BLUESTONE
MINES TASMANIA PTY LTD
ACN 108 492 628

Confidential

Technical Report

Mt Bischoff Retention Licence ("RL7/1988)

September 2006

Contents

1 Introduction

Mt Bischoff Project (RL7/1988) is located at Waratah in Northwest Tasmania.

The permit was purchased by Bluestone Mines (Tasmania) P/L, a wholly owned subsidiary of publicly listed company, Bluestone Tin Ltd ("Bluestone"), in early 2005. Bluestone intends to developing the tin resources as part of the company's overall Tasmanian Tin Strategy.

The development is that of a simple open pit operation to provide 200 – 250,000 tonnes per annum ore feed for the Renison Tin Concentrator. This will enable the tin concentrator to operate at full capacity in the ensuing 3-4 years.

Figure 1: Plan of North West Tasmania showing the location of Mt Bischoff

2 Geology

Local Geology

Mt Bischoff represents one of the three major stratabound, carbonate replacement, pyrrhotite-cassiterite deposits within western Tasmania. Forceful emplacement of a buried ridge of the Meredith Granite provided the major focus for ascending hydrothermal fluids. The major porphyry dykes and the Giblin, Queen and other faults provided the pathways for these mineralising fluids which has resulted in tin-rich sulphide replacement in folded and faulted shallow-dipping dolomite

horizons, the formation of greisen and sulphide lodes in the porphyry and fault/vein lodes in the major faults. All lodes contain tin as cassiterite within sulphide mineralisation with some coarse cassiterite as veins through the lodes.

Dolomite Sulphide Lode This mineralisation occurs within the dolomite and is typically a massive pyrrhotite/pyrite/talc rock with fine grained cassiterite. The mineralisation generally occurs near the base of the dolomite and varies in thickness from 2 to 35 metres. Dolomite sulphide lode also occurs along the hangingwall and footwall of the porphyry intrusions.

Porphyry lode The porphyry lodes are formed by strong greisenisation of the porphyry dykes. The tin occurs as disseminations of cassiterite both as veins and fractures in the rock and is associated with an increase of sulphide content.

Argillite lodes These lodes occur in the footwall argillite sediments as thin cassiterite veins 5mm to 10mm thickness in intensely altered argillite near the crest of Mt Bischoff. There is no associated sulphide concentration.

Vein lodes The predominant faults in the area have an average strike of 340° and dip steep west. The 'fissure' lodes are fault fillings carrying tin as cassiterite associated with pyrite and accessory minerals of, marcasite, sphalerite arsenopyrite and minor stannite. They vary between 0.5m to 5m in thickness and dip SW and NW at angles of between 40 and 80 degrees. They were considered the last mineralising event at Mt Bischoff (see Figures 2 and 3).
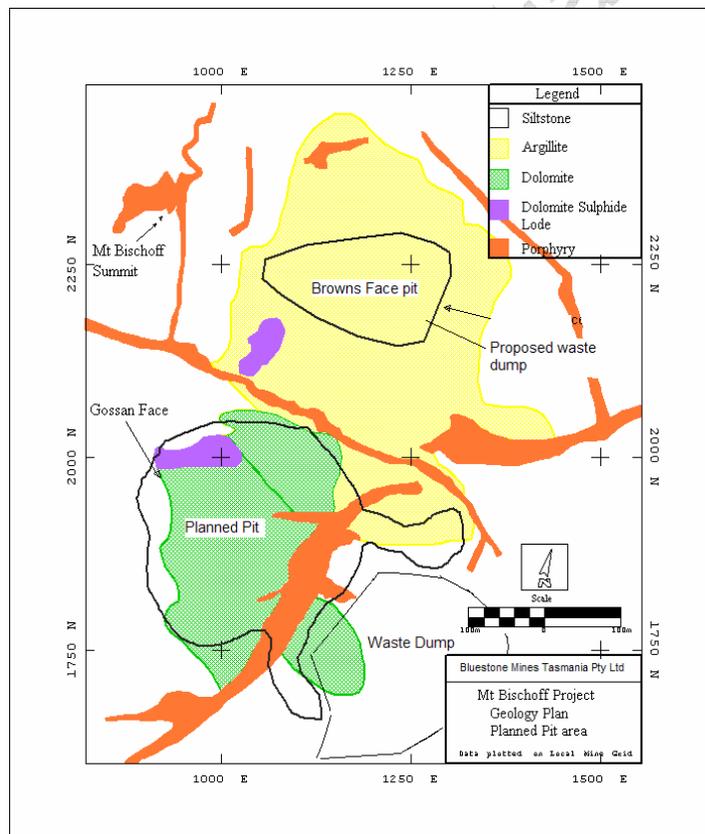

Figure 2: Mt Bischoff geology, lode, pit and waste dump location

Geological interpretation and resource block model generation

The geological and the resource interpretation was based on an existing set of fully interpreted 1:500 scale NS sections derived from diamond drilling, pit and drive mapping, previous geological mapping, the surface open pit lode positions and the underground openings (see Figure 3).
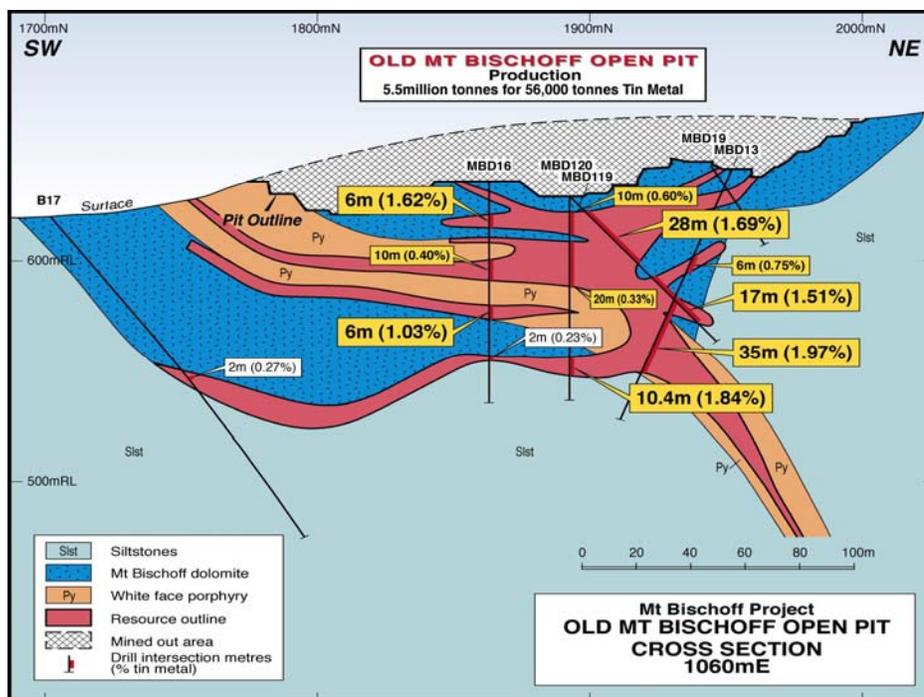

Figure 3: Mt Bischoff Geology and Resource Cross Section 1060mE

The main geology and structural features were digitised from this set of cross sections and the geology and mineralisation was converted into computer 3D solids models that constrained the resource block model. The Mt Bischoff Resources are shown in Table 1.

Table 1 MT BISCHOFF IDENTIFIED MINERAL RESOURCE STATEMENT						
As at September 2006						
RESOURCE CATEGORY	LOW GRADE (0.2%Sn)			ROM GRADE (>0.5%Sn)		
	TONNES	GRADE	CONTAINED	TONNES	GRADE	CONTAINED
	Tonnes	%Sn	Tonnes Sn	Tonnes	%Sn	Tonnes Sn
Measured Resources	481,000	0.33	1,588	537,000	0.79	4,242
Indicated Resources	1,575,000	0.32	5,056	1,139,000	1.06	12,073
Inferred Resources	635,000	0.32	2,033	227,000	0.86	1,952
Total Identified Mineral Resources	2,691,000	0.32	8,677	1,903,000	0.96	18,267
Total Identified Mineral Resources	4,594,000 tonnes at 0.60 %Sn for 26,944 tonnes tin metal					

Table 1: Identified Mineral resource Estimate

3 MINING STUDIES

Pit optimisation Stage 2 final pit Design and Reserves calculation

Whittle 4D – Pit Optimisation was undertaken using expecting mining, processing and recovery factors, parameters and costs. A conventional open pit (figure 4)was designed optimized A$10,000 shell financially evaluated on the basis that Mt Bischoff ore would be incremental feed to the Renison plant and as such would carry only a marginal processing cost. The resultant open pit was determined to yield 778kt of ore grading 1.17% Sn and have a strip ratio of 10.5:1.

The Mt Bischoff Reserves on this basis are shown in Table 2 and by Flitch in Table 3.

<table>
<tr><td colspan="7" align="center">Table 1 MT BISCHOFF MINING RESERVES STATEMENT</td></tr>
<tr><td colspan="7" align="center">As at September 2006</td></tr>
<tr><td colspan="7">MINING RESERVES</td></tr>
<tr><td rowspan="3">CATEGORY</td><td colspan="3" align="center">LOW GRADE</td><td colspan="3" align="center">ROM GRADE</td></tr>
<tr><td>TONNES</td><td>GRADE</td><td>CONTAINED</td><td>TONNES</td><td>GRADE</td><td>CONTAINED</td></tr>
<tr><td>Tonnes</td><td>%Sn</td><td>Tonnes Sn</td><td>Tonnes</td><td>%Sn</td><td>Tonnes Sn</td></tr>
<tr><td>Proved Mining Reserves</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Probable Reserves</td><td></td><td></td><td></td><td>778,000</td><td>1.17</td><td>9,103</td></tr>
<tr><td>Total Proved & Probable Reserves</td><td></td><td></td><td></td><td>778,000</td><td>1.17</td><td>9,103</td></tr>
</table>

Table 2: Reserve tabulation

The reserve is broken into the following flitch analysis of ore and waste:

BENCH	Total pit TONNES	Measured Tonnes	Metal Kg Sn	Indicated Tonnes	Metal Kg Sn	Waste Waste Tonnes
680	543	-	-	-	-	543
670	34,011	-	-	230	200	33,780
660	86,111	-	-	6,120	5,582	79,698
650	251,354	-	-	8,043	10,878	242,242
640	581,944	12,484	13,166	35,039	37,975	528,521
630	973,648	31,274	40,098	41,284	48,770	889,069
620	1,450,464	48,065	65,003	53,330	59,336	1,324,262
610	1,575,169	35,108	54,810	73,234	90,144	1,453,994
600	1,289,134	29,925	44,114	71,450	82,577	1,173,335
590	1,036,195	5,294	11,048	62,191	83,552	954,930
580	731,719	7,328	11,164	44,966	56,464	670,523
570	568,258	13,620	19,746	47,153	46,935	502,414
560	326,845	17,219	27,546	20,613	34,496	288,194
550	147,914	42,183	82,516	23,061	37,962	81,589
540	33,658	12,770	24,287	9,759	19,114	11,128
	9,086,968		393,499		613,984	8,234,221
Resource		255,270 t	1.54% Sn	496,473	1.24% Sn	
Total	**Resource**	**751,743 t**	**1.34% Sn**			
	Reserve*	**778,054 t**	**1.17% Sn**	15% dilution 10% ore loss		
	Waste	**8,208,000**				

* **Reserves have 15% dilution at 0.0% Sn applied and are factored to a 95% mining recovery.**

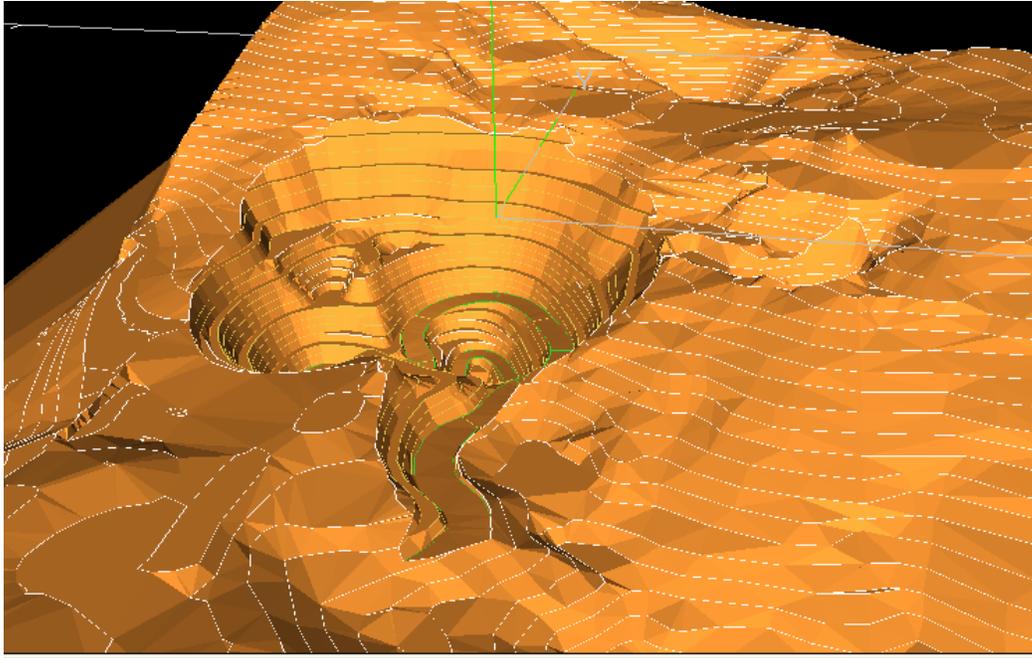**Table 3: Total pit resources on 10 m flitches and the total calculated reserve including stage 1)**

Figure 4:   Open Pit Design Stage 2.   View of design 4 – showing all cut ramp at pit exit

4   PREPARATION of DPEMP

Assessment of requirements

The majority of works completed in the past 12 months were works in preparation for the submission of a DPEMP to enable the title to be reverted back to a Mining Lease and the approval for mining to be received.

Significant works were completed associated with the environmental assessment, impact and treatment of materials from the site.

The environmental issues associated with the recommencement of mining at Mt Bischoff are seen as:
- Mine waste disposal
- Prevention of acid drainage
- Surface and groundwater hydrology (and impacts on Arthur River)
- Residential socio-economic and socio-political impact issues
- Archaeological - mine and mineral heritage
- Flora, fauna etc in the area to be disturbed

Mine waste disposal

The resource is between 1.0 million and 4.6 million tonnes (depending on cut off grade). The current planned open pit will mine approximately 800,000 tonnes at 1.2 %Sn and generate approximately 2.5 million cubic metres of waste. Potential for additional mining following further exploration is considered high.

A location for waste dump has been identified in Happy Valley which is not visible from Waratah township. While the composition of the waste material is to be determined, it is expected that this will contain a mixture of both sulphidic acid generating rocks and alkaline dolomictic and acid neutralising rocks. Blending and/or encapsulation studies are underway.

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EGI were engaged to complete the geochemical testwork and drill samples were sent to EGI's Sydney laboratory for analysis. This programme provided the basis for the DPEMP in the form of a waste management plan. This work is being carried forward by David Brett of GHD and will be reported on in a separate report.

Possible acid neutralising material in Mt Bischoff pit area
The dolomite horizons were nearly all mined in the old pit area. The only dolomite remaining is in and to the south of the current planned pit area. Once the pit is mined there will be a reasonably large volume of dolomite remaining outside the south wall of the pit and also a minor area remaining in a skin under the top section of the planned waste dump in Happy Valley. The dolomite remaining outside the south wall of the pit is unmineralised and should be acid neutralising.

Potential Dump Locations and Volume

The total unconsolidated waste volume is approximately 3.2million m^3.

Waste stockpile areas/alternatives have been estimated with the following capacities: SE dump with allowance for cut ramp into Pit Design 4 – volume 1.7Millm^3
- SE or Happy Valley Dump option – volume 1.7M m^3
- Browns face Dump – 0.92M m^3
- White Face Dump – 0.14M m^3
- In pit SW 35° face Dump – 0.27M m^3
- An alternative East Dump was looked – 1.3M m^3

Dump options and locations are shown in Figure 6, 7, 8 & 9 with perspectives.
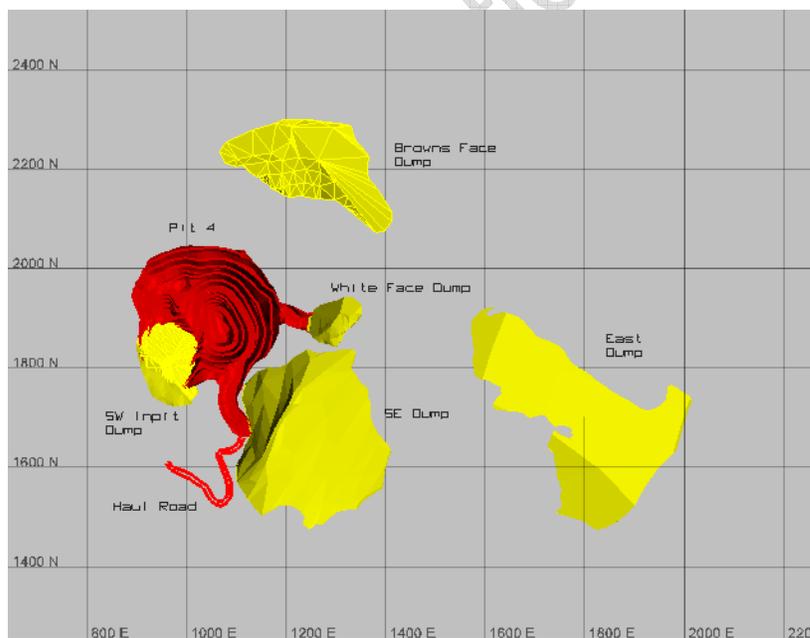

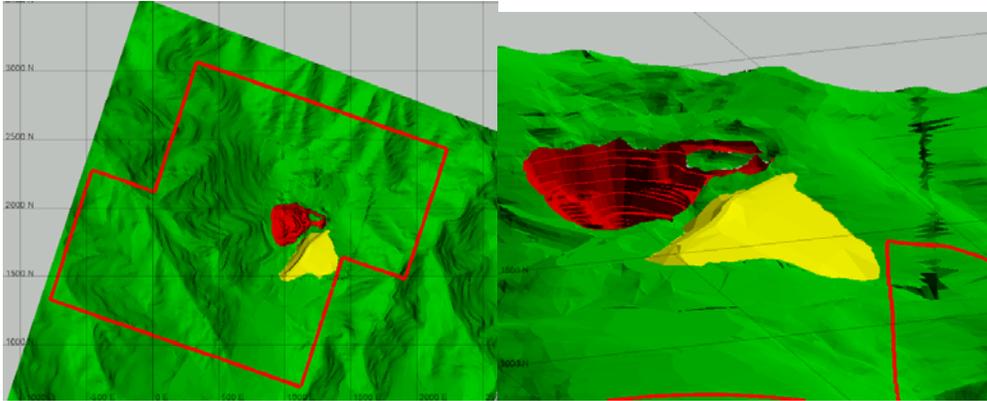Figure 6.   Potential Waste Dump Locations

Figure7.   Plan View of Happy Valley waste dump location
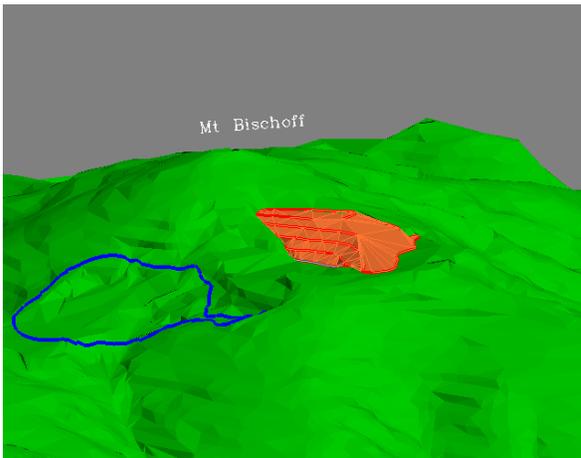

Figure 8: Brown's face dump location

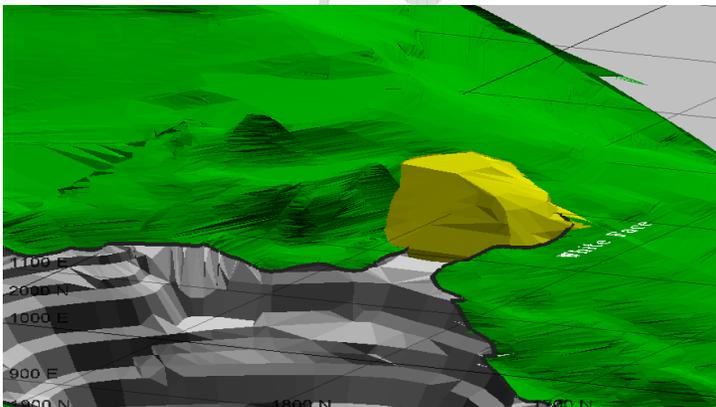Figure 9.   White face dump (yellow) above pit design

Prevention of acid drainage

To enable the acid forming or acid neutralising characteristics the S% of the ore and waste material within the pit needs to be calculated. There was almost no S% assays done of the old 1960's to 1980's drilling. Bluestone commissioned a number of S% determinations through EGI and these were used to compare with the estimated S%.

The method applied was to establish a database of sulphide type and recorded percentage. The Sulphide type and the Sulphide % fields recorded in the drill logs were used to estimate Pyrrhotite and Pyrite % and components of the two.

The sulphide log data was reviewed and the following procedure was adopted to update the database with detailed sulphide % information.

- Using the summary geology interval data as a template add sulphide type and amount columns.
- If sulphide is recorded within the summary geology intervals then subdivide the summary interval into the new shorter intervals. This step was most necessary for the Lode geology intervals where up to 10 subintervals are recorded in some holes.
- Load this data as a new table into the current database (See Table 14)

Hole ID	From	to	Geological Description	LithCode	Sulphide_type	Sul%	Sulphide%
B1	14.2	19.8	dolomite	Do	po py diss tr sp diss		
B1	19.8	27.4	dolomite sulphide lode	DSL	po tr py tr cp sp	50 to 70	60
B1	27.4	32.6	dolomite sulphide lode	DSL	po tr py sp diss	30 to 50	40
B1	32.6	33.5	dolomite sulphide lode	DSL	po>py diss	30	30
B1	33.5	36.5	dolomite sulphide lode	DSL	po diss	30	30
B1	36.5	39.2	dolomite sulphide lode	DSL	po minor py cp massive diss	50	50
B1	39.2	48.2	dolomite sulphide lode	DSL	po diss strong cp	30	30
B1	48.2	51.2	Siltstone minor Quartzite	Slt/Qtze	po py diss	1 to 2	1.5
B1	51.2	55.5	Siltstone minor Silty Shale	Slt/SSh	po>py diss	3	3
B1	55.5	58.5	Quartzite minor Siltstone	Qtze/Slt	po>py diss	7 to 10	8.5
B1	58.5	61.9	Quartzite minor Siltstone	Qtze/Slt	po>py diss	1 to 2	1.5
B1	61.9	62.5	Tuff	Vt	py	tr	0.1
B1	62.5	66.2	Siltstone and Silty Shale	Slt/sSh	po>py diss	2	2
B1	66.2	68.1	Tuff	Vt	po py diss	1 to 2	1.5
B1	68.1	74.7	Quartzite with lesser Siltstone	Qtze/Slt	po py diss	<1	0.5

Table 4   Showing methodology of conversion of Sulphide type and % to sulphide %

A block model was constructed of the Sulphide percentage and the results viewed to get an estimation of where the sulphide concentrations were (See figures 10 and 11).
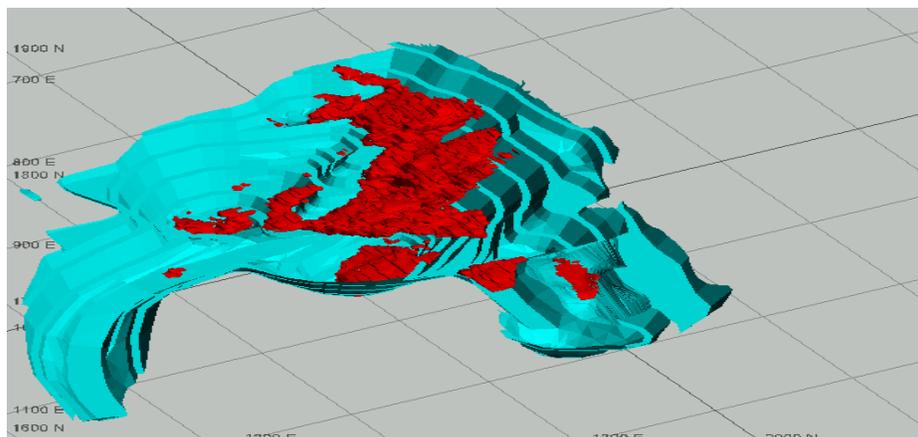
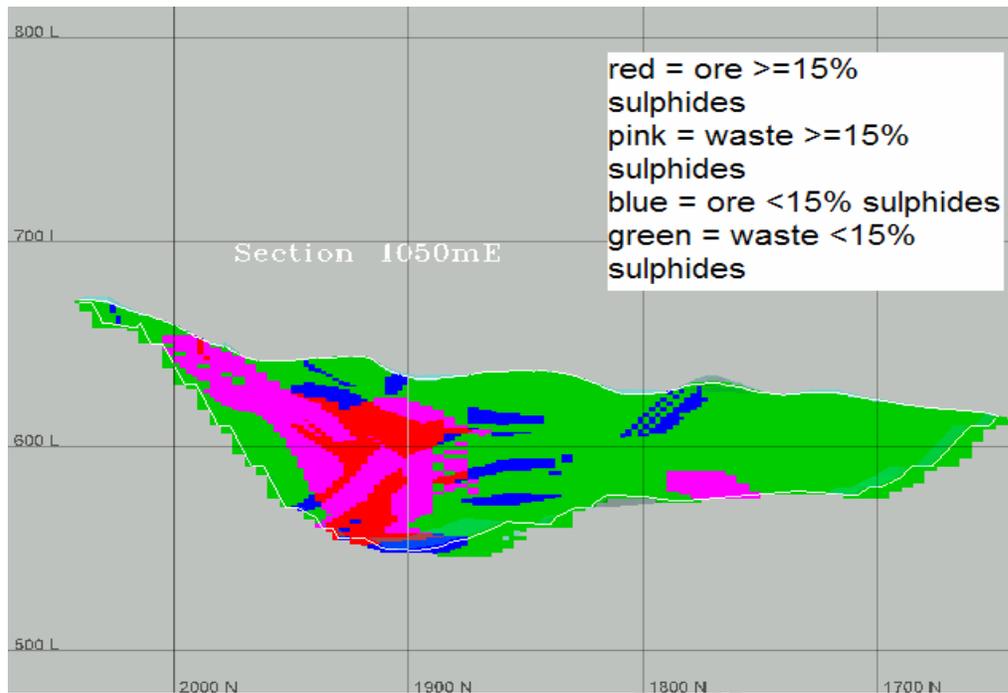Figure 10 Showing the planned pit with Sulphide Block model >25%Sulphide

Figure 11   Cross section 1050E showing block modeled Sulphide percentages

Sulphur percentage calculation methodology

In the original drill logs the sulphide type and percentage is recorded. The sulphide type and percentage were input into the database from the drill logs. The S% was allocated according to the hierarchy of the sulphide type and the mixtures of sulphides. Po alone = 40%, Py alone = 55%, Po /Py = 45% and say py/po = 50%. The other sulphides were very minor and wouldn't influence the overall sulphur percentage. A new database was constructed which now included the estimated Sulphur %.

This methodology for S% is only as good as the original estimations of the sulphide % and the sulphide type made in the drill logs. It was apparent after detailed re-logging and checking of some holes that geologists of the time had good skills in this area and the overall database of S% is considered relatively reliable. A block model was constructed of the Sulphur percentage.

Assessments of the acid forming potential of each rock unit within the proposed mine area were made with units classified as:

- NAG - net acid generation,

- ANC - acid neutralising capacity,

- NAPP - net acid producing potential,

- NAF - non acid forming,

- PAF - possible acid forming,

- ARD - acid rock drainage

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The following table is the results for total S%, NAG 4.5, NAG 7.0, ARD class and the NAPP for the 39 samples of material from the Mt Bischoff pit sent to EGI (See Table 4).

Sample#	Grade class	lithology	Total %S	NAG - 4.5	NAG - 7.0	ARD class	NAPP
5	high	DSL	20.8	33	101	PAF	635
6	high	porphyry	4.73	70	90	PAF	145
4	low	DSL	13.8	64	118	PAF	412
8	low	porphyry	5.56	45	77	PAF	162
9	med	dol talc rich	0.07	0.2	2	UC(NAF)	-2
3	med	DSL	9.82	51	93	PAF	238
28	med	DSL	9.05	102	188	PAF	251
7	med	porphyry	6.87	53	103	PAF	195
1	waste	dol wk ox	0.37	0	0	NAF	-899
15	waste	dol wk talc	0.43	0	0	NAF	-773
16	waste	dol wk talc	0.06	0	0	NAF	-727
17	waste	dol wk talc	0.1	0	0	NAF	-898
10	waste	dol wox	0.24	0	0	NAF	-249
27	waste	dol wox	0.08	0	0	NAF	-825
2	waste	dolomite	0.29	0	0	NAF	-793
19	waste	dolomite	0.08	0	0	NAF	-963
20	waste	dolomite	0.01	0	0	NAF	-994
22	waste	dolomite	0.01	0	0	NAF	-939
26	waste	dolomite	0.36	0	0	NAF	-754
29	waste	dolomite	0.03	0	0	NAF	-988
30	waste	dolomite	0.26	0	0	NAF	-869
32	waste	dolomite	1.42	0	0	NAF	**-781**
33	waste	dolomite	1.26	0	0	NAF	-548
34	waste	dolomite	3.55	2	22	PAF	64
35	waste	dolomite	0.62	0	0	NAF	-582
36	waste	dolomite	0.96	0	0	NAF	-114
37	waste	dolomite	0.35	0	3	NAF	-8
38	waste	dolomite	0.82	4	11	PAF	11
39	waste	dolomite	0.81	0	8	UC(NAF)	4
25	waste	dolomite 15m core lost	0.93	0	0	NAF	-165
11	waste	DSL	6.73	0	2	NAF	-79
12	waste	DSL	21.9	58	113	PAF	476
13	waste	DSL	13	23	74	PAF	100
21	waste	DSL	2.32	0	0	NAF	-479
23	waste	DSL	1.25	0	0	NAF	-289
31	waste	DSL	3.39	0	0	NAF	-387
24	waste	porph 20m lost core	4.18	67	77	PAF	128
18	waste	porphyry	0.4	0	0	NAF	-67
14	waste	sil siltstone	0.4	13	20	UC(NAF)	-8

Table 4 Results from EGI for total S%, NAG 4.5, NAG 7.0, ARD class and NAPP

In order to get the split of the different NAPP for the different ore and waste categories these values were plotted and lines of best fit applied.
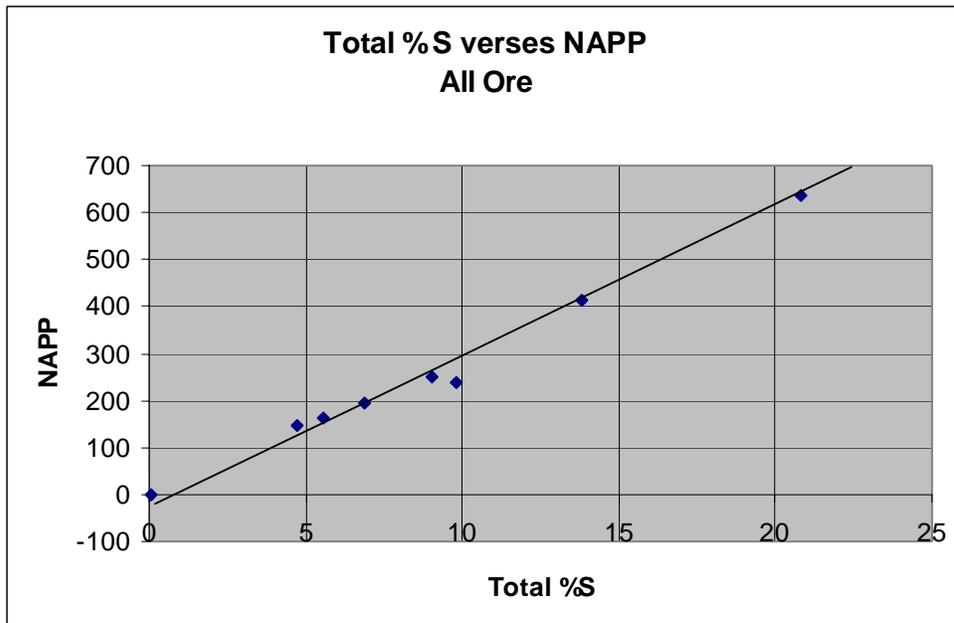

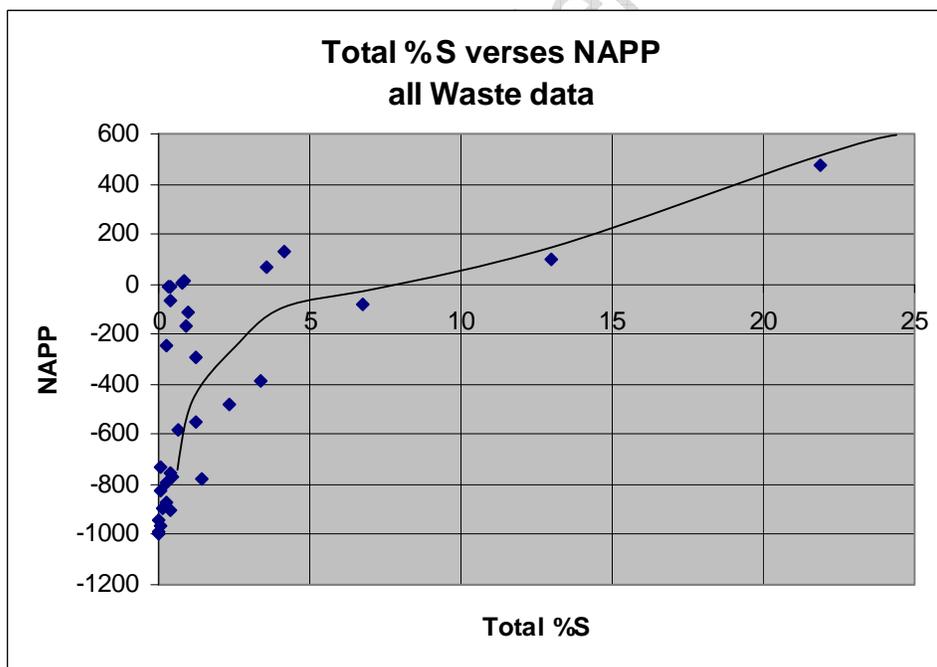Figure 12:   Plot of total S% versus 100% NAPP values for ore samples

Figure 13:   Plot of total S% versus 100% NAPP values for waste samples

Block modelling the waste, S% and NAPP
This graph was then used to build a NAPP block model based on the regression curve of NAPP related to S% of the waste and ore.

Further tests by EGI on the effectiveness of the acid reducing potential of the waste indicated that the waste material was only about 35% effective in reducing the acid that could be generated by the PAF material possibly because of siderite replacement of the dolomite. Thus all the NAPP values of the acid neutralising material were reduced to 35% of the original full value reported above.

The values of the Acid producing material were left at full value. The graph was used to produce a graphical equation for block modelling the 35% NAPP values.

S#	new class	lith	Total %S	NAG - 4.5	NAG - 7.0	ARD class	NAPP @35% of measured Val
20	waste	dolomite	0.01	0	0	NAF	-348
22	waste	dolomite	0.01	0	0	NAF	-329
29	waste	dolomite	0.03	0	0	NAF	-346
16	waste	dol wk talc	0.06	0	0	NAF	-254
27	waste	dol wk ox	0.08	0	0	NAF	-289
19	waste	dolomite	0.08	0	0	NAF	-337
17	waste	dol wk talc	0.1	0	0	NAF	-314
10	waste	dol wk ox	0.24	0	0	NAF	-87
30	waste	dolomite	0.26	0	0	NAF	-304
2	waste	dolomite	0.29	0	0	NAF	-278
37	waste	dolomite	0.35	0	3	NAF	-3
26	waste	dolomite	0.36	0	0	NAF	-264
1	waste	dol ox wk	0.37	0	0	NAF	-315
18	waste	porphyry	0.4	0	0	NAF	-23
14	waste	sil siltstone	0.4	13	20	UC(NAF)	-3
15	waste	dol wk talc	0.43	0	0	NAF	-271
35	waste	dolomite	0.62	0	0	NAF	-204
39	waste	dolomite	0.81	0	8	UC(NAF)	1
38	waste	dolomite	0.82	4	11	PAF	11
25	waste	dolomite 15m core lost	0.93	0	0	NAF	-58
36	waste	dolomite	0.96	0	0	NAF	-40
23	waste	DSL	1.25	0	0	NAF	-101
33	waste	dolomite	1.26	0	0	NAF	-192
32	waste	dolomite	1.42	0	0	NAF	-273
21	waste	DSL	2.32	0	0	NAF	-168
31	waste	DSL	3.39	0	0	NAF	-135
34	waste	dolomite	3.55	2	22	PAF	
24	waste	porph 20m lost core	4.18	67	77	PAF	128
11	waste	DSL	6.73	0	2	NAF	-28
13	waste	DSL	13	23	74	PAF	100
12	waste	DSL	21.9	58	113	PAF	476

Table 5; Results (EGI) for total S%, NAG 4.5, NAG 7.0, ARD class and NAPP@ 35%

The same procedure of using the graph curve to allocate 35% NAPP to the waste material was followed. The conversion of %S to NAPP 35% in the block model was based on the following graph (See Figure 15).
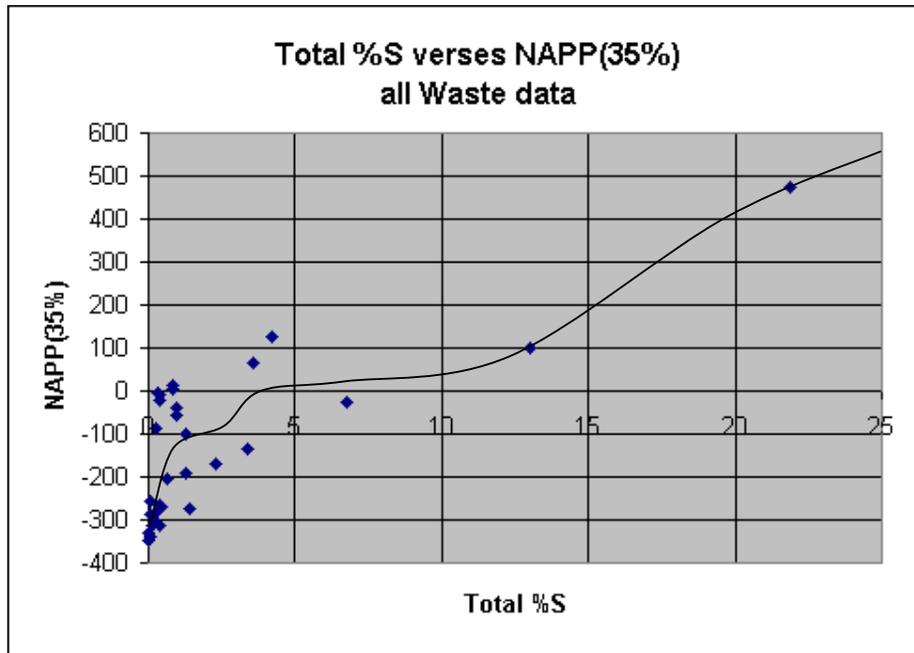

Figure 15:   Plot of total S% versus 35% NAPP values for waste samples

Block modelling the waste, S% and 35%NAPP
A block model of the pit ore and waste was then constructed using the 35% NAPP values.

The 35% NAPP Block model for waste was split up on rock type and sulphide content, not tin grade. This is because rock type and sulphide content affect the NAF/PAF value whereas the tin content does not. The 35% NAPP block model included the ore and the ore was then taken out of the reported waste to give the volume of the waste.

It is proposed to use this block model will be used for scheduling using appropriate waste dump generation to mitigate ARD.

A value of 3.5 %S as the boundary between NAF and PAF was recommended by EGI. The concept of using the curve defining the relationship between the NAPP (or 35% of it in this case) and the S% to define the 'active NAPP'. Additional analysis of samples between 0.4% and 4% S range are being assessed to further validate the data.

Waste dump construction
The Geochemical Characterization and ARD assessment of Samples from Mt Bischoff' are planned to be used to establish a waste dumping strategy that ensure best practice in the management of ARD from the proposed mine.

Water Quality/ Hydrology
The main drainage path from the existing underground workings (and contaminant source to the Arthur River) has been demonstrated to be from Adit 9 to Tinstone Creek and the Arthur River. The "Main Tunnel" draining north to Webster Creek and the

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Waratah River is a minor source. These areas are outside the area of the planned open pit mine.

Drainage from the old workings has severely impacted the Arthur River ecosystem for tens of kilometres downstream. DPIWE has recently completed a 12 months monitoring programme and a base-load of existing contamination is now well understood. The major pollutants are Fe, Zn and sulphates.

This data will form a basis for a baseline and a water management plan will be prepared to minimise any impacts from Bluestone's mining activity on the Arthur River.

Mine waters needed to be disposed of during mining are planned to be discharged through blended stockpiles (neutralising effect) and then through the wetlands of the old Waratah River alluvial pits before discharge into the Arthur River. Detailed reporting and planning for the control of water flow and hydrology will form part of the DPEMP submission for the site.

Mine and mineral heritage

There are a number of sites and objects of both geological heritage and mining heritage on the lease. These includes the appearance of the historic workings from observation points, notably the township. The sites were located and described during the Riverworks investigations (see Table 6).

Site No.	Site name	GPS location		Significance	Recommendations
		Easting	Northing		
2	Timber landing	376453	5412209	Medium	Protect from impact
10	Timbered gallery	376567	5412303	Medium	Protect from impact
11	Timbered shaft/headframe	376590	5412289	Medium	Protect from impact
12	Hexagonal air shaft	376608	5412269	Medium	Protect from impact
13	Battery/mill site	376607	5442256	High	Protect from all impacts
14	Aerial ropeway relay station	376642	5412247	High	Protect from all impacts
24	Bed logs/machinery scatter	376666	5412101	Low	Removal to another locality if threatened by development.
26	2 x machine bases	376662	5412146	Low	Removal to another locality if threatened by development.
31	Aerial ropeway tower footings	376654	5412070	Medium	Protect from impact
34	Commonwealth assay shed and air receiver	376537	5412113	Low	Relocation of air receiver tank required if site becomes threatened.
35	Aerial ropeway relay complex	376703	5412573	High	Protect from all impacts
38	Stone cairn	376873	5412364	Low	Clarification of feature's actual identity required prior to disturbance.
41	Aerial ropeway tower section	376696	5412351	Medium	Protect from impact
42	Gutted boiler	376670	5412361	Low	Relocation of boiler required if site becomes

43	Toppled aerial ropeway tower	376677	5412380	High	threatened. Protect from all impacts
45	Detonator store	376582	5412387	High	Protect from all impacts
47	Machinery footings	376601	5412352	Medium	Protect from impact
49	Timbered air shaft	376602	5412345	Medium	Protect from impact

Table 6   Mine and mineral heritage sites

The main historic workings at Mt Bischoff occur on three topographic levels ranging from approximately 630 - 700 metres RL. On the lower and middle levels large areas, comprising mainly sulphidic rock materials with high acid generating potential and low mining heritage and geo-conservation values have been mapped. These are where the pit and waste disposal area are located.

Most of the high quality mining heritage and geology sites occur on the upper level, coincident with a low proportion of highly sulphidic rock. This area will not be affected by the project.

Flora, Fauna, Aboriginal Heritage
The open pit and proposed location of the waste dump in Happy Valley are within the area of disturbance of the previous mining and processing operations and as such flora and fauna and aboriginal heritage are not expected to be an issue. Bluestone has North commissioned a review (North Barker and Associates) any record of endangered species etc.

Works on environmental areas are continuing and it is expected the DPEMP would be lodged in late August 2006.

5   Appendices

Appendix 1   Geotechnical Report Coffey Geosciences Pty Ltd

Appendix 1 – Geotechnical Report Coffey Geosciences Pty Ltd

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Geotechnical | **Resources** | Environmental | **Technical** | Project Management

Facsimile Transmission

To	Bluestone Tin	From	Barry McDowell
Attention	BOB WATCHORN	Date	8 June 2005
Facsimile number	E mail	Our Reference	Z13270/1-AA
cc		Number of pages including this page	5
Subject:	MT BISCHOFF PROJECT: RECOMENNDED PIT SLOPE DESIGN PARAMETERS		

Note. If you do not receive 1 page(s) including this one, please telephone COFFEY on the above number as soon as possible. Important. The contents of this facsimile (including attachments) may be privileged and confidential. Any unauthorised use of the contents is expressly prohibited. If you have received the document in error, please advise us by telephone (reverse charges) immediately and then shred the document. Thank you.

Coffey Geosciences Pty Ltd (Coffey) is undertaking a geotechnical assessment of proposed open pit operations at Mt Bischoff for Bluestone Tin (Bluestone).

A site visit was conducted between 23 and 25 May 2005 with the objectives of observing selected drill core and carrying out a walkover of the site to note geotechnical conditions in exposed faces.

Drill core observed was selected on the basis of representative boreholes that lie around the perimeter of the proposed pit. The boreholes are B2, B12, MBD24, MBD28, MBD67, MBD70, MBD71, MBD73, MBD82, MBD97, MBD115.

The walkover observations were undertaken at Happy Valley, White Face, Pig Flat/Allens Workings, Gossan Face, Greisen Face, Brown Face.

The existing surface mapping and defect data summations provided in the Mines Department Bulletin on 100 Years Of Mining at Mt Bischoff are considered to be relevant to the current study based on the concurrence of our walkover observations. It is understood that the major N-S cross section interpretation of the flat dipping porphyry bodies has been reworked by Bluestone compared to the Mine Department version. These geological interpretations are important to considerations of the pit slope design angles.

Based on the core and exposure observations made by Coffey, information provided by Bluestone and published information there are several major assumptions that impact on the recommended pit slope design parameters as follows:

- No significant faulting, shearing or clay layers exist parallel to bedding and dyke contacts in the proposed pit south and southeast walls, where the bedding and contacts are inferred to dip at 45 to 10º out of the proposed pit walls.

- The bedding and cleavage in the country rocks are undulose to contorted and continuous for less than 30m due to tight isoclinal folding occurring in limbs of the broad fold structures.

- There will be no regular wedges formed by bedding/cleavage and joint intersections in any of the pit walls. Isolated wedges could form with plunges of intersections as flat as 30º on bench faces of 15 to 20m height, resulting in isolated bench scale failures.

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- No significant Extremely Weathered to Highly Weathered rock mass is remaining in proposed pit walls, i.e. they do not require a significant flattened bench face angle around the pit crest.

- No continuous faults cutting across the pit area. None are mapped in previous work. Also assumed that there are no medium to large scale folded contacts similar to that which caused the historic large scale wedge failure in Brown Face.

- Voids (existing adits and stopes) intercepted in pit walls will not affect stability beyond individual bench faces.

- Voids within the pit area will be approximately located from old plans and managed by a program of probe drilling in the pit floor. The known voids extend to RL 630m, i.e. within the upper 15 to 20m of the proposed pit.

- Groundwater conditions are drained due to the presence of existing workings to approximately RL630m. Horizontal drainage drilling will be employed to depressurise slopes as required below this depth.

The proposed pit is approximately 250m N-S by 250m E-W, with some grade controlled mining flats in the NW corner and 2 'bullseye' bases aligned E-W. A switchback ramp on the south wall wraps around the east wall to eth base of eth pit. The maximum wall heights are approximately:

- North wall 85m;
- South west wall 70m;
- West wall 55m.

Slope design parameters are recommended as follows:

Sector	Interramp	Bench Face	Berms
North, East and West	47.7°	15m high, 60°	5m wide
South and South West	47.7°	15m high, 60°	5m wide
Slopes below/between ramps	47.7° or maximum of 50° for a single bench.	Single bench faces between ramps and ramp and pit floor can be up to 20m high, and 50° maximum.	5m wide

Notes: Subject to adequate void management procedures in upper approximately 20m of the pit development

Pit wall depressurisation below the drained depth of existing workings is subject to mapping and assessment of the upper pit. If required, it is more likely to be on the ramp slopes (South and SW).

General bench face heights can be extended to 20m to locally account for grade controlled variations in the pit outline. The general 15m high face recommendation is made to improve the control of possible bench scale wedge and planar failures on undulating and composite cleavage/bedding surfaces.

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For and on behalf of

COFFEY GEOSCIENCES PTY LTD

BARRY MCDOWELL

ASSOCIATE ENGINEERING GEOLOGIST

Attachments: Important Information About Your Coffey Report