Screen oversize	Trommel water	Screen Feed	DSM Screen undersize
Solids tph	71	143	71.3	71.3	71.3	8.8	63		93.8		156	63
Water tph	3.6	7.1	3.6	3.6	3.6	0.4	3.1	63	31	10	108	76
Slurry tph	75	150	75	75	75	9	66	63	125	10	264	139
% solids	95%	95%	95%	95%	95%	95%	95%	0%	75%	0%	59%	45%
Slurry m3/h	29.0	58.1	29.0	29.0	29.0	3.6	25.4	63.3	64.7	10.0	163.4	98.7
Slurry SG	2.58	2.58	2.58	2.58	2.58	2.58	2.58	1.00	1.93	1.00	1.61	1.41
Solids SG	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.25%	0.25%	0.25%	0.25%	0.25%	100.25%	0.25%		0.25%		0.25%	0.25%
Units Sn (kg/h)	178.4	356.7	178.4	178.4	178.4	8869.1	156.3	0.0	234.4	0.0	390.6	156.3

**MINEMAKERS LIMITED**

**GREAT PYRAMID STUDY**

**MASS BALANCE**

**Key data**

J/N 1406

REVISION

**B**

Solids to cyc O/F	<b>50%</b> mass	Coarse scav conc	<b>10%</b> mass	Spiral conc SG	<b>3.20</b>
Water to cyc O/F	<b>80%</b> mass	Coarse scav conc	<b>60%</b> Sn rec	Spiral tail SG	<b>2.80</b>
Coarse spiral feed	<b>40%</b> % solids	Coarse scav conc	<b>8%</b> water		
Coarse rough conc	<b>25%</b> mass	Coarse clean feed	<b>40%</b> % solids		
Coarse rough conc	<b>90%</b> Sn rec	Coarse clean conc	<b>20%</b> mass		
Coarse rough conc	<b>20%</b> water	Coarse clean conc	<b>90%</b> Sn rec		
		Coarse clean conc	<b>15%</b> water		

**Coarse Spirals Circuit**

Stream No	12	13	14	15	16	17	18	19	20	21	44	22	22a	22b	23	24
	Cyclone Feed	Cyclone Overflow	Cyclone Underflow	Coarse dilution water	Coarse rougher feed	Coarse rougher conc	Coarse rougher tail	Coarse scav feed	Coarse scav con	Coarse scav tail	Coarse table tail	Coarse clean feed	Coarse clean water	Coarse clean spiral feed	Coarse clean con	Coarse clean tail
Solids tph	63	31	31.3		31.3	7.8	23	35	3.5	31	2.6	14		14	3	11
Water tph	76	61.1	15.3	31.6	46.9	9.4	38	56	4	51	3.8	18	3	21	3	18
Slurry tph	139	92	47	32	78	17	61	90	8	82	6.4	32	3	35	5	29
% solids	45%	34%	67%	0%	40%	45%	38%	38%	44%	38%	41%	44%	0%	40%	51%	38%
Slurry m3/h	98.7	72.3	26.4	31.6	58.0	11.8	45.9	68.1	5.5	62.4	4.8	22.0	3.2	25.8	3.5	22.2
Slurry SG	1.41	1.28	1.76	1.00	1.35	1.45	1.33	1.33	1.43	1.32	1.36	1.43	1.00	1.35	1.54	1.32
Solids SG	2.8	2.8	2.8	2.8	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.25%	0.25%	0.25%	0.25%	0.25%	0.90%	0.03%	0.05%	0.30%	0.02%	0.48%	0.67%	0.00%	0.67%	3.02%	0.08%
Units Sn (kg/h)	156.3	78.1	78.1	0.0	78.1	70.3	7.8	17	10.3	6.9	12.6	93	0	93	83.9	9

**Fine Spirals Circuit**

Fine rough conc	<b>25%</b> mass	Fine clean feed	<b>40%</b> % solids
Fine rough conc	<b>90%</b> Sn rec	Fine clean conc	<b>20%</b> mass
Fine rough conc	<b>16%</b> water	Fine clean conc	<b>90%</b> Sn rec
Fine scav conc	<b>10%</b> mass	Fine clean conc	<b>15%</b> water
Fine scav conc	<b>60%</b> Sn rec	Spiral conc SG	<b>3.20</b>
Fine scav conc	<b>8%</b> water	Spiral tail SG	<b>2.80</b>

Stream No	13	25	26	27	28	29	54	30	31	32	33	34
	Fine rougher feed	Fine rougher conc	Fine rougher tail	Fine scav feed	Fine scav con	Fine scav tail	Fine table tail	Fine clean feed	Fine clean water	Fine clean spiral feed	Fine clean con	Fine clean tail
Solids tph	31.3	7.8	23	35	3.5	31	2.6	14		14	3	11
Water tph	61.1	9.8	51	69	6	64	3.8	19	2	21	3	18
Slurry tph	92	18	75	104	9	95	6.4	33	2	35	6	29
% solids	34%	44%	31%	33%	38%	33%	41%	42%	0%	40%	49%	38%
Slurry m3/h	72.3	12.2	59.7	81.7	6.6	74.9	4.8	23.5	1.7	25.8	3.7	22.0
Slurry SG	1.28	1.44	1.25	1.27	1.36	1.27	1.36	1.41	1.00	1.35	1.51	1.33
Solids SG	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.25%	0.90%	0.03%	0.05%	0.30%	0.02%	0.48%	0.67%	0.00%	0.67%	3.02%	0.08%
Units Sn (kg/h)	78.1	70.3	7.8	17	10.3	6.9	12.6	93	0	93	83.9	9

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Table water addition	<b>0.20</b> m3/h	Coarse table mids	<b>20%</b> mass	Table conc SG	<b>3.50</b>
Coarse table feed	<b>40%</b> % solids	Coarse table mids	<b>10%</b> Sn rec	Table mids SG	<b>3.20</b>
Coarse table conc	<b>4%</b> mass	Coarse table mids	<b>17%</b> water	Spiral tail SG	<b>2.80</b>
Coarse table conc	<b>80%</b> Sn rec	Coarse retreat conc	<b>6%</b> mass		
Coarse table conc	<b>5%</b> water	Coarse retreat conc	<b>50%</b> Sn rec		
		Coarse retreat conc	<b>15%</b> water		

**Coarse Table Circuit**

Stream No	23	35	36	36a	37	38	39	40	40a	41	42	43	44
	Coarse clean con	Dilution water	Coarse table feed	Table water	Coarse table conc	Coarse table mids	Coarse table tail	Coarse retreat feed	Table water	Coarse retreat conc	Coarse retreat tail	Combined coarse conc	Combined coarse tail
Solids tph	2.8		2.8		0.11	0.56	2.11	0.56		0.03	0.52	0.14	2.64
Water tph	2.6	1.5	4.2	0.2	0.22	0.74	3.41	0.74	0.20	0.54	0.40	0.76	3.81
Slurry tph	5.4	1.5	7.0	0.2	0.33	1.30	5.52	1.30	0.20	0.58	0.92	0.91	6.45
% solids	51%	0%	40%	0%	34%	43%	38%	43%	0%	6%	57%	16%	41%
Slurry m3/h	3.5	1.53	5.04	0.20	0.25	0.92	4.07	0.92	0.20	0.55	0.59	0.80	4.75
Slurry SG	1.54	1.00	1.38	1.00	1.32	1.42	1.36	1.42	1.00	1.04	1.57	1.13	1.36
Solids SG	3.20	3.20	3.20	2.8	3.50	3.20	3.20	3.20	2.8	3.50	2.8	3.50	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	3.0%		3.02%	0.00%	60.30%	1.51%	0.40%	1.51%	0.00%	12.56%	0.80%	49.29%	0.48%
Units Sn (kg/h)	83.9	0.0	83.9	0.0	67.1	8.4	8.4	8.39	0.0	4.2	4.2	71.27	12.58

**Fine Table Circuit**

Table water addition	<b>0.20</b> m3/h	Fine table mids	<b>20%</b> mass	Table conc SG	<b>3.50</b>
Fine table feed	<b>40%</b> % solids	Fine table mids	<b>10%</b> Sn rec	Table mids SG	<b>3.20</b>
Fine table conc	<b>4%</b> mass	Fine table mids	<b>17%</b> water	Spiral tail SG	<b>2.80</b>
Fine table conc	<b>80%</b> Sn rec	Fine retreat conc	<b>6%</b> mass		
Fine table conc	<b>5%</b> water	Fine retreat conc	<b>50%</b> Sn rec		
		Fine retreat conc	<b>15%</b> water		

Stream No	33	45	46	46a	47	48	49	50	50a	51	52	53	54
	Fine clean con	Dilution water	Fine table feed	Table water	Fine table conc	Fine table mids	Fine table tail	Fine retreat feed	Table water	Fine retreat conc	Fine retreat tail	Combined fine conc	Combined fine tail
Solids tph	2.8		2.8		0.11	0.56	2.11	0.56		0.03	0.52	0.14	2.64
Water tph	2.9	1.3	4.2	0.2	0.22	0.74	3.41	0.74	0.20	0.54	0.40	0.76	3.81
Slurry tph	5.7	1.3	7.0	0.2	0.33	1.30	5.52	1.30	0.20	0.58	0.92	0.91	6.45
% solids	49%	0%	40%	0%	34%	43%	38%	43%	0%	6%	57%	16%	41%
Slurry m3/h	3.7	1.30	5.04	0.20	0.25	0.92	4.07	0.92	0.20	0.55	0.59	0.80	4.75
Slurry SG	1.51	1.00	1.38	1.00	1.32	1.42	1.36	1.42	1.00	1.04	1.57	1.13	1.36
Solids SG	3.2	3.20	3.20	2.8	3.50	3.20	3.20	3.20	2.8	3.50	2.8	3.50	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	3.02%		3.02%	0.00%	60.30%	1.51%	0.40%	1.51%	0.00%	12.56%	0.80%	49.29%	0.48%
Units Sn (kg/h)	83.9	0.0	83.9	0.0	67.1	8.4	8.4	8.39	0.0	4.2	4.2	71.27	12.58

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Decanted concentrate      **90%** % solids  
 Table conc SG              **3.50**  
 Table mids SG              **3.20**  
 Spiral tail SG              **2.80**

**Dewatering circuit**

Stream No	43	55	56	53	57	58	58a
	Combined coarse conc	Decanted Coarse conc	Overflow water	Combined fine conc	Decanted Fine conc	Overflow water	Total overflow water
Solids tph	0.14	0.14		0.14	0.14		
Water tph	0.76	0.02	0.75	0.76	0.02	0.75	1.49
Slurry tph	0.9	0.16	0.75	0.9	0.16	0.75	1.49
% solids	16%	90%	0%	16%	90%	0%	0%
Slurry m3/h	0.8	0.06	0.75	0.80	0.06	0.75	1.49
Slurry SG	1.13	2.80	1.00	1.13	2.80	1.00	
Solids SG	3.50	3.50	2.80	3.50	3.50	2.80	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	49.3%	49.3%		49.3%	49.3%		
Units Sn (kg/h)	71.27	71.3	0.0	71.27	71.3	0.0	0.0

**Tailings circuit**

Flocculant conc                   **0.25%**  
 Flocculant addition           **30 g/t**  
 Thickener U/F                   **50% % solids**  
 Decant Return                   **50% mass split**

Stream No	21	29	58a	59	59a	60	61	62	63	64	65
	Coarse scav tail	Fine scav tail	Overflow water	Dilute flocculant	Total thickener feed	Overflow water	Thickener underflow	Tails dam feed	Decant Return	Process water top up	Process water demand
Solids tph	31.1	31.1	0.0		62		62	62			
Water tph	51.3	63.8	1.5	0.75	117	55.1	62.21	62.21	31.11	33.46	119.63
Slurry tph	82.4	94.9	1.49	0.75	179	55.1	124.42	124.42	31.11	33.46	119.63
% solids	38%	33%	0%	0%	35%	0%	50%	50%	0%	0%	0%
Slurry m3/h	62.4	74.88	1.49	0.75	139	55.1	84.43	84.43	31.11	33.46	119.63
Slurry SG	1.32	1.27	1.00	1.00	1.29	1.00	1.47	1.47	1.00	1.00	1.00
Solids SG	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.02%	0.02%		0.0%	0.02%		0.02%	0.02%			
Units Sn (kg/h)	6.85	6.85	0.0	0.00	13.7	0.0	13.7	13.7	0.0	0.0	0.0

**Process Water**

**Raw Water**

Stream No	65	66	67	68	69	69a
	Process water demand	Crushing water demand	Milling water demand	Spirals water demand	Tabling water demand	Washdown
Solids tph						
Water tph	119.6	2.0	73.3	36.54	3	5.0
Slurry tph	119.6	2.0	73.26	36.54	3	5.0
% solids	0%	0%	0%	0%	0%	0%
Slurry m3/h	119.6	2.0	73.26	36.54	3	5.0
Slurry SG	1.00	1.0	1.00	1.00	1.00	1.00
Solids SG	2.80	2.80	2.80	2.80	2.80	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn						
Units Sn (kg/h)						

74	64	70	71	72	73
Raw water demand	Process water top up	Ablutions	Spirals Tables	Safety Showers	Gland Water
43.3	33.46	3.00	0.80	3.00	3.00
43.3	33.46	3.00	0.80	3.00	3.00
0%	0%	0%	0%	0%	0%
43.26	33.46	3.00	0.80	3.00	3.00
1.00	1.00	1.00	1.00	1.00	1.00
2.80	2.80	2.80	2.80	2.80	2.80
1.0	1.0	1.0	1.0	1.0	1.0



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Annual feed	<b>1000000</b> tpa	Crusher recirc	<b>100%</b>
Crusher Operating hours	<b>7008</b> hrs	Milling density	<b>70%</b> % solids
Crusher feedrate	<b>143</b> tph	Milling recirc	<b>150%</b> ref Selby
Milling Operating hours	<b>8000</b>	Oversize % solids	<b>75%</b>
Milling feed rate	<b>125</b> tph	Trommel water	<b>10</b> m3/h
Feed moisture	<b>5%</b>	Screen undersize	<b>45%</b> % solids
Feed grade	<b>0.20%</b> Sn		

**Crushing and Milling**

Stream No	1	2	3	4	5	5a	6	7	8	9	10	11
	ROM Feed	Product Screen Feed	Product Screen Oversize	Cone Crusher feed	Product Screen Undersize	Ore to stockpile	Ball Mill feed	Mill water	DSM Screen oversize	Trommel water	Screen Feed	DSM Screen undersize
Solids tph	143	285	142.7	142.7	142.7	17.7	125		187.5		313	125
Water tph	7.1	14.3	7.1	7.1	7.1	0.9	6.3	137	63	10	215	153
Slurry tph	150	300	150	150	150	19	131	137	250	10	528	278
% solids	95%	95%	95%	95%	95%	95%	95%	0%	75%	0%	59%	45%
Slurry m3/h	58.1	116.2	58.1	58.1	58.1	7.2	50.9	136.5	129.5	10.0	326.9	197.4
Slurry SG	2.58	2.58	2.58	2.58	2.58	2.58	2.58	1.00	1.93	1.00	1.61	1.41
Solids SG	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%		0.20%		0.20%	0.20%
Units Sn (kg/h)	285.4	570.8	285.4	285.4	285.4	35.4	250.0	0.0	375.0	0.0	625.0	250.0

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Solids to cyc O/F	<b>50%</b> mass	Coarse scav conc	<b>10%</b> mass	Spiral conc SG	<b>3.20</b>
Water to cyc O/F	<b>80%</b> mass	Coarse scav conc	<b>60%</b> Sn rec	Spiral tail SG	<b>2.80</b>
Coarse spiral feed	<b>40%</b> % solids	Coarse scav conc	<b>8%</b> water		
Coarse rough conc	<b>25%</b> mass	Coarse clean feed	<b>40%</b> % solids		
Coarse rough conc	<b>88%</b> Sn rec	Coarse clean conc	<b>20%</b> mass		
Coarse rough conc	<b>20%</b> water	Coarse clean conc	<b>88%</b> Sn rec		
		Coarse clean conc	<b>15%</b> water		

**Coarse Spirals Circuit**

Stream No	12	13	14	15	16	17	18	19	20	21	44	22	22a	22b	23	24
	Cyclone Feed	Cyclone Overflow	Cyclone Underflow	Coarse dilution water	Coarse rougher feed	Coarse rougher conc	Coarse rougher tail	Coarse scav feed	Coarse scav con	Coarse scav tail	Coarse table tail	Coarse clean feed	Coarse clean water	Coarse clean spiral feed	Coarse clean con	Coarse clean tail
Solids tph	125	63	62.5		62.5	15.6	47	69	6.9	62	5.3	28		28	6	22
Water tph	153	122.2	30.6	63.2	93.8	18.8	75	112	9	103	7.1	35	7	42	5	37
Slurry tph	278	185	93	63	156	34	122	181	16	165	12.4	63	7	70	11	59
% solids	45%	34%	67%	0%	40%	45%	38%	38%	44%	38%	43%	45%	0%	40%	52%	38%
Slurry m3/h	197.4	144.5	52.9	63.2	116.1	23.6	91.7	136.3	11.1	124.9	9.0	43.5	7.1	51.8	7.0	44.6
Slurry SG	1.41	1.28	1.76	1.00	1.35	1.45	1.33	1.33	1.43	1.32	1.38	1.44	1.00	1.35	1.55	1.32
Solids SG	2.8	2.8	2.8	2.8	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.20%	0.20%	0.20%	0.20%	0.20%	0.70%	0.03%	0.05%	0.30%	0.02%	0.54%	0.57%	0.00%	0.57%	2.51%	0.09%
Units Sn (kg/h)	250.0	125.0	125.0	0.0	125.0	110.0	15.0	34	20.5	13.6	28.7	159	0	159	140.1	19

**Fine Spirals Circuit**

Fine rough conc	<b>25%</b> mass	Fine clean feed	<b>40%</b> % solids
Fine rough conc	<b>88%</b> Sn rec	Fine clean conc	<b>20%</b> mass
Fine rough conc	<b>16%</b> water	Fine clean conc	<b>88%</b> Sn rec
Fine scav conc	<b>10%</b> mass	Fine clean conc	<b>15%</b> water
Fine scav conc	<b>60%</b> Sn rec	Spiral conc SG	<b>3.20</b>
Fine scav conc	<b>8%</b> water	Spiral tail SG	<b>2.80</b>

Stream No	13	25	26	27	28	29	54	30	31	32	33	34
	Fine rougher feed	Fine rougher conc	Fine rougher tail	Fine scav feed	Fine scav con	Fine scav tail	Fine table tail	Fine clean feed	Fine clean water	Fine clean spiral feed	Fine clean con	Fine clean tail
Solids tph	62.5	15.6	47	69	6.9	62	5.3	28		28	6	22
Water tph	122.2	19.6	103	139	11	128	7.1	38	4	42	6	36
Slurry tph	185	35	150	208	18	190	12.4	66	4	70	11	58
% solids	34%	44%	31%	33%	38%	33%	43%	42%	0%	40%	50%	38%
Slurry m3/h	144.5	24.4	119.4	163.5	13.3	149.9	9.0	46.4	4.1	51.8	7.4	44.1
Slurry SG	1.28	1.44	1.25	1.27	1.36	1.27	1.38	1.41	1.00	1.35	1.52	1.32
Solids SG	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8	2.8	3.20	2.8
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.20%	0.70%	0.03%	0.05%	0.29%	0.02%	0.37%	0.54%	0.00%	0.54%	2.36%	0.08%
Units Sn (kg/h)	125.0	110.0	15.0	33	19.8	13.2	19.7	149	0	149	131.6	18

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Table water addition	<b>0.20</b> m3/h	Coarse table mids	<b>20%</b> mass	Table conc SG	<b>3.50</b>
Coarse table feed	<b>40%</b> % solids	Coarse table mids	<b>10%</b> Sn rec	Table mids SG	<b>3.20</b>
Coarse table conc	<b>3.3%</b> mass	Coarse table mids	<b>17%</b> water	Spiral tail SG	<b>2.80</b>
Coarse table conc	<b>75%</b> Sn rec	Coarse retreat conc	<b>5.5%</b> mass		
Coarse table conc	<b>5%</b> water	Coarse retreat conc	<b>45%</b> Sn rec		
		Coarse retreat conc	<b>15%</b> water		

**Coarse Table Circuit**

Stream No	23	35	36	36a	37	38	39	40	40a	41	42	43	44
	Coarse clean con	Dilution water	Coarse table feed	Table water	Coarse table conc	Coarse table mids	Coarse table tail	Coarse retreat feed	Table water	Coarse retreat conc	Coarse retreat tail	Combined coarse conc	Combined coarse tail
Solids tph	5.6		5.6		0.18	1.11	4.28	1.11		0.06	1.05	0.25	5.33
Water tph	5.2	3.1	8.4	0.2	0.43	1.46	6.68	1.46	0.20	1.26	0.40	1.68	7.08
Slurry tph	10.8	3.1	13.9	0.2	0.61	2.57	10.95	2.57	0.20	1.32	1.45	1.93	12.41
% solids	52%	0%	40%	0%	30%	43%	39%	43%	0%	5%	72%	13%	43%
Slurry m3/h	7.0	3.15	10.10	0.20	0.48	1.80	8.01	1.80	0.20	1.27	0.78	1.75	8.98
Slurry SG	1.55	1.00	1.38	1.00	1.27	1.42	1.37	1.42	1.00	1.03	1.87	1.10	1.38
Solids SG	3.20	3.20	3.20	2.8	3.50	3.20	3.20	3.20	2.8	3.50	2.8	3.50	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	2.5%		2.51%	0.00%	57.11%	1.26%	0.49%	1.26%	0.00%	10.28%	0.73%	45.40%	0.54%
Units Sn (kg/h)	140.1	0.0	140.1	0.0	105.1	14.0	21.0	14.01	0.0	6.3	7.7	111.36	28.72

**Fine Table Circuit**

Table water addition	<b>0.20</b> m3/h	Fine table mids	<b>20%</b> mass	Table conc SG	<b>3.50</b>
Fine table feed	<b>40%</b> % solids	Fine table mids	<b>10%</b> Sn rec	Table mids SG	<b>3.20</b>
Fine table conc	<b>3.3%</b> mass	Fine table mids	<b>17%</b> water	Spiral tail SG	<b>2.80</b>
Fine table conc	<b>80%</b> Sn rec	Fine retreat conc	<b>5.5%</b> mass		
Fine table conc	<b>5%</b> water	Fine retreat conc	<b>50%</b> Sn rec		
		Fine retreat conc	<b>15%</b> water		

Stream No	33	45	46	46a	47	48	49	50	50a	51	52	53	54
	Fine clean con	Dilution water	Fine table feed	Table water	Fine table conc	Fine table mids	Fine table tail	Fine retreat feed	Table water	Fine retreat conc	Fine retreat tail	Combined fine conc	Combined fine tail
Solids tph	5.6		5.6		0.18	1.11	4.28	1.11		0.06	1.05	0.25	5.33
Water tph	5.7	2.7	8.4	0.2	0.43	1.46	6.68	1.46	0.20	1.26	0.40	1.68	7.08
Slurry tph	11.2	2.7	13.9	0.2	0.61	2.57	10.95	2.57	0.20	1.32	1.45	1.93	12.41
% solids	50%	0%	40%	0%	30%	43%	39%	43%	0%	5%	72%	13%	43%
Slurry m3/h	7.4	2.70	10.10	0.20	0.48	1.80	8.01	1.80	0.20	1.27	0.78	1.75	8.98
Slurry SG	1.52	1.00	1.38	1.00	1.27	1.42	1.37	1.42	1.00	1.03	1.87	1.10	1.38
Solids SG	3.2	3.20	3.20	2.8	3.50	3.20	3.20	3.20	2.8	3.50	2.8	3.50	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	2.36%		2.36%	0.00%	57.21%	1.18%	0.31%	1.18%	0.00%	10.73%	0.62%	45.59%	0.37%
Units Sn (kg/h)	131.6	0.0	131.6	0.0	105.2	13.2	13.2	13.16	0.0	6.6	6.6	111.82	19.73

**MINEMAKERS LIMITED**

**GREAT PYRAMID STUDY**

**MASS BALANCE**

**Key data**

J/N 1406

REVISION

A

Decanted concentrate      **90%** % solids  
 Table conc SG              **3.50**  
 Table mids SG              **3.20**  
 Spiral tail SG              **2.80**

**Dewatering circuit**

Stream No	43	55	56	53	57	58	58a
	Combined coarse conc	Decanted Coarse conc	Overflow water	Combined fine conc	Decanted Fine conc	Overflow water	Total overflow water
Solids tph	0.25	0.25		0.25	0.25		
Water tph	1.68	0.03	1.66	1.68	0.03	1.66	3.31
Slurry tph	1.9	0.27	1.66	1.9	0.27	1.66	3.31
% solids	13%	90%	0%	13%	90%	0%	0%
Slurry m3/h	1.8	0.10	1.66	1.75	0.10	1.66	3.31
Slurry SG	1.10	2.80	1.00	1.10	2.80	1.00	
Solids SG	3.50	3.50	2.80	3.50	3.50	2.80	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	45.4%	45.4%		45.6%	45.6%		
Units Sn (kg/h)	111.36	111.4	0.0	111.82	111.8	0.0	0.0

**Tailings circuit**

Flocculant conc                   **0.25%**  
 Flocculant addition               **30 g/t**  
 Thickener U/F                   **50% % solids**  
 Decant Return                   **50% mass split**

Stream No	21	29	58a	59	59a	60	61	62	63	64	65
	Coarse scav tail	Fine scav tail	Overflow water	Dilute flocculant	Total thickener feed	Overflow water	Thickener underflow	Tails dam feed	Decant Return	Process water top up	Process water demand
Solids tph	62.3	62.3	0.0		125		125	125			
Water tph	102.7	127.7	3.3	1.50	235	110.7	124.51	124.51	62.25	60.76	233.69
Slurry tph	164.9	190.0	3.31	1.50	360	110.7	249.02	249.02	62.25	60.76	233.69
% solids	38%	33%	0%	0%	35%	0%	50%	50%	0%	0%	0%
Slurry m3/h	124.9	149.94	3.31	1.50	280	110.7	168.98	168.98	62.25	60.76	233.69
Slurry SG	1.32	1.27	1.00	1.00	1.29	1.00	1.47	1.47	1.00	1.00	1.00
Solids SG	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn	0.02%	0.02%		0.0%	0.02%		0.02%	0.02%			
Units Sn (kg/h)	13.64	13.18	0.0	0.00	26.8	0.0	26.8	26.8	0.0	0.0	0.0

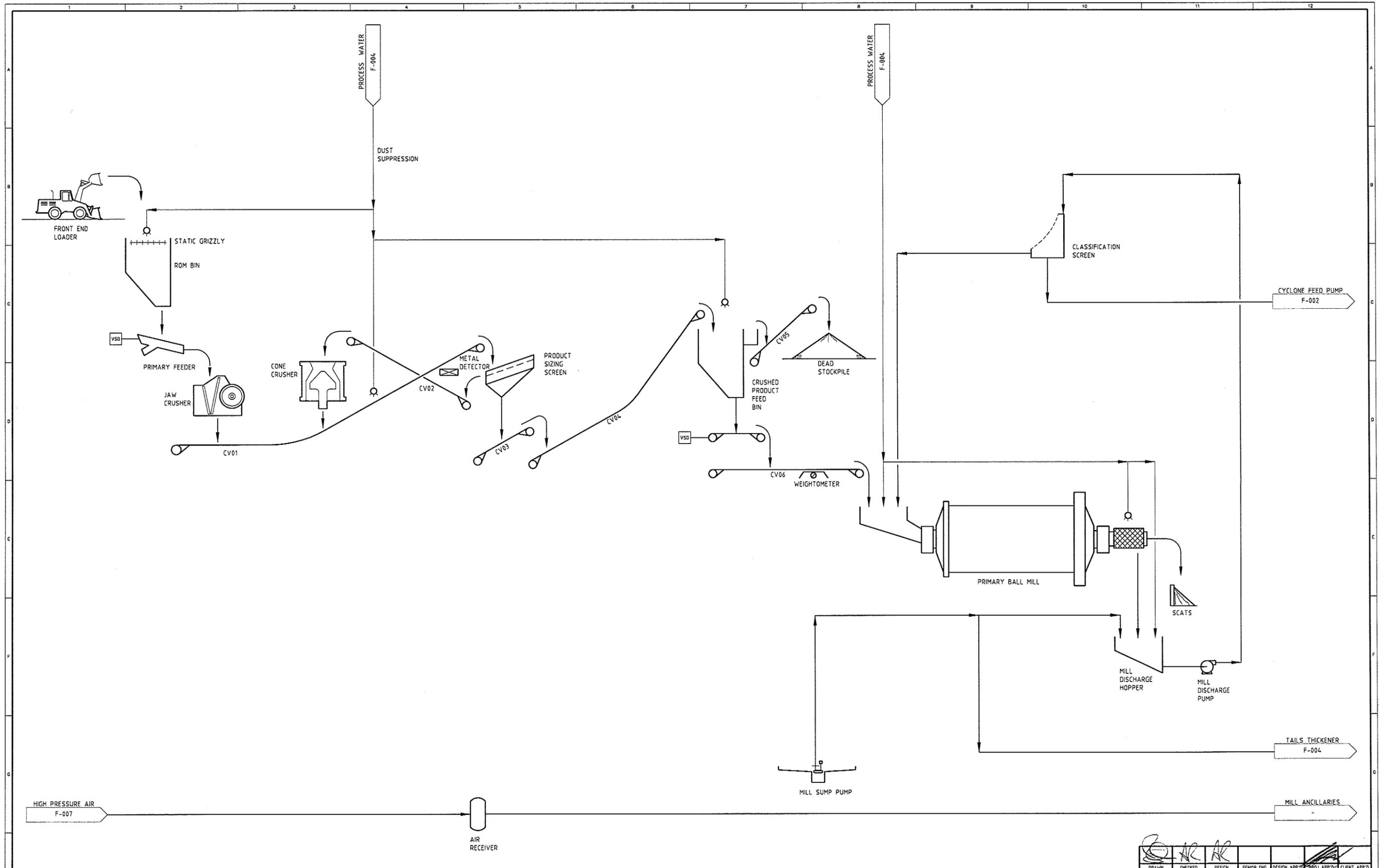
**Process Water**

**Raw Water**

Stream No	65	66	67	68	69	69a
	Process water demand	Crushing water demand	Milling water demand	Spirals water demand	Tabling water demand	Washdown
Solids tph						
Water tph	233.7	2.0	146.5	74.31	6	5.0
Slurry tph	233.7	2.0	146.53	74.31	6	5.0
% solids	0%	0%	0%	0%	0%	0%
Slurry m3/h	233.7	2.0	146.53	74.31	6	5.0
Slurry SG	1.00	1.0	1.00	1.00	1.00	1.00
Solids SG	2.80	2.80	2.80	2.80	2.80	2.80
Water SG	1.0	1.0	1.0	1.0	1.0	1.0
Assay % Sn						
Units Sn (kg/h)						

74	64	70	71	72	73
Raw water demand	Process water top up	Ablutions	Spirals Tables	Safety Showers	Gland Water
70.6	60.76	3.00	0.80	3.00	3.00
70.6	60.76	3.00	0.80	3.00	3.00
0%	0%	0%	0%	0%	0%
70.56	60.76	3.00	0.80	3.00	3.00
1.00	1.00	1.00	1.00	1.00	1.00
2.80	2.80	2.80	2.80	2.80	2.80
1.0	1.0	1.0	1.0	1.0	1.0

**APPENDIX 2**  
**PROCESS FLOW DIAGRAMS**



DRG No	REFERENCE DRAWINGS	No	DATE	REVISIONS	DRN	CHK'D	APP'D	DESIGN APP'D	PRD APP'D	CLIENT APP'D	No	DATE	REVISIONS	DRN	CHK'D	DESIGN APP'D	PRD APP'D	CLIENT APP'D	

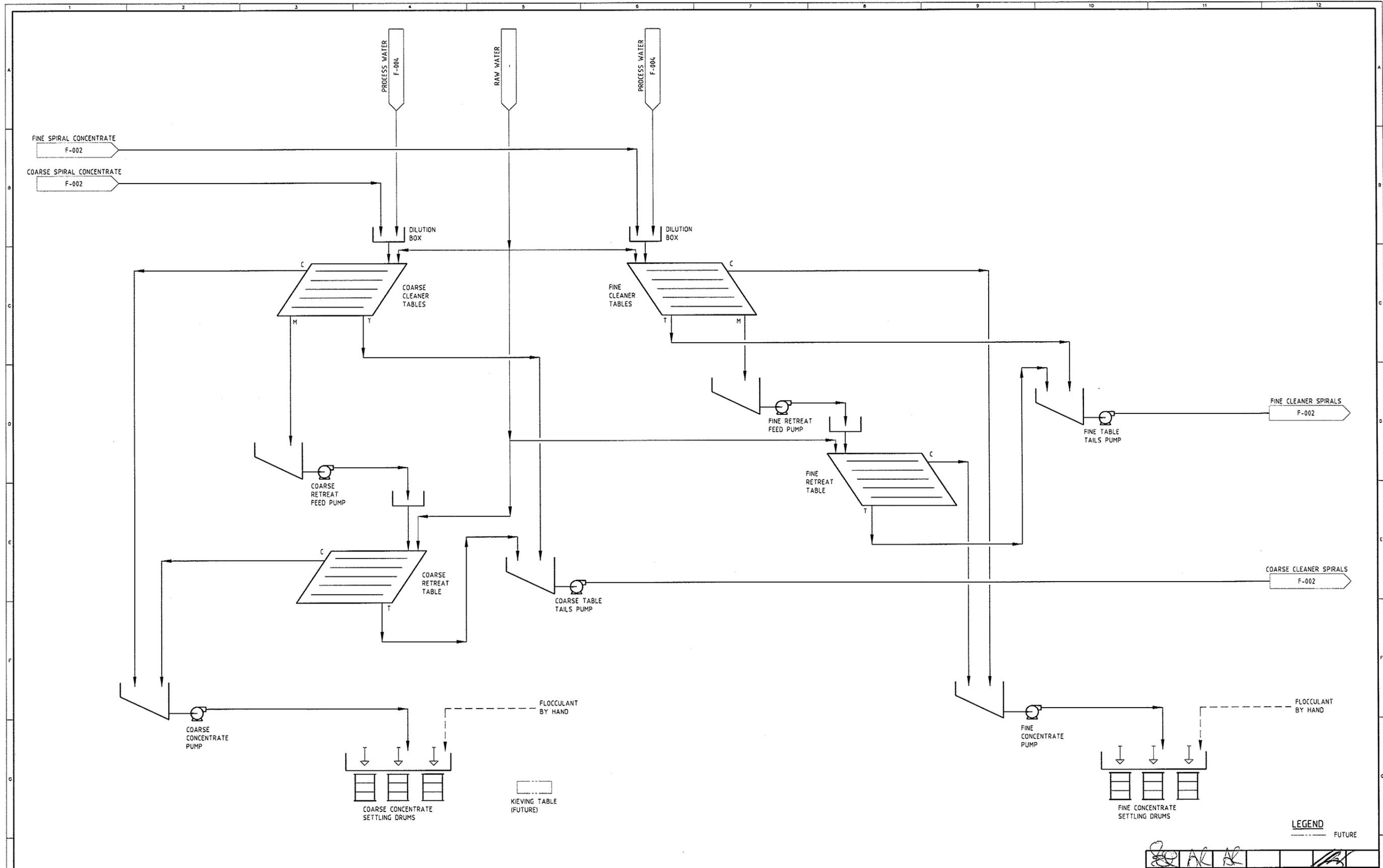
CLIENT  
MINEMAKERS LTD

PROJECT  
GREAT PYRAMID STUDY

**Lycopodium**  
ENGINEERING  
10/20 100 20  
LEVEL 5, 1 ADELAIDE TERRACE, EAST PERTH, WESTERN AUSTRALIA 6004  
TEL: +618 8210 5222 FAX: +618 8210 3201  
www.lycopodium.com.au

DRAWN	CHECKED	DESIGN	SENIOR ENG	DESIGN APP'D	PROJ APP'D	CLIENT APP'D
DRAWING TITLE CRUSHING & MILLING FLOWSHEET						
SCALE	N.T.S.	JOB No.	1406	DWG No.	000-F-001	REV.
DRAWN	HP	DATE	25JAN07			D





**LEGEND**  
 ----- FUTURE

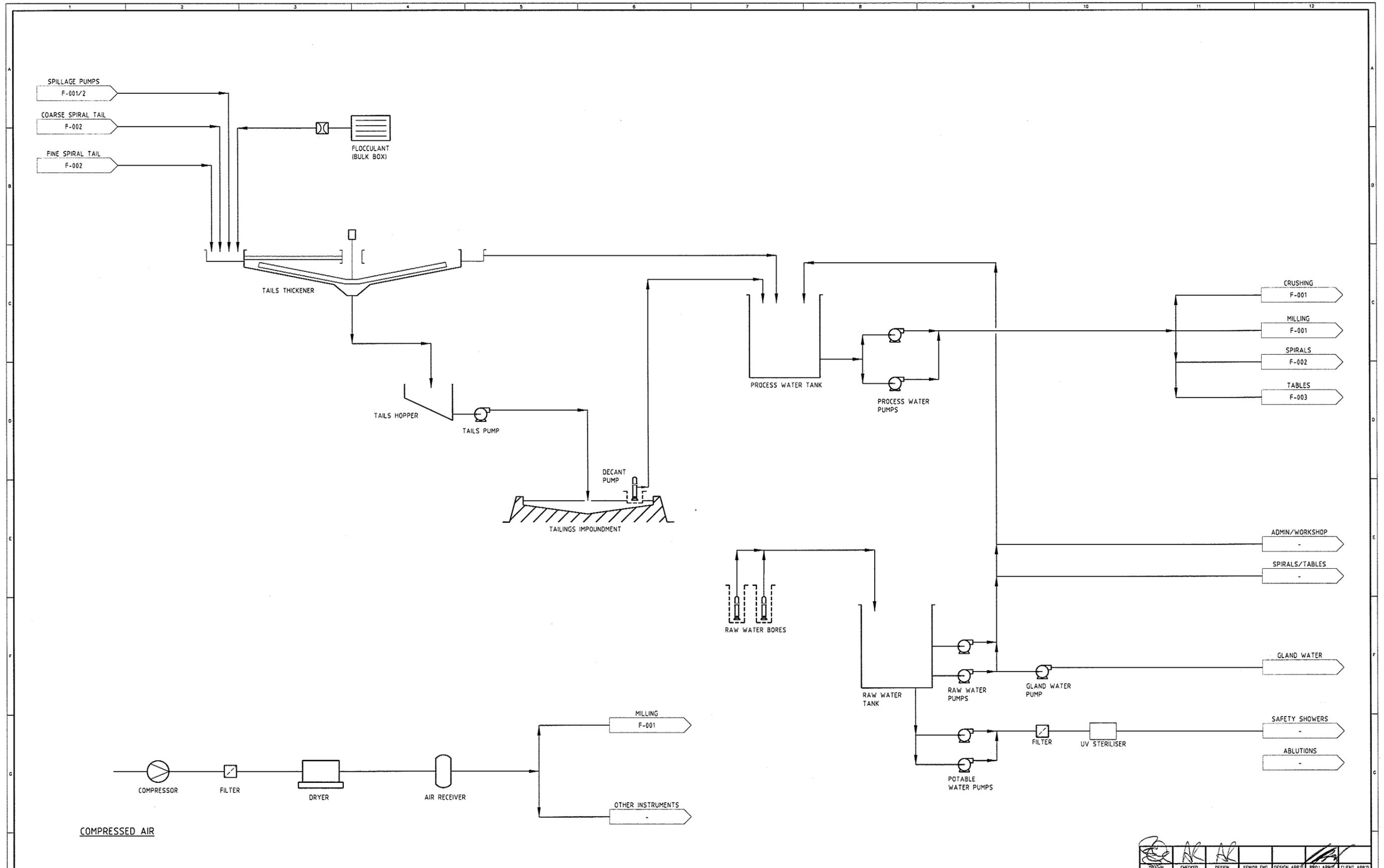
DRG No	REFERENCE DRAWINGS	No	DATE	REVISIONS	DRN	CHK'D	APP'D	DESIGN APP'D	PROJ APP'D	CLIENT APP'D
xxx	xxx									

No	DATE	REVISIONS	DRN	CHK'D	DESIGN	PROJ	CLIENT
D	04OCT07	REVISE BY CLIENT	VEC	AR	AR	RL	CW
C	03APR07	ISSUED FOR CONCEPT STUDY	VEC	AR	AR	RL	CW
B	26MAR07	REVISED FOR INTERNAL REVIEW	VEC	AR	AR	RL	CW
A	29JAN07	ISSUED FOR INTERNAL REVIEW	WG	AR	AR	RL	CW

CLIENT: MINEMAKERS LTD  
 PROJECT: GREAT PYRAMID STUDY  
**Lycopodium ENGINEERING**  
 LEVEL 2, 1 ADELAIDE TERRACE, EAST PERTH, WESTERN AUSTRALIA 6004  
 TEL: +618 9210 5222 FAX: +618 9210 5201  
 www.lycopodium.com.au

DRAWN	CHECKED	DESIGN	SENIOR ENG	DESIGN APP'D	PROJ APP'D	CLIENT APP'D
SDM						
DRAWING TITLE: CONCENTRATE CLEANING FLOWSHEET		SCALE: N.T.S.	JOB No: 14.06	DWG No: 000-F-003	REV: D	
DATE: 29JAN07						



DRG No	REFERENCE DRAWINGS	No	DATE	REVISIONS	DRN	CHKD	APPD	DESIGN APP'D	PROJ APP'D	CLIENT APP'D	No	DATE	REVISIONS	DRN	CHKD	DESIGN APP'D	PROJ APP'D	CLIENT APP'D	

CLIENT MINEMAKERS LTD		DRAWN [Signature]		CHECKED [Signature]		DESIGN [Signature]		SENIOR ENG [Signature]		DESIGN APP'D [Signature]		PROJ APP'D [Signature]		CLIENT APP'D [Signature]		
PROJECT GREAT PYRAMID STUDY		DRAWING TITLE REAGENTS AND SERVICES FLOWSHEET														
Lycopodium ENGINEERING LEVEL 5, 1 ADELAIDE TERRACE, EAST PERTH, WESTERN AUSTRALIA 6004 TEL: +618 9210 3222 FAX: +618 9210 3201 www.lycopodium.com.au		SCALE N.T.S.		JOB No. 14.06		DWG No. 000-F-004		DATE 29 JAN 07		REV. D						

**APPENDIX 3**  
**MAJOR EQUIPMENT LIST**

**1406 GREAT PYRAMID TIN PROJECT  
EQUIPMENT LIST  
500 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 001 Crushing and Milling</b>								
C	1		ROM Bin	25tonne capacity	3500 w 10m3 bin		-	-
C	1		Primary Vibrating Feeder	71tph @ minus 500mm	1200 x 4000mm vibrating feeder	V	22	22
C	1		Primary Jaw Crusher	71tph @ minus 500mm, CSS of 100mm	36" x 24" single toggle jaw	F	75	75
C	1		Crusher Discharge Conveyor	71tph @ minus 100mm	750 w stringer conveyor	F	7.5	7.5
C	1		Product Sizing Screen	143tph @ minus 100mm	1800 x 6100 2 deck screen, 40mm top, 15mm bottom deck	F	15	15
C	1		Screen oversize conveyor	71tph @ minus 100mm	600 w conveyor	F	5.5	5.5
C	1		Metal Detector				-	-
C	1		Secondary Crusher	71tph @ minus 100mm, CSS of 15mm	4ft cone crusher, medium liners	F	150	150
C	1		Product screen undersize conveyor	71tph @ minus 15mm	600 w conveyor	F	2.2	2.2
C	1		Crushed product conveyor	71tph @ minus 15mm	600 w conveyor	F	5.5	5.5
C	1		Crushed product bin	16tonne capacity	3500 w 10m3 bin		-	-
C	1		Stockpile feed conveyor	71tph @ minus 15mm	600 w conveyor	F	11	11
C	1		Mill belt feeder	63tph @ minus 15mm	600w x 2500L	V	7.5	7.5
C	1		Mill feed conveyor	63tph @ minus 15mm	600 w conveyor	F	11	11
C	1		Mill feed weightometer	0-100tph +/-1%			-	-
C	1		Primary ball mill	63tph grind to P80 of 350 microns	3.66 x 5.00 EGL grate discharge mill c/w 1250kW drive	F	1250	1250
C	1		Mill discharge hopper	163m3/h @59% solids, 1minute	3m3	F	-	-
C	1		Mill discharge pump	163m3/h @59% solids and 35m TDH	6/4 AH VSD	F	75	75
C	2		DSM Screen	163m3/h @59% solids	1.6 m wide x 2.036 m radius, 45 degree arc DSM screen		-	-
C	1		Milling sump pump	15 m3/hr capacity, 10 m TDH, 1.57 SG, 350 micron P80	50mm	F	15	15
C	1		Milling area air receiver	750kPa	0.5m3 capacity		-	-

**1406 GREAT PYRAMID TIN PROJECT**  
**EQUIPMENT LIST**  
**500 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 002 Coarse and Fine Spirals</b>								
C	1		Classification cyclone feed hopper	99m3/h @ 1 minute	2m3 capacity		-	-
C	1		Classification cyclone feed pump	99m3/h @ 45m TDH	4/3 AH	V	45	45
C	2		Classification cyclones	99m3/h feed, 90 mic P80 in overflow	250CVX		-	-
C	1		Coarse spirals dilution box	58m3/h, 30secs	0.5m3 capacity		-	-
C	6		Coarse rougher spirals	31tph, 40% solids, 1.8tph/start	6 x triple start, 6 turns		-	-
C	1		Coarse scavenger spiral feed hopper	68m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Coarse scavenger spiral feed pump	68m3/h @ 32m TDH	4/3 AH	F	22	22
C	6		Coarse scavenger spirals	35tph, 30% solids, 1.8tph/start	6 x triple start, 6 turns		-	-
C	1		Combined Scavenger spiral tails hopper	137m3/h @ 30 secs	1m3 capacity		-	-
C	1		Combined Scavenger spiral tails pump	137m3/h @ 21m TDH	6/4 AH	F	37	37
C	1		Coarse cleaner spiral feed hopper	22m3/h @ 1 minute	0.5m3 capacity		-	-
C	1		Coarse cleaner spiral feed pump	22m3/h @ 46m TDH	3/2 AH	F	22	22
C	6		Coarse cleaner spirals	14tph, 30% solids, 1.0tph/start	6 x triple start, 6 turns		-	-
C	10		Fine rougher spirals	31tph, 34% solids, 1tph/start	10 x triple start, 8.5 turns		-	-
C	1		Fine scavenger spiral feed hopper	82m3/h @ 30 secs	1m3 capacity		-	-
C	1		Fine scavenger spiral feed pump	82m3/h @ 23m TDH	4/3 AH	F	22	22
C	10		Fine scavenger spirals	35tph, 33% solids, 1tph/start	10 x triple start, 8.5 turns		-	-
C	1		Fine cleaner spiral feed hopper	24m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Fine cleaner spiral feed pump	24m3/h @ 24m TDH	3/2 AH	F	11	11
C	10		Fine cleaner spirals	14tph, 30% solids, 0.5tph/start	10 x triple start, 8.5 turns		-	-
C	1		Spirals area sump pump	15 m3/hr capacity, 10 m TDH, 1.57 SG, 350 micron P80	50mm	F	11	11

**1406 GREAT PYRAMID TIN PROJECT  
EQUIPMENT LIST  
500 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 003 Coarse and Fine Tables</b>								
C	3		Coarse cleaner tables	2.8tph @ -350 + 90 micron	3 x Holman 8000 shaking tables		1.5	4.5
C	1		Coarse retreat table feed hopper	1m3/h @ 30 secs	0.3m3 capacity		-	-
C	1		Coarse retreat table feed pump	1m3/h @ 24m TDH	1.5/1 AH	F	1.1	1.1
C	1		Coarse retreat tables	0.6tph @ -350 + 90 micron	1 x Holman 8000 shaking tables		1.5	1.5
C	1		Coarse concentrate hopper	0.5m3/h @ 30 secs	0.3m3 capacity		-	-
C	1		Coarse concentrate pump	0.5m3/h @ 11m TDH	1.5/1 AH	F	1.1	1.1
C	1		Coarse table tails hopper	5m3/h @ 30 secs	0.3m3 capacity		-	-
C	1		Coarse table tails pump	5m3/h @ 40m TDH	1.5/1 AH	F	5.5	5.5
C	6		Fine cleaner tables	2.8tph @ -350 + 90 micron	6 x Holman 8000 shaking tables		1.5	9
C	1		Fine retreat table feed hopper	1m3/h @ 30 secs	0.3m3 capacity		-	-
C	1		Fine retreat table feed pump	1m3/h @ 15m TDH	1.5/1 AH	F	1.1	1.1
C	1		Fine retreat tables	0.6tph @ -350 + 90 micron	1 x Holman 8000 shaking tables		1.5	1.5
C	1		Fine concentrate hopper	0.5m3/h @ 30 secs	0.3m3 capacity		-	-
C	1		Fine concentrate pump	0.5m3/h @ 10m TDH	1.5/1 AH	F	1.1	1.1
C	1		Fine table tails hopper	5m3/h @ 30 secs	0.3m3 capacity		-	-
C	1		Fine table tails pump	5m3/h @ 26m TDH	1.5/1 AH	F	5.5	5.5
C	1		Table area sump pump	5.5 m3/hr capacity, 17.5 m TDH, 1.57 SG, 350 micron P80	25mm	F	7.5	7.5

**1406 GREAT PYRAMID TIN PROJECT**  
**EQUIPMENT LIST**  
**500 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 004 Tailings and services</b>								
C	1		Final Tails thickener	62tph, 1t/m2/h	10m diam hi rate thickener	F	11	11
C	1		Final Tails hopper	84m3/h @ 60 secs	2m3 capacity		-	-
C	1		Final Tails pump	84m3/h @ 77m TDH	4/3 AH, 15m static, 1000m line	F	75	75
C	1		Tailings impoundment	1 million tonne starter dam	Unlined		-	-
C	1		Decant return pump	31m3/h @ 45m TDH	3/2 AH	F	15	15
C	1		Process water tank	120m3/hr demand	120 m3 capacity, 9m dia x 2.4 hi		-	-
C	2		Process water pumps	120m3/hr, 65m TDH	6/4 AH	F	75	150
C	1		Raw water tank	45m3/hr demand	50 m3 capacity, 6m dia x 2.4 hi		-	-
C	2		Raw water pump	45m3/hr, 55m TDH	Southern Cross Water pumps	F	22	44
C	2		Gland water pump	5m3/hr, 31m TDH	Southern Cross Water pumps	F	3	6
C	2		Raw water bore pumps	30m3/hr, 45m	Southern Cross Water pumps	F	15	30
C	1		Potable water treatment facility	5m3/hr, filter and UV steriliser			1	1
C	2		Potable water pump	5m3/hr, 30m	Southern Cross Water pumps	F	5.5	11
C	1		Plant air compressor	700kPa	300 Nm3/hr @ 700 kPa(g)	F	45	45
C	1		Plant air receiver	700kPa	2m3 capacity	F	-	-
C	1		Flocculant pump	30g/t as 20% pre-mix solution	0-20L/hr, 20m	F	0.5	0.5
C	1		Tails area sump pump	15 m3/hr capacity, 10 m TDH, 1.57 SG, 350 micron P80	50mm	F	7.5	7.5



**1406 GREAT PYRAMID TIN PROJECT**  
**EQUIPMENT LIST**  
**1,000 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 001 Crushing and Milling</b>								
C	1		ROM Bin	25tonne capacity	3500 w 15m3 bin		-	-
C	1		Primary Vibrating Feeder	143tph @ minus 500mm	1200 x 4000mm vibrating feeder	V	30	30
C	1		Primary Jaw Crusher	143tph @ minus 500mm, CSS of 100mm	40" x 30" single toggle jaw	F	110	110
C	1		Crusher Discharge Conveyor	143tph @ minus 100mm	750 w stringer conveyor	F	15	15
C	2		Product Sizing Screen	285tph @ minus 100mm	1800 x 6100 2 deck screen, 40mm top, 15mm bottom deck	F	15	30
C	1		Screen oversize conveyor	143tph @ minus 100mm	750 w conveyor	F	11	11
C	1		Metal Detector				-	-
C	1		Secondary Crusher	143tph @ minus 100mm, CSS of 15mm	4ft cone crusher, medium liners	F	150	150
C	1		Product screen undersize conveyor	143tph @ minus 15mm	750 w conveyor	F	5.5	5.5
C	1		Crushed product conveyor	143tph @ minus 15mm	750 w conveyor	F	11	11
C	1		Crushed product bin	40tonne capacity	3500 w 25m3 bin		-	-
C	1		Stockpile feed conveyor	143tph @ minus 15mm	750 w conveyor	F	11	11
C	1		Mill belt feeder	125tph @ minus 15mm	750w x 2500	V	15	15
C	1		Mill feed conveyor	125tph @ minus 15mm	750 w conveyor	F	15	15
C	1		Mill feed weightometer	0-150tph +/-1%			-	-
C	1		Primary ball mill	125tph grind to P80 of 350 microns	4.27 x 5.50 EGL overflow discharge mill c/w 1650kW drive	F	1650	1650
C	1		Mill discharge hopper	327m3/h @59% solids, 1minute	6m3	F	-	-
C	1		Mill discharge pump	327m3/h @59% solids and 39m TDH	8/6 AH, VSD	F	150	150
C	4		DSM Screen	327m3/h @59% solids	1.6 m wide x 2.036 m radius, 45 degree arc DSM screen		-	-
C	1		Milling sump pump	25 m3/hr capacity, 10 m TDH, 1.57 SG, 350 micron P80	65mm	F	15	15
C	1		Milling area air receiver	750kPa	1m3 capacity		-	-

**1406 GREAT PYRAMID TIN PROJECT**  
**EQUIPMENT LIST**  
**1,000 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 002 Coarse and Fine Spirals</b>								
C	1		Classification cyclone feed hopper	198m3/h @ 1 minute	4m3 capacity		-	-
C	1		Classification cyclone feed pump	198m3/h @ 40m	6/4 AH	V	75	75
C	4		Classification cyclones	198m3/h feed, 90 mic P80 in overflow	250CVX		-	-
C	1		Coarse spirals dilution box	116m3/h, 30secs	1m3 capacity		-	-
C	12		Coarse rougher spirals	63tph, 40% solids, 1.8tph/start	12 x triple start, 6 turns		-	-
C	1		Coarse scavenger spiral feed hopper	136m3/h @ 30 secs	1m3 capacity		-	-
C	1		Coarse scavenger spiral feed pump	136m3/h @ 28m TDH	6/4 AH	F	30	30
C	12		Coarse scavenger spirals	69tph, 38% solids, 1.8tph/start	12 x triple start, 6 turns		-	-
C	1		Combined Scavenger spiral tails hopper	275m3/h @ 30 secs	3m3 capacity		-	-
C	1		Combined Scavenger spiral tails pump	275m3/h @ 21m TDH	8/6 AH	F	45	45
C	1		Coarse cleaner spiral feed hopper	51m3/h @ 1 minute	1m3 capacity		-	-
C	1		Coarse cleaner spiral feed pump	51m3/h @ 30m TDH	4/3 AH	F	22	22
C	10		Coarse cleaner spirals	28tph, 45% solids, 1.0tph/start	10 x triple start, 6 turns		-	-
C	20		Fine rougher spirals	63tph, 34% solids, 1tph/start	20 x triple start, 8.5 turns		-	-
C	1		Fine scavenger spiral feed hopper	164m3/h @ 30 secs	1.5m3 capacity		-	-
C	1		Fine scavenger spiral feed pump	164m3/h @ 23m TDH	6/4 AH	F	30	30
C	20		Fine scavenger spirals	69tph, 33% solids, 1tph/start	20 x triple start, 8.5 turns		-	-
C	1		Fine cleaner spiral feed hopper	46m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Fine cleaner spiral feed pump	46m3/h @ 24m TDH	4/3 AH	F	15	15
C	20		Fine cleaner spirals	28tph, 30% solids, 0.5tph/start	20 x triple start, 8.5 turns		-	-
C	1		Spirals area sump pump	25 m3/hr capacity, 10 m TDH, 1.57 SG, 350 micron P80	65mm	F	22	22

**1406 GREAT PYRAMID TIN PROJECT  
EQUIPMENT LIST  
1,000 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 003 Coarse and Fine Tables</b>								
C	6		Coarse cleaner tables	5.6tph @ -350 + 90 micron	6 x Holman 8000 shaking tables		1.5	9
C	1		Coarse retreat table feed hopper	2m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Coarse retreat table feed pump	2m3/h @ 24m TDH	1.5/1 AH	F	5.5	5.5
C	2		Coarse retreat tables	1.1tph @ -350 + 90 micron	2 x Holman 8000 shaking tables		1.5	3
C	1		Coarse concentrate hopper	1.8m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Coarse concentrate pump	1.8m3/h @ 20m TDH	1.5/1 AH	F	5.5	5.5
C	1		Coarse table tails hopper	9m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Coarse table tails pump	9m3/h @ 40m TDH	1.5/1 AH	F	7.5	7.5
C	12		Fine cleaner tables	5.6tph @ - 90 micron	12 x Holman 8000 shaking tables		1.5	18
C	1		Fine retreat table feed hopper	2m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Fine retreat table feed pump	2m3/h @ 15m TDH	1.5/1 AH	F	5.5	5.5
C	2		Fine retreat tables	1.1tph @ - 90 micron	2 x Holman 8000 shaking tables		1.5	3
C	1		Fine concentrate hopper	1.8m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Fine concentrate pump	1.8m3/h @ 10m TDH	1.5/1 AH	F	5.5	5.5
C	1		Fine table tails hopper	9m3/h @ 30 secs	0.5m3 capacity		-	-
C	1		Fine table tails pump	9m3/h @ 26m TDH	1.5/1 AH	F	5.5	5.5
C	1		Table area sump pump	5.5 m3/hr capacity, 17.5 m TDH, 1.57 SG, 350 micron P80	25mm	F	7.5	7.5

**1406 GREAT PYRAMID TIN PROJECT  
EQUIPMENT LIST  
1,000 ktpa**

Rev	Tot Qty	S/By Qty	Equipment Name	Process Duty Point	Size	Fixed/ Variable Speed	kW each	kW Inst.
<b>F 004 Tailings and services</b>								
C	1		Final Tails thickener	125tph, 1t/m2/h	13m diam hi rate thickener	F	15	15
C	1		Final Tails hopper	169m3/h @ 60 secs	4m3 capacity		-	-
C	1		Final Tails pump	169m3/h @61m TDH	6/4 AH, VSD 15m static, 1000m line	F	110	110
C	1		Tailings impoundment	2 million tonne starter dam	Unlined		-	-
C	1		Decant return pump	63m3/h @ 45m TDH	4/3 AH	F	30	30
C	2		Process water tank	240m3/hr demand	120 m3 each, 9m dia x 2.4 hi		-	-
C	2		Process water pumps	300m3/hr, 70m TDH	8/6 AH	F	132	264
C	1		Raw water tank	71m3/hr demand	80 m3 capacity, 7m dia x 2.4 hi		-	-
C	2		Raw water pump	80m3/hr, 80m TDH	Southern Cross Water pumps	F	55	110
C	2		Gland water pump	5m3/hr, 31m TDH	Southern Cross Water pumps	F	7.5	15
C	3		Raw water bore pumps	30m3/hr, 45m	Southern Cross Water pumps	F	22	66
C	1		Potable water treatment facility	5m3/hr, filter and UV steriliser			1	1
C	2		Potable water pump	5m3/hr, 30m	Southern Cross Water pumps	F	5.5	11
C	1		Plant air compressor	700kPa	500 Nm3/hr @ 700 kPa(g)	F	55	55
C	1		Plant air receiver	700kPa	2m3 capacity	F	-	-
C	1		Flocculant pump	30g/t as 20% pre-mix solution	0-40L/hr, 20m	F	0.5	0.5
C	1		Tails area sump pump	15 m3/hr capacity, 10 m TDH, 1.57 SG, 350 micron P80	50mm	F	7.5	7.5
C	3		Safety showers					
C						<b>TOTAL</b>	<b>2,932</b>	<b>3,218</b>

**APPENDIX 4**  
**CAPITAL COST ESTIMATE DETAIL**

**Capital Cost Estimate  
Summary 500 ktpa**

**GREAT PYRAMID TIN PROJECT CONCEPTUAL STUDY  
CAPITAL COST ESTIMATE  
ACCURACY +50%, -20%, 1Q2007  
CURRENCY AUSTRALIAN DOLLARS**

<b>Area Description</b>	<b>Total Cost (excluding Contingency)</b>	<b>Contingency</b>	<b>Total Cost</b>
001 Site Estab.-General Total	745,000	149,000	894,000
010 Site Constr. Facilities Total	190,000	38,000	228,000
020 Constr. Equip. & Operations Total	539,000	107,800	646,800
<b>000 Site Estab. &amp; Constr. Total</b>	<b>1,474,000</b>	<b>294,800</b>	<b>1,768,800</b>
101 Treatment Plant-General Total	238,000	95,200	333,200
101 Treatment Plant-Total	21,295,068	4,259,014	25,554,081
180 Plant Services Total	145,000	29,000	174,000
<b>100 Treatment Plant Total</b>	<b>21,678,068</b>	<b>4,383,214</b>	<b>26,061,281</b>
201 Infrastructure-General Total	220,000	44,000	264,000
210 Utilities Total	325,000	90,500	415,500
230 Tailings Dam Total	500,000	200,000	700,000
240 Plant Buildings Total	1,107,000	221,400	1,328,400
251 Site Sewage Plant and Management Housing	1,040,000	208,000	1,248,000
250 Other Permanent Accommodation	N/A		
260 Construction Accommodation Total	Not required		
270 Mobile Plant & General Equip/Furniture Total	546,000	109,200	655,200
280 Overland Pipelines Total	344,000	68,800	412,800
<b>200 Infrastructure Total</b>	<b>4,082,000</b>	<b>941,900</b>	<b>5,023,900</b>
<b>300 Mining Total</b>	<b>Excluded</b>	<b>Excluded</b>	<b>Excluded</b>
410 EPCM Total	4,732,936	946,587	5,679,523
420 Specialist Consultants Total	400,000	80,000	480,000
430 Vendor Representatives Total	50,000	10,000	60,000
<b>400 Management Costs Total</b>	<b>5,182,936</b>	<b>1,036,587</b>	<b>6,219,523</b>
501 Owners Costs-General Total	1,380,000	276,000	1,656,000
530 Spare Parts Total	500,000	100,000	600,000
540 Fees/Taxes/Duties Total	Excluded	Excluded	Excluded
590 Other Owners Costs Total	Excluded	Excluded	Excluded
510 Pre-production Total	625,000	125,000	750,000
<b>500 Owners Costs Total</b>	<b>2,505,000</b>	<b>501,000</b>	<b>3,006,000</b>
<b>600 Working Capital Total</b>	<b>Excluded</b>	<b>Excluded</b>	<b>Excluded</b>
<b>Grand Total</b>	<b>34,922,004</b>	<b>7,157,501</b>	<b>42,079,504</b>

**Capital Cost Estimate  
Equipment by Area  
500 ktpa**

**GREAT PYRAMID TIN PROJECT CONCEPTUAL STUDY  
CAPITAL COST ESTIMATE  
ACCURACY +50%, -20%, 1Q2007  
CURRENCY AUSTRALIAN DOLLARS**

Area	Ex Works	Freight	Percentage								Total
			Install	Equip	Concrete	Steelwork	Platework	Piping	E&I	100	
Crushing	1,500,000	135,000	450,000	2,085,000	677,625	417,000	364,875	677,625	990,375	5,212,500	
Milling	2,663,500	239,715	799,050	3,702,265	1,203,236	740,453	647,896	1,203,236	1,758,576	9,255,663	
Spirals	592,500	53,325	177,750	823,575	267,662	164,715	144,126	267,662	391,198	2,058,938	
Tables	554,900	49,941	166,470	771,311	250,676	154,262	134,979	250,676	366,373	1,928,278	
Tailings & Services	788,400	70,956	236,520	1,095,876	356,160	219,175	191,778	356,160	520,541	2,739,690	
<b>Grand Total</b>	<b>6,099,300</b>	<b>548,937</b>	<b>1,829,790</b>	<b>8,478,027</b>	<b>2,755,359</b>	<b>1,695,605</b>	<b>1,483,655</b>	<b>2,755,359</b>	<b>4,027,063</b>	<b>21,195,068</b>	

**Capital Cost Estimate  
Estimate Details  
500 ktpa**

GREAT PYRAMID TIN PROJECT CONCEPTUAL STUDY  
CAPITAL COST ESTIMATE  
ACCURACY +50%, -20%, 1Q2007  
CURRENCY AUSTRALIAN DOLLARS

Main Area	Plant Area	Facility	PDisc.	Ex-Works Cost	Freight Cost	Install Cost	Total Cost (excl Cont)	% Cont	Cont	Grand Total		
000 Site Estab. & Constr.	001 Site Estab.-General	002 Mob/Demob contractors labour	0 General	200,000	10,000		210,000	20%	42,000	252,000		
		003 Mob/Demob constr. plant & equip.	0 General	300,000	50,000		350,000	20%	70,000	420,000		
		004 Site Surveying	0 General	20,000	5,000		25,000	20%	5,000	30,000		
		005 General Freight & Transport	0 General			125,000	125,000	20%	25,000	150,000		
		007 Testing and Inspection	0 General			25,000	25,000	20%	5,000	30,000		
		008 Barricades/Safety Signs	0 General	5,000	1,000	4,000	10,000	20%	2,000	12,000		
		<b>001 Site Estab.-General Total</b>				<b>525,000</b>	<b>191,000</b>	<b>29,000</b>	<b>745,000</b>	<b>20%</b>	<b>149,000</b>	<b>894,000</b>
		010 Site Constr. Facilities	012 Construction Roads & Drainage	1 Earthworks	15,000		15,000	30,000	20%	6,000	36,000	
	013 Laydown Areas (hardstand)		1 Earthworks	15,000		15,000	30,000	20%	6,000	36,000		
	014 Construction Buildings/Facilities		0 General	5,000		5,000	10,000	20%	2,000	12,000		
			8 Arch/ Bldgs	25,000		25,000	50,000	20%	10,000	60,000		
	015 Construction Site Services		0 General	15,000		15,000	30,000	20%	6,000	36,000		
	018 Constr Security Fencing		0 General	5,000		5,000	10,000	20%	2,000	12,000		
	<b>010 Site Constr. Facilities Total</b>				<b>100,000</b>	<b>0</b>	<b>90,000</b>	<b>190,000</b>	<b>20%</b>	<b>38,000</b>	<b>228,000</b>	
	020 Constr. Equip. & Operations	023 Heavy lift crane	0 General			20,000	80,000	100,000	20%	20,000	120,000	
		024 Misc. Equipment hire	0 General			2,000	20,000	22,000	20%	4,400	26,400	
		025 Handling & access equipment	0 General			2,000	10,000	12,000	20%	2,400	14,400	
		026 Security during construction	0 General				10,000	10,000	20%	2,000	12,000	
		027 Fuel & consumables	0 General				20,000	20,000	20%	4,000	24,000	
		028 Medical & First Aid	0 General	5,000	1,000	4,000	10,000	10,000	20%	2,000	12,000	
029 Construction Services		0 General	25,000	1,000	14,000	40,000	40,000	20%	8,000	48,000		
xxx Accommodation and meals		0 General				325,000	325,000	20%	65,000	390,000		
<b>020 Constr. Equip. &amp; Operations Total</b>				<b>30,000</b>	<b>26,000</b>	<b>483,000</b>	<b>539,000</b>	<b>20%</b>	<b>107,800</b>	<b>646,800</b>		
<b>000 Site Estab. &amp; Constr. Total</b>				<b>655,000</b>	<b>217,000</b>	<b>602,000</b>	<b>1,474,000</b>	<b>20%</b>	<b>294,800</b>	<b>1,768,800</b>		
100 Treatment Plant	101 Treatment Plant-General	102 Bulk site earthworks	1 Earthworks	20,000		20,000	40,000	40%	16,000	56,000		
		103 Detailed site earthworks	1 Earthworks	20,000		20,000	40,000	40%	16,000	56,000		
		104 Site drainage & culverts	1 Earthworks	20,000		20,000	40,000	40%	16,000	56,000		
		105 Inplant Tracks	1 Earthworks	20,000		80,000	100,000	40%	40,000	140,000		
		107 Site Security Fencing	0 General	0		0	0	40%	0	0		
		108 Packers/shims/bolts	5 Equipment	4,000		4,000	8,000	40%	3,200	11,200		
		109 Non Shrink Grout	5 Equipment	5,000		5,000	10,000	40%	4,000	14,000		
		<b>101 Treatment Plant-General Total</b>				<b>89,000</b>	<b>0</b>	<b>149,000</b>	<b>238,000</b>	<b>40%</b>	<b>95,200</b>	<b>333,200</b>
		100 Treatment Plant	Crushing			2,866,875	260,625	2,085,000	5,212,500	20%	1,042,500	6,255,000
	Milling				5,090,614	462,783	3,702,265	9,255,663	20%	1,851,133	11,106,795	
	Spirals				1,132,416	102,947	823,575	2,058,938	20%	411,788	2,470,725	
	Tables				1,060,553	96,414	771,311	1,928,278	20%	385,656	2,313,933	
	Tailings & Services				1,506,830	136,985	1,095,876	2,739,690	20%	547,938	3,287,628	
	<b>101 Treatment Plant-Total</b>				<b>11,707,287</b>	<b>1,064,753</b>	<b>8,523,027</b>	<b>21,295,068</b>	<b>20%</b>	<b>4,259,014</b>	<b>25,554,081</b>	
180 Plant Services	183 Other Plant Services (Gases, Fuel)			15,000	3,000	12,000	30,000	20%	6,000	36,000		
	184 Fire Protection			9,000	1,000	5,000	15,000	20%	3,000	18,000		
	185 Plant Control System - PLC			85,000		15,000	100,000	20%	20,000	120,000		
	186 Common Services & Piperacks			0	0	0	0	20%	0	0		
	187 CCTV System			0	0	0	0	20%	0	0		
	188 Instrument and Controls			0	0	0	0	20%	0	0		
<b>180 Plant Services Total</b>				<b>109,000</b>	<b>4,000</b>	<b>32,000</b>	<b>145,000</b>	<b>20%</b>	<b>29,000</b>	<b>174,000</b>		
<b>100 Treatment Plant Total</b>				<b>11,905,287</b>	<b>1,068,753</b>	<b>8,704,027</b>	<b>21,678,068</b>	<b>20%</b>	<b>4,383,214</b>	<b>26,061,281</b>		
200 Infrastructure	201 Infrastructure-General	202 Main Access Road	1 Earthworks			0	0	20%	0	0		
		203 Misc. Track	1 Earthworks			25,000	25,000	20%	5,000	30,000		
		204 Misc Bulk Earthworks	1 Earthworks			50,000	50,000	20%	10,000	60,000		
		205 Environmental Control Pond	1 Earthworks			100,000	100,000	20%	20,000	120,000		
		206 Misc Culverts & Drainage	1 Earthworks			15,000	15,000	20%	3,000	18,000		
		207 Security Fencing	0 General			30,000	30,000	20%	6,000	36,000		
		<b>201 Infrastructure-General Total</b>				<b>0</b>	<b>0</b>	<b>220,000</b>	<b>220,000</b>	<b>20%</b>	<b>44,000</b>	<b>264,000</b>
	210 Utilities	211 HV Switchyard	7 Elect & Instr	125,000	5,000	45,000	175,000	30%	52,500	227,500		
		212 Powerlines	7 Elect & Instr	50,000	2,000	28,000	80,000	30%	24,000	104,000		
		213 Emergency Power	7 Elect & Instr	30,000	2,000	8,000	40,000	20%	8,000	48,000		
		214 Communications	7 Elect & Instr	15,000	2,000	13,000	30,000	20%	6,000	36,000		
	<b>210 Utilities Total</b>				<b>220,000</b>	<b>11,000</b>	<b>94,000</b>	<b>325,000</b>	<b>28%</b>	<b>90,500</b>	<b>415,500</b>	
	230 Tailings Dam	231 Tailings Dam Stage	1 Earthworks	250,000	0	250,000	500,000	40%	200,000	700,000		
	<b>230 Tailings Dam Total</b>				<b>250,000</b>	<b>0</b>	<b>250,000</b>	<b>500,000</b>	<b>40%</b>	<b>200,000</b>	<b>700,000</b>	
	240 Plant Buildings	241 Administration Office	8 Arch/ Bldgs	300,000	10,000	90,000	400,000	20%	80,000	480,000		
		242 Process Office	8 Arch/ Bldgs	0	0	0	0	20%	0	0		
		243 Workshop/Warehouse	8 Arch/ Bldgs	270,000	30,000	120,000	420,000	20%	84,000	504,000		
		244 Laboratory	8 Arch/ Bldgs	25,000	1,000	14,000	40,000	20%	8,000	48,000		
		245 Weighbridge station	8 Arch/ Bldgs	15,000	2,000	13,000	30,000	20%	6,000	36,000		
		246 Conc Storage Shed	8 Arch/ Bldgs	50,000	2,000	23,000	75,000	20%	15,000	90,000		
		247 Plant Site Ablutions	8 Arch/ Bldgs	25,000	5,000	10,000	40,000	20%	8,000	48,000		
		248 MCC's and Switchroom	8 Arch/ Bldgs	50,000	5,000	25,000	80,000	20%	16,000	96,000		
		249 Remote Pumphouse	8 Arch/ Bldgs	0	0	0	0	20%	0	0		
		249b Control room	8 Arch/ Bldgs	15,000	2,000	5,000	22,000	20%	4,400	26,400		
	<b>240 Plant Buildings Total</b>				<b>750,000</b>	<b>57,000</b>	<b>300,000</b>	<b>1,107,000</b>	<b>20%</b>	<b>221,400</b>	<b>1,328,400</b>	
250 Permanent Accommodation	251 Sewerage Treatment Plant	8 Arch/ Bldgs	25,000	2,000	13,000	40,000	20%	8,000	48,000			
	252 Water Treatment Plant	8 Arch/ Bldgs	0	0	0	0	20%	0	0			
	253 Misc Facilities (Pool, Tennis Court, Oval, Club House)	8 Arch/ Bldgs	0	0	0	0	20%	0	0			
	254 Accommodation Units	8 Arch/ Bldgs	1,000,000	0	0	1,000,000	20%	200,000	1,200,000			
	254b Laundry	8 Arch/ Bldgs	0	0	0	0	20%	0	0			
	255 Kitchen/Diner	8 Arch/ Bldgs	0	0	0	0	20%	0	0			
	256 Toilets	8 Arch/ Bldgs	0	0	0	0	20%	0	0			
	257 Rec Room	8 Arch/ Bldgs	0	0	0	0	20%	0	0			
	258 Office	8 Arch/ Bldgs	0	0	0	0	20%	0	0			
	258b Stores	8 Arch/ Bldgs	0	0	0	0	20%	0	0			

**Capital Cost Estimate  
Estimate Details  
500 ktpa**

GREAT PYRAMID TIN PROJECT CONCEPTUAL STUDY  
CAPITAL COST ESTIMATE  
ACCURACY +50%, -20%, 1Q2007  
CURRENCY AUSTRALIAN DOLLARS

Main Area	Plant Area	Facility	PDisc.	Ex-Works Cost	Freight Cost	Install Cost	Total Cost (excl Cont)	% Cont	Cont	Grand Total
		259 Services	8 Arch/ Bldgs	0	0	0	0	20%	0	0
	<b>250 Permanent Accommodation Total</b>			<b>1,025,000</b>	<b>2,000</b>	<b>13,000</b>	<b>1,040,000</b>	<b>20%</b>	<b>208,000</b>	<b>1,248,000</b>
	260 Construction Accommodation	261 Sewerage Treatment Plant	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		262 Water Treatment Plant	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		263 Misc Facilities (Pool, Multi Use Courts)	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		264 Accommodation Units	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		264b Laundry	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		265 Kitchen/Diner	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		266 Toilets	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		267 Rec Room	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		268 Office	8 Arch/ Bldgs	0	0	0	0	20%	0	0
		259 Services	8 Arch/ Bldgs	0	0	0	0	20%	0	0
	<b>250 Construction Accommodation Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20%</b>	<b>0</b>	<b>0</b>
	260 Mobile Plant & General Equip/Furniture	261 Mobile Plant	5 Equipment	380,000	20,000	0	400,000	20%	80,000	480,000
		262 Maint. Tools and Equip.	5 Equipment	45,000	5,000	0	50,000	20%	10,000	60,000
		263 Warehouse Shelving/Fitout	8 Arch/ Bldgs	15,000	2,000	4,000	21,000	20%	4,200	25,200
		264 Office Equip. and Furniture	8 Arch/ Bldgs	25,000	3,000	7,000	35,000	20%	7,000	42,000
		266 Laboratory Equipment	5 Equipment	30,000	5,000	5,000	40,000	20%	8,000	48,000
	<b>260 Mobile Plant &amp; General Equip/Furniture Total</b>			<b>495,000</b>	<b>35,000</b>	<b>16,000</b>	<b>546,000</b>	<b>20%</b>	<b>109,200</b>	<b>655,200</b>
	280 Overland Pipelines	281 Water Supply	6 Piping	50,000	54,000	50,000	154,000	20%	30,800	184,800
		282 Tailings Pipeline	6 Piping	50,000	5,000	50,000	105,000	20%	21,000	126,000
		283 Decant Return Pipeline	6 Piping	48,000	2,000	25,000	75,000	20%	15,000	90,000
		284 Dump Run-Off Collection	6 Piping	0	0	0	0	20%	0	0
		285 TSF Toe Drain/Run-Off Collection	6 Piping	5,000	0	5,000	10,000	20%	2,000	12,000
		286 Pit Dewatering	6 Piping	0	0	0	0	20%	0	0
	<b>270 Overland Pipelines Total</b>			<b>153,000</b>	<b>61,000</b>	<b>130,000</b>	<b>344,000</b>	<b>20%</b>	<b>68,800</b>	<b>412,800</b>
	<b>200 Infrastructure Total</b>			<b>2,893,000</b>	<b>166,000</b>	<b>1,023,000</b>	<b>4,082,000</b>	<b>23%</b>	<b>941,900</b>	<b>5,023,900</b>
	<b>300 Mining Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0%</b>	<b>0</b>	<b>0</b>
400 Management Costs	410 EPCM	411 EPCM - Home Office	9 EPCM	1,545,329	145,175	1,032,903	2,723,407	20%	544,681	3,268,088
		412 EPCM - Site Construction	9 EPCM		145,175	1,549,354	1,694,529	20%	338,906	2,033,435
		414 EPCM - Commissioning	9 EPCM		15,000	150,000	165,000	20%	33,000	198,000
		415 EPCM - Expenses	9 EPCM	75,000		75,000	150,000	20%	30,000	180,000
	<b>410 EPCM Total</b>			<b>1,620,329</b>	<b>305,351</b>	<b>2,807,257</b>	<b>4,732,936</b>	<b>20%</b>	<b>946,587</b>	<b>5,679,523</b>
	420 Specialist Consultants	425 Other Specialist Consultants	0 General	100,000		50,000	150,000	20%	30,000	180,000
		xxx TSF Consultants	0 General	200,000		50,000	250,000	20%	50,000	300,000
	<b>420 Specialist Consultants Total</b>			<b>300,000</b>	<b>0</b>	<b>100,000</b>	<b>400,000</b>	<b>20%</b>	<b>80,000</b>	<b>480,000</b>
	430 Vendor Representatives	431 Vendor Representatives - General	0 General	50,000			50,000	20%	10,000	60,000
	<b>430 Vendor Representatives Total</b>			<b>50,000</b>	<b>0</b>	<b>0</b>	<b>50,000</b>	<b>20%</b>	<b>10,000</b>	<b>60,000</b>
	<b>400 Management Costs Total</b>			<b>1,970,329</b>	<b>305,351</b>	<b>2,907,257</b>	<b>5,182,936</b>	<b>20%</b>	<b>1,036,587</b>	<b>6,219,523</b>
500 Owners Costs	501 Owners Costs-General	502 Owners Project Mng't Team	0 General	500,000			500,000	20%	100,000	600,000
		503 Legal Services	0 General	25,000			25,000	20%	5,000	30,000
		504 Computing Systems	5 Equipment	50,000	5,000		55,000	20%	11,000	66,000
		505 Construction Insurances	0 General	300,000			300,000	20%	60,000	360,000
		506 Specialised Insurance Cover	0 General	0			0	20%	0	0
		507 Specialist Consultants	0 General	250,000			250,000	20%	50,000	300,000
		508 Recruiting	0 General	250,000			250,000	20%	50,000	300,000
	<b>501 Owners Costs-General Total</b>			<b>1,375,000</b>	<b>5,000</b>	<b>0</b>	<b>1,380,000</b>	<b>20%</b>	<b>276,000</b>	<b>1,656,000</b>
	530 Spare Parts	531 Commissioning & Consumables Spares	0 General	50,000			50,000	20%	10,000	60,000
		532 Consumable Spares	0 General	150,000	15,000		165,000	20%	33,000	198,000
		533 Insurance Spares	0 General	265,000	20,000		285,000	20%	57,000	342,000
	<b>530 Spare Parts Total</b>			<b>465,000</b>	<b>35,000</b>	<b>0</b>	<b>500,000</b>	<b>20%</b>	<b>100,000</b>	<b>600,000</b>
	540 Fees/Taxes/Duties	541 Fees/Taxes/Duties	0 General	0	0	0	0	20%	0	0
	<b>540 Fees/Taxes/Duties Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20%</b>	<b>0</b>	<b>0</b>
	590 Other Owners Costs	591 Community Relations	0 General	0		0	0	20%	0	0
	<b>590 Other Owners Costs Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20%</b>	<b>0</b>	<b>0</b>
	510 Pre-production	511 Plant Pre-production Labour	0 General			250,000	250,000	20%	50,000	300,000
		512 Plant Pre-production Expenses	5 Equipment			25,000	25,000	20%	5,000	30,000
		515 Opening Stocks	0 General	0	0		0	20%	0	0
		516 First Fill Reagents & Consumables	0 General	95,000	5,000		100,000	20%	20,000	120,000
		519 Training	0 General			250,000	250,000	20%	50,000	300,000
	<b>510 Pre-production Total</b>			<b>95,000</b>	<b>5,000</b>	<b>525,000</b>	<b>625,000</b>	<b>20%</b>	<b>125,000</b>	<b>750,000</b>
	<b>500 Owners Costs Total</b>			<b>1,935,000</b>	<b>45,000</b>	<b>525,000</b>	<b>2,505,000</b>	<b>20%</b>	<b>501,000</b>	<b>3,006,000</b>
600 Working Capital	601 Working Capital-General	602 Plant	0 General				0		0	0
	<b>601 Working Capital-General Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>
	<b>600 Working Capital Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>
<b>Grand Total</b>				<b>19,358,616</b>	<b>1,802,104</b>	<b>13,761,284</b>	<b>34,922,004</b>	<b>20%</b>	<b>7,157,501</b>	<b>42,079,504</b>



## Capital Cost Estimate Summary 1,000 ktpa

**GREAT PYRAMID TIN PROJECT CONCEPTUAL STUDY  
CAPITAL COST ESTIMATE  
ACCURACY +50%, -20%, 1Q2007  
CURRENCY AUSTRALIAN DOLLARS**

Area Description	Total Cost (excluding Contingency)	Contingency	Total Cost
001 Site Estab.-General Total	990,000	198,000	1,188,000
010 Site Constr. Facilities Total	190,000	38,000	228,000
020 Constr. Equip. & Operations Total	723,608	144,722	868,329
<b>000 Site Estab. &amp; Constr. Total</b>	<b>1,903,608</b>	<b>380,722</b>	<b>2,284,329</b>
101 Treatment Plant-General Total	238,000	95,200	333,200
101 Treatment Plant-Total	31,328,626	6,265,725	37,594,351
180 Plant Services Total	145,000	29,000	174,000
<b>100 Treatment Plant Total</b>	<b>31,711,626</b>	<b>6,389,925</b>	<b>38,101,551</b>
201 Infrastructure-General Total	220,000	44,000	264,000
210 Utilities Total	452,500	126,250	578,750
230 Tailings Dam Total	757,858	303,143	1,061,002
240 Plant Buildings Total	1,207,565	241,513	1,449,078
251 Site Sewage Plant and Management Housing	1,040,000	208,000	1,248,000
250 Other Permanent Accommodation	N/A		
260 Construction Accommodation Total	Not required		
270 Mobile Plant & General Equip/Furniture Total	566,629	113,326	679,954
280 Overland Pipelines Total	477,571	95,514	573,085
<b>200 Infrastructure Total</b>	<b>4,722,122</b>	<b>1,131,746</b>	<b>5,853,868</b>
<b>300 Mining Total</b>	<b>Excluded</b>	<b>Excluded</b>	<b>Excluded</b>
410 EPCM Total	6,731,247	1,346,249	8,077,496
420 Specialist Consultants Total	400,000	80,000	480,000
430 Vendor Representatives Total	50,000	10,000	60,000
<b>400 Management Costs Total</b>	<b>7,181,247</b>	<b>1,436,249</b>	<b>8,617,496</b>
501 Owners Costs-General Total	1,534,715	306,943	1,841,658
530 Spare Parts Total	757,858	151,572	909,430
540 Fees/Taxes/Duties Total	Excluded	Excluded	Excluded
590 Other Owners Costs Total	Excluded	Excluded	Excluded
510 Pre-production Total	676,572	135,314	811,886
<b>500 Owners Costs Total</b>	<b>2,969,145</b>	<b>593,829</b>	<b>3,562,974</b>
<b>600 Working Capital Total</b>	<b>Excluded</b>	<b>Excluded</b>	<b>Excluded</b>
<b>Grand Total</b>	<b>48,487,748</b>	<b>9,932,471</b>	<b>58,420,219</b>

**Capital Cost Estimate  
Equipment by Area  
1,000 ktpa**

Area	Ex Works	Freight	Percentage							Total
			Install	Equip	Concrete	Steelwork	Platework	Piping	E&I	
Crushing	2,273,575	204,622	682,072	3,160,269	1,027,087	632,054	553,047	1,027,087	1,501,128	7,900,673
Milling	3,243,730	291,936	973,119	4,508,785	1,465,355	901,757	789,037	1,465,355	2,141,673	11,271,963
Spirals	1,089,984	98,099	326,995	1,515,078	492,400	303,016	265,139	492,400	719,662	3,787,694
Tables	1,025,500	92,295	307,650	1,425,445	463,270	285,089	249,453	463,270	677,086	3,563,613
Tailings & Services	1,338,758	120,488	401,627	1,860,874	604,784	372,175	325,653	604,784	883,915	4,652,184
<b>Grand Total</b>	<b>8,971,547</b>	<b>807,439</b>	<b>2,691,464</b>	<b>12,470,450</b>	<b>4,052,896</b>	<b>2,494,090</b>	<b>2,182,329</b>	<b>4,052,896</b>	<b>5,923,464</b>	<b>31,176,126</b>

**Capital Cost Estimate**  
**Estimate Details**  
**1,000 ktpa**

GREAT PYRAMID TIN PROJECT CONCEPTUAL STUDY  
CAPITAL COST ESTIMATE  
ACCURACY +50%, -20%, 1Q2007  
CURRENCY AUSTRALIAN DOLLARS

Main Area	Plant Area	Facility	PDisc.	Ex-Works Cost	Freight Cost	Install Cost	Total Cost (excl Cont)	% Cont	Cont	Grand Total	
000 Site Estab. & Constr.	001 Site Estab.-General	002 Mob/Demob contractors labour	0 General	300,000	15,000		315,000	20%	63,000	378,000	
		003 Mob/Demob constr. plant & equip.	0 General	400,000	65,000		465,000	20%	93,000	558,000	
		004 Site Surveying	0 General	20,000	5,000		25,000	20%	5,000	30,000	
		005 General Freight & Transport	0 General		150,000		150,000	20%	30,000	180,000	
		007 Testing and Inspection	0 General			25,000	25,000	20%	5,000	30,000	
		008 Barricades/Safety Signs	0 General	5,000	1,000	4,000	10,000	20%	2,000	12,000	
		<b>001 Site Estab.-General Total</b>			<b>725,000</b>	<b>236,000</b>	<b>29,000</b>	<b>990,000</b>	<b>20%</b>	<b>198,000</b>	<b>1,188,000</b>
	010 Site Constr. Facilities	012 Construction Roads & Drainage	1 Earthworks	15,000		15,000	30,000	20%	6,000	36,000	
		013 Laydown Areas (hardstand)	1 Earthworks	15,000		15,000	30,000	20%	6,000	36,000	
		014 Construction Buildings/Facilities	0 General	5,000		5,000	10,000	20%	2,000	12,000	
		8 Arch/ Bldgs	25,000		25,000	50,000	20%	10,000	60,000		
		015 Construction Site Services	0 General	15,000		15,000	30,000	20%	6,000	36,000	
		018 Constr Security Fencing	0 General	5,000		5,000	10,000	20%	2,000	12,000	
	<b>010 Site Constr. Facilities Total</b>			<b>100,000</b>	<b>0</b>	<b>90,000</b>	<b>190,000</b>	<b>20%</b>	<b>38,000</b>	<b>228,000</b>	
	020 Constr. Equip. & Operations	023 Heavy lift craneage	0 General		20,000	80,000	100,000	20%	20,000	120,000	
		024 Misc. Equipment hire	0 General			3,000	28,000	20%	5,600	33,600	
		025 Handling & access equipment	0 General			3,000	18,000	20%	3,600	21,600	
		026 Security during construction	0 General			10,000	10,000	20%	2,000	12,000	
		027 Fuel & consumables	0 General			25,000	25,000	20%	5,000	30,000	
		028 Medical & First Aid	0 General	5,000	1,000	4,000	10,000	20%	2,000	12,000	
		029 Construction Services	0 General	25,000	1,000	14,000	40,000	20%	8,000	48,000	
		xxx Accommodation and meals	0 General			492,608	492,608	20%	98,522	591,129	
		<b>020 Constr. Equip. &amp; Operations Total</b>			<b>30,000</b>	<b>28,000</b>	<b>665,608</b>	<b>723,608</b>	<b>20%</b>	<b>144,722</b>	<b>868,329</b>
<b>000 Site Estab. &amp; Constr. Total</b>				<b>855,000</b>	<b>264,000</b>	<b>784,608</b>	<b>1,903,608</b>	<b>20%</b>	<b>380,722</b>	<b>2,284,329</b>	
100 Treatment Plant		101 Treatment Plant-General	102 Bulk site earthworks	1 Earthworks	20,000		20,000	40,000	40%	16,000	56,000
	103 Detailed site earthworks		1 Earthworks	20,000		20,000	40,000	40%	16,000	56,000	
	104 Site drainage & culverts		1 Earthworks	20,000		20,000	40,000	40%	16,000	56,000	
	105 Inplant Tracks		1 Earthworks	20,000		80,000	100,000	40%	40,000	140,000	
	107 Site Security Fencing		0 General	0		0	0	40%	0	0	
	108 Packers/shims/bolts		5 Equipment	4,000		4,000	8,000	40%	3,200	11,200	
	109 Non Shrink Grout		5 Equipment	5,000		5,000	10,000	40%	4,000	14,000	
	<b>101 Treatment Plant-General Total</b>				<b>89,000</b>	<b>0</b>	<b>149,000</b>	<b>238,000</b>	<b>40%</b>	<b>95,200</b>	<b>333,200</b>
	100 Treatment Plant		Crushing		4,345,370	395,034	3,160,269	7,900,673	20%	1,580,135	9,480,807
		Milling		6,199,579	563,598	4,508,785	11,271,963	20%	2,254,393	13,526,355	
		Spirals		2,083,232	189,385	1,515,078	3,787,694	20%	757,539	4,545,233	
		Tables		1,959,987	178,181	1,425,445	3,563,613	20%	712,723	4,276,335	
		Tailings & Services		2,558,701	232,609	1,860,874	4,652,184	20%	930,437	5,582,621	
		Conc Storage Dam		75,000	7,500	70,000	152,500	20%	30,500	183,000	
	<b>101 Treatment Plant-Total</b>			<b>17,221,869</b>	<b>1,566,306</b>	<b>12,540,450</b>	<b>31,328,626</b>	<b>20%</b>	<b>6,265,725</b>	<b>37,594,351</b>	
	180 Plant Services	183 Other Plant Services (Gases, Fuel)		15,000	3,000	12,000	30,000	20%	6,000	36,000	
		184 Fire Protection		9,000	1,000	5,000	15,000	20%	3,000	18,000	
		185 Plant Control System - PLC		85,000		15,000	100,000	20%	20,000	120,000	
		186 Common Services & Piperacks		0	0	0	0	20%	0	0	
		187 CCTV System		0	0	0	0	20%	0	0	
188 Instrument and Controls			0	0	0	0	20%	0	0		
<b>180 Plant Services Total</b>				<b>109,000</b>	<b>4,000</b>	<b>32,000</b>	<b>145,000</b>	<b>20%</b>	<b>29,000</b>	<b>174,000</b>	
<b>100 Treatment Plant Total</b>			<b>17,419,869</b>	<b>1,570,306</b>	<b>12,721,450</b>	<b>31,711,626</b>	<b>20%</b>	<b>6,389,925</b>	<b>38,101,551</b>		
200 Infrastructure	201 Infrastructure-General	202 Main Access Road	1 Earthworks			0	0	20%	0	0	
		203 Misc. Track	1 Earthworks			25,000	25,000	20%	5,000	30,000	
		204 Misc Bulk Earthworks	1 Earthworks			50,000	50,000	20%	10,000	60,000	
		205 Environmental Control Pond	1 Earthworks			100,000	100,000	20%	20,000	120,000	
		206 Misc Culverts & Drainage	1 Earthworks			15,000	15,000	20%	3,000	18,000	
		207 Security Fencing	0 General			30,000	30,000	20%	6,000	36,000	
		<b>201 Infrastructure-General Total</b>			<b>0</b>	<b>0</b>	<b>220,000</b>	<b>220,000</b>	<b>20%</b>	<b>44,000</b>	<b>264,000</b>
	210 Utilities	211 HV Switchyard	7 Elect & Instr	200,000	7,500	70,000	277,500	30%	83,250	360,750	
		212 Powerlines	7 Elect & Instr	50,000	2,000	28,000	80,000	30%	24,000	104,000	
		213 Emergency Power	7 Elect & Instr	50,000	3,000	12,000	65,000	20%	13,000	78,000	
		214 Communications	7 Elect & Instr	15,000	2,000	13,000	30,000	20%	6,000	36,000	
	<b>210 Utilities Total</b>			<b>315,000</b>	<b>14,500</b>	<b>123,000</b>	<b>452,500</b>	<b>28%</b>	<b>126,250</b>	<b>578,750</b>	
	230 Tailings Dam	231 Tailings Dam Stage	1 Earthworks	378,929	0	378,929	757,858	40%	303,143	1,061,002	
	<b>230 Tailings Dam Total</b>			<b>378,929</b>	<b>0</b>	<b>378,929</b>	<b>757,858</b>	<b>40%</b>	<b>303,143</b>	<b>1,061,002</b>	
	240 Plant Buildings	241 Administration Office	8 Arch/ Bldgs	300,000	10,000	90,000	400,000	20%	80,000	480,000	
		242 Process Office	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		243 Workshop/Warehouse	8 Arch/ Bldgs	270,000	30,000	120,000	420,000	20%	84,000	504,000	
		244 Laboratory	8 Arch/ Bldgs	37,893	1,516	21,220	60,629	20%	12,126	72,754	
		245 Weighbridge station	8 Arch/ Bldgs	15,000	2,000	13,000	30,000	20%	6,000	36,000	
		246 Conc Storage Shed	8 Arch/ Bldgs	75,786	3,031	34,861	113,679	20%	22,736	136,414	
247 Plant Site Ablutions		8 Arch/ Bldgs	25,000	5,000	10,000	40,000	20%	8,000	48,000		
248 MCC's and Switchroom		8 Arch/ Bldgs	75,786	7,579	37,893	121,257	20%	24,251	145,509		
249 Remote Pumphouse		8 Arch/ Bldgs	0	0	0	0	20%	0	0		
249b Control room		8 Arch/ Bldgs	15,000	2,000	5,000	22,000	20%	4,400	26,400		
<b>240 Plant Buildings Total</b>			<b>814,465</b>	<b>61,126</b>	<b>331,974</b>	<b>1,207,565</b>	<b>20%</b>	<b>241,513</b>	<b>1,449,078</b>		
250 Permanent Accommodation	251 Sewerage Treatment Plant	8 Arch/ Bldgs	25,000	2,000	13,000	40,000	20%	8,000	48,000		

**Capital Cost Estimate  
Estimate Details  
1,000 ktpa**

Main Area	Plant Area	Facility	PDisc.	Ex-Works Cost	Freight Cost	Install Cost	Total Cost (excl Cont)	% Cont	Cont	Grand Total	
		252 Water Treatment Plant	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		253 Misc Facilities (Pool, Tennis Court, Oval, Club House)	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		254 Accommodation Units	8 Arch/ Bldgs	1,000,000	0	0	1,000,000	20%	200,000	1,200,000	
		254b Laundry	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		255 Kitchen/Diner	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		256 Toilets	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		257 Rec Room	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		258 Office	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		258b Stores	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
		259 Services	8 Arch/ Bldgs	0	0	0	0	20%	0	0	
	<b>250 Permanent Accommodation Total</b>				<b>1,025,000</b>	<b>2,000</b>	<b>13,000</b>	<b>1,040,000</b>	<b>20%</b>	<b>208,000</b>	<b>1,248,000</b>
		260 Construction Accommodation	261 Sewerage Treatment Plant	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			262 Water Treatment Plant	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			263 Misc Facilities (Pool, Multi Use Courts)	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			264 Accommodation Units	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			264b Laundry	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			265 Kitchen/Diner	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			266 Toilets	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			267 Rec Room	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			268 Office	8 Arch/ Bldgs	0	0	0	0	20%	0	0
			259 Services	8 Arch/ Bldgs	0	0	0	0	20%	0	0
	<b>250 Construction Accommodation Total</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>20%</b>	<b>0</b>	<b>0</b>
		260 Mobile Plant & General Equip/Furniture	261 Mobile Plant	5 Equipment	380,000	20,000	0	400,000	20%	80,000	480,000
			262 Maint. Tools and Equip.	5 Equipment	45,000	5,000	0	50,000	20%	10,000	60,000
			263 Warehouse Shelving/Fitout	8 Arch/ Bldgs	15,000	2,000	4,000	21,000	20%	4,200	25,200
264 Office Equip. and Furniture			8 Arch/ Bldgs	25,000	3,000	7,000	35,000	20%	7,000	42,000	
266 Laboratory Equipment			5 Equipment	45,471	7,579	7,579	60,629	20%	12,126	72,754	
<b>260 Mobile Plant &amp; General Equip/Furniture Total</b>					<b>510,471</b>	<b>37,579</b>	<b>18,579</b>	<b>566,629</b>	<b>20%</b>	<b>113,326</b>	<b>679,954</b>
	280 Overland Pipelines	281 Water Supply	6 Piping	75,786	81,849	75,786	233,421	20%	46,684	280,104	
		282 Tailings Pipeline	6 Piping	75,786	7,579	75,786	159,150	20%	31,830	190,980	
		283 Decant Return Pipeline	6 Piping	48,000	2,000	25,000	75,000	20%	15,000	90,000	
		284 Dump Run-Off Collection	6 Piping	0	0	0	0	20%	0	0	
		285 TSF Toe Drain/Run-Off Collection	6 Piping	5,000	0	5,000	10,000	20%	2,000	12,000	
		286 Pit Dewatering	6 Piping	0	0	0	0	20%	0	0	
		<b>270 Overland Pipelines Total</b>				<b>204,572</b>	<b>91,427</b>	<b>181,572</b>	<b>477,571</b>	<b>20%</b>	<b>95,514</b>
<b>200 Infrastructure Total</b>				<b>3,248,437</b>	<b>206,632</b>	<b>1,267,054</b>	<b>4,722,122</b>	<b>24%</b>	<b>1,131,746</b>	<b>5,853,868</b>	
<b>300 Mining Total</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	
400 Management Costs	410 EPCM	411 EPCM - Home Office	9 EPCM	2,152,331	204,094	1,477,311	3,833,736	20%	766,747	4,600,483	
		412 EPCM - Site Construction	9 EPCM		204,094	2,215,967	2,420,061	20%	484,012	2,904,073	
		414 EPCM - Commissioning	9 EPCM		22,736	227,357	250,093	20%	50,019	300,112	
		415 EPCM - Expenses	9 EPCM	113,679		113,679	227,357	20%	45,471	272,829	
		<b>410 EPCM Total</b>				<b>2,266,009</b>	<b>430,923</b>	<b>4,034,314</b>	<b>6,731,247</b>	<b>20%</b>	<b>1,346,249</b>
	420 Specialist Consultants	425 Other Specialist Consultants	0 General	100,000		50,000	150,000	20%	30,000	180,000	
		xxx TSF Consultants	0 General	200,000		50,000	250,000	20%	50,000	300,000	
	<b>420 Specialist Consultants Total</b>			<b>300,000</b>	<b>0</b>	<b>100,000</b>	<b>400,000</b>	<b>20%</b>	<b>80,000</b>	<b>480,000</b>	
	430 Vendor Representatives	431 Vendor Representatives - General	0 General	50,000			50,000	20%	10,000	60,000	
	<b>430 Vendor Representatives Total</b>			<b>50,000</b>	<b>0</b>	<b>0</b>	<b>50,000</b>	<b>20%</b>	<b>10,000</b>	<b>60,000</b>	
<b>400 Management Costs Total</b>				<b>2,616,009</b>	<b>430,923</b>	<b>4,134,314</b>	<b>7,181,247</b>	<b>20%</b>	<b>1,436,249</b>	<b>8,617,496</b>	
500 Owners Costs	501 Owners Costs-General	502 Owners Project Mng't Team	0 General	500,000			500,000	20%	100,000	600,000	
		503 Legal Services	0 General	25,000			25,000	20%	5,000	30,000	
		504 Computing Systems	5 Equipment	50,000	5,000		55,000	20%	11,000	66,000	
		505 Construction Insurances	0 General	454,715			454,715	20%	90,943	545,658	
		506 Specialised Insurance Cover	0 General	0			0	20%	0	0	
		507 Specialist Consultants	0 General	250,000			250,000	20%	50,000	300,000	
		508 Recruiting	0 General	250,000			250,000	20%	50,000	300,000	
		<b>501 Owners Costs-General Total</b>			<b>1,529,715</b>	<b>5,000</b>	<b>0</b>	<b>1,534,715</b>	<b>20%</b>	<b>306,943</b>	<b>1,841,658</b>
	530 Spare Parts	531 Commissioning & Consumables Spares	0 General	75,786			75,786	20%	15,157	90,943	
		532 Consumable Spares	0 General	227,357	22,736		250,093	20%	50,019	300,112	
		533 Insurance Spares	0 General	401,665	30,314		431,979	20%	86,396	518,375	
	<b>530 Spare Parts Total</b>			<b>704,808</b>	<b>53,050</b>	<b>0</b>	<b>757,858</b>	<b>20%</b>	<b>151,572</b>	<b>909,430</b>	
	540 Fees/Taxes/Duties	541 Fees/Taxes/Duties	0 General	0			0	20%	0	0	
	<b>540 Fees/Taxes/Duties Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	
	590 Other Owners Costs	591 Community Relations	0 General	0			0	20%	0	0	
<b>590 Other Owners Costs Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>		
510 Pre-production	511 Plant Pre-production Labour	0 General			250,000	250,000	20%	50,000	300,000		
	512 Plant Pre-production Expenses	5 Equipment			25,000	25,000	20%	5,000	30,000		
	515 Opening Stocks	0 General	0	0		0	20%	0	0		
	516 First Fill Reagents & Consumables	0 General	143,993	7,579		151,572	20%	30,314	181,886		
	519 Training	0 General			250,000	250,000	20%	50,000	300,000		
<b>510 Pre-production Total</b>			<b>143,993</b>	<b>7,579</b>	<b>525,000</b>	<b>676,572</b>	<b>20%</b>	<b>135,314</b>	<b>811,886</b>		
<b>500 Owners Costs Total</b>				<b>2,378,516</b>	<b>65,629</b>	<b>525,000</b>	<b>2,969,145</b>	<b>20%</b>	<b>593,829</b>	<b>3,562,974</b>	
600 Working Capital	601 Working Capital-General	602 Plant	0 General				0		0		
	<b>601 Working Capital-General Total</b>			<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	
<b>600 Working Capital Total</b>				<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>	
<b>Grand Total</b>				<b>26,517,832</b>	<b>2,537,490</b>	<b>19,432,426</b>	<b>48,487,748</b>	<b>20%</b>	<b>9,932,471</b>	<b>58,420,219</b>	

**APPENDIX 5**  
**OPERATING COST ESTIMATE DETAIL**

**Operating Cost Estimate  
Summary  
500 ktpa**

**MINEMAKERS LIMITED  
GREAT PYRAMID TIN PROJECT  
OPERATING COST ESTIMATE  
ACCURACY -20/+50%, 3Q07  
JOB NO: 1406**

**SUMMARY**

Annual throughput	<b>500,000</b> tpa
Ore Processing Rate	<b>63</b> tph
Plant Availability	<b>91.3%</b>
Operating Hours	<b>8000</b> h/annum

<b>SUMMARY</b>	<b>Annual Cost</b>	
	<b>A\$000</b>	<b>A\$/t ore</b>
Labour	5,232,500	<b>10.47</b>
Consumables	1,091,250	<b>2.18</b>
Power	1,329,584	<b>2.66</b>
Maintenance	714,286	<b>1.43</b>
General and Administration	789,750	<b>1.58</b>
Tailings Disposal	500,000	<b>1.00</b>
<b>TOTAL</b>	<b>9,657,370</b>	<b>19.31</b>

**Operating Cost Estimate**  
**Labour Costs**  
**500 ktpa**

**Summary of Labour Costs**

	Number of Employees	Classification	Roster	Base Annual Salary/Wage AUD\$	Overhead Costs %	Overhead Costs AUD\$	Annual Labour Costs AUD\$	Annual Salary/Wage Total AUD\$	Overhead Costs Total AUD\$	Annual Labour Costs Total AUD\$
<b>Process Department</b>										
Plant Superintendent	1	M	4	\$150,000	30%	\$45,000	\$195,000	\$150,000	\$45,000	\$195,000
Plant Metallurgist	1	SD	6	\$95,000	30%	\$28,500	\$123,500	\$95,000	\$28,500	\$123,500
Mill Supervisor	1	SD	6	\$95,000	30%	\$28,500	\$123,500	\$95,000	\$28,500	\$123,500
Shift Foreman	3	SS	5	\$90,000	30%	\$27,000	\$117,000	\$270,000	\$81,000	\$351,000
Crushing Operators	4	SS	5	\$90,000	30%	\$27,000	\$117,000	\$360,000	\$108,000	\$468,000
Milling Operators	4	SS	5	\$90,000	30%	\$27,000	\$117,000	\$360,000	\$108,000	\$468,000
Gravity Operators	4	SS	5	\$90,000	30%	\$27,000	\$117,000	\$360,000	\$108,000	\$468,000
Tails/Water Operators	2	SD	4	\$80,000	30%	\$24,000	\$104,000	\$160,000	\$48,000	\$208,000
Relief/Conc Handling	3	SD	4	\$80,000	30%	\$24,000	\$104,000	\$240,000	\$72,000	\$312,000
Lab supervisor	1	SD	4	\$80,000	30%	\$24,000	\$104,000	\$80,000	\$24,000	\$104,000
Lab Technicians	2	SD	2	\$65,000	30%	\$19,500	\$84,500	\$130,000	\$39,000	\$169,000
Maintenance Supervisor	1	M	3	\$120,000	30%	\$36,000	\$156,000	\$120,000	\$36,000	\$156,000
Maintenance Planner	1	SD	7	\$100,000	30%	\$30,000	\$130,000	\$100,000	\$30,000	\$130,000
Maintenance L/Hand	1	SD	7	\$100,000	30%	\$30,000	\$130,000	\$100,000	\$30,000	\$130,000
Boilermakers	2	SD	5	\$90,000	30%	\$27,000	\$117,000	\$180,000	\$54,000	\$234,000
Fitters	4	SD	5	\$90,000	30%	\$27,000	\$117,000	\$360,000	\$108,000	\$468,000
Electricians	2	SD	5	\$90,000	30%	\$27,000	\$117,000	\$180,000	\$54,000	\$234,000
	<b>37</b>			<b>\$1,595,000</b>		<b>\$478,500</b>	<b>\$2,073,500</b>	<b>\$3,340,000</b>	<b>\$1,002,000</b>	<b>\$4,342,000</b>
<b>Administration</b>										
Site Manager	1	M	5	\$180,000	30%	\$54,000	\$234,000	\$180,000	\$54,000	\$234,000
Accountant	1	SD	4	\$80,000	30%	\$24,000	\$104,000	\$80,000	\$24,000	\$104,000
HR Officer	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
HSE Nurse	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
Safety Officer	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
Logistics/Environmental Officer	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
Warehouse	2	SD	1	\$55,000	30%	\$16,500	\$71,500	\$110,000	\$33,000	\$143,000
Reception/Payroll	1	SD	1	\$55,000	30%	\$16,500	\$71,500	\$55,000	\$16,500	\$71,500
	<b>8</b>			<b>\$630,000</b>		<b>\$189,000</b>	<b>\$819,000</b>	<b>\$685,000</b>	<b>\$205,500</b>	<b>\$890,500</b>
<b>Total (excl Mining)</b>	<b>45</b>			<b>\$2,225,000</b>		<b>\$667,500</b>	<b>\$2,892,500</b>	<b>\$4,025,000</b>	<b>\$1,207,500</b>	<b>\$5,232,500</b>

**Operating Cost Estimate  
Consumables  
500 ktpa**

**CONSUMABLES**

<b>Consumable</b>	<b>Cost A\$ / unit</b>	<b>Consumption</b>	<b>Consumption</b>	<b>A\$/annum</b>	<b>A\$/t</b>
Crusher liners				150,000	0.30
Mill liners	1500 /t	0.14 kg/t	0.009 tph	105,000	0.21
Grinding Media	1350 /t	1.2 kg/t	0.075 tph	810,000	1.62
Flocculant	3500 /t	15 g/t	0.938 kgph	26,250	0.05
<b>Total Cost per annum</b>				1,091,250	
<b>Total Cost per tonne processed</b>					<b>2.18</b>

**Operating Cost Estimate  
Power  
500 ktpa**

**POWER**

Power Cost	0.1000 \$/kWh
Drawn Power	1662 kW
Power used	13,295,840 kWh/year 26.6 kWh/t
<b>Annual Cost</b>	<b>\$1,329,584 /year</b>
<b>Cost per tonne processed</b>	<b>\$2.66 /t ore</b>

**Operating Cost Estimate  
Maintenance  
500 ktpa**

**MAINTENANCE**

Cost of Equipment	A\$	5,000,000
Estimated installed cost (at 35% for eqt)	A\$	14,285,714
Maintenance factor	5%	
Maintenance Cost per annum	A\$	714,286
<b>Total Cost per tonne processed</b>	<b>A\$/t</b>	<b>1.43</b>

**Operating Cost Estimate  
General and Administration  
500 ktpa**

**GENERAL AND ADMINISTRATION**

Item	A\$/year
G& A Allowance	789,750
<b>TOTAL</b>	<b>789,750</b>

**G&A Allowance**

Item	A\$/year
Telecommunications	20,000
Insurances	180,000
Stationery	10,000
Office Cleaning	36,000
Postage, Courier and Light Freight	15,000
Computer Supplies and Support	10,000
First Aid Costs	5,000
Entertainment	3,000
Metallurgical Testing - External Met labs	70,000
Environmental Testing	70,000
Consultants and Vendors	50,000
Banking Fees	6,000
Safety, Clothing	25,000
Training budget	10,000
Travel & Accommodation	40,000
Recruiting/Relocation	50,000
Licenses	10,000
Rent assistance	25,000
Assaying - external laboratory	54,750
Miscellaneous	100,000
<b>TOTAL</b>	<b>789,750</b>

**Operating Cost estimate  
Tailings Disposal  
500 ktpa**

**Tailings Disposal**

Allowance of \$1.00/tonne for ongoing lifts to dam wall and general works and progressive rehabilitation.



**Operating Cost Estimate**

**Summary**

**1,000 ktpa**

**MINEMAKERS LIMITED**

**GREAT PYRAMID TIN PROJECT**

**OPERATING COST ESTIMATE**

**ACCURACY -20/+50%, 3Q07**

**JOB NO: 1406**

**SUMMARY**

Annual throughput **1,000,000** tpa  
Ore Processing Rate **125** tph  
Plant Availability **91.3%**  
Operating Hours **8000** h/annum

<b>SUMMARY</b>	<b>Annual Cost</b>	
	<b>A\$000</b>	<b>A\$/t ore</b>
Labour	5,466,500	<b>5.47</b>
Consumables	2,182,500	<b>2.18</b>
Power	1,957,920	<b>1.96</b>
Maintenance	1,071,429	<b>1.07</b>
General and Administration	929,750	<b>0.93</b>
Tailings Disposal	1,000,000	<b>1.00</b>
<b>TOTAL</b>	<b>12,608,099</b>	<b>12.61</b>

**Operating Cost Estimate**  
**Labour Costs**  
**1,000 ktpa**

**Summary of Labour Costs**

	Number of Employees	Classification	Roster	Base Annual Salary/Wage AUD\$	Overhead Costs %	Overhead Costs AUD\$	Annual Labour Costs AUD\$	Annual Salary/Wage Total AUD\$	Overhead Costs Total AUD\$	Annual Labour Costs Total AUD\$
<b>Process Department</b>										
Plant Superintendent	1	M	4	\$150,000	30%	\$45,000	\$195,000	\$150,000	\$45,000	\$195,000
Plant Metallurgist	1	SD	6	\$95,000	30%	\$28,500	\$123,500	\$95,000	\$28,500	\$123,500
Mill Supervisor	1	SD	6	\$95,000	30%	\$28,500	\$123,500	\$95,000	\$28,500	\$123,500
Shift Foreman	3	SS	5	\$90,000	30%	\$27,000	\$117,000	\$270,000	\$81,000	\$351,000
Crushing Operators	4	SS	5	\$90,000	30%	\$27,000	\$117,000	\$360,000	\$108,000	\$468,000
Milling Operators	4	SS	5	\$90,000	30%	\$27,000	\$117,000	\$360,000	\$108,000	\$468,000
Gravity Operators	4	SS	5	\$90,000	30%	\$27,000	\$117,000	\$360,000	\$108,000	\$468,000
Tails/Water Operators	2	SD	4	\$80,000	30%	\$24,000	\$104,000	\$160,000	\$48,000	\$208,000
Relief/Conc Handling	3	SD	4	\$80,000	30%	\$24,000	\$104,000	\$240,000	\$72,000	\$312,000
Lab supervisor	1	SD	4	\$80,000	30%	\$24,000	\$104,000	\$80,000	\$24,000	\$104,000
Lab Technicians	2	SD	2	\$65,000	30%	\$19,500	\$84,500	\$130,000	\$39,000	\$169,000
Maintenance Supervisor	1	M	3	\$120,000	30%	\$36,000	\$156,000	\$120,000	\$36,000	\$156,000
Maintenance Planner	1	SD	7	\$100,000	30%	\$30,000	\$130,000	\$100,000	\$30,000	\$130,000
Maintenance L/Hand	1	SD	7	\$100,000	30%	\$30,000	\$130,000	\$100,000	\$30,000	\$130,000
Boilermakers	3	SD	5	\$90,000	30%	\$27,000	\$117,000	\$270,000	\$81,000	\$351,000
Fitters	5	SD	5	\$90,000	30%	\$27,000	\$117,000	\$450,000	\$135,000	\$585,000
Electricians	2	SD	5	\$90,000	30%	\$27,000	\$117,000	\$180,000	\$54,000	\$234,000
	<b>39</b>			<b>\$1,595,000</b>		<b>\$478,500</b>	<b>\$2,073,500</b>	<b>\$3,520,000</b>	<b>\$1,056,000</b>	<b>\$4,576,000</b>
<b>Administration</b>										
Site Manager	1	M	5	\$180,000	30%	\$54,000	\$234,000	\$180,000	\$54,000	\$234,000
Accountant	1	SD	4	\$80,000	30%	\$24,000	\$104,000	\$80,000	\$24,000	\$104,000
HR Officer	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
HSE Nurse	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
Safety Officer	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
Logistics/Environmental Officer	1	SD	2	\$65,000	30%	\$19,500	\$84,500	\$65,000	\$19,500	\$84,500
Warehouse	2	SD	1	\$55,000	30%	\$16,500	\$71,500	\$110,000	\$33,000	\$143,000
Reception/Payroll	1	SD	1	\$55,000	30%	\$16,500	\$71,500	\$55,000	\$16,500	\$71,500
	<b>8</b>			<b>\$630,000</b>		<b>\$189,000</b>	<b>\$819,000</b>	<b>\$685,000</b>	<b>\$205,500</b>	<b>\$890,500</b>
<b>Total (excl Mining)</b>	<b>47</b>			<b>\$2,225,000</b>		<b>\$667,500</b>	<b>\$2,892,500</b>	<b>\$4,205,000</b>	<b>\$1,261,500</b>	<b>\$5,466,500</b>

**Operating Cost Estimate  
Consumables  
1,000 ktpa**

**CONSUMABLES**

<b>Consumable</b>	<b>Cost A\$ / unit</b>	<b>Consumption</b>	<b>Consumption</b>	<b>A\$/annum</b>	<b>A\$/t</b>
Crusher liners				300,000	<b>0.30</b>
Mill liners	1500 /t	0.14 kg/t	0.018 tph	210,000	<b>0.21</b>
Grinding Media	1350 /t	1.2 kg/t	0.150 tph	1,620,000	<b>1.62</b>
Flocculant	3500 /t	15 g/t	1.875 kgph	52,500	<b>0.05</b>
<b>Total Cost per annum</b>				2,182,500	
<b>Total Cost per tonne processed</b>					<b>2.18</b>

**Operating Cost Estimate**

**Power**

**1,000 ktpa**

**POWER**

Power Cost	0.1000 \$/kWh
Drawn Power	2447 kW
Power used	19,579,200 kWh/year 19.6 kWh/t
<b>Annual Cost</b>	<b>\$1,957,920 /year</b>
<b>Cost per tonne processed</b>	<b>\$1.96 /t ore</b>

**Operating Cost Estimate**  
**Maintenance**  
**1,000 ktpa**

**MAINTENANCE**

Cost of Equipment	A\$	7,500,000
Estimated installed cost (at 35% for eqt)	A\$	21,428,571
Maintenance factor	5%	
Maintenance Cost per annum	A\$	1,071,429
<b>Total Cost per tonne processed</b>	<b>A\$/t</b>	<b>1.07</b>

**Operating Cost Estimate  
General and Administration  
1,000 ktpa  
GENERAL AND ADMINISTRATION**

Item	A\$/year
G& A Allowance	929,750
<b>TOTAL</b>	<b>929,750</b>

**G&A Allowance**

Item	A\$/year
Telecommunications	20,000
Insurances	270,000
Stationery	10,000
Office Cleaning	36,000
Postage, Courier and Light Freight	20,000
Computer Supplies and Support	10,000
First Aid Costs	5,000
Entertainment	3,000
Metallurgical Testing - External Met labs	70,000
Environmental Testing	100,000
Consultants and Vendors	50,000
Banking Fees	6,000
Safety, Clothing	25,000
Training budget	10,000
Travel & Accommodation	50,000
Recruiting/Relocation	50,000
Licenses	15,000
Rent assistance	25,000
Assaying - external laboratory	54,750
Miscellaneous	100,000
<b>TOTAL</b>	<b>929,750</b>

**Operating Cost Estimate  
Tailings Disposal  
1,000 ktpa**

**Tailings Disposal**

Allowance of \$1.00/tonne for ongoing lifts to dam wall and general works and progressive rehabilitation.