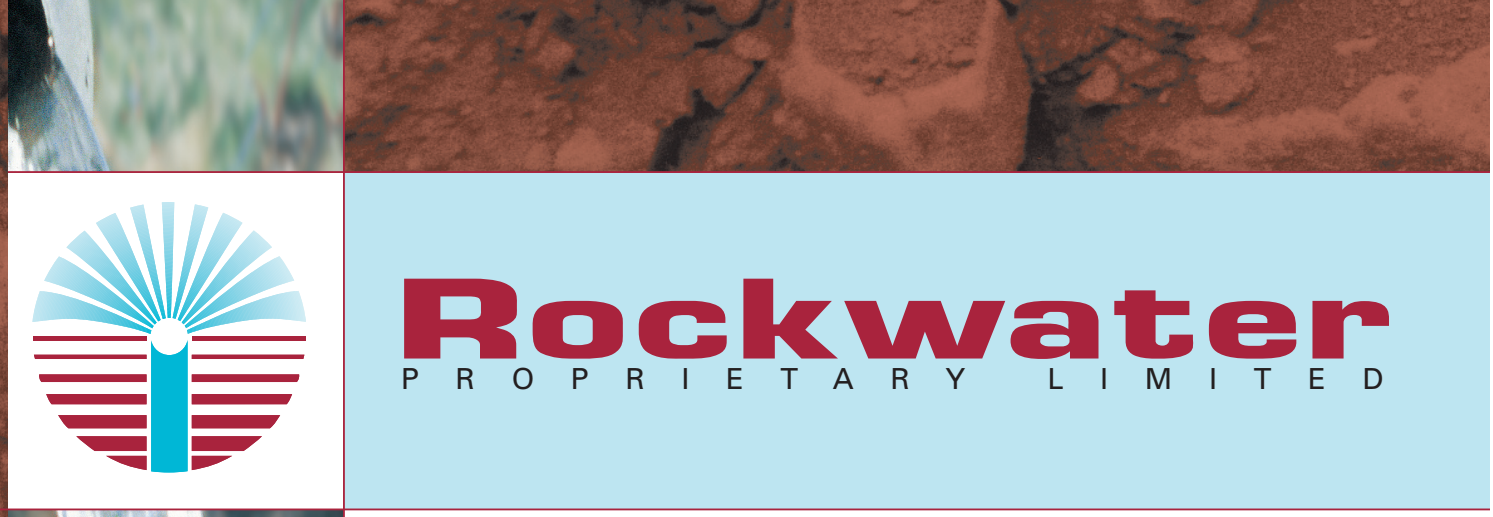

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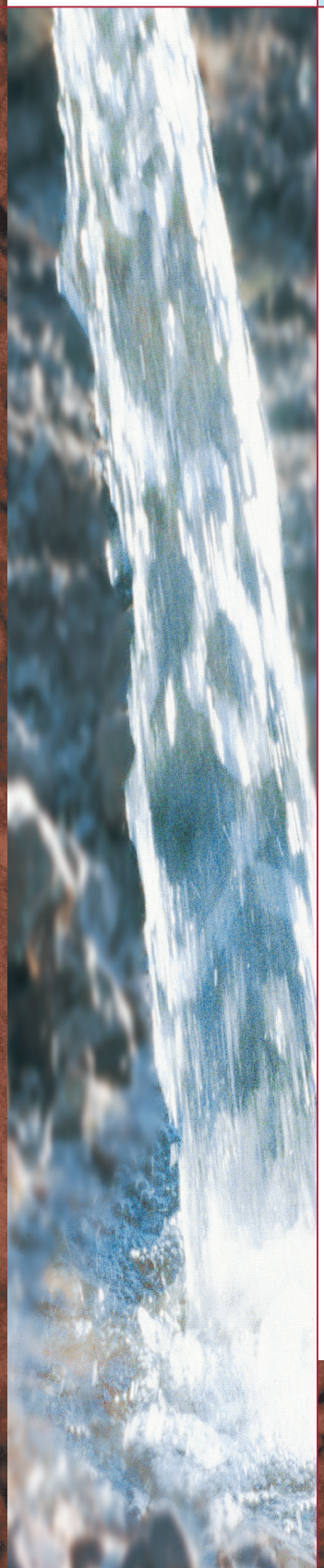

TRILOGY GOLD AND BASE METAL PROJECT

HYDROGEOLOGICAL INVESTIGATION: RESULTS OF EXPLORATORY DRILLING, CONSTRUCTION OF A TEST PRODUCTION BORE, TEST PUMPING AND NUMERICAL MODELLING

MARCH 2004

REPORT FOR
TECTONIC RESOURCES NL

253.1/04/001

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1 INTRODUCTION

Tectonic Resources is planning to mine the Trilogy gold and base metal deposit east of the Hopetoun - Ravensthorpe road, approximately 30 km south of Ravensthorpe (Fig. 1). As part of the statutory Notice of Intent (NOI) to mine, an exploratory groundwater drilling programme has been conducted to establish background conditions and assess pit dewatering requirements.

This report presents the results of the exploration programme conducted in January 2004; it provides bore construction and pumping test details, and assesses the likely dewatering requirements using numerical groundwater modelling techniques.

2 HYDROGEOLOGICAL SETTING

2.1 CLIMATE

Ravensthorpe has a Mediterranean-type climate with cool wet winters and warm to hot, dry summers. The average annual rainfall is 425 mm (508 mm at Hopetoun), and potential annual evaporation is about 2,000 mm.

2.2 GEOLOGY

The Trilogy deposit is located in an area of phyllitic schist and carbonaceous shale (with minor quartzite) of the Proterozoic Mount Barren Beds. These beds unconformably overlie the Archaean succession of the southern part of the Yilgarn Block.

The mineralisation occurs within a zone of silicified shale and minor sandstone that dips to the south-east at about 40 degrees. The hanging wall consists of laminated shale, which is vuggy in places: the footwall is more massive.

The siliceous mineralised zone forms the main aquifer. The permeability is associated with vugs and fractures, which also occur locally in the hanging wall and less commonly in the footwall.

Groundwater levels are about 34 m below ground level.

3 DRILLING RESULTS

Drilling was conducted between 6 and 25 January 2004, by Resource Drilling using a Schram T66H rig. Eight exploration holes were drilled and completed as monitoring bores, and the results used to select a site for a test-production bore. The locations of the bores are shown in Figure 2.

3.1 MONITORING BORES

The monitoring bores range in depth from 76 m (Bores TMB2, TMB5 and TMB8) to 160 m (Bore TMB3). Down-hole hammer, reverse-circulation methods were used, drilling at 200 mm diameter to 3 m and installing 154 mm diameter steel surface casing before drilling at 140 mm diameter to total depth. The bores were cased with 50 mm diameter PVC, slotted over the aquifer interval, and sealed at the surface using quickset cement. The bore construction details are summarised in Table 1, and are presented with geological and hydrogeological data in Appendix I.

Maximum airlift yields ranged from a trace in Bore TMB8 to 240 m^3/day in Bore TMB4. The airlift yields might under-estimate potential flows because of the drilling technique employed (reverse circulation) and small hole diameter. A cross-over sub was put in the drill string at various intervals to maximise airlift yield, but made no observable difference to flows.

The groundwater flows measured during drilling in TMB3 and TMB4 coincide closely with the silicified mineralised zone, indicating that this is the main zone of permeability.

Static water levels range from about 51.34 m AHD in the north-west (TMB8) to 55.24 m AHD in the east (TMB6), indicating groundwater flow towards tributaries of the Steere River to the north-west: water level contours are shown in Figure 3. The hydraulic gradient appears to be contrary to local and regional topography. This will need to be confirmed in future monitoring events, as water levels may be affected by low recovery rates and/or air-entrainment.

Salinity (by electrical conductivity) ranged from 15,200 mg/L TDS in TMB5 to 25,400 mg/L TDS in TMB4. Field pH measurements ranged from 3.3 in the mineralised zone to 8.0 in one of the regional monitoring bores (Table 1).

Table 1 – Summary of Monitoring Bore Details

Bore	Exploration Site	Location (MGA)		Elevation	Depth Drilled	Slotted Interval	Top of Casing	Static Water Level	Maximum Airlift Yield	Salinity	Average Field pH[4]
		(mN)	(mE)	(m AHD)	(m bgl)	(m bgl)	(m agl)	(m btc[1])	(m^3/d)	(mg/L TDS)[2]	
TMB1	A	6 261 661	241 797	85.90	100	64 - 100	0.14	33.52	40	22,200	6.9
TMB2	F	6 262 136	242 037	89.58	76	46 - 76	0.32	37.57	40	16,400	8.0
TMB3	C	6 261 402	241 687	84.19	160	101 - 155	-	31.72	120	23,300	3.9
TMB4	D	6 261 441	241 619	85.64	100	58 - 94	0.36	33.56	240	25,400	4.4
TMB5	B	6 261 309	241 530	85.64	76	52 - 76	0.39	33.48	40	15,200	4.7
TMB6	G	6 261 406	242 267	86.37	82	58 - 82	0.5	31.93	35	16,900	6.2
TMB7	H	6 260 641	242 397	80.87	88	64 - 88	0.44	27.23	40	23,100	6.5
TMB8	E	6 261 841	240 877	90.26	76	46 - 76	0.31	39.61	Trace	16,500	6.8

1. Top of PVC casing, 28/1/2004
2. By electrical conductivity
3. Measured 1/2/04
4. Measured with pH paper.

3.2 TEST PRODUCTION BORE

The test-production bore site (TPB1) was selected on the basis of the maximum airlift yield measured during the drilling of the monitoring bores. It is located about 10 m north-east of monitoring bore TMB4, where an airlift yield of 240 m^3/day was measured at 94 m depth. Bore TPB1 was drilled using down-hole hammer methods at 330 mm diameter to 6 m, with 254 mm diameter mild steel surface casing installed before drilling at 254 mm diameter to total depth (95.5 m).

The hole was cased with 152 mm diameter, Schedule 40 steel, slotted over the basal 30 m (64.8 m to 94.8 m) and open at the base. An annular seal, comprising a rubber ring attached to a steel flange, was installed above the slotted interval at 64.8 m to prevent the overlying clays from falling down the annulus and blocking the slots. The annulus was sealed at ground level with Gypset cement.

The bore was developed for three hours until the water was reasonably clear and free of fine drill cuttings. The final airlift yield was 255 m^3/d with salinity approximately 25,000 mg/L TDS (by electrical conductivity) and field pH about 3.8.

Bore construction details are provided in Appendix II and Figure 4.

4 WATER QUALITY

A water sample was collected immediately before the end of the constant-rate pumping test and was analysed by SGS Laboratories; the results are presented in Appendix III. The laboratory results indicate the groundwater from the bore is saline (18,000 mg/L TDS) and of sodium-chloride type with relatively high concentrations of magnesium and sulphate.

Acidic water with a field pH of 3.3 to 3.8 was intersected below 90 m depth in TMB4, and below 110 m depth in TMB3, in the siliceous mineralised zone. The water was apparently less acidic higher in the mineralised zone in TMB4 (about 5.6), although this could be an artefact of low flows and high silt content of the water. Near neutral or slightly alkaline groundwater was present in the surrounding country rocks.

Water pumped from the test-production bore TPB1 during the pumping test was very acidic, with a laboratory pH of 2.8, and contained highly elevated levels of soluble iron (96 mg/L). The high levels of iron are probably due to the acidic groundwater conditions and mineralised nature of the aquifer in this location. Subsequent analyses for additional metals (Appendix III) indicated concentrations of zinc (160 mg/L) and lead (7.7 mg/L) are

also highly elevated in this bore. TPB1 is open to the aquifer from 64.8 to 94.8 m depth, and draws most of the water from 88 to 94 m depth.

The low pH groundwater in the mineralised zone and footwall is associated with a high sulphur content resulting from the various forms of pyrite. Sulphur generally ranges from 9 to 15% in the mineralised zone, and up to 40% in the overlying supergene zone (Dave Jackson, pers. comm.). There is less sulphur in the country rocks, typically 1 to 2%, where the groundwater pH circum-neutral. The low pH below 90 m depth in TMB3 and TMB4 is possibly related to the relatively high sulphur content, which is up to 15% in the lower part of TMB4 and about 9% in TMB3. These high sulphur zones are well below the base of oxidation at about 40 m depth.

Permeability is associated with the mineralised zone, particularly where transitional from weathered to fresh. Most of the water will be pumped from this zone, and it is predicted that the low pH will dominate disproportionately in mixtures of acidic to slightly acidic groundwater (Graeme Campbell, pers. comm.). For example, pumping a mixture of water of pH 3.3 and pH 5.6 could result in a pH of about 3.5 to 3.6.

Further samples were collected from the production bore (TPB1) and TMB1 to test treatment requirements for the groundwater. The samples had a pH of 5.2 and 7.4, respectively. The testing indicated that the groundwater could be neutralised readily and economically by the addition of lime. The results are shown in Figure 5.

5 PUMPING TEST

The production bore was test-pumped to determine long-term pumping rates and aquifer characteristics. Bennett Drilling carried out the pumping test between 27 and 30 January 2004, using an electric submersible pump. Water levels were measured manually in the production bore and observation bores using a graduated electronic probe.

5.1 STEP-RATE TEST

A step-rate pumping test was conducted on 27 January 2004 at four flow rates (75, 150, 250 and 350 m^3/day) each for an hour, to determine an appropriate pumping rate for the 48-hour constant rate test. A discharge rate of 300 m^3/day was selected.

Because of anomalous results obtained from the constant-rate pumping test (Section 5.2), the results from the step-test were also used to assess the production bore efficiency using Bierschenk and Wilson, and Sheahan's analyses. The analyses indicated that well losses in the bore are between 70 and 90 % for flow rates of 300 m^3/d; i.e. up to 90% of the water

level drawdown observed during pumping could be due to turbulent flow losses as water enters the bore, rather than drawdown in the aquifer. Reduced bore efficiency can result from partial penetration of the aquifer, low open area of the slotted casing (eg from narrow slot aperture or widely spaced slots in the casing), or the effects of air or gas in the groundwater.

5.2 CONSTANT RATE TEST

Production bore TPB1 was pumped at a constant rate of 300 m^3/day for 48 hours from 28 January 2004. Water levels were monitored during the test in the pumped bore (Fig. 6), and in monitoring bores TMB1 to TMB6 and TMB8. Significant water level drawdowns were only observed in monitoring bores TMB3 to TMB5 (Fig. 7). Minor water level variation in bores TMB1, 2, 6 and 8 (Fig. 8) were most likely due to changes in barometric pressure.

Difficulties were experienced in maintaining a constant flow rate during the test because of an unusually high gas content in the water (probably air entrained during drilling).

The final water level drawdown in the production bore was 23.2 m, compared to a drawdown of 2.1 m in monitoring bore TMB4, only 10 m away. Monitoring bore TMB4 is along-strike of the production bore, and at that distance should have similar water level drawdowns to those in the production bore. The large discrepancy is probably due mainly to reduced bore efficiency (Section 5.1), and possibly restricted hydraulic connection between the two bores.

Similarly, water level drawdowns of only 0.45 m in monitoring bore TMB3 (about 75 m away) and 0.96 m in monitoring bore TMB5 (about 160 m away) are also likely to be the result of low aquifer drawdown around the production bore, and possibly some restricted hydraulic connection between these monitoring bores and the production bore. In addition, the distribution of water level drawdown, with larger drawdowns observed in TMB5 than TMB3, which is closer to the production bore, suggests the aquifer is anisotropic with higher hydraulic conductivities occurring along-strike than across-strike. Contours of final water level drawdowns in the monitoring bores are illustrated in Figure 9.

The water level drawdown trends observed in monitoring bores TMB3 to 5 (Fig. 6) are typical of a strongly bounded aquifer, and suggest that the aquifer is of limited extent and is surrounded by rocks of low permeability. However, the water level drawdown trend in the production bore is typical of a laterally-extensive aquifer (with no obvious boundary effects), and so the trends observed in the monitoring bores are probably due more to restricted hydraulic connection between the bores in the early stages of pumping, rather than aquifer response.

Analysis of the drawdown in TPB1 (Fig. 6) using Theis and Cooper-Jacob methods indicates a hydraulic conductivity of about of about 0.4 m/d, although assessment of water level data corrected for 70% well loss and late time recovery data suggest the hydraulic conductivity could be higher, in the order of 1.5 to 4 m/d. Analysis of the drawdown in the observation bores using the same methods, indicates hydraulic conductivities ranging from about 0.8 to 17.4 m/d (average about 8 m/d), and storage coefficients ranging from 0.0008 and 0.001. The results are provided in Table 2. Variable hydraulic conductivity is typical in a fractured rock aquifer; however, some of the higher values are probably the result of the restricted hydraulic connection with the pumping bore, and are therefore higher than true values.

Table 2 - Calculated Hydraulic Conductivities and Storage Coefficients for Trilogy

Bore	Final Water Level Drawdown (m)	Hydraulic Conductivity (m/d)	Storage Coefficient
TPB1	23.29	0.4	-
TMB3	0.45	3.5	0.001
TMB4	2.11	0.76	0.002
TMB5	0.96	0.89	0.0008

6 NUMERICAL MODELLING OF PIT DEWATERING

It is understood that the proposed pit will be excavated down to between 37 and 100 m depth, probably in stages over a period of several years. The pit outline is shown in Figure 2.

The numerical groundwater model was constructed using structural data provided by Tectonic Resources, data obtained from the water exploration drilling and pumping test, the Ravensthorpe 1:250,000 geological series map (Thom et al, 1977), and qualitative information derived from inspection of cores and from core logs. The model was designed to assess likely dewatering pumpage requirements.

6.1 DESCRIPTION OF GROUNDWATER MODEL

The groundwater model uses PMWIN, which incorporates Modflow, the industry-standard finite-difference groundwater modelling software designed by the U.S. Geological Survey (McDonald and Harbaugh, 1988). It consists of a variable rectangular grid of 56 rows and

53 columns and two layers covering an area 2.8 km east-west by 3.7 km north-south, centred on Trilogy. Model cells range in size from 25 m x 25 m at Trilogy, to 500 m x 500 m in some peripheral areas.

Layer 1 represents the phyllitic schist and schistose black shales of the hanging wall, which did not yield any significant water flows during drilling. Layer 2 represents fractured water-bearing zones, predominantly in the siliceous mineralised zone and overlying supergene zone of the planned pit area, as well as unfractured shale in peripheral areas. The aquifer interval was contoured from water intersections identified during drilling, and is between 6 m and 40 m thick. Groundwater levels were assumed to be at 33.5 m bgl.

Values of hydraulic conductivity and storage coefficient derived from the pumping test results (Table 2) were used as initial values in the model.

Other assumptions made in assigning initial aquifer parameters include:

- The aquifer is of significant areal extent;
- The aquifer is anisotropic, with higher hydraulic conductivities along-strike than across-strike;
- Recharge to the aquifer is insignificant over the period of dewatering;
- Vertical hydraulic conductivity is one tenth of horizontal hydraulic conductivity.

Values of hydraulic conductivity, storage coefficient and anisotropy were varied during the model calibration, as described in Section 6.2. Adopted model parameters after calibration given in Table 3.

Table 3 – Adopted Model Parameters

Parameter		**Trilogy**	**Adjoining Areas**
Horizontal Hydraulic Conductivity (K_H):	Layer 1	0.2 m/d	0.2 m/d
	Layer 2	0.5 to 6 m/d	0.1 to 2 m/d
Specific Yield:	Layer 1	0.01	0.01
	Layer 2	0.015	0.015
Storage Coefficient:	(Layer 2)	0.0035	0.0035
Anisotropic Ratio	Layer 2	0.08	0.08
(= K_H across strike/K_H along strike)			
Recharge:		0 mm/d	0 mm/d
Static Groundwater Level:		33.5 m bgl	33.5 m bgl

6.2 MODEL CALIBRATION

The model was calibrated to the pumping test results for TPB1 using the water level trends in monitoring bores TMB3 to TMB5, and the trend in the production bore after adjustment for well losses. Model-calculated water level drawdowns after calibration are compared with measured drawdowns and extrapolated trends in Figure 10, and modelled water-level contours after 48-hours pumping are shown in Figure 11. The results indicate an acceptable correlation between the extrapolated and modelled drawdown trends.

6. 3 MODEL RUNS

Initially, the pit at Trilogy is likely to extend to about 37 m depth, with subsequent intermittent mining to a final depth of possibly 100 m. The model was run using MODFLOW's drain package to estimate pumping requirements to dewater the pit to 37 m and 100 m depth. It was assumed that dewatering would be over two months in mining below the water table, from 33.5 m to 37 m depth, and a further 12 months to a final depth of 100 m.

6.3.1 Modelling Results

The results indicate that an average pumping rate of about 250 m^3/d will be needed over two months to dewater to 37 m depth, during Stage 1 of mining.

To lower groundwater levels to 100 m depth, a total pumping rate of about 2,500 m^3/d would be required over a period of about 12 months. Inflows to the pit at this depth, once pumping was stopped, are calculated to be of the order of 1,700 m^3/d initially, decreasing to about 1,400 m^3/d after six months. Therefore, any suspension of mining could result in significant additional pumping.

6.3.2 Sensitivity Analysis

The model was run to test the sensitivity of the calculated dewatering pumping rate to possible variations in specific yield, the value of which had little or no impact on model calibration.

If the specific yield was 0.03 rather than 0.01 (Layer 1), or 0.015 (Layer 2), the average pumping requirement to lower groundwater levels to 37 m below ground level would be

about 300 m^3/d. If groundwater levels needed to be lowered to 100 m, the average pumping requirement would increase to about 2,800 m^3/d over 12 months.

6.4 DISCUSSION OF MODELLING RESULTS

The modelling results assume that the aquifer is areally extensive (although of lower permeability outside of the Trilogy area), based on the drawdown trend observed in the production bore. After an extended period of pumping, the rate of water-level decline could increase as the expanding drawdown cone intersects boundaries to the aquifer. If that was the case, then the average dewatering rates could be lower: around half of those indicated above for dewatering to an 100 m-deep pit. Conversely, pumping rates could be higher if there are other areas of high permeability along-strike of the Trilogy deposit.

7 SUMMARY AND CONCLUSIONS

Eight groundwater exploration holes were drilled to test the carbonaceous shale host rock and fractured/mineralised zones of the Trilogy orebody. Airlift yields from the holes ranged from <20 m^3/d to 240 m^3/d, with only two holes having airlift yields >50 m^3/d. The groundwater is contained within fractures, joints and vugs in the silicified shales of the mineralized zone and overlying supergene zone.

The groundwater has a salinity of about 18,000 mg/L TDS, and in the mineralised zone and underlying footwall is acidic, with pH as low as 2.8 in the deeper parts of the aquifer. The high acidity and mineralised nature of the aquifer has apparently resulted in highly elevated concentrations of some metals, i.e. soluble iron (96 mg/L), zinc (160 mg/L) and lead (7.7 mg/L). Stage I of the pit might also intersect low pH water because of the high sulphur content of the supergene zone. Groundwater outside of the mineralised zone is circum-neutral: mixing this water with low pH water from the mineralised zone is unlikely to result in a significant increase in pH of the pumped water.

Testing indicated that treatment of the groundwater with lime is technically and economically feasible. If treatment is undertaken, therefore, water contained in the dam will have a neutral pH, and subsequently reduced metal concentrations.

A test production bore (TPB1) was constructed about 10 m along-strike of the highest yielding exploration hole (TMB4) and test-pumped. The pumping test results indicated reduced bore efficiency in the production bore, with water level drawdowns much greater than those observed in nearby TMB4. This may be due to factors such as bore construction, air entrainment in the aquifer and/or restricted hydraulic connection between the production bore and TMB4.

Numerical modelling results indicate that an average pumping rate of about 250 m^3/d could be required to lower groundwater levels to 37 m below ground level for the Stage I pit, and about 2,500 m^3/d to lower groundwater levels to 100 m below ground level over 12 months, if deeper ore is mined. In-pit bores and/or sumps will be needed to achieve the required dewatering, although a perimeter bore in the vicinity of TMB3 could be constructed to assist with dewatering, if required.

It is recommended that pumpage, water levels and water quality be closely monitored during initial dewatering, so that the hydraulic characteristics and water chemistry of the site can be confirmed, and if necessary the model can be re-calibrated to re-assess the capacity required for the disposal pond.

Dated: 17 March 2004 **Rockwater Pty Ltd**

K J Rattray
Senior Environmental Hydrogeologist

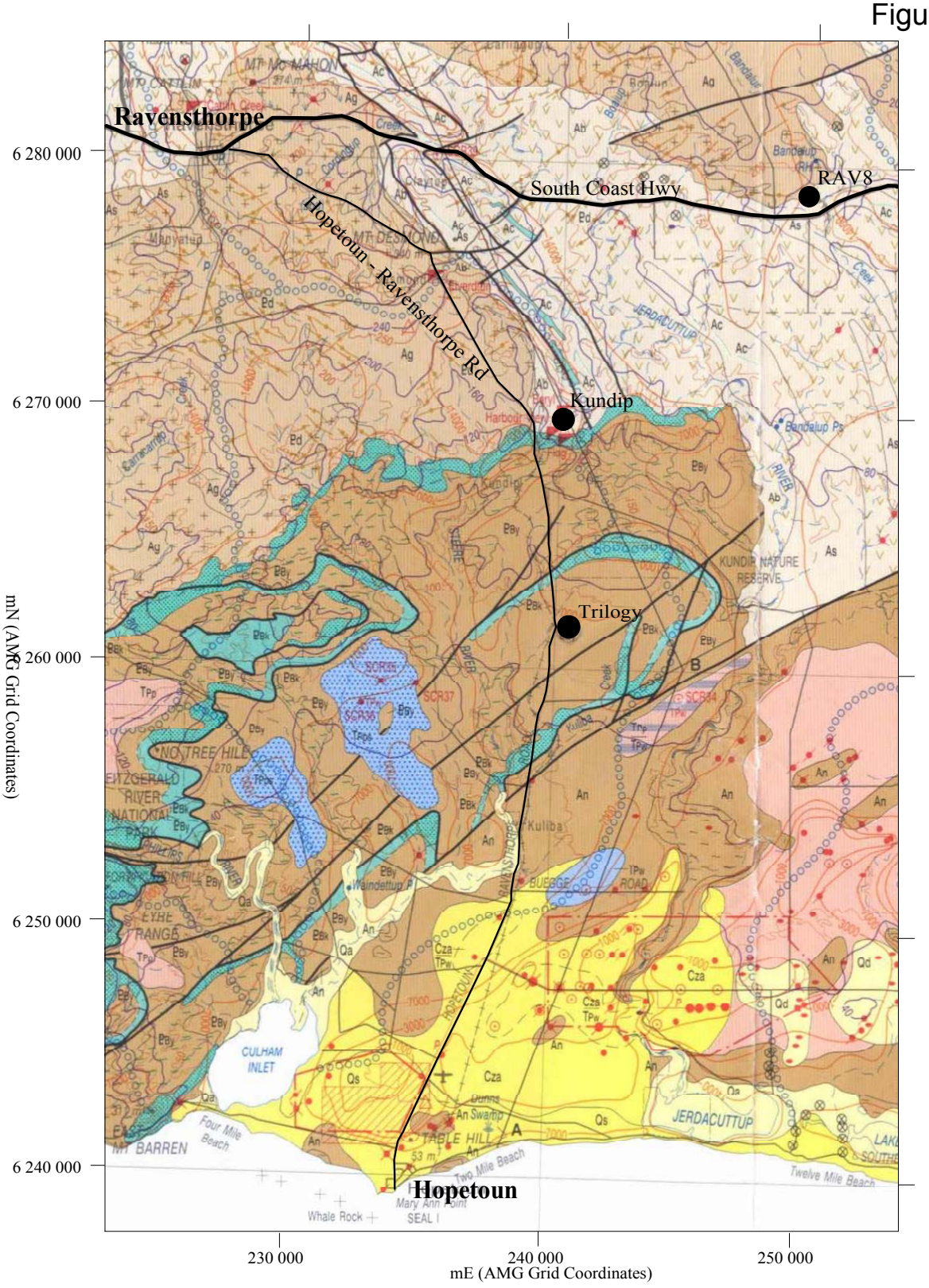
P H Wharton
Principal Hydrogeologist

REFERENCES

Thom R., Lipple SL. and Sanders CC., 1977. 1:250,000 Geological Series Explanatory Notes – Ravensthorpe, Western Australia. Geological Survey of Western Australia. Sheet SI/51-5

FIGURES

Figure 1



Base map from GSWA 1:250,000 Series Hydrogeological Map - Ravensthorpe

CLIENT: Tectonic Resources NL

PROJECT: Trilogy Feasibility Study

DATE: April 2004

Dwg. No: 253.1/04/1-1

TRILOGY DEPOSIT LOCATION MAP

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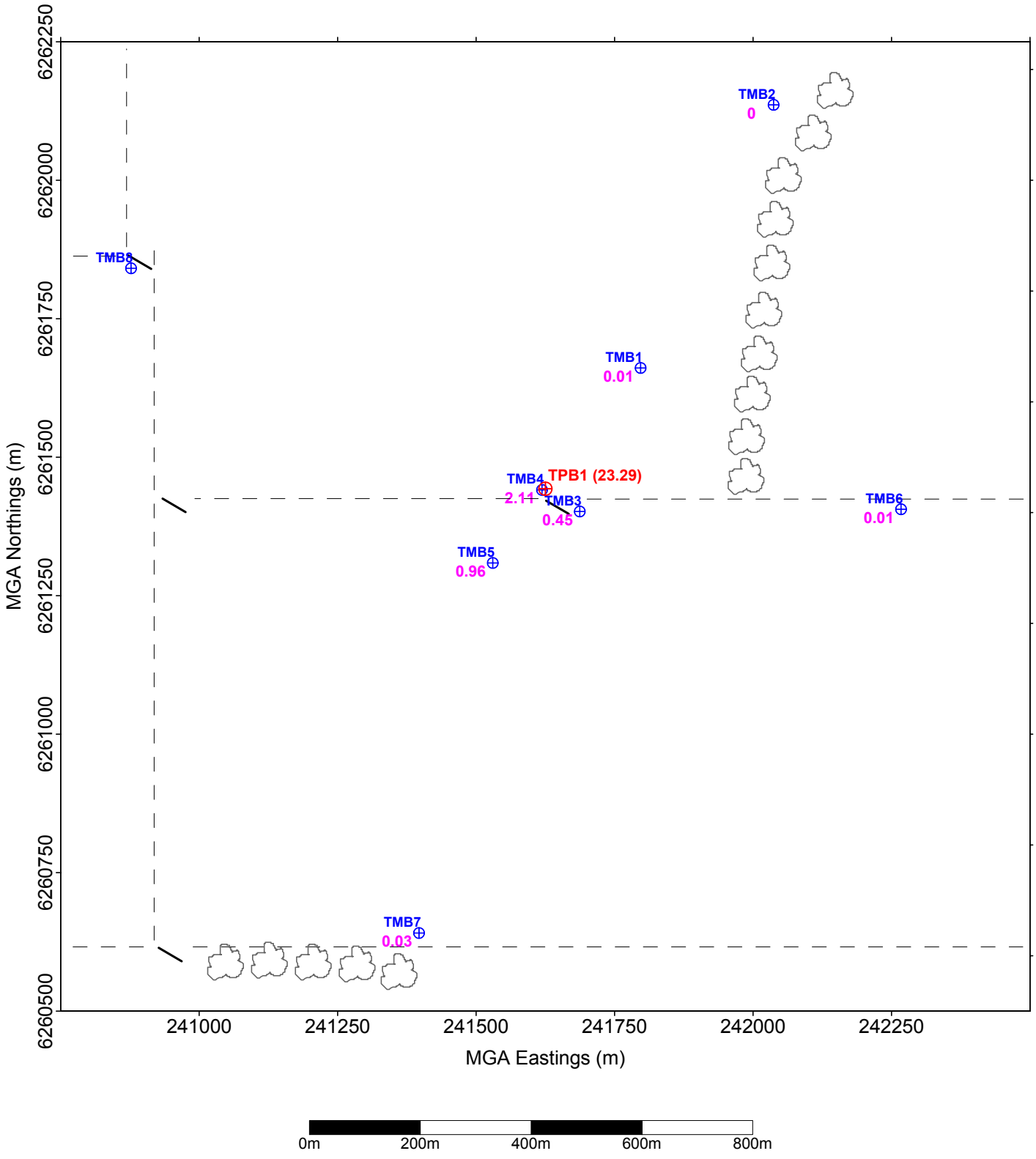
Figure 2



Maxdds.xls/drawdowns .srf

CLIENT: Tectonic Resources NL

PROJECT: Trilogy Dewatering

DATE: February 2004

Dwg No: 253.1/04/1-2

MAXIMUM DRAWDOWNS (m) DURING BORE TPB1 PUMPING TEST (MEASURED ON 30/1/2004)

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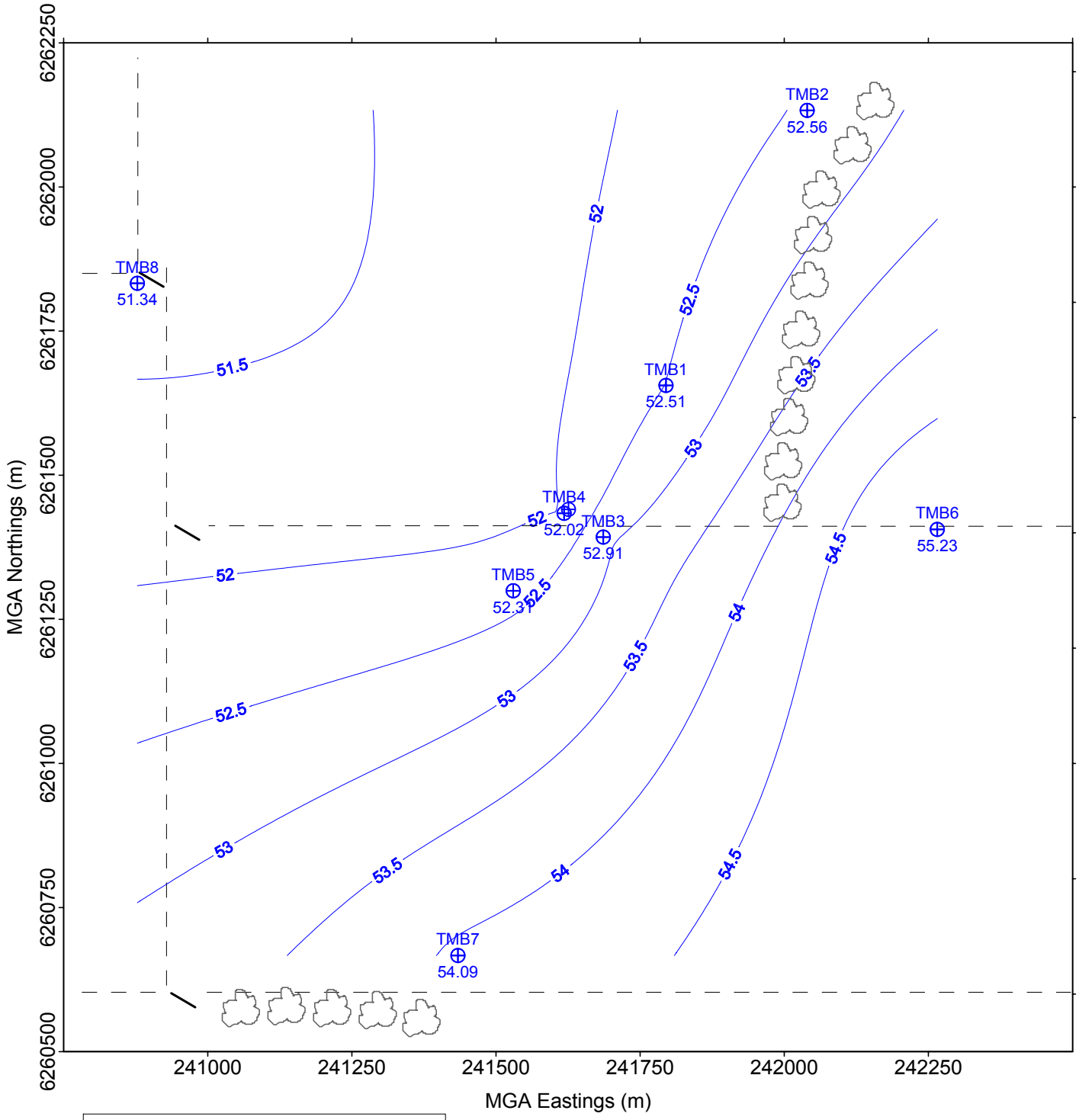
Figure 3



Maxdds.xls/WL contours 2-2-04 .srf

CLIENT:	Tectonic Resources NL
PROJECT:	Trilogy Feasibility Study
DATE:	April 2004
Dwg No:	253.1/04/1-3

TRILOGY
WATER LEVEL CONTOURS (m AHD)
2 FEBRUARY 2004

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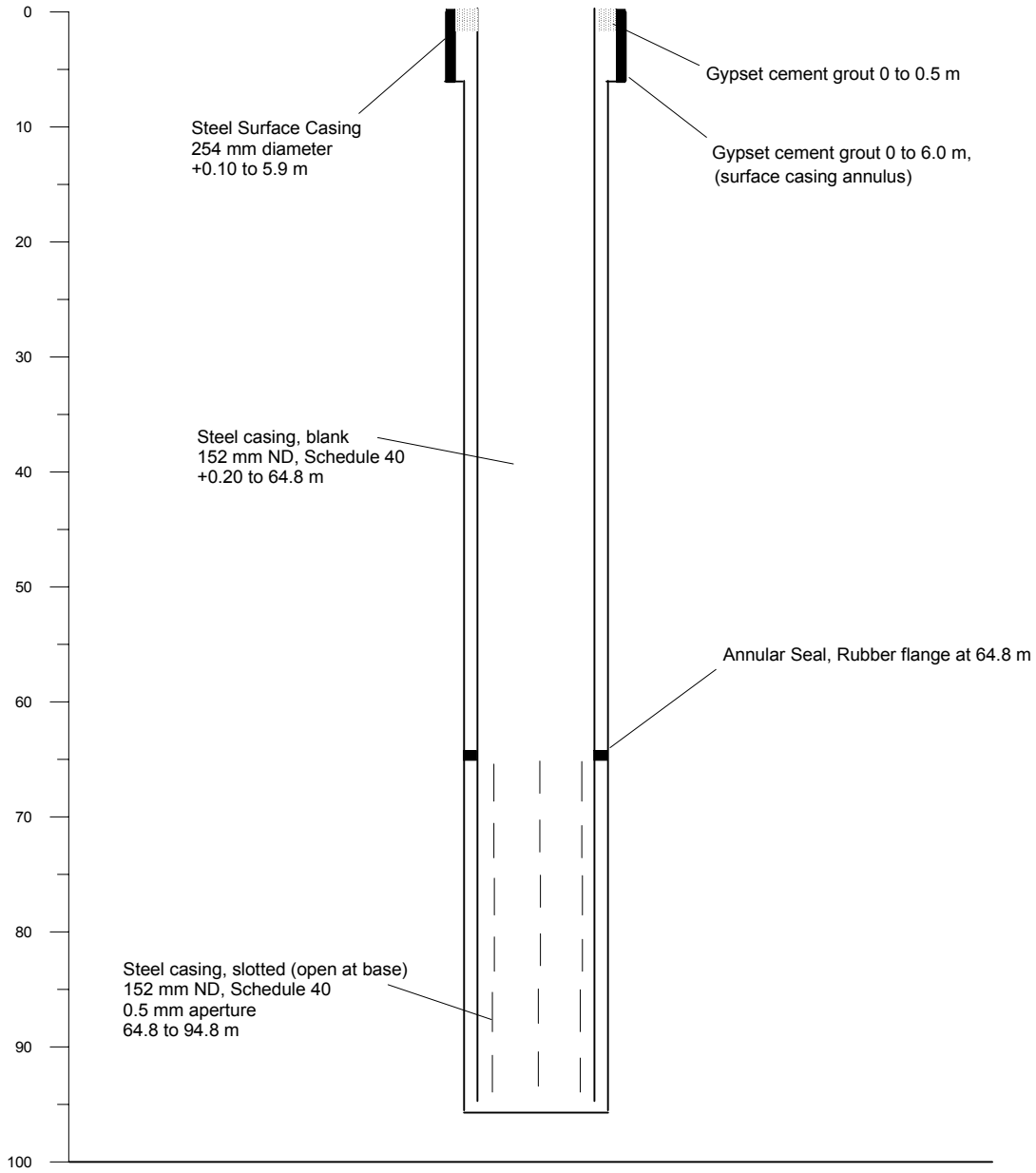
Figure 4



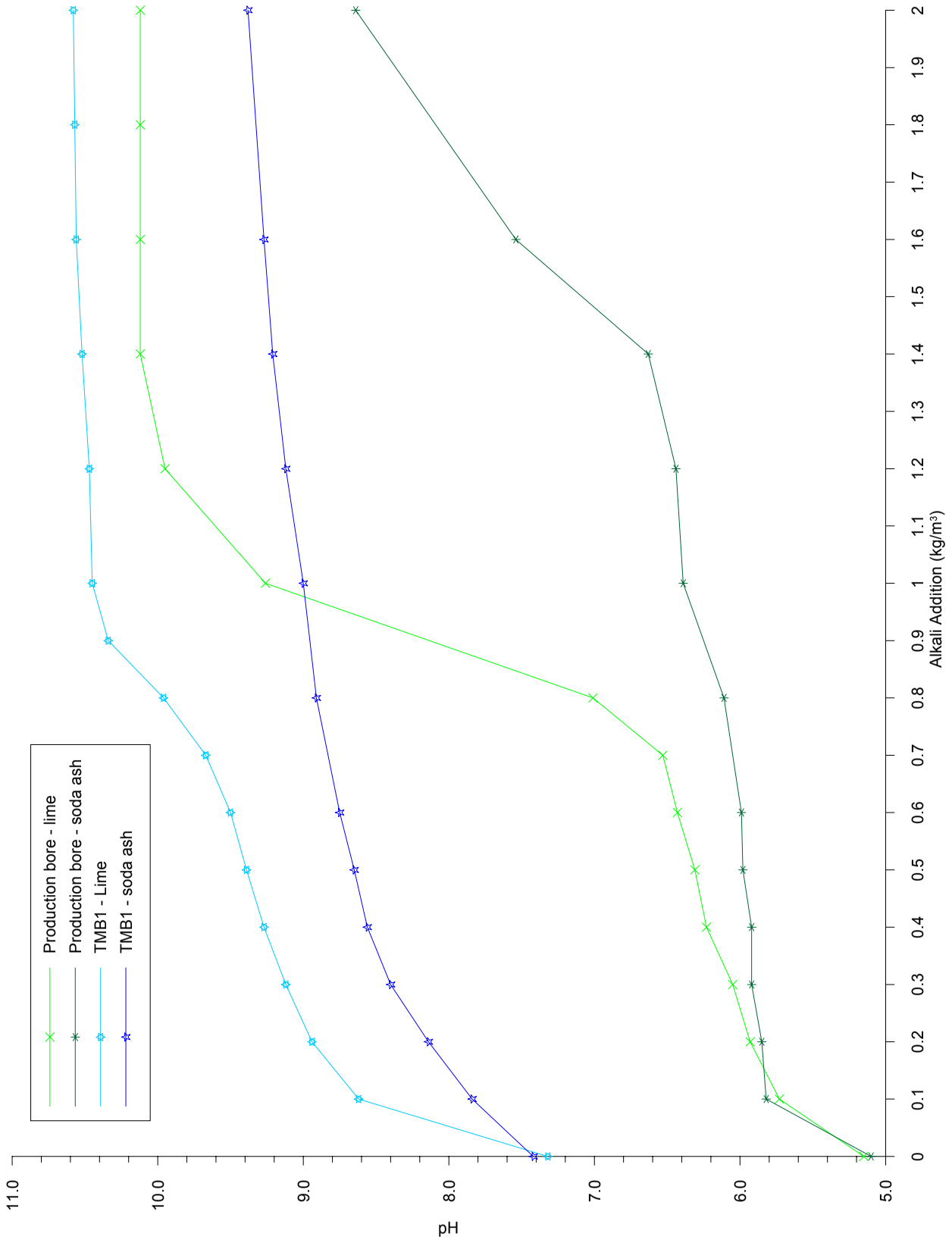
DRILLING DETAILS

0 to 6 m	330 mm diameter down-hole hammer
6 to 95.5 m	254 mm diameter down-hole hammer

i:/253-1/Graph/TPB1.xls/TPB1 diagram.grf

Client: Tectonic Resources NL Project: Trilogy Feasibility Study Date: April 2004 Dwg. No: 253.1/04/1-4	PRODUCTION BORE TPB1 BORE CONSTRUCTION DIAGRAM

Figure 5



Raw Data/Alkali demand Philips River Water Bore.xls/Graph/Treatment graphs.grf

Client: Tectonic Resources NL

Project : Trilogy Dewatering

Date : April 2004

Dwg. No: 253.1/04/1-5

GROUNDWATER TREATMENT
pH vs ALKALI DEMAND

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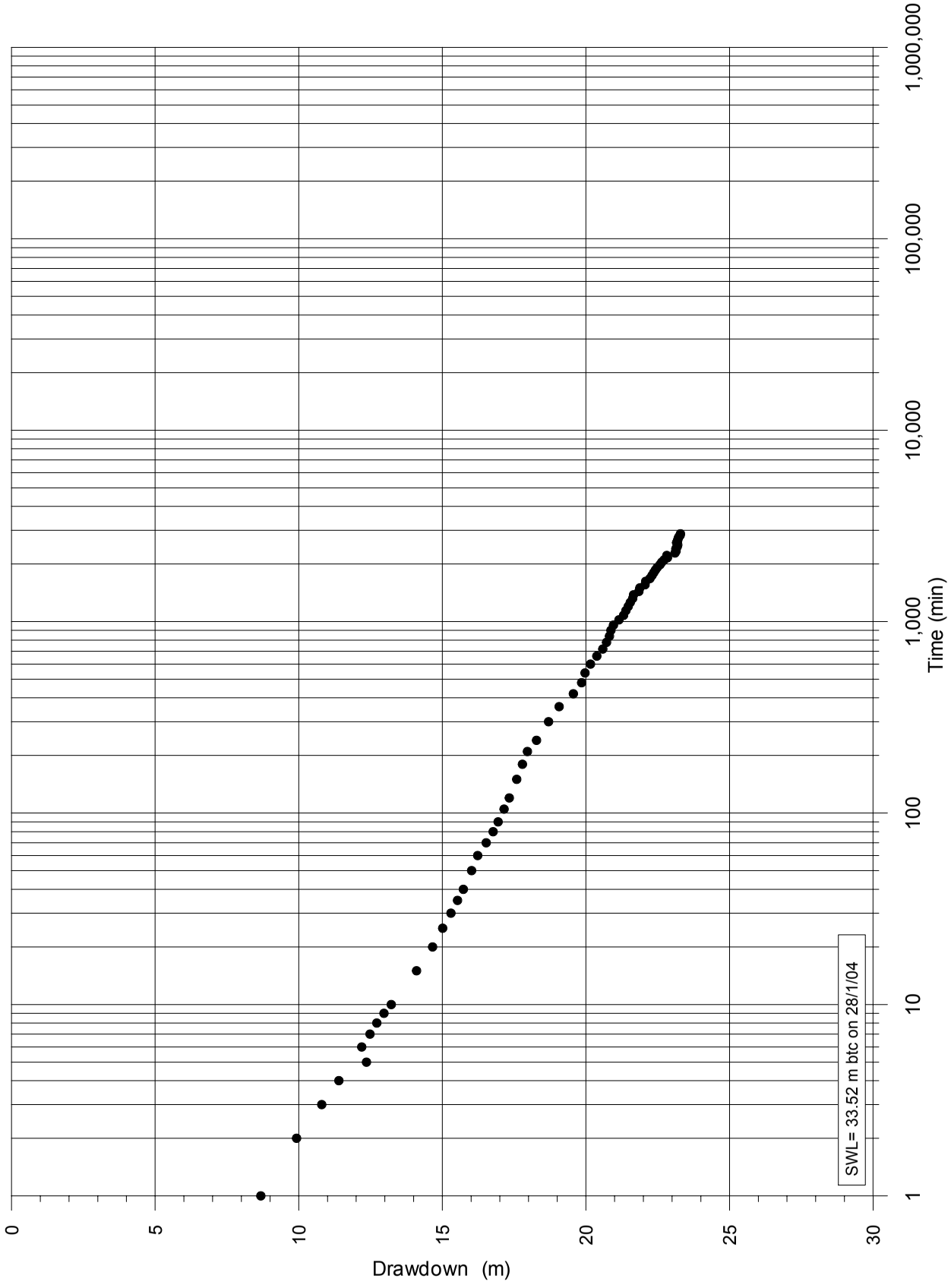
Figure 6



TPB1 constantrate.xls/Bore TPB1 CRT.grf

Client: Tectonic Resources NL

Project : Trilogy Feasibility Study

Date : April 2004

Dwg. No: 253.1/04/1-6

BORE TPB1 CONSTANT RATE PUMPING TEST

48 hours, 300 m^3/day

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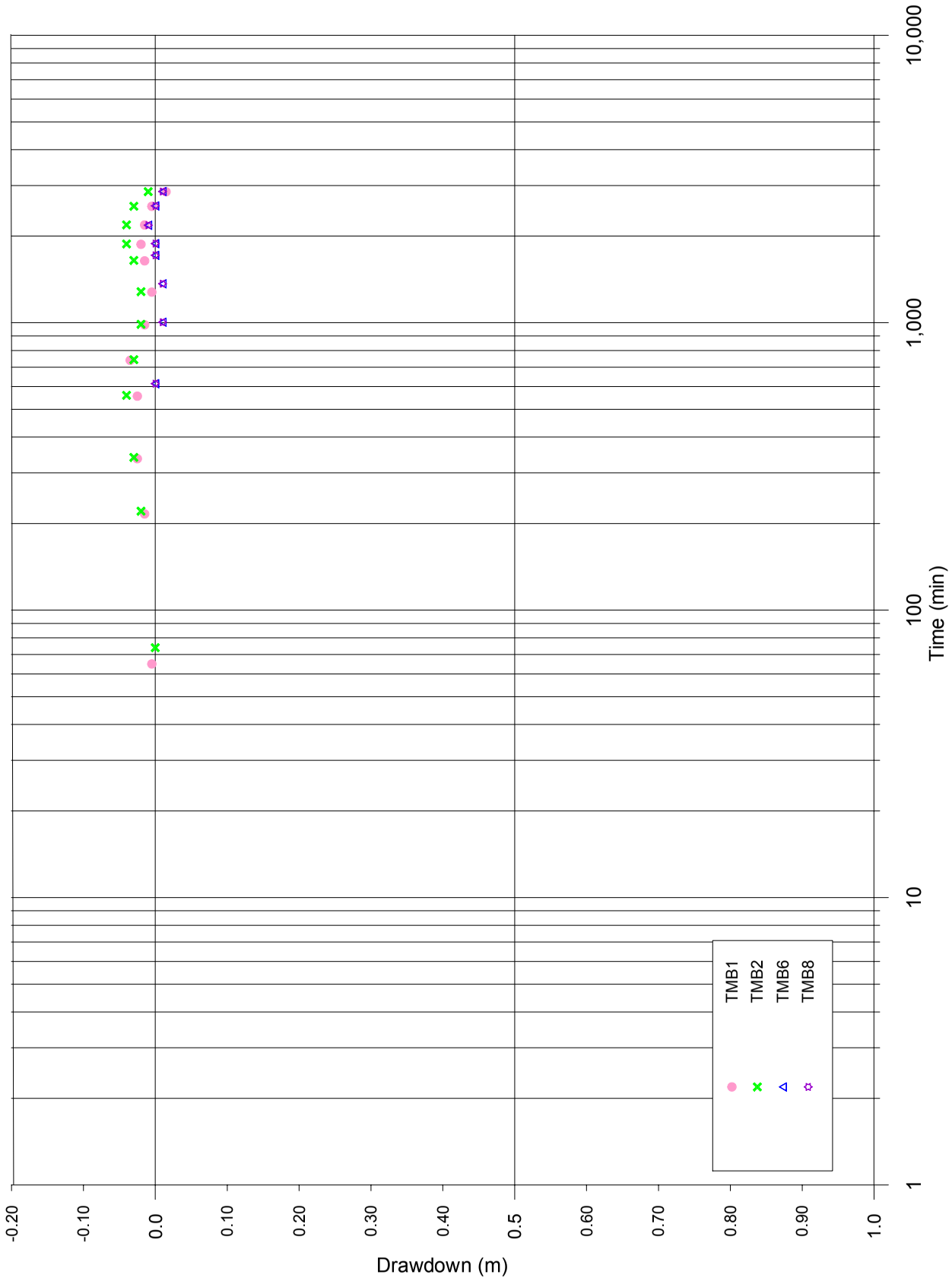
Figure 7



Piezo TMB1 pump test.xls/monitoring bores 1,2,6 &8 CRT.grf

Client: Tectonic Resources NL

Project : Trilogy Dewatering

Date : April 2004

Dwg. No: 253.1/04/1-7

TPB1 CONSTANT RATE PUMPING TEST DRAWDOWN IN MONITORING BORES TMB1, 2, 6 & 8

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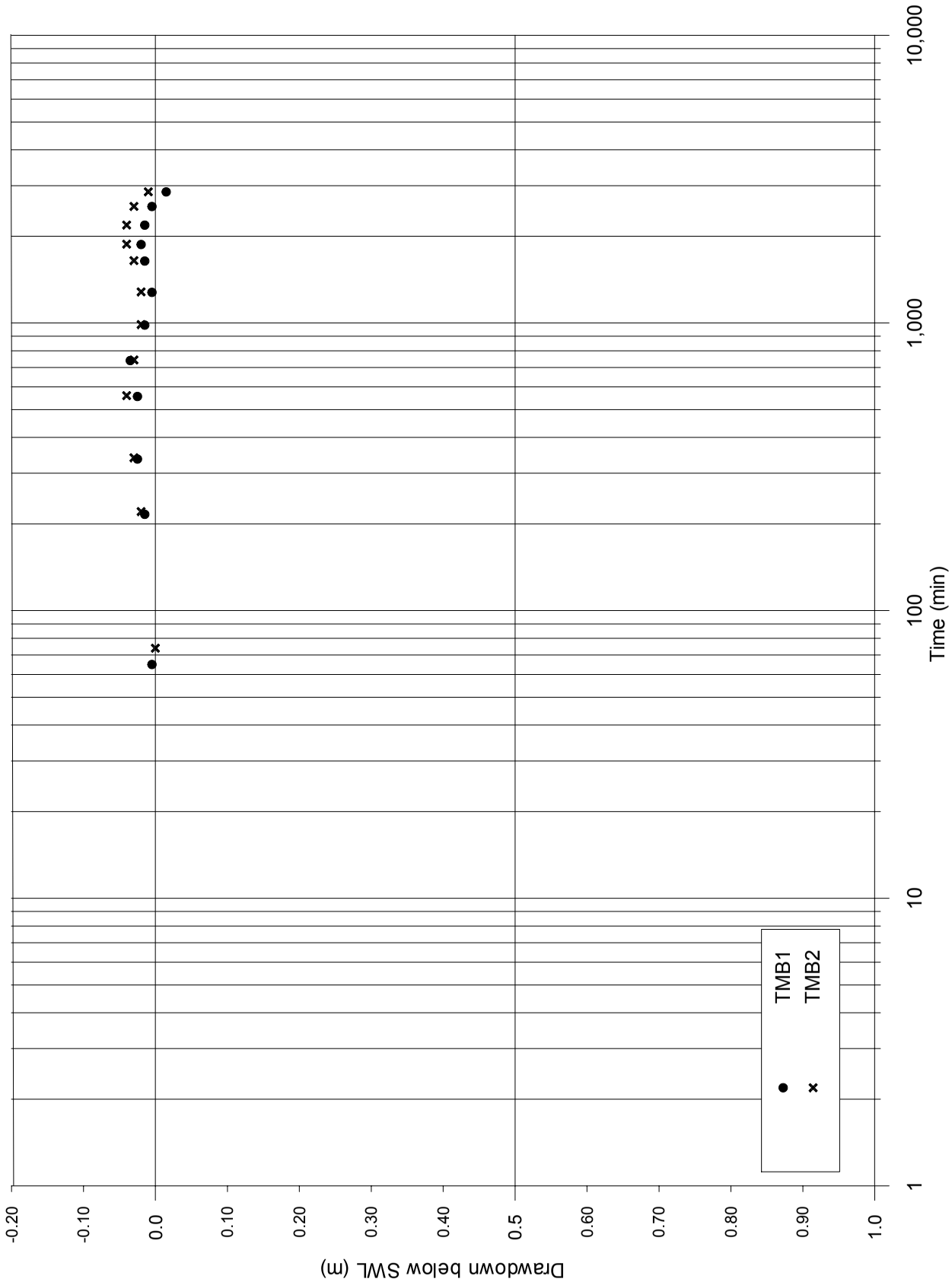
Figure 8



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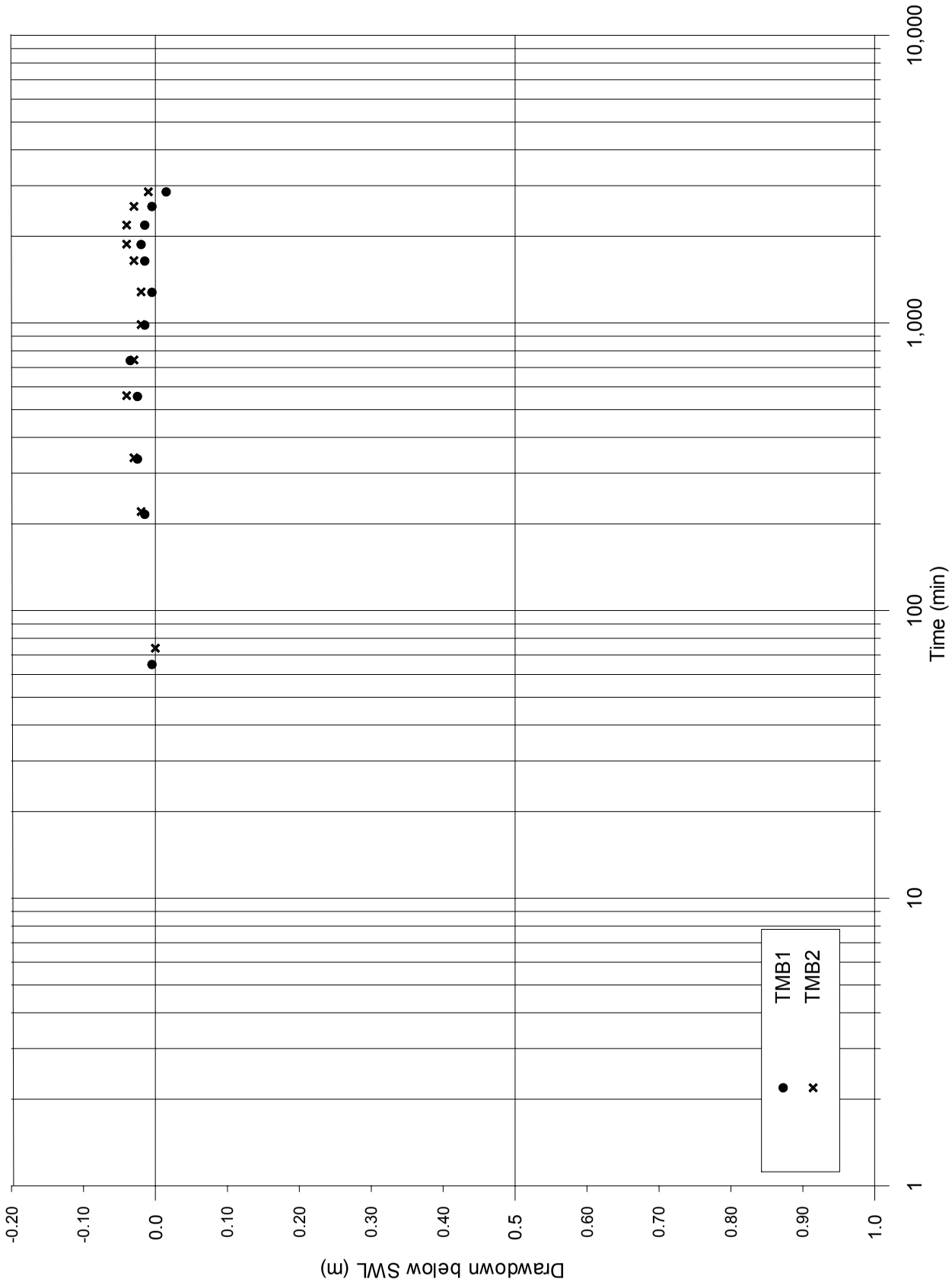
Client: Tectonic Resources NL	TPB1 CONSTANT RATE PUMPING TEST
Project : Trilogy Dewatering	Drawdown in Bores TMB1 & TMB2
Date : February 2004	
Dwg. No: 253.1/04/1-8	Rockwater Pty Ltd

Figure 8



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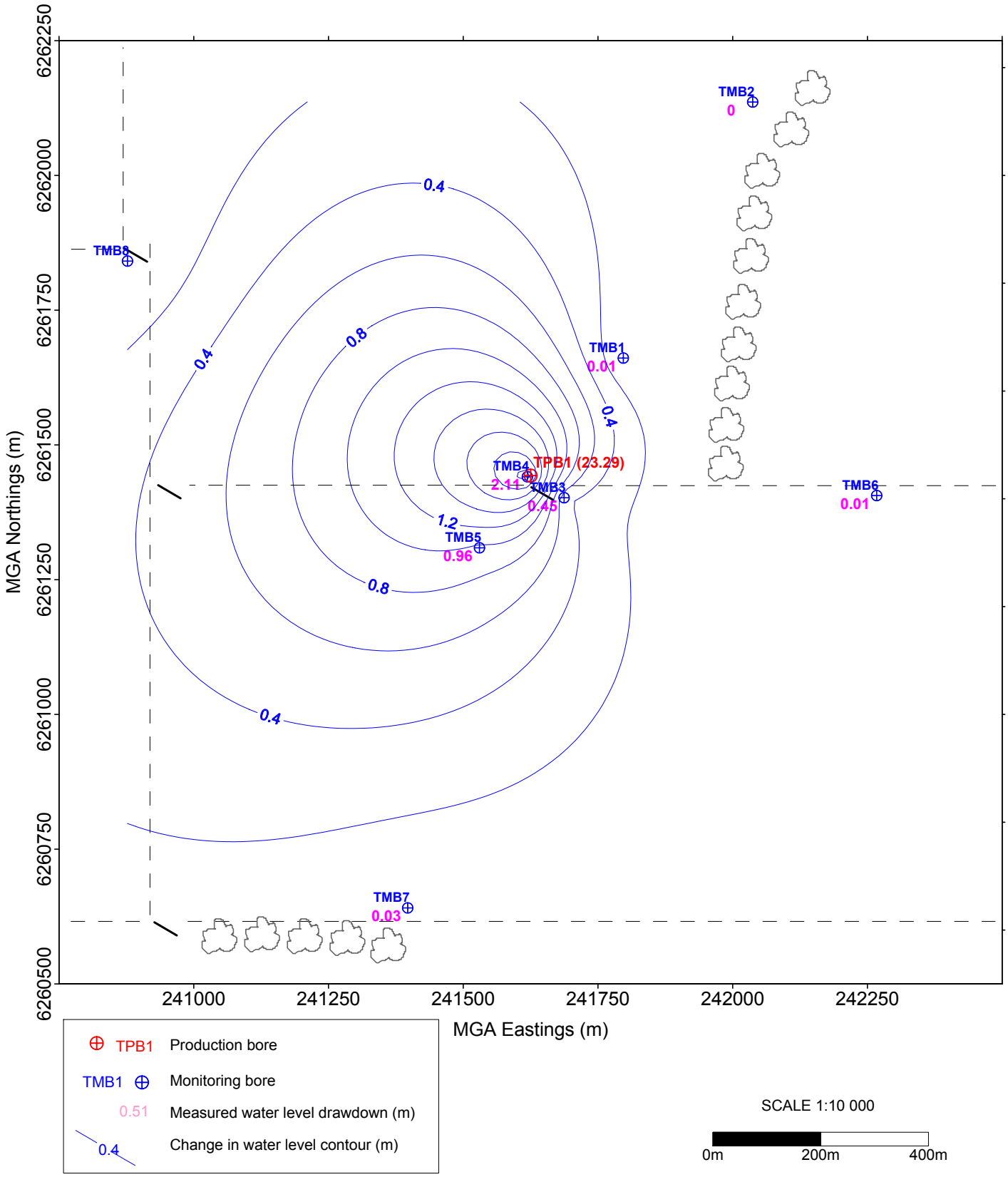
Project : Trilogy Dewatering	Drawdown in Bores TMB1 & TMB2
Date : February 2004	
Dwg. No: 253.1/04/1-8	Rockwater Pty Ltd

Figure 9



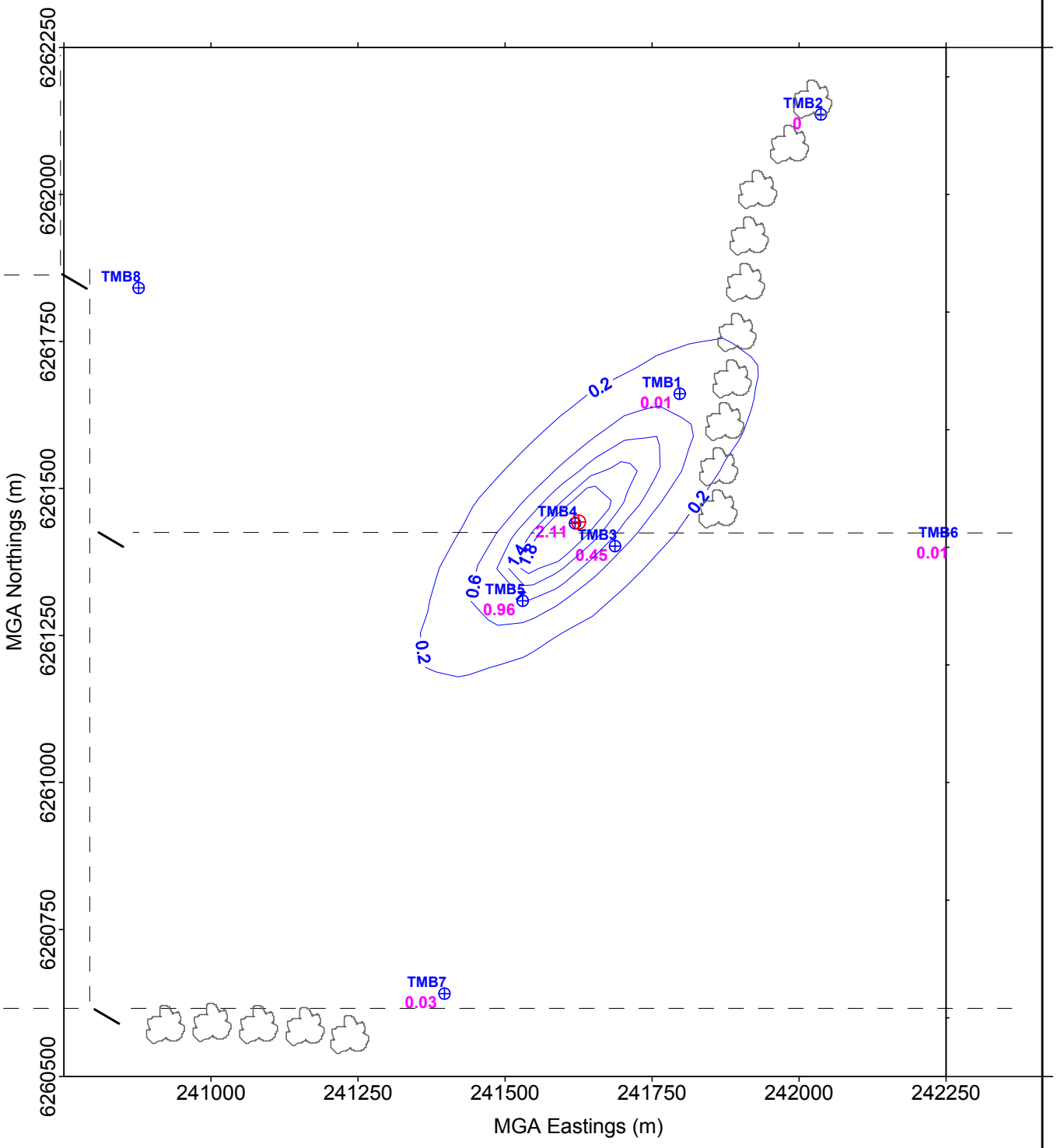
Maxdds.xls/48 hr dd .srf

CLIENT:	Tectonic Resources NL
PROJECT:	Trilogy Feasibility Study
DATE:	April 2004
Dwg No:	253.1/04/1-9

DRAWDOWN AFTER 48 HOURS (m)
PUMPING 300 m3/d
(MEASURED ON 30/1/2004)

Rockwater Pty Ltd

Figure 10



48 hr modelled dd.srf

CLIENT: Tectonic Resources NL

PROJECT: Trilogy Feasibility Study

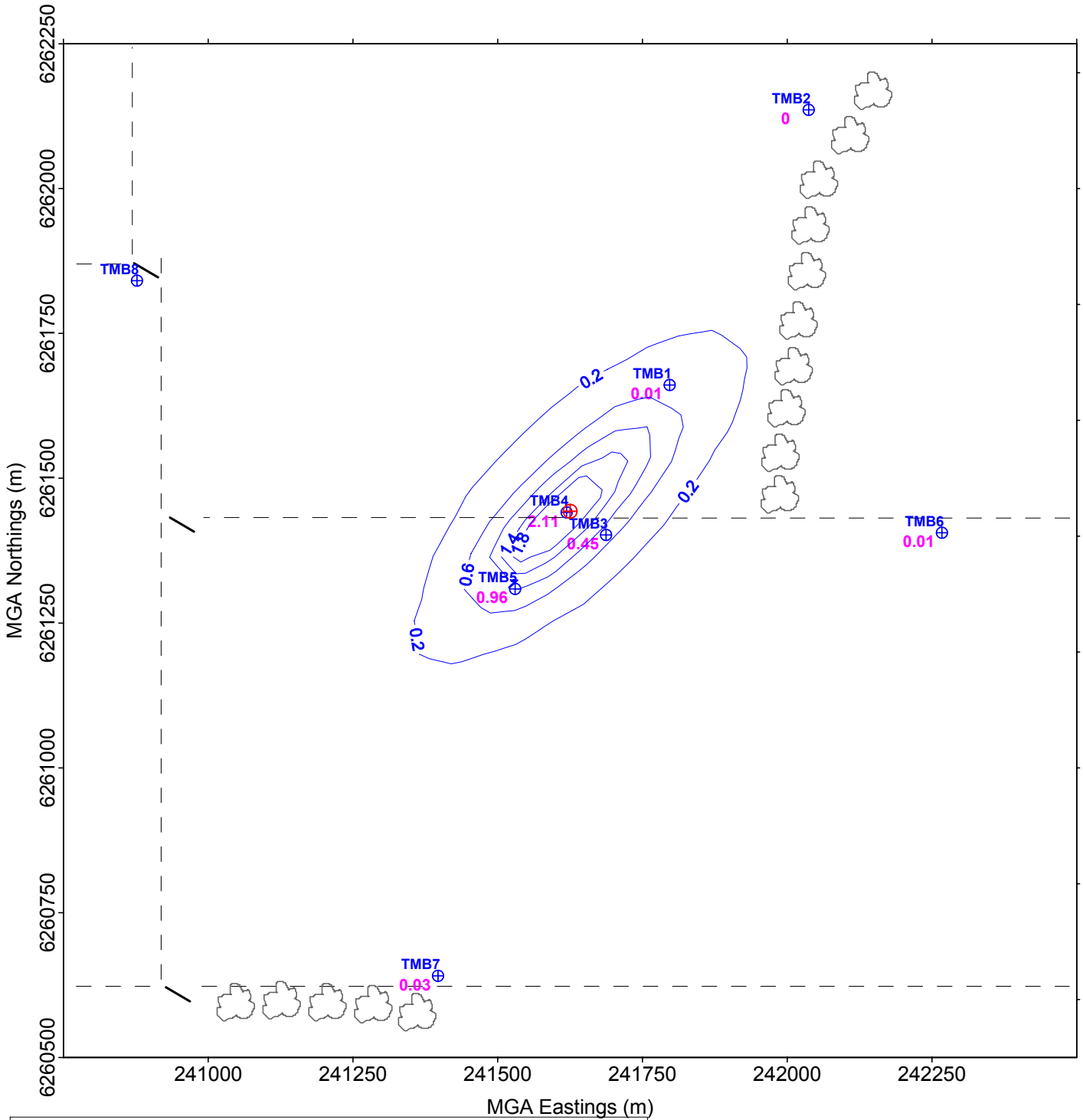
DATE: February 2004

Dwg No: 253.1/04/1-10

COMPARISON BETWEEN MODELLED AND MEASURED DRAWDOWN AFTER 48 HOURS (m) PUMPING 300 m3/d

Rockwater Pty Ltd

Figure 11



48 hr modelled dd.srf

CLIENT:	Tectonic Resources NL
PROJECT:	Trilogy Feasibility Study
DATE:	April 2004
Dwg No:	253.1/04/1-11

COMPARISON BETWEEN MODELLED AND MEASURED DRAWDOWN AFTER 48 HOURS (m) PUMPING 300 m3/d

Rockwater Pty Ltd

APPENDICES

APPENDIX I

TRILOGY MONITORING BORE COMPLETION DATA

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB1**

Location: Site A, North end of pit along strike

MGA Co-ordinates: 241 797 mE, 6 261 661 mN

Status: Monitoring Bore

Date Commenced: 6/1/04 **Date Completed:** 6/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 100 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 100 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+0.14 – 64 m	50 mm ND Class 9 uPVC Blank
64 – 100 m	50 mm ND Class 9 UPVC slotted (0.5 mm aperture)

Static Water Level: 33.67 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC ($\mu S/cm$)	Temp (°C)	TDS (mg/L)	pH	Comments
58	Water Cut	-		-	-	
64	Trace	-		-	-	
70	17	31 700	24.8	21 400	6.8	Black
76	30	32 500	21.4	23 800	6.8	Black, silty
82	35	33 800	23.8	23 400	7.0	Black, silty
88	43	33 800	23.0	23 900	7.0	Black, silty

BORE COMPLETION DATA TMB1 (cont.)

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
92	43	28 900	23.7	19 900	7.0	Poss. erroneous reading from cyclone
100	26	35 000	27.7	22 200	7.0	Black, silty

Lithology:

Depth (m)	Lithology	Description
0 - 2	Clay	Brown, soft, gritty.
2 - 10	Clay / Highly Weathered schist	Brown (grey – yellow – pinkish), micaceous and soft with weathered rock fragments: grey, very fine grained, schistose, oxidised (pink and orange), micaceous sheen, quartz veining 8 – 9 m.
10 - 11	Weathered schist	Light brown – grey, Light grey to dark grey, very fine grained, schistose, micaceous sheen.
11 - 18	(Phyllite) Schist	Light grey to dark grey, black, very fine grained, schistose, fresh.
18 - 33	(Phyllite) Schist	Black (some grey and red), fine grained, slightly silicified in part, slightly to moderately oxidised, schistose, becoming more massive with increasing depth.
33 - 100	Shale	Black, fine grained, graphitic, micaceous sheen, slightly silicified from 43 – 95 m (thin quartz veining), grain size coarsening in part from 50 m, pyrite mineralisation from 50 - 53 m, oxidisation at 63 m (red).
100	EOH	

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB2**

Location: Site F, Regional monitoring bore on veg. drainage line

MGA Co-ordinates: 242 037 mE, 6 262 136 mN

Status: Monitoring Bore

Date Commenced: 6/1/04 **Date Completed:** 6/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 76 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 76 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+0.32 – 46 m	50 mm ND Class 9 uPVC Blank
46 – 76 m	50 mm ND Class 9 UPVC slotted (0.5 mm aperture)

Static Water Level: 37.85 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
58	Minor	24 000	28.7	14 500	8.0	
64	<43	24 600	25.1	16 200	8.0	
70	22	26 200	26.3	16 900	8.0	
76	22	25 400	26.0	16 400	8.0	

APPENDIX I

BORE COMPLETION DATA TMB2 (cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 1	Clay	Cream, soft, gritty.
1 - 7	Clay / Highly Weathered schist	Cream to buff, soft, gritty with bedrock fragments: oxidised schist, light grey to pink, very fine grained, micaceous sheen, platy fracture.
7 - 11	Weathered schist	Grey to pink, very fine to fine-grained. Minor Quartzite?, small vugs, lineations.
11 - 14	Quartzite? / Schist	Grey, fine grained, siliceous, weathered, slight to moderate schistosity.
14 - 33	Schist / Quartzite?	Grey to pink, very fine to fine-grained, oxidised 14 – 19 m, 24 – 25 m (pink), quartz veining 25 – 26 m.
33 - 76	Shale	Dark grey to black, very fine to fine-grained, lineations, micaceous sheen, platy, graphitic, slightly more massive 38 – 40 m, 44 – 46 m, 48 – 50 m, 51 – 52m, red oxidation 38 – 39 m, 46 – 48 m, 55 – 56 m, 64 – 65 m. fresher from ~60 m.
76	EOH	

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB3**

Location: Site C, Down-dip on high wall

MGA Co-ordinates: 241 687 mE, 6 261 402 mN

Status: Monitoring Bore

Date Commenced: 7/1/04 **Date Completed:** 8/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 160 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 160 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+1.11 – 101 m	50 mm ND Class 9 uPVC Blank
101 – 155 m	50 mm ND Class 9 UPVC slotted (0.5 mm aperture)

Static Water Level: 22.47 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
70	Trace	-	-	-	-	On rod change
94	Trace	-	-	-	-	On rod change
106	Minor	-	-	-	-	On rod change
112	Minor	-	-	-	-	On rod change
116	Trace	-	-	-	-	Water flow into hole during drilling
118	52	35 500	20.2	26 800	3.8	Black, silty

APPENDIX I

BORE COMPLETION DATA TMB3 (cont.)

Depth (m)	Airlift Rate (m^3/d)	EC ($\mu S/cm$)	Temp (°C)	TDS (mg/L)	pH	Comments
130	65	38 000	22.5	27 300	3.8	Black, silty
136	86	38 200	21.4	28 200	3.8	Black, silty
142	86	40 500	20.5	30 600	3.8	Black, silty
148	121	38 700	22.1	28 100	3.8	Black, silty
154	121	38 200	20.9	28 500	3.8	Black, silty
160	86	37 500	28.8	23 300	4.4	Black, silty

Lithology:

Depth (m)	Lithology	Description
0 - 2	Clay / Highly Weathered schist	Light orange brown, soft, gritty, micaceous sheen, bedrock fragments: light to medium grey, very fine grained, siliceous.
2 - 11	Weathered schist	Light to dark grey, orange and pink oxidation, platy, silicified.
11 - 35	(Phyllite) Schist	Light to dark grey, slightly to moderately weathered (pink to red oxidation), freshening with depth, very fine grained, platy, siliceous, micaceous sheen, oxidation 14 – 15 m, 17 – 18 m, 24 – 26 m, 30 – 31, quartz veining 26 – 29 m.
35 - 45	Shale	Dark grey to black, very fine grained, micaceous sheen, platy, graphitic, slightly vuggy, some red oxidation, thin quartz veins throughout (high quartz 37 – 45 m), slightly to moderately silicified.
45 - 160	Shale	Dark grey to black, very fine grained, micaceous sheen, platy, becoming more massive with depth, graphitic, quartz veining throughout (high quartz 114 – 116m, 119 – 120 m, 144 – 145 m, 150 – 151 m, 157 – 158 m), remnant folding ~80 m, broken/vuggy ground ~102 m, pyrite mineralisation from 54 m (increasing 100 – 105 m, 110 – 111 m, 114 – 115 m, 118 – 119 m, 129 – 130 m, 139 – 142 m, 148 – 149 m).
160	EOH	

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB4**

Location: Site D, In-pit, very wet zone

MGA Co-ordinates: 241 619 mE, 6 261 441 mN

Status: Monitoring Bore

Date Commenced: 8/1/04 **Date Completed:** 9/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 100 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 100 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+0.36 – 58 m	50 mm ND Class 9 uPVC Blank
58 – 94 m	50 mm ND Class 9 UPVC slotted (0.5 mm aperture)

Static Water Level: 33.59 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC ($\mu S/cm$)	Temp (°C)	TDS (mg/L)	pH	Comments
64	Trace	-	-	-	-	
70	Trace	-	-	-	-	
76	22	18 000	22.7	12 300	5.6	Grey muddy water
82	43	18 000	23.6	12 000	5.3	Grey muddy water
88	35	-	-	-	-	

APPENDIX I

BORE COMPLETION DATA TMB4(cont.)

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
94	238	34 100	23.6	23 800	3.3	Grey muddy water
100	190	36 700	24.1	25 400	3.5	Grey muddy water

Lithology:

Depth (m)	Lithology	Description
0 - 2	Clay / Highly Weathered schist	Light orange-brown, soft and gritty, bedrock fragments: grey, very fine grained, platy, minor subangular quartz.
2 - 6	Weathered schist	Light to dark grey (minor orange oxidation), very fine grained, platy, micaceous sheen, siliceous, some subangular quartz grains.
6 - 21	(Phyllite) Schist	Light to dark grey, slight to moderate weathering (yellow and red oxidation), very fine grained, platy, siliceous, quartz veins 7 – 10 m, 11 – 14 m, 15 – 18 m, 19 – 21 m.
21 - 25	Highly Weathered Shale	Greyish-orange, massive, siliceous, quartz rich.
25 - 32	Quartzite? / schist	Grey, fine grained, slightly weathered, platy to massive, siliceous, quartz rich.
32 – 34	Shale / quartz	Dark grey to black, slightly weathered (orange oxidation), fine grained, platy to massive, siliceous, graphitic, quartz veins, traces of Azurite and Malachite.
34 - 100	Shale	Dark grey to black, very fine grained, platy (tending to massive from 54 m), micaceous sheen, graphitic, minor schist (to 40 m- contamination?), slight to moderate weathering (orange and red oxidation) 34 – 42 m, 44 – 47 m, 54 – 55 m, quartz veins 40 – 100 m, trace Azurite, pyrite mineralisation (increasing from 73 m) 44 – 100 m.
100	EOH	

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB5**

Location: Site B, South end of pit, along strike

MGA Co-ordinates: 241 530 mE, 6 261 309 mN

Status: Monitoring Bore

Date Commenced: 9/1/04 **Date Completed:** 10/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 76 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 76 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+0.39 – 52 m	50 mm ND Class 9 uPVC Blank
52 – 76 m	50 mm ND Class 9 UPVC slotted (0.5 mm aperture)

Static Water Level: 35.52 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
45	Trace					After resumption from breakdown
46	-	-	-	-	-	
52	Trace	-	-	-	-	
58	Trace	-	-	-	-	
64	43	16 600	19.6	12 100	4.7	
70	22	22 200	22.3	15 500	4.7	

APPENDIX I

BORE COMPLETION DATA TMB5 (cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 2	Clay / Highly Weathered schist	Dark grey, soft, gritty, bedrock fragments: orange to brown.
2 - 7	Weathered schist	Grey to orange brown, slightly to highly weathered, very fine grained, platy to massive, minor quartz veining, freshening with increasing depth.
7 - 22	(Phyllite) Schist	Light to dark grey (orange and brown oxidation), slighly to moderately weathered (freshening with increasing depth), platy, micaceous sheen, quartz veining 7 – 13 m, 17 – 19 m (quartz rich 11 – 12 m).
22 - 33	Schist/Shale	Grey to Black (minor orange and red oxidation), very fine grained, soft and platy, schistose, micaceous sheen, slighly siliceous, quartz veining 24 – 27 m, 28 – 33 m.
33 - 76	Shale	Black (rare orange weathering throughout contamination?), very fine grained, soft, platy (becoming massive from 54 m), graphitic, micaceous sheen, siliceous, oxidation 40 – 43 m, increasing hardness from 60 m, quartz rich 57 – 60 m , 61 – 65 m, 67 – 72 m, pyrite mineralisation 43 – 76 m.
76	EOH	

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB6**

Location: Site G, Regional bore, near fenceline

MGA Co-ordinates: 242 267 mE, 6 261 406 mN

Status: Monitoring Bore

Date Commenced: 10/1/04 **Date Completed:** 10/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 82 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 82 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+0.50 – 58 m	50 mm ND Class 9 uPVC Blank
58 – 82 m	50 mm ND Class 9 UPVC slotted (0.5 mm aperture)

Static Water Level: 32.30 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
64	Water Cut	-	-	-	-	
70	Trace	-	-	-	-	
76	22	30 400	23.4	21 100	6.2	Pale brown, quite clean
82	35	29 800	32.1	16 900	6.2	Pale brown, quite clean

APPENDIX I

BORE COMPLETION DATA TMB6 (cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 5	Clay / Highly Weathered schist	Pale pinkish orange, soft, gritty, bedrock fragments: orange, red and grey, very fine grained, massive.
5 - 36	(Phyllite) Schist	Pale to dark grey, moderately weathered from 5 – 10 m, 25 – 28 m, 33 – 36 m (orange and red oxidation), very fine grained, platy, micaceous sheen, soft, quartz veining 11 – 14 m, 15 – 24 m (quartz rich 34 – 35 m).
36 - 82	Shale	Black, very fine grained, platy (more massive from 58 m), micaceous sheen, graphitic, soft, some oxidation (red discolouration), slightly siliceous, quartz veining 42 – 46 m, 51 – 56 m, 62 – 82 m, becoming harder from 60 m, Malachite 65 – 66 m, 67 – 68 m, minor pyrite mineralisation 65 – 82 m, copper? mineralisation ~60 – 82 m (copper coloured, shiny, like a coating, not crystalline?).
82	EOH	

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB7**

Location: Site H, Regional bore, near fenceline

MGA Co-ordinates: 241 397 mE, 6 260 641 mN

Status: Monitoring Bore

Date Commenced: 10/1/04 **Date Completed:** 10/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 88 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 88 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+0.44 – 64 m	50 mm ND Class 9 uPVC Blank
64 – 88 m	50 mm ND Class 9 UPVC slotted

Static Water Level: 27.66 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
76	Water Cut	-	-	-	-	
82	17	24 300	25.6	15 800	-	Muddy
88	43	36 700	28.3	23 100	6.5	Muddy

APPENDIX I

BORE COMPLETION DATA TMB7 (cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 5	Clay / Highly Weathered schist	Dark grey to pale pinkish orange, soft, gritty, bedrock fragments: red and brown, very fine grained, massive.
5 - 34	(Phyllite) Schist	Pale to dark grey, slight to moderate weathering (higher from 26 – 29 m, 33 – 34 m: orange and red oxidation), very fine grained, platy, micaceous sheen, soft, quartz veining throughout (quartz rich 6 - 7 m), pyrite mineralisation 32 – 33 m.
34 - 88	Shale	Black, very fine grained, platy, micaceous sheen, graphitic, soft, some oxidation (red discolouration, maybe copper mineralisation?) freshening with increasing depth from 57 m (red oxidation from 77 – 79 m), siliceous, quartz veining 34 – 52 m, 55 - 88 m (quartz rich 64 – 65 m), pyrite mineralisation 78 – 85 m.
88	EOH	

APPENDIX I

BORE COMPLETION DATA

Project: **Tectonic Resources – Trilogy Deposit**

Hole No: **TMB8**

Location: Site E, Regional bore, near fenceline

MGA Co-ordinates: 240 877 mE, 6 261 841 mN

Status: Monitoring Bore

Date Commenced: 11/1/04 **Date Completed:** 11/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 76 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 76 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm steel surface casing
+0.31 – 46 m	50 mm ND Class 9 uPVC Blank
46 – 76 m	50 mm ND Class 9 UPVC slotted

Static Water Level: 39.61 m below toc (15/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	PH	Comments
46	Water Cut	-	-	-	-	
52	Trace	-	-	-	-	
58	Trace	-	-	-	-	Slight increase in flow
64	Trace	-	-	-	-	Same flow as at 58 m
70	Trace	-	-	-	-	Same flow as at 58 m
76	Trace	27 900	30.2	16 500	6.8	Same flow as at 58 m

APPENDIX I

BORE COMPLETION DATA TMB8 (cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 3	Clay / Highly Weathered schist	Dark reddish-grey to orange-red, soft, gritty, bedrock fragments: red and brown, very fine grained, massive, some quartz.
3 - 31	(Phyllite) Schist	Pale to medium grey, slight to moderate weathering 12 – 14 m, 17 – 25 m, 28 – 31 m (orange and red oxidation) freshening with increasing depth, very fine grained, platy, micaceous sheen, siliceous, soft, quartz veining 3 - 8 m, 11 – 16 m.
31 - 76	Shale	Black, very fine grained, platy to massive, micaceous sheen, graphitic, siliceous, hard, some oxidation (red discolouration, maybe copper mineralisation?) freshening with increasing depth 31 – 40 m, 52 – 54 m, 62 – 66 m, 75 – 76 m, siliceous, quartz veining 33 – 76 m), pyrite mineralisation 69 – 72 m, 75 – 76 m.
76	EOH	

APPENDIX II

PRODUCTION BORE COMPLETION DATA

APPENDIX II

PRODUCTION BORE COMPLETION DATA

Project:	**Tectonic Resources – Trilogy Deposit**
Hole No:	**TPB1**
Location:	Site D, In-pit, very wet zone
MGA Co-ordinates:	~241 619 mE, ~6 261 441 mN
Status:	Production Bore
Date Commenced:	21/1/04 **Date Completed:** 25/1/04
Drilling Contractor:	Resource Drilling
Drilling Rig:	Schram T66H
Depth Drilled:	95.5 m
Drilling Details:	0 – 6 m 330 mm hammer 3 – 100 m 254 mm hammer
Casing Details:	+0.1 – 5.9 m 254 mm mild steel surface casing +0.2 – 64.8 m 152 mm steel, Schedule 40 blank 64.8 m Annular seal – rubber flange 64.8 – 94.8 m 152 mm steel, Schedule 40 slotted (1.5 mm aperture) (Hole collapsed - 0.7 m lost during casing)
Static Water Level:	N/D
Maximum Airlift Yield:	255 m³/day
Water Salinity:	Approx. 25 000 mg/L TDS (by electrical conductivity)
Water pH:	3.8

APPENDIX II

PRODUCTION BORE COMPLETION DATA (cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 2	Clay / Highly Weathered schist	Light orange-brown, soft and gritty, bedrock fragments: grey, very fine grained, platy, minor subangular quartz.
2 - 21	Weathered schist	Light to dark grey, slight to moderate weathering (yellow and red oxidation), very fine grained, platy, micaceous sheen, siliceous, quartz veins throughout.
21 - 34	Weathered Shale / Quartzite or quartz	Greyish-orange to black, slightly weathered, platy to massive, siliceous, quartz rich, graphitic 32 – 34 m, traces of Azurite and Malachite at base.
34 – 95.5	Shale	Dark grey to black, very fine grained, platy (tending to massive from 54 m), micaceous sheen, graphitic, slight to moderate weathering (orange and red oxidation) 34 – 55 m, quartz veins throughout, trace Azurite, pyrite mineralisation traces from 44 m (increasing from ~75 m).
95.5	EOH	

APPENDIX III

WATER QUALITY DATA TPB1

SGS

LABORATORY REPORT COVERSHEET

DATE:	20 February 2004
TO:	Rockwater Pty Ltd
	PO Box 201
	WEMBLEY WA 6913
ATTENTION:	Ms Miranda Taylor
YOUR REFERENCE:	253.1 Tectonic Resources
OUR REFERENCE:	78274
SAMPLES RECEIVED:	02/02/04
SAMPLES/QUANTITY:	1 Water

The above samples were received intact and analysed according to your written instructions. Unless otherwise stated, solid samples are reported on a dry weight basis and liquid samples as received.

pp JANICE VENNING
Manager, Perth

PETER BAMFORD
Manager Laboratory Services

This report supersedes our preliminary results that were reported by facsimile.
This report must not be reproduced except in full.

SGS Australia Pty Ltd
ABN 44 000 964 278
Environmental Services 52 Murray Road, Welshpool 6106 Western Australia www.sgs.com
t +61 (0)8 9458 7278 f +61 (0)8 9451 3505

SGS

CLIENT: Rockwater Pty Ltd **OUR REFERENCE:** 78274
PROJECT: 253.1 Tectonic Resources

LABORATORY REPORT

Your Reference Our Reference Date Sampled Type of Sample	Units	TP B1 78274-1 30/01/2004 Water
pH	pH Units	2.8
Electrical Conductivity @ 25°C	µS/cm	25000
Total Dissolved Solids (grav) @ 180°C	mg/L	18000
Iron, Fe (soluble)	mg/L	96
Sodium, Na	mg/L	4800
Potassium, K	mg/L	120
Calcium, Ca	mg/L	54
Magnesium, Mg	mg/L	510
Chloride, Cl	mg/L	8800
Carbonate, CO_3	mg/L	<1
Bicarbonate, HCO_3	mg/L	<5
Sulphate, SO_4	mg/L	3900
Nitrate, NO_3	mg/L	0.5
Sum of Ions (calc.)	mg/L	18179

SGS

CLIENT: Rockwater Pty Ltd **OUR REFERENCE:** 78274
PROJECT: 253.1 Tectonic Resources

LABORATORY REPORT

TEST PARAMETERS	UNITS	LOR	METHOD
Standard 1			
pH	pH Units	0.1	PEI-001
Electrical Conductivity @ 25°C	µS/cm	1	PEI-032
Total Dissolved Solids (grav) @ 180°C	mg/L	10	PEI-002
Iron, Fe (soluble)	mg/L	0.05	PEM-001
Sodium, Na	mg/L	0.5	PEM-001
Potassium, K	mg/L	0.5	PEM-001
Calcium, Ca	mg/L	0.5	PEM-002
Magnesium, Mg	mg/L	0.5	PEM-002
Chloride, Cl	mg/L	1	PEI-020
Carbonate, CO_3	mg/L	1	PEI-006
Bicarbonate, HCO_3	mg/L	5	PEI-006
Sulphate, SO_4	mg/L	1	PEI-020
Nitrate, NO_3	mg/L	0.2	PEI-020
Sum of Ions (calc.)	mg/L		Calc.

NOTES:
LOR - Limit of Reporting.

SGS

LABORATORY REPORT COVERSHEET

DATE:	1 April 2004
TO:	Rockwater Pty Ltd
	PO Box 201
	WEMBLEY WA 6913
ATTENTION:	Ms Miranda Taylor
YOUR REFERENCE:	253.1 Additional Analysis ex job 78274
OUR REFERENCE:	79525
SAMPLES RECEIVED:	02/02/04
SAMPLES/QUANTITY:	1 Water

The above samples were received intact and analysed according to your written instructions. Unless otherwise stated, solid samples are reported on a dry weight basis and liquid samples as received.
Gold was analysed by SGS Mineral Services, Welshpool, their report No.WM076942.

JANICE VENNING
Manager, Perth

PETER BAMFORD
Manager Laboratory Services

This report supersedes our preliminary results that were reported by facsimile.
This report must not be reproduced except in full.

SGS Australia Pty Ltd | Environmental Services | 52 Murray Road | Welshpool 6106 | Western Australia | www.au.sgs.com
ABN 44 000 964 278 | t +61 (0)8 9458 7278 | f +61 (0)8 9451 3505

SGS

CLIENT: Rockwater Pty Ltd **OUR REFERENCE:** 79525

PROJECT: 253.1 Additional Analysis ex job 78274

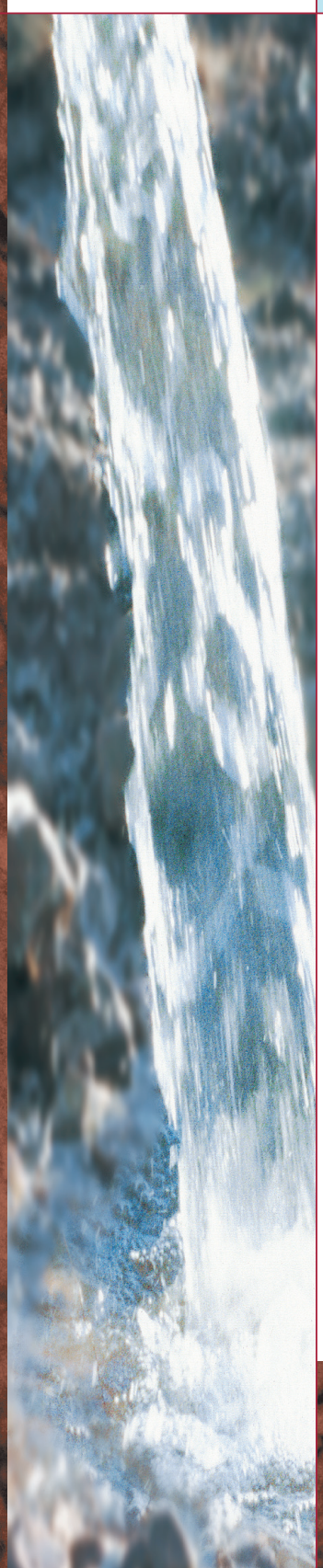
LABORATORY REPORT

Your Reference Our Reference Date Sampled Type of Sample	Units	TPB 1 79525-1 30/01/2004 Water
Copper, Cu	mg/L	0.15
Nickel, Ni	mg/L	0.45
Zinc, Zn	mg/L	160
Lead, Pb	mg/L	7.7
Cadmium, Cd	mg/L	0.30
Silver, Ag	mg/L	<0.01
Gold, Au	mg/L	<0.001

TEST PARAMETERS	UNITS	LOR	METHOD

Copper, Cu	mg/L	0.05	PEM-001
Nickel, Ni	mg/L	0.05	PEM-001
Zinc, Zn	mg/L	0.05	PEM-001
Lead, Pb	mg/L	0.05	PEM-001
Cadmium, Cd	mg/L	0.005	PEM-001
Silver, Ag	mg/L	0.01	PEM-001
Gold, Au	mg/L	0.001	P657

NOTES:
LOR - Limit of Reporting.



Rockwater
PROPRIETARY LIMITED

KUNDIP COPPER & GOLD PROJECT

HYDROGEOLOGICAL INVESTIGATION AND MONITORING BORE COMPLETION REPORT

MARCH 2004

REPORT FOR
TECTONIC RESOURCES NL

253.1/04/002

76 Jersey Street Jolimont 6014 Western Australia ABN: 43 008 804 653
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TABLE OF CONTENTS

1 INTRODUCTION

Tectonic Resources is planning to mine the Kundip copper and gold deposit, east of the Ravensthorpe-Hopetoun road, approximately 16 km south of Ravensthorpe (Fig. 1). The Kundip project site encompasses the previously mined Beryl, Harbour View and Flag underground workings. As part of the statutory Notice of Intent (NOI) to mine, a Hydrogeological investigation has been carried out to assess background conditions and likely dewatering requirements.

This report presents the results of the hydrogeological investigation, which included a drilling programme completed in January 2004.

2 HYDROGEOLOGICAL SETTING

2.1 CLIMATE

Ravensthorpe has a Mediterranean-type climate with cool wet winters and warm to hot, dry summers. Average rainfall is 425 mm (508 mm at Hopetoun), and potential evaporation is about 2,000 mm.

2.2 GEOLOGY

The Kundip mining area lies in a region of steeply-dipping mafic to intermediate volcanic rocks of Archaean age (Annabelle Volcanics) with some ultramafic schists (Witt, 1997). The volcanic rocks have been intruded to the west by granitic rocks, also of Archaean age. The upper reaches of the Steere River follows the contact between the granitic and the volcanic rocks.

Immediately south of the Kundip mining area, the Archaean rocks are overlain by the Proterozoic Mount Barren Group, including sediments of the Kundip Quartzite and the Kybulup Schist. The quartzite dips at about 15 degrees to the south-south-west.

3 HYDROGEOLOGY

The Kundip mining area is described as having “minor local aquifers” (Johnson, 1998). The Archaean volcanic rocks are generally of low permeability. Fractures and joints in the rocks, and mineralised zones, can be moderately permeable.

Drainage lines may also follow zones of weakness such as fractures in the underlying rocks.

The old mine workings are reported to have intersected water-bearing fractures, and there are significant volumes of water stored in the workings. Anecdotal evidence suggests that Flag is the wettest mine, with inflows possibly in the order of 400 to 500 m^3/d; one report (Lea 1989) indicated that "the heavy inflow of water at the face of the No. 3 level east drive had caused the cessation of operations because the existing pumps were totally inadequate to cope with the volume". The Harbour View workings were also reported to be 'wet', and apparently, a large Flygt pump was run continuously during periods of mining in the 1980's to keep them dry. Inflows to Harbour View in 1903 required pumping rates of only 5,000 gallons per day (about 25 m^3/d) for a main shaft depth of 160 ft (about 50 m) (Montgomery, 1903). The Beryl workings were said to have yielded moderate amounts of water, which was used as a source for tailings re-treatment. Apart from the Montgomery report, there is no written record of dewatering rates for the Kundip mining area.

The water table is about 37 m deep at the Harbour View workings, in the area where mining is likely to recommence.

Groundwater in the area is generally saline, with salinity ranging from about 20,000 to 40,000 mg/L TDS.

4 TEST-DRILLING

Six sites were selected for exploratory drilling and completion as monitoring bores. Two (KMB1 & KMB4, Fig.2) were planned to intersect the Harbour View mineralised zone. The others were planned as regional exploration holes/monitoring bores and included two sites at the intersection of linear drainages that might follow fracture zones. The latter sites had to be re-located a short distance to prevent damage to vegetation.

The holes were drilled by Resource Drilling using a Schram T66H rig and reverse circulation, down-hole hammer methods. They were drilled at 200 mm diameter to 3 m, and 154 mm diameter steel surface casing was installed before drilling on at 140 mm diameter to total depth. Five of the holes were drilled to 70 m depth and one to 76 m depth. The holes were completed as monitoring bores with 50 mm uPVC casing, slotted over the aquifer interval. The bore annuli were sealed at the surface using Gypset cement.

An existing exploration hole, drilled to 106 m depth, was also cased for groundwater monitoring (Bore KMB7). The results of the drilling are summarised in Table 1, and detailed bore completion reports are presented in Appendix I.

Table 1. Summary of Kundip Drilling Results

Bore	Exploration Site	mE (AMG)	mN (AMG)	Elevation (m AHD)	Depth Drilled (m bgl)	Slotted Interval (m bgl)	Lithology	Static Water Level (m btc)**	Static Water Level (m AHD)	Maximum Airlift Yield (m^3/d)	Final Salinity (mg/L TDS)*
KMB1	Site F	239975	6269578	158.40	70	52 - 70	Mafic, some Ultramafic minor BIF	36.75	121.65	Trace	N/A
KMB2	Site B	240402	6270011	180.44	76	58 - 76	BIF, Interm. Volcanic Below 38m	58.04	122.40	Dry	N/A
KMB3	Site C	239985	6269062	142.18	70	46 - 70	Ultramafic	21.28	120.90	Trace	N/A
KMB4	Site G	240092	6269758	163.93	76	52 - 76	Mafic, minor porphyry	41.82	122.11	Trace	21,800
KMB5	Site D	239221	6269810	132.85	70	45 - 63	Felsic volcanic, mafic below 48m	4.08	128.77	Dry	N/A
KMB6	Site E	239580	6269319	145.71	70	46 - 70	Mafic, minor porphyry	23.56	122.15	57	37,200
KMB7^	Site A	240162	6268581	143.41	106	76 - 106	Phyllite, Conglomerate, felsic volcanic	25.85	117.56	N/A	N/A

*by electrical conductivity
**below top of surface casing, 23/1/2004
^old exploration, hole cased

Only trace amounts of water were intersected during drilling, with the exception of KMB6, which is situated in a drainage line along-strike of the Harbour View workings: a maximum flow of 60 m^3/day was measured from this hole. It should be noted that the drilling method (reverse circulation) tends to keep out groundwater, and so airlift flows can be smaller than in larger-diameter holes drilled using direct circulation.

The results show that in general, rocks in the area are of low permeability, even within the Harbour View mineralised zone.

Static water levels measured on 27 April 2004 ranged from 117.74 m AHD in KMB7 to 130.90 m AHD in KMB5, with a hydraulic gradient trending downwards to the south-south-east (Fig. 3). The shape of the water table is somewhat irregular, and does not closely reflect the topography, as would be expected. In particular, the water table between bores KMB1, KMB2, KMB4 and KMB6 has a very low gradient, with less than one metre fall in elevation between KMB2 and KMB6, compared with a 20 m difference in the topography. The low hydraulic gradient in this area may reflect increased permeability at the water table, resulting from mine voids at the water table near the Harbour View workings. The high water level in KMB5 could indicate shallow groundwater perched on a clay layer.

The groundwater had salinity values (by electrical conductivity) between about 22,000 and 38,000 mg/L TDS, and had a near neutral pH of 6.8.

5 SUMMARY AND CONCLUSIONS

Tectonic Resources is planning to mine within the Kundip Mining Area, encompassing the old Harbour View, Flag and Beryl underground workings.

In general, the Archaean volcanic rocks in the area are of low permeability, although previous groundwater inflows to the old workings have been estimated to be up to 500 m^3/d. Flag was probably the 'wettest' mine, followed by Harbour View and Beryl. Groundwater occurs in localised fractures, most of which are probably associated with mineralised zones. Pumping rates from Harbour View were about 25 m^3/d in 1903, when the main shaft was about 50 m deep.

Six groundwater exploration holes were drilled and completed as monitoring bores, and one existing exploration hole was also completed as a monitoring bore. Of the six holes drilled, only four intersected water. Bore KMB6 had a maximum airlift yield of 60 m^3/day; the other bores (KMB1, 3 and 4) yielded only a trace. The water table slopes downwards to the south-south-east. A low hydraulic gradient in the Harbour View area probably results from open mine voids at the water table.

The groundwater has a salinity of about 22,000 mg/L to 38,000 mg/L TDS (by electrical conductivity), and a near-neutral pH.

Dewatering can be progressed ahead of mining by installing pumps in existing mine shafts. Pumping rates in the order of 2,000 m^3/d could be required for initial dewatering of the old workings; the total volume that will need to be pumped will depend on the volume of mine voids below the water table. Once dewatered, continuing groundwater inflows could be up to 500 m^3/d.

Dated: 29 March 2004 **Rockwater Pty Ltd**

K J Rattray
Senior Environmental Hydrogeologist

P H Wharton
Principal Hydrogeologist

REFERENCES

Johnson, S.L., 1998. Hydrogeology of the Ravensthorpe 1:250 000 sheet: Western Australia, Water and Rivers Commission, Hydrogeological Map Explanatory notes Series, Report HM4.

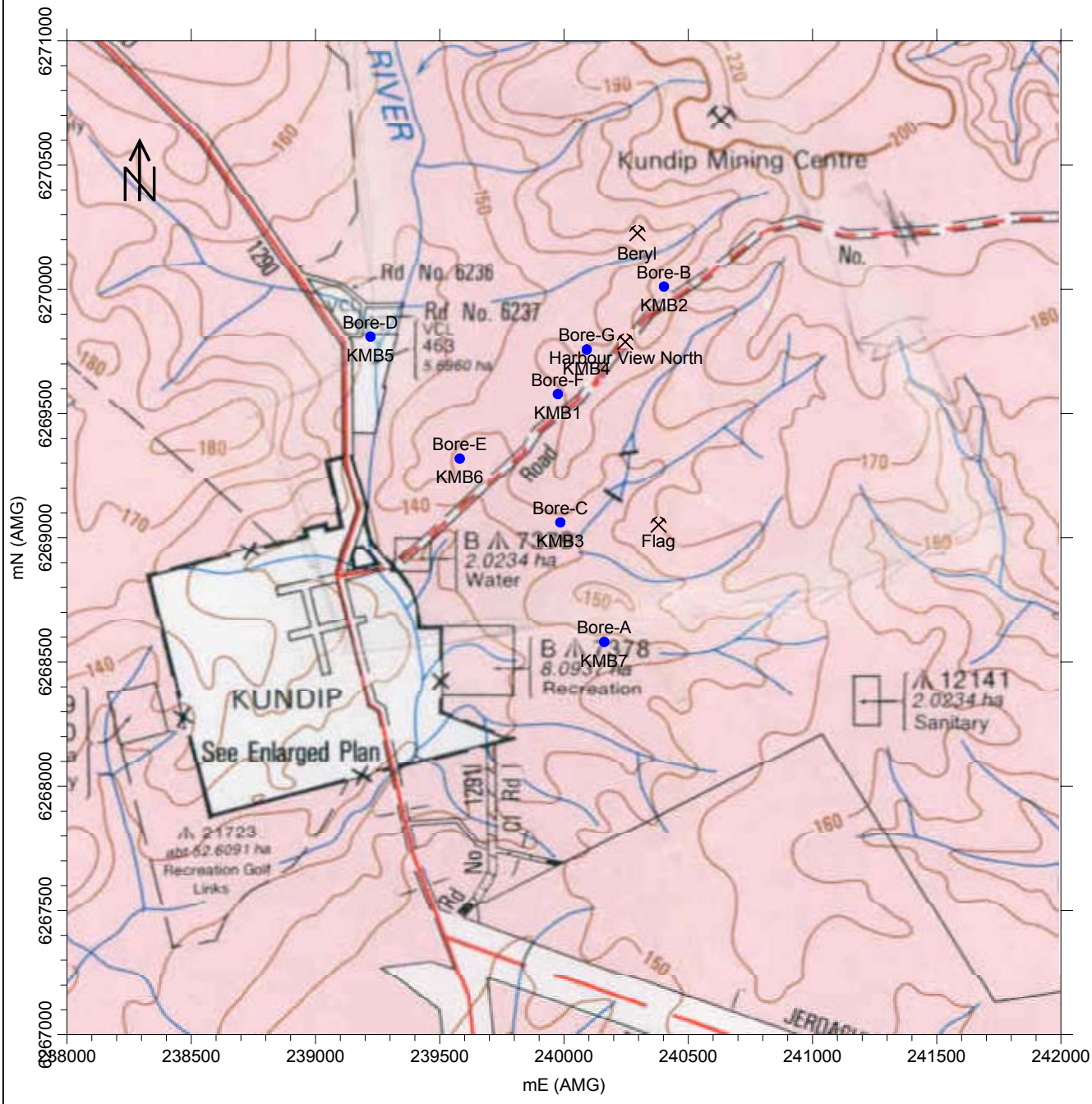
Lea, E.J., 1989. Report on Flag Shaft Project. Unpublished report for Norseman Gold Mines NL.

Montgomery, A., 1903. Report on Philips River Goldfield. WA Department of Mines.

Witt, W. K., 1997. Geology of the Ravensthorpe and Cocanarup 1:100 000 Sheets: Western Australia Geological Survey, 1:100 000 Geological Series Explanatory Notes.

FIGURES

Figure 1



253.1/Surfer/Kundip location plan

CLIENT: Tectonic Resources NL

PROJECT: Kundip Feasibility Study

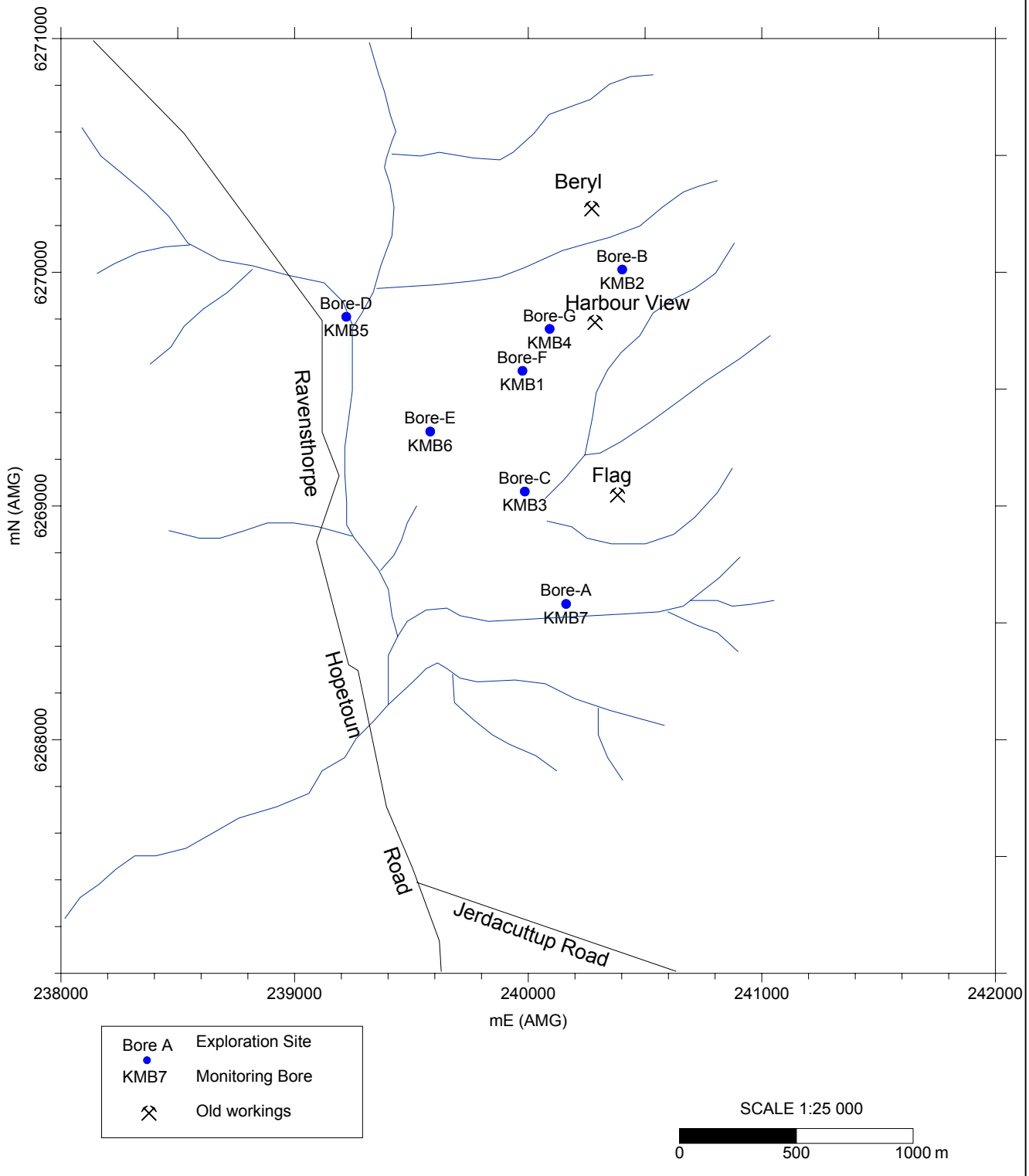
DATE: April 2004

Dwg. No: 253.1/04/2-1

KUNDIP MINING AREA LOCATION MAP

Rockwater Pty Ltd

Figure 2



253.1/Surfer/Kundip site plan

CLIENT: Tectonic Resources NL

PROJECT: Kundip Feasibility Study

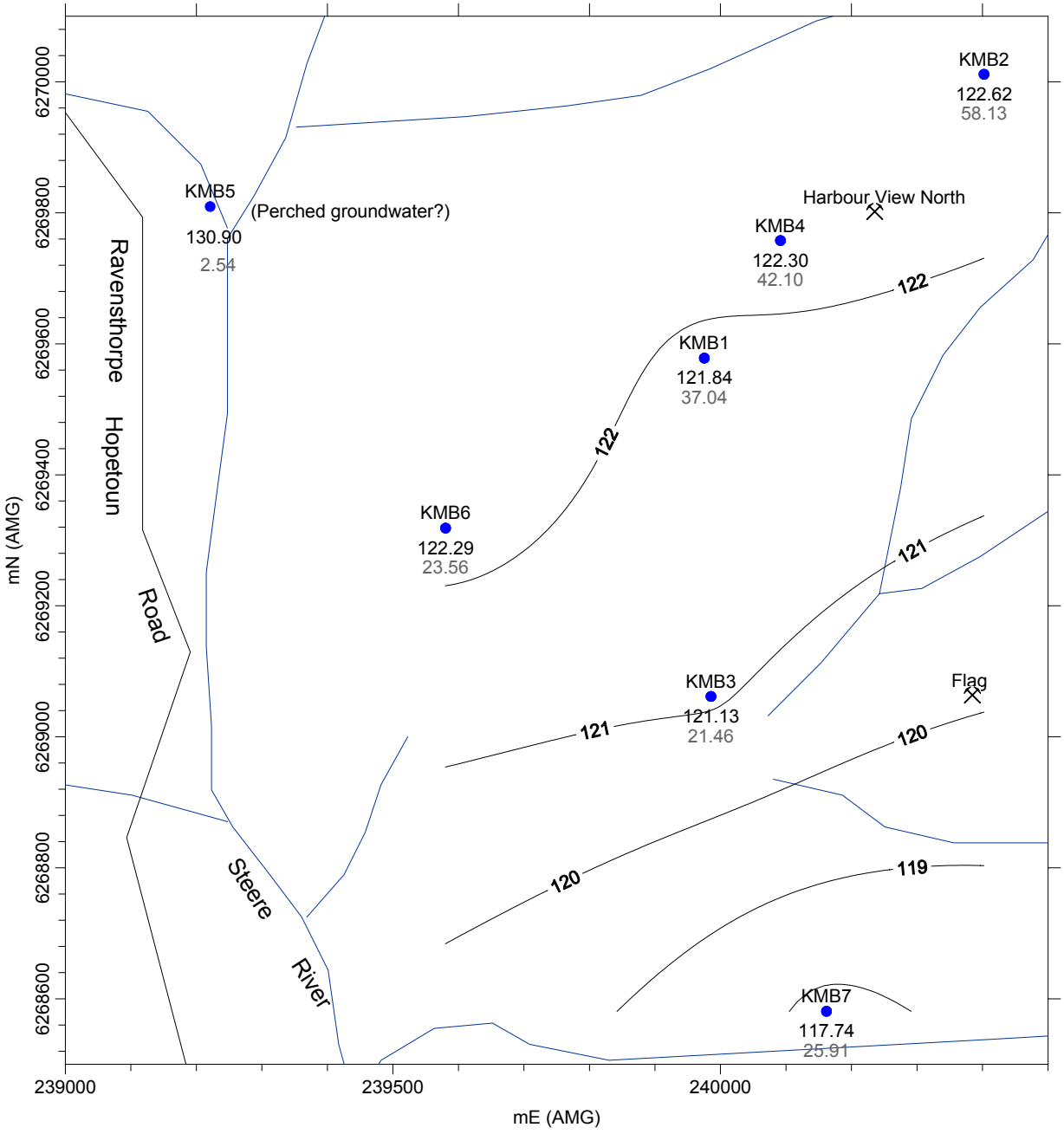
DATE: April 2004

Dwg. No: 253.1/04/2-2

KUNDIP MINING AREA
BORE LOCATION PLAN

Rockwater Pty Ltd

Figure 3



120 Water level contour (m AHD)

KMB3 Monitoring bore

120.90 Water level (m AHD)
21.30 (m btc)

SCALE 1:100

0 100 200 m

253.1/Surfer/Kundip water levels April 04

CLIENT: Tectonic Resources NL

PROJECT: Kundip Feasibility Study

DATE: April 2004

Dwg. No: 253.1/04/2-3

KUNDIP MINING AREA GROUNDWATER LEVELS 27 APRIL 2004

Rockwater Pty Ltd

APPENDIX I

KUNDIP MONITORING BORE COMPLETION DATA

APPENDIX I

MONITORING BORE COMPLETION DATA

Project: **Tectonic Resources – Kundip Deposit**

Hole No: **KMB1**

Location: Site F, near head-frame at Harbour View

MGA Co-ordinates: 240 111 mE, 6 269 724 mN

AMG Co-ordinates: 239 975 mE, 6 269 578 mN

Status: Monitoring Bore

Date Commenced: 12/1/04 **Date Completed:** 12/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 70 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 70 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm, steel surface casing
+0.48 – 52 m	50 mm ND, Class 9 uPVC, blank
52 – 70 m	50 mm ND, Class 9 uPVC, slotted (0.5 mm aperture)

Static Water Level: 36.75 m below surface casing (23/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
52	Water Cut	-	-	-	-	
58	Trace	-	-	-	-	
64	Trace	-	-	-	-	
70	Trace	-	-	-	-	No significant flows

APPENDIX I

MONITORING BORE COMPLETION DATA (KMB1 cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 6	Clay / Highly Weathered bedrock	Dark reddish-grey to orange-red, soft, gritty. Bedrock fragments; red and brown, very fine grained, massive, some quartz.
6 - 27	Basalt	Green, slightly to moderately weathered (cream, orange and red), very fine grained, massive, soft, fine fractures throughout, graphitic 21 – 23 m, mineralisation 14 – 27 m.
27 - 29	BIF / Quartz	Red to dark grey, slightly to moderately weathered, very fine grained, hard, massive, slightly vuggy, goethite and hematite.
29 – 49	Ultramafic – Serpentinite?	Dark green, very fine grained with some coarser quartz porphyry, slightly weathered (increasing from 31 – 33 m, 38 – 49 m), moderately hard, quartz veining 31 – 32 m.
49 - 70	Basalt	Dark bluish-green, even-grained mafic, massive, hard, fresh, siliceous, fractured rock ~50 – 70 m
70	EOH	

APPENDIX I

MONITORING BORE COMPLETION DATA

Project: **Tectonic Resources – Kundip Deposit**

Hole No: **KMB2**

Location: Site B – up gradient of Harbour View

MGA Co-ordinates: 240 546 mE, 6 270 163 mN

AMG Co-ordinates: 240 402 mE, 6 270 011 mN

Status: Monitoring Bore

Date Commenced: 13/1/04 **Date Completed:** 13/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 76 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 76 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm, steel surface casing
+0.31 – 58 m	50 mm ND, Class 9 uPVC, blank
58 – 76 m	50 mm ND, Class 9 uPVC, slotted (0.5 mm aperture)

Static Water Level: 58.04 m below surface casing (23/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
64	Water Cut	-	-	-	-	
70	Trace	-	-	-	-	
76	Dry	-	-	-	-	No significant flows

APPENDIX I

MONITORING BORE COMPLETION DATA (KMB2 cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 1	Clay	Pale orange-brown, soft, gritty.
1 -5	Weathered BIF / Chert / Quartz	Orange, red, cream and greys, massive, hard.
5 - 33	Highly Weathered BIF / Chert	Yellowish orange, very fine grained rock fragments, massive; clay matrix, quartz throughout (quartz rich 13 – 14 m), pyrite mineralisation 28 – 33 m.
33 – 34	Clay	Pale olive, soft, gritty.
34 - 38	Highly Weathered BIF	Brown, very fine grained; clay matrix.
38 - 76	Intermediate Volcanic	Greyish green, very fine grained, massive, siliceous, quartz veining 62 – 65 m, slight to moderate weathering 38 – 40, oxidised fracture planes 46 – 53 m, 55 – 65 m, pyrite mineralisation 73 – 74 m.
76	EOH	

APPENDIX I

MONITORING BORE COMPLETION DATA

Project: **Tectonic Resources – Kundip Deposit**

Hole No: **KMB3**

Location: Site C

MGA Co-ordinates: 240 130 mE, 6 269 207 mN

AMG Co-ordinates: 239 985 mE, 6 269 062 mN

Status: Monitoring Bore

Date Commenced: 13/1/04 **Date Completed:** 14/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 70 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 70 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm, steel surface casing
+0.41 – 46 m	50 mm ND, Class 9 uPVC, blank
46 – 70 m	50 mm ND, Class 9 uPVC, slotted (0.5 mm aperture)

Static Water Level: 21.28 m below surface casing (23/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
28	Water Cut	-	-	-	-	
34	Trace	-	-	-	-	
40	Trace	-	-	-	-	
46	Trace	-	-	-	-	
52	Trace	-	-	-	-	
58	Trace	-	-	-	-	

APPENDIX I

MONITORING BORE COMPLETION DATA (KMB3 cont.)

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
64	Trace	-	-	-	-	
70	Trace	-	-	-	-	No significant flows

Lithology:

Depth (m)	Lithology	Description
0 - 1	Quartz Aggregate (intraformational conglomerate?)	Pinkish-red, fine to medium grained, subangular to subrounded grains, clay matrix.
1 - 4	Conglomerate	Dark red, orange, brown, green and greys, BIF, chert, quartz, quartz aggregate (as above), greenstone (mafic?), subangular to subrounded, poorly sorted.
4 - 70	Ultramafic – Serpentinite?	Olive to greyish green, fine-grained, massive, hard, possibly some quartz porphyry in sections, slightly to moderately weathered fracture planes (ferruginised) 7 – 9 m, 12 – 14 m, 46 – 47 m, freshening with increasing depth, pyrite mineralisation 27 – 29 m, 46 – 56 m.
70	EOH	

APPENDIX I

MONITORING BORE COMPLETION DATA

Project: **Tectonic Resources – Kundip Deposit**

Hole No: **KMB4**

Location: Site G

MGA Co-ordinates: 240 230 mE, 6 269 901 mN

AMG Co-ordinates: 240 092 mE, 6 269 758 mN

Status: Monitoring Bore

Date Commenced: 14/1/04 **Date Completed:** 14/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 76 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 76 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm, steel surface casing
+0.47 – 52 m	50 mm ND, Class 9 uPVC, blank
52 – 76 m	50 mm ND, Class 9 uPVC, slotted (0.5 mm aperture)

Static Water Level: 41.82 m below surface casing (23/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
58	Water Cut	-	-	-	-	
64	Trace	-	-	-	-	
70	Minor	-	-	-	-	Increase in flow
76	Minor	36 400	30.2	21 800	6.8	Increase in flow

APPENDIX I

MONITORING BORE DATA COMPLETION DATA (KMB4 cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 1	Clay / Highly Weathered bedrock	Orange-brown, soft, gritty. Bedrock fragments fine-grained, massive, moderate to hard, slightly pitted.
1 - 10	Highly Weathered bedrock	Orange-brown, fine grained, massive, moderate to hard, slightly pitted.
10 - 38	Mafic	Green to olive (some orange and red oxidation), fine grained, slightly to moderately weathered, massive, siliceous, quartz veins 16 – 17 m, 38 – 40 m, 44 – 45 m, freshening from 28 m, minor quartz porphyry from 28 m.
38 - 76	Mafic	Bluish-green, very fine grained, massive, hard, slightly to moderately weathered fracture planes (orange and red) throughout, freshening with increasing depth, quartz veins 38 – 40 m, 44 – 52 m, 58 – 76 m, malachite 51 – 52 m, pyrite mineralisation 58 - 63 m, 72 – 76 m, fresh from 58 m (slow drilling).
76	EOH	

APPENDIX I

MONITORING BORE COMPLETION DATA

Project: **Tectonic Resources – Kundip Deposit**

Hole No: **KMB5**

Location: Site D

MGA Co-ordinates: 239 360 mE, 6 269 963 mN

AMG Co-ordinates: 239 221 mE, 6 269 810 mN

Status: Monitoring Bore

Date Commenced: 14/1/04 **Date Completed:** 15/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 70 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 70 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm, steel surface casing
+0.59 – 45 m	50 mm ND, Class 9 uPVC, blank
45 – 63 m	50 mm ND, Class 9 uPVC, slotted (0.5 mm aperture)

(Hole collapsed- 7 m lost during casing)

Static Water Level: 4.08 m below surface casing (23/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
4	Water Cut	-	-	-	-	Perched aquifer? - Rainwater infiltration from previous week sitting on clay pan below surface
						Dry hole

APPENDIX I

MONITORING BORE COMPLETION DATA (KMB5 cont.)

Lithology:

Depth (m)	Lithology	Description
0 - 1	Clay	Dark grey-brown, soft, gritty.
1 - 2	Quartz Sand	Brown, fine to medium, minor clay and highly-weathered bedrock granules (orange-brown, fine grained), poorly sorted, alluvial
2 - 3	Colluvium	Orange-brown, minor fine quartz sand, clay and highly-weathered bedrock (orange-brown, fine grained), poorly sorted.
3 - 4	Clay / Highly Weathered bedrock	Yellow, orange, brown and red. Bedrock fragments: fine grained, massive, hard.
4 - 8	Clay / Highly Weathered bedrock	Orange-brown, soft, gritty. Bedrock fragments: fine grained, massive, some well-rounded.
8 - 15	Conglomerate	Pale blue-green rock with orange clay matrix, very fine grained with very well-rounded clasts, moderately hard to hard.
15 - 48	Felsic Volcanic?	Pale bluish-green, very fine to fine grained, massive with minor well rounded clasts, fresh, hard (slow drill rate), quartz veins 32 – 33 m, minor oxidation (yellow) from 30 – 33 m.
48 - 70	Mafic	Dark greenish-blue, very fine grained, massive, fresh, hard (slow drilling rate), quartz veins 48 – 70 m, pyrite mineralisation 62 – 63 m.
70	EOH	

APPENDIX I

MONITORING BORE COMPLETION DATA

Project: **Tectonic Resources – Kundip Deposit**

Hole No: **KMB6**

Location: Site E

MGA Co-ordinates: 239 716 mE, 6 269 469 mN

AMG Co-ordinates: 239 580 mE, 6 269 319 mN

Status: Monitoring Bore

Date Commenced: 15/1/04 **Date Completed:** 17/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 70 m

Drilling Details: 0 – 3 m 200 mm hammer
3 – 70 m 140 mm hammer

Casing Details:

0 – 3 m	154 mm, steel surface casing
+0.14 – 46 m	50 mm ND, Class 9 uPVC, blank
46 – 70 m	50 mm ND, Class 9 uPVC, slotted (0.5 mm aperture)

Static Water Level: 23.56 m below surface casing (23/1/04)

Hydro Data:

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
28	Trace	-	-	-	-	After change of rods
34	Trace	-	-	-	-	After change of rods
40	Trace	-	-	-	-	
46	Trace	-	-	-	-	
52	22	-	-	-	-	
58	57	62 000	18.7	37 200	7.1	Pale brown, sample clean

APPENDIX I

MONITORING BORE COMPLETION DATA (KMB6 cont.)

Depth (m)	Airlift Rate (m^3/d)	EC (µS/cm)	Temp (°C)	TDS (mg/L)	pH	Comments
64	57	62 200	19.6	37 300	7.1	Pale brown
70	52	62 000	22.2	37 200	7.1	Pale brown

Lithology:

Depth (m)	Lithology	Description
0 - 4	Clay / Highly Weathered bedrock	Brown, soft. Bedrock fragments: orange, red and brown, fine grained, massive, hard, minor quartz.
4 - 37	Mafic	Greenish grey-blue, very fine grained, some oxidation on fracture faces (orange and brown), massive, hard, quartz porphyry in sections, freshening with depth, quartz veins 20 – 37 m, pyrite mineralisation 36 – 37 m.
37 - 42	Mafic	Dark grey, very fine grained, siliceous, massive, hard, fresh, quartz veins 40 – 41 m, pyrite mineralisation 37 – 42 m (mineralisation rich 38 – 40 m).
42 - 46	Mafic	Greenish grey-blue, very fine grained, massive, hard, fresh, quartz porphyry in sections, pyrite mineralisation 42 – 46 m.
46 - 70	Mafic	Dark greenish-grey, fine to medium grained, massive, siliceous, hard, fresh, quartz porphyry in sections, quartz veins 49 – 51 m, 67 – 68 m, minor pyrite throughout.
70	EOH	

APPENDIX I

MONITORING BORE COMPLETION DATA

Project: **Tectonic Resources – Kundip Deposit**

Hole No: **KMB7**

Location: Site A

MGA Co-ordinates: 240 301 mE, 6 268 730 mN

AMG Co-ordinates: 240 162 mE, 6 268 581 mN

Status: Monitoring Bore (converted exploration hole, Previously drilled on 28/8/03)

Date Commenced: 17/1/04 **Date Completed:** 17/1/04

Drilling Contractor: Resource Drilling

Drilling Rig: Schram T66H

Depth Drilled: 106 m

Drilling Details: **Previously drilled hole**

Casing Details:

+0.24 – 76 m	50 mm ND Class 9 uPVC Blank
76 – 106 m	50 mm ND Class 9 UPVC slotted (0.5 mm aperture)

Static Water Level: 25.85 m below surface casing (23/1/04)

Hydro Data: Previously drilled hole – no data

Lithology:

Depth (m)	Lithology	Description
0 - 54	Weathered Phyllite	Cream, yellow, khaki, grey, brown and light brown, weathered to partially weathered, quartz veins 5 – 8 m, 11 – 13 m, 14 – 18 m (rich), 19 – 20 m, 23 – 24 m, 25 – 26 m, 27 – 28 m, 29 – 30 m, 37 – 38 m, 41 – 45 m, 46 – 47 m, 48 – 50 m, 51 – 54 m, minor ferrugenisation 19 – 20 m, 27 – 28 m, highly ferruginous 37 – 39 m.
54 – 60	Phyllite	Light to dark grey, green, quartz veins 54 – 56 m, 59 – 60 m.
60 – 64	Phyllite	Light green, quartz veins (rich from 60 – 61 m).
64 - 71	Dolomite	Light green, red, pink and cream, quartz veins (rich from

		64 – 68 m).
71 - 77	Phyllite / Quartzite	Cream, red and dark green, quartz veins 75 – 77 m.
77 - 99	Conglomerate	Dark red, green, grey and pink.
99 - 106	Intermediate Volcanic	Dark grey and green.
106	EOH	

Type of Sample Location		Date Sampled	EC	TDS	pH	Al	B	Ca	Cl	Cd	Co	Cu	Fe	K	Mg	Na	Ni	Pb	Zn	CO3	HCO3	Nitrate as NO3	Nitrate as NH3	Sulphate as SO4
			mS/m	mg/l		mg/l	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/L	mg/L	mg/l	mg/L
SALINE WATER STORAGE DAM	Dam Wall	24-Apr-02	3660	26000	8.2	0.005	3.5	109		<.005	0.006	<.002	0.081	186	1270	8210	1.6	<0.050	0.01			0.45		2440
		21-Jun-02	3390	27000	8.4				12000											45	194	0.44		2380
		01-Aug-02	3630	24000	8.1				14600											<2	598	0.35		2350
		16-Oct-02	3200	28000	8.2				12000											<2	555	0.23		2430
		11-Nov-02	3690	29000	8.1				12000											<2	543	0.08	0.03	2380
		23-Dec-02	4100	30000	8.2				14000											<2	512	0.01	0.05	2600
		29-Jan-03	4210	30000	8.5				16000											60	387	0.01	0.02	2670
		04-Mar-03	4380	31000	8.4				14000											66	372	<0.01	0.01	2780
		01-May-03	4370	31000	8.3				16000											<2	430	<0.01	0.04	2910
		22-May-03	4360	30000	8.2				16300											75	360	<0.01	0.02	2990
		01-Jul-03	4300	31000	8.3				16000												525	0.03	0.08	2960
		30-Jul-03	4230	30000	8.2				16000											<2	531	0.01	0.04	2850
		16-Oct-03	4090	30000	8.4			120	15000					145	1350	8330				174	171	0.03	0.02	2650
		15-Jul-04	4610	33000	8.4	0.043	5.4	164	17000	<0.002	0.006	0.006	1.2	114	1440	8120	1.1	<0.005	0.013	<2	4610	0.41		2520
		12-Aug-04	4620	36000	8.5	0.067	6	151	17000	<0.002	0.005	0.007	0.11	164	1540	9800	1.2	<0.005	0.014	<2	302	0.4		3290
		08-Sep-04	4450	32000	8.5	0.087	5.7	148	17000	<0.002	0.006	0.005	0.1	176	1430	8610	1.2	<0.005	0.009	81	329	0.37		2920
		24-Nov-04	4760	33000	8.4	0.045	5.8	137	17000	<0.001	<0.005	0.008	0.062	171	1570	9820	0.97	<0.005	0.021	99	247	0.11		3050
		16-Feb-05	5260	37000	8.4	0.13	7	152	21000	<0.002	<0.005	0.034	<0.005	222	1830	9780	0.52	0.0043	0.013	50	388	<0.01		3610
		22-Mar-05		40000	8.6	<0.05	6.5	166	21800	<0.002	<0.05	<0.05	<0.05	209	1710	11500	-	<0.002	<0.05	108	275	0.03		3320
		19-May-05		39000	8.7	<0.005	7.3	161	21000	<0.002	<0.005	0.007	<0.005	187	1790	12200	0.71	<0.002	0.013	73	317	0.12		3530
		21-Jun-05		37000	8.9	0.025	6.5	157	18000	<0.001	0.005	0.007	0.078	195	1590	10200	1.2	<0.0010	0.032	102	268	0.13		3250
MINE DEWATERING	Mine Discharge	01-May-03	3200	22000	7.8				11000								7.4			<2	787	0.49	0.96	1950
		22-May-03	3210	22000	7.8				10300								6.4			<2	793	0.55	1	1900
		01-Jul-03	3150	21000	8				11000								5.9			<2	790	0.56	0.92	2100
		03-Jul-03	3130					288																
		30-Jul-03	3210	22000	7.5				11000											<2	784	1.2	2	2070
		19-May-05		22000	8	<0.005	4.1	289	11000	<0.002	0.049	<0.005	0.007	114	1000	6600	7	<0.001	0.077	<2	726	3		2010
		21-Jun-05		22000	8.2	0.025	3.5	275	10000	<0.001	0.058	<0.005	0.14	115	973	6520	8.5	<0.0010	0.099	<2	659	0.4		2220
	Ppit	05-Sep-02	2660	22000	7.5				11000												830	0.59		1900
		16-Oct-02	2620	23000	7.7				9600											<2	720	0.52		1880
	Pit Sump	08-Nov-02	3060	22000	7.3				9700								5.4			<2	763	0.96	1.1	1750
		23-Dec-02	3100	22000	7.4				9600								4.7			<2	723	0.39	0.6	1870
		29-Jan-03	3090	22000	7.6				11000								6.2			<2	695	0.68	0.95	1900
		04-Mar-03	3210	22000	7.6				11000								11			<2	689	1.3	1.6	1970
	Underground	20-Sep-02	2460	22000	7.5	0.072	3.3	188	10000	0.005	0.061	0.007	3	106	853	6080	6.6	0.05	0.057		695	0.2		1990
		20-Sep-02	2460	21000	8	0.005	3.4	210	9900	0.005	0.005	0.002	0.37	108	757	6170	0.035	0.05	0.005		744	0.03		1770
		20-Sep-02	2250	18000	7.8	0.005	2.9	105	8600	0.005	0.005	0.002	0.38	110	1030	5290	0.045	0.05	0.005		1280	0.01		1490
		20-Sep-02	2670	23000	7.5	0.005	3.3	314	11000	0.005	0.005	0.002	0.53	116	954	6720	0.01	0.05	0.005		854	0.01		1930
		20-Sep-02	2660	23000	7.6	0.005	3.3	289	11000	0.005	0.005	0.002	0.46	112	934	6500	0.1	0.05	0.16		878	0.01		1990
		16-Oct-02	2330	18000	7.6				9100											<2	1270	<0.01		1530
		16-Oct-02	2800	24000	7.4				11000											<2	824	<0.01		1960
		16-Oct-02	2660	23000	7.7				10000											<2	756	0.05		1930
		16-Oct-02	3670	23000	7.6				10000											<2	683	0.97		1910
		16-Oct-02	2810	25000	7.4				11000											<2	878	<0.01		1940
		08-Nov-02	2980	23000	7.4				9500											<2	769	0.01	0.11	1770
		08-Nov-02	3240	25000	7.2				11000											<2	824	<0.01	0.48	1940
		08-Nov-02	3220	25000	6.9				9100											<2	811	<0.01	0.46	1930
		08-Nov-02	2650	20000	6.9				8300											<2	1260	<0.01	0.09	1500
		08-Nov-02	2550	19000	7				8700											<2	1300	<0.01	0.1	1440
		23-Dec-02	3250	22000	7.9				11000											<2	720	0.87	0.21	1990
		23-Dec-02	3550	24000	7.5				11000											<2	787	<0.01	0.5	2000
		23-Dec-02	3540	24000	7.5				11000											<2	799	<0.01	0.47	1980

Type of Sample Location		Date Sampled	EC	TDS	pH	Al	B	Ca	Cl	Cd	Co	Cu	Fe	K	Mg	Na	Ni	Pb	Zn	CO3	HCO3	Nitrate as NO3	Nitrate as NH3	Sulphate as SO4
			mS/m	mg/l		mg/l	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/L	mg/L	mg/l	mg/L
MINE DEWATERING	Underground	23-Dec-02	3630	24000	7.4				12000											<2	744	<0.01	0.54	2090
		29-Jan-03	3180	22000	7.9				11000											<2	619	0.34	0.09	1960
		29-Jan-03	2580	17000	8.1				9000											<2	1350	0.03	0.07	1450
		29-Jan-03	3370	23000	7.8				12000											<2	793	0.01	0.38	1940
		29-Jan-03	2980	20000	7.7				10000											<2	589	0.02	0.07	1720
		29-Jan-03	2990	20000	7.8				10000											<2	1160	0.01	0.21	1690
		04-Mar-03	3210	22000	7.7				11000											<2	622	0.52	0.04	1970
		04-Mar-03	3450	24000	7.6				12000											<2	793	<0.01	0.24	1980
		04-Mar-03	3020	20000	7.7				10000											<2	1210	<0.01	0.14	1680
		04-Mar-03	3500	24000	7.5				12000											<2	744	<0.01	0.32	2070
		04-Mar-03	2830	19000	7.9				9600											<2	1300	<0.01	0.13	1550
		01-May-03	2850	19000	7.6				9600											<2	1260	<0.01	0.23	1550
		01-May-03	3450	25000	7.4				12000											<2	738	<0.01	0.54	2210
		01-May-03	2910	20000	7.8				9800											<2	1280	<0.01	0.25	1710
		22-May-03	2870	19000	8				9460												1220	<0.01	0.21	1530
		22-May-03	2930	20000	8				9670												1220	<0.01	0.28	1600
		01-Jul-03	2640	18000	7.8				9000											<2	1340	0.03	0.05	1500
		01-Jul-03	3440	24000	7.2				12000											<2	689	0.06	0.48	2110
		01-Jul-03	2830	19000	7.7				9800											<2	1240	0.01	0.13	1680
		30-Jul-03	2730	18000	7.6				9300											<2	1240	0.01	0.07	1540
		30-Jul-03	3150	21000	7.5				11000											<2	1110	<0.01	0.17	1910
		09-Oct-03	3160	23000	8				10000											<2	1110	<0.01		1790
		20-Nov-03	3180	23000	7.5			300	11000						11000	6330				<2	1520	<0.01	0.35	2000
		22-Dec-03	3310	22000	7.2			287	11200					115	1040	6190				<2	755	<0.01	0.31	2150
		15-Jan-04	3310	23000	7.6	<0.005	3.7	213	11000	0.086	<0.005	0.021	0.065	112	1160	5900	0.24	<0.02	0.24	<2	1040	0.27		1900
		18-Feb-04	3990	25000																		0.01		2400
		11-Mar-04	3320	23000	7.2	<0.005	3.5	171	11000	<0.002	<0.005	0.008	0.007	102	1100	5620	0.02	<0.02	0.005	<2	1070	0.01		2020
		21-Apr-04	3310	23000	7.7	<0.005	3	164	11000	<0.002	<0.005	<0.005	0.11	117	1020	6540	0.1	<0.02	<0.005	<2	634	0.03		1900
		20-May-04	3910	25000	7.7	<0.005	2.1	458	15000	<0.002	<0.005	<0.005	2.4	109	1190	7330	<0.01	<0.02	0.014	<2	348	0.03		2460
		15-Jun-04	3300	22000	8	0.007	3.1	231	12000	<0.002	0.047	0.047	0.1	111	983	6050	8.2	<0.02	<0.02	<2	705	0.29		2210
		14-Jul-04	3430	24000	7.4	<0.005	5.3	141	12000	<0.002	<0.005	<0.005	1.4	112	1010	7330	<0.01	<0.005	0.025	<2	811	0.01		2080
		12-Aug-04	3600	27000	7.1	0.053	4.1	354	9750	<0.002	<0.002	<0.005	1.2	112	978	6630	0.04	<0.005	0.01	<2	717	0.01		2400
		08-Sep-04	3370	23000	7.9	<0.005	3.9	260	10000	<0.002	0.12	<0.005	0.22	114	1070	6030	25	<0.005	0.15	<2	787	0.05		2380
		28-Oct-04	4340	26000	7.3	<0.005	3.4	399	14000	<0.001	0.077	<0.005	<0.005	115	1030	6860	11	<0.005	0.059	<2	522	5.8		2300
		24-Nov-04	3320	22000	7.8	0.032	3.7	324	11000	<0.001	<0.005	<0.005	1.1	112	981	6220	0.04	<0.005	0.023	<2	991	0.01		1930
		22-Dec-04	3220	21000	7.6	<0.005	3.3	231	11000	<0.001	<0.005	<0.005	2.5	103	884	5730	<0.01	0.005	0.008	<2	799	0.23		1890
		25-Jan-05	3540	38000	7.5	<0.005	3.8	385	12000	<0.002	<0.005	<0.005	0.008	121	1050	6700	0.03	<0.002	0.02	<2	877	<0.01		2030
		16-Feb-05	3100	20000	7.6	0.009	3.5	223	10000	<0.001	<0.005	0.016	<0.005	117	929	5580	0.17	0.0028	0.14	<2	1170	0.17		1650
		19-Apr-05		20000	7.6	<0.005	3.4	158	10100	<0.002	<0.005	<0.005	<0.005	129	910	5430		<0.001	<0.005	<2	1240	<0.01		1550
SEEPAGE RETURN	Dam Sump	07-Apr-02	3650	29000																		3.8		4520
		15-Apr-02	4280	40000	7.3																	0.87		4150
		23-May-02	3960	33000	7.1				14000											<2	653	1.8		4020
		21-Jun-02	3740	31000	7				15000											<2	641	0.49		3310
		16-Oct-02	3120	30000	6.8				10000											<2	671	0.27		3650
		25-Nov-02	4130	31000	7.3				13000											<2	689	5.9	0.1	4180
		23-Dec-02	3950	29000	7				13000											<2	671	0.21	0.04	2730
		29-Jan-03	3880	28000	7.4				15000											<2	641	0.23	0.03	2700
		06-Oct-04	3650	24000	7.6	0.011	3.5	341	12000	<0.002	0.058	0.006	0.021	131	1160	7560	8.1	0.002	0.058	<2	702	2		2530
	nt Tower	04-Mar-03	4010	28000	7.9				14000											<2	592	0.08	0.02	2700
		28-Oct-04	4920	30000	6.9	<0.005	6.2	113	16000	<0.001	0.069	<0.005	<0.005	101	1370	7910	2.5	<0.005	0.023	<2	572	0.09		2600
		16-Feb-05	4270	29000	7	<0.005	7.7	122	16000	<0.001	0.097	0.008	0.011	119	1340	7990	2	<0.001	0.042	<2	683	0.12		2670

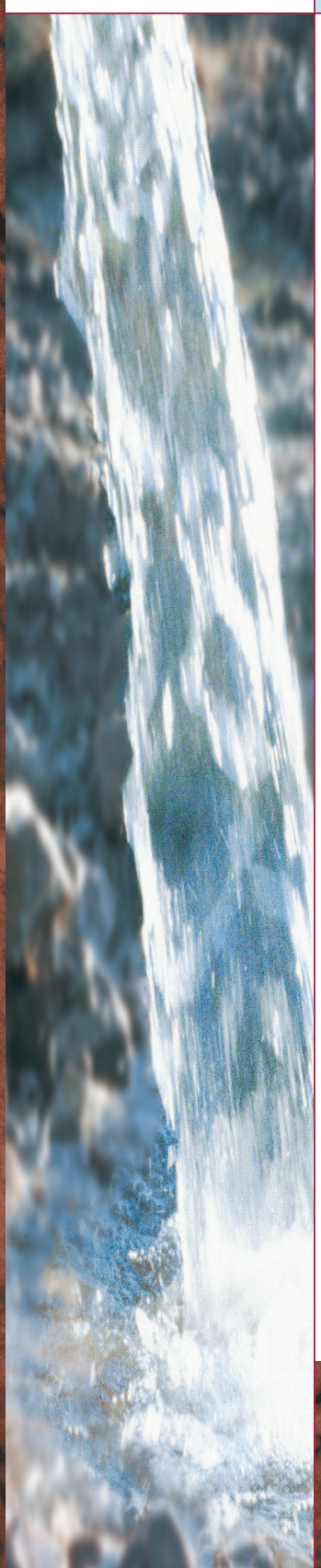
Type of Sample Location		Date Sampled	EC	TDS	pH	Al	B	Ca	Cl	Cd	Co	Cu	Fe	K	Mg	Na	Ni	Pb	Zn	CO3	HCO3	Nitrate as NO3	Nitrate as NH3	Sulphate as SO4
			mS/m	mg/l		mg/l	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/L	mg/L	mg/l	mg/L
	Deca	19-Apr-05		30000	7.1	<0.005	7.8	124	15700	<0.002	0.094	<0.005	0.011	115	1390	8370		0.002	0.022	<2	616	0.12		2690
		19-May-05		30000	7.4	0.008	8.7	129	16000	<0.002	0.097	0.007	0.013	110	1510	9870	2.5	<0.001	0.046	<2	647	0.09		2770
SEEPAGE RECOVERY BORE	WB01	29-Jan-03	3880	27000	7.2				14000											<2	677	0.09	0.01	2610
		30-Jul-03	4000	29000	7				15000											<2	613	0.03	0.01	2730
		15-Jun-04	4260	30000	6.9	<0.005	6	158	16000	<0.002	<0.005	<0.005	1.8	116	1460	7850	0.09	<0.02	<0.02	<2	647	0.04		2700
		12-Aug-04	4190	35000	6.6	<0.005	6.7	117	15000	<0.002	0.012	<0.005	1	146	1490	8290	0.12	<0.005	0.006	<2	536	0.02		3130
		22-Dec-04	4180	29000	7.1	<0.005	6.2	102	15000	<0.001	0.013	<0.005	1.7	122	1380	8280	0.13	<0.005	0.005	<2	485	0.02		2670
		22-Mar-05		31000	7	<0.05	5.9	108	16200	<0.002	<0.05	<0.05	<0.05	139	1430	8610	-	<0.002	<0.05	<2	464	0.01		3570
		19-May-05		30000	7.1	0.096	7.2	96.6	17000	<0.002	0.015	0.018	0.39	131	1480	9180	0.16	0.003	0.018	<2	451	<0.01		2760
		01-Aug-02	3660	25000	6.5				14900											<2	750	0.25		2480
		05-Sep-02	3100	27000	6.4				13000												732	0.15		2590
		16-Oct-02	3110	29000	6.7				11000											<2	702	0.2		2550
		11-Nov-02	3710	29000	6.5				13000											<2	702	0.14	<0.01	2500
		23-Dec-02	3960	28000	6.7				13000											<2	677	0.09	<0.01	2640
		10-Aug-05		29000	6.9	0.13	6.6	106	15400	0.001	0.016	<0.005	1.7	152	1660	9680	0.21	<0.001	0.022	<2	409	0.01		3150
	WB02	04-Mar-03	4010	28000	7.3				34000											<2	668	0.04	<0.01	2650
		04-Mar-03	3990	28000	7.2				14000											<2	747	0.04	<0.01	2610
		20-May-04	4420	31000	7.1	<0.005	6.4	210	16000	<0.002	<0.005	<0.005	0.026	80.1	1520	8670	0.15	<0.02	0.008	<2	714	0.08		3080
		15-Jul-04	4230	30000	7.2	<0.005	5.5	161	15000	<0.002	<0.005	<0.005	2.5	117	1480	8090	0.09	<0.005	0.016	177	4230	0.04		2570
		28-Oct-04	5030	30000	6.8	<0.005	4.5	167	16000	<0.001	<0.005	<0.005	<0.005	114	1420	7830	0.1	<0.005	0.005	<2	560	0.05		2600
		22-Dec-04	4360	30000	7.5	<0.005	5.8	179	16000	<0.001	0.006	<0.005	2.3	110	1440	8600	0.15	<0.005	0.013	<2	552	0.05		2790
		19-May-05		32000	7.2	<0.005	6.7	189	18000	<0.002	0.006	<0.005	<0.005	115	1620	9860	0.15	<0.001	0.012	<2	555	0.09		3020
		21-Jun-05		31000	7.3	<0.005	5.9	174	15000	<0.001	0.005	<0.005	0.66	123	1480	8610	0.13	<0.0010	0.011	<2	573	0.08		2780
	WB02 & WB03	08-Sep-04	4190	30000	7.4	<0.005	6.3	174	16000	<0.002	<0.005	<0.005	0.19	135	1500	7940	0.11	<0.005	<0.005	<2	598	0.06		2920
	WB02, WB03 & WB04	29-Jan-03	3840	27000	7.3				14000											<2	787	0.19	0.02	2460
		01-May-03	3890	27000	7.6				14000											<2	738	0.07	0.02	2620
		22-May-03	4000	27000	7.8				14900											<2	747	0.06	0.03	2580
		01-Jul-03	4010	29000	6.9				15000											<2	756	0.09	0.07	2570
		30-Jul-03	4030	28000	6.8				15000											<2	735	0.01	0.08	2580
	WB03	01-May-03	4050	28000	7.6				14000											<2	641	0.03	<0.01	2790
		08-Sep-04	4520	32000	7.3	<0.005	6.6	248	17000	<0.002	0.001	<0.005	0.009	75.6	1510	8660	0.99	<0.005	0.022	<2	634	0.11		2930
		18-Jul-05		35000	7	0.018	7.6	292	18600	<0.001	0.005	0.015	0.022	85	2060	9820	0.18	0.002	0.059	0	616	0.08		3750
	WB04	22-May-03	4060	29000	7.2				15200											<2	653	0.05	<0.01	2960
	WB05	01-Jul-03	4000	29000	6.9				15000											<2	634	0.08	0.03	2980
		28-Oct-04	4970	30000	6.7	<0.005	4.7	154	16000	<0.001	0.01	0.014	0.007	121	1370	7190	0.58	<0.005	0.058	<2	698	0.01		2470
		16-Feb-05	4210	28000	7	<0.005	6	154	15000	<0.001	<0.005	<0.005	0.022	140	1320	7840	0.02	0.0012	0.006	<2	647	<0.01		2510
		19-Apr-05		30000	7.1	<0.005	6.1	148	16500	<0.002	<0.005	<0.005	0.069	140	1400	8170		0.001	<0.005	<2	708	<0.01		2520
		19-May-05		30000	7.3	<0.005	6.9	152	19000	<0.002	<0.005	<0.005	0.005	133	1560	9220	0.01	<0.001	0.008	<2	644	<0.01		2790
		18-Jul-05		30000	7.1	<0.005	6.5	161	16000	<0.001	<0.005	<0.005	0.78	142	1600	8850	0.01	<0.001	<0.005	0	677	0		3010
		10-Aug-05		29000	7.2	0.12	6.5	6.5	14200	<0.001	<0.005	<0.005	0.26	159	1890	8470	0.01	<0.001	0.006	<2	634	<0.01		3210
	WB06	20-May-04	4100	29000	7	<0.005	6.2	110	15000	<0.002	0.01	<0.005	1.2	126	1430	7850	0.15	<0.02	0.04	<2	543	0.03		2900
		19-May-05		29000	7.4	0.005	5.8	154	17000	<0.002	0.006	0.007	0.007	136	1520	9530	0.06	<0.001	0.011	<2	769	0.01		2550
		10-Aug-05		29000	7.3	0.12	6	6	14900	<0.001	0.009	0.009	0.36	165	1770	9340	0.11	<0.001	0.008	<2	744	0.02		3110
	01	20-Nov-03	3980	28000	7.1			131	15000						1510	8260				<2	641	<0.01	0.19	2570
		22-Dec-03	1070	24000	7			143	11900					134	1320	7170				<2	1070	<0.01	<0.01	2110
		15-Jan-04	4070	25000	6.7	0.032	5	120	15000	<0.002	0.01	0.016	0.051	117	1440	7690	0.1	<0.02	0.12	<2	656	<0.01		2430

Type of Sample Location	Date Sampled	EC	TDS	pH	Al	B	Ca	Cl	Cd	Co	Cu	Fe	K	Mg	Na	Ni	Pb	Zn	CO3	HCO3	Nitrate as NO3	Nitrate as NH3	Sulphate as SO4
		mS/m	mg/l		mg/l	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/L	mg/L	mg/l	mg/L
WMB	18-Feb-04	4100	25000																		0.01		2520
WMB01	21-Apr-04	4100	39000	6.7	<0.005	6.5	111	15000	<0.002	0.011	<0.005	0.36	127	1410	8430	0.1	<0.02	<0.005	<2	555	0.02		2610
	15-Jul-04	4210	25000	7.1	<0.005	5.1	122	16000	<0.002	0.005	0.013	0.011	124	1510	8980	0.06	<0.005	0.015	<2	612	0.04		2460
	16-Aug-04	4610	29000	6.8	0.016	6.1	131	16000	<0.002	0.007	0.019	0.02	149	1530	8170	0.09	0.0051	0.059	<2	698	0.44		2800
	08-Sep-04	4170	30000	7.4	0.012	5.8	129	16000	<0.002	0.007	0.013	0.017	133	1520	7960	0.06	<0.005	0.01	<2	653	0.44		2730
	28-Oct-04	4270	29000	7	0.025	5.6	156	16000	<0.001	0.005	0.025	0.017	149	1700	9120	0.07	<0.005	0.031	<2	628	0.11		3000
	28-Oct-04	5150	30000	6.7	<0.005	4.2	134	17000	<0.001	<0.005	0.013	<0.005	131	1460	7440	0.06	<0.005	0.021	<2	589	0.01		2640
	24-Nov-04	4410	31000	7	0.043	5.4	142	16000	<0.001	0.007	0.028	0.038	157	1660	9360	0.07	<0.005	0.068	<2	558	0.06		3010
	22-Dec-04	4360	31000	7.9	0.051	5.3	139	16000	<0.001	0.008	0.018	0.045	132	1530	8720	0.07	<0.005	0.028	<2	567	0.03		2720
	25-Jan-05	4190	29000	7	0.029	5.1	130	15000	<0.002	0.009	0.014	0.008	128	1470	8380	0.06	<0.002	0.049	<2	573	0.34		2700
	16-Feb-05	4370	25000	6.8	0.07	5.3	138	16000	<0.001	0.014	0.019	0.012	160	1510	7850	0.07	0.0027	0.088	<2	573	0.21		2780
	22-Mar-05		31000	7.2	0.15	5.2	174	15000	<0.002	<0.05	<0.05	<0.05	157	1680	9720	0.07	<0.002	<0.05	60	543	0.1		2840
	19-Apr-05		31000	6.9	<0.005	5.3	128	16900	<0.002	0.01	0.013	<0.005	143	1430	8060		0.001	0.01	<2	580	0.18		2510
	19-May-05		31000	7.2	0.007	5.9	131	17000	<0.002	0.014	0.041	0.005	146	1610	9780	0.07	0.001	0.08	<2	573	<0.01		2730
	21-Jun-05		32000	7.3	0.013	5.6	130	16000	0.0011	0.01	0.021	0.019	146	1530	8560	0.07	0.014	0.04	<2	581	<0.01		2710
	18-Jul-05		32000	7	0.013	6	149	19700	<0.001	0.01	0.019	0.006	586	1990	10200	0.08	0.003	0.037	0	586	0		3070
	10-Aug-05		29000	7.8	0.17	6.2	152	16500	0.002	0.01	0.021	0.011	164	1950	10400	0.16	0.007	0.019	<2	549	<0.01		3260
WMB02	20-Nov-03	3470	24000	7.3			140	12000						1300	6980				<2	1050	<0.01	<0.01	2160
	22-Dec-03	984	25000	6.9			139	12700					116	1360	6980				<2	984	<0.01	<0.01	2290
	15-Jan-04	3540	22000	6.9	0.012	4.2	129	12000	<0.002	0.01	<0.005	0.16	106	1250	6460	0.12	<0.02	0.11	<2	1010	<0.01		2040
	18-Feb-04	3550	22000																		0.01		2110
	11-Mar-04	3320	26000	6.9	<0.005	2.5	126	11000	0.007	0.21	0.052	0.016	122	1460	5520	2.9	<0.02	0.85	<2	586	0.01		3240
	15-Jun-04	4120	28000	7.2	0.012	6.3	142	15000	<0.002	0.016	0.023	0.75	93.4	1410	7480	0.2	<0.02	0.026	<2	839	0.01		2540
	16-Aug-04	3870	24000	6.8	0.23	5.2	141	11900	<0.002	<0.005	0.03	0.92	131	1330	6920	0.05	0.0063	0.047	<2	1090	0.01		2340
	08-Sep-04	3590	25000	7.3	<0.005	4.8	137	11000	<0.002	<0.005	<0.005	0.1	114	1300	6710	0.03	<0.005	0.005	<2	1050	<0.01		2210
	28-Oct-04	3700	25000	7.1	0.005	4.8	176	13000	<0.001	<0.005	<0.005	0.1	139	1280	7320	0.03	<0.005	<0.005	<2	1010	<0.01		2440
	28-Oct-04	4260	25000	7	<0.005	3.8	134	14000	<0.001	<0.005	0.018	<0.005	119	1250	6180	0.04	<0.005	0.058	<2	1010	0.01		2170
	24-Nov-04	1010	27000	7.6	0.015	5.4	138	14000	<0.001	<0.005	0.07	0.049	120	1530	7830	0.07	<0.005	0.078	<2	869	0.04		2510
	22-Dec-04	4110	28000	7.4	0.012	5.9	141	15000	<0.001	<0.005	0.037	0.05	107	1480	7930	0.06	<0.005	0.047	<2	802	0.04		2490
	25-Jan-05	3730	26000	7.2	<0.005	4.6	139	14000	<0.002	<0.005	0.012	0.009	118	1320	6990	0.05	<0.002	0.03	<2	878	0.01		2370
	16-Feb-05	4010	25000	7.2	0.008	4.9	151	14000	<0.001	0.007	0.005	<0.005	148	1390	7080	0.04	<0.001	0.008	<2	848	<0.01		2470
	22-Mar-05		32000	7.4	0.07	5.3	156	16000	0.002	<0.05	<0.05	<0.05	127	1620	8650	0.1	<0.002	<0.05	<2	610	<0.01		2570
	19-Apr-05		30000	7.2	<0.005	5	148	15100	<0.002	0.01	<0.005	0.058	138	1420	7750		0.003	<0.005	<2	744	<0.01		2410
	19-May-05		32000	7.6	0.005	7	159	18000	<0.002	0.019	0.026	<0.005	114	1690	9320	0.1	<0.001	0.036	<2	598	0.01		2800
	21-Jun-05		32000	7.4	0.05	6.6	157	18000	<0.001	0.021	0.034	0.32	121	1560	8690	0.11	0.0019	0.084	<2	604	<0.01		2760
	18-Jul-05		33000	6.9	0.012	7.6	190	17500	<0.001	0.029	0.017	0.029	616	1850	9850	0.15	0.002	0.027	0	616	0		3260
	10-Aug-05		31000	7.1	0.14	7.7	208	17200	<0.001	0.04	0.016	0.02	121	1980	9440	0.22	<0.001	0.033	<2	573	<0.01		3430
WMB03	16-Sep-03	3510	24000	7.4												0.07					<0.01		
	16-Oct-03	3500	25000	6.9			146	12000					130	1340	6540				<2	994	<0.01	<0.01	2160
	20-Nov-03	3490	25000	7.2			147	12000						1320	7000				<2	1090	<0.01	<0.01	2180
	22-Dec-03	648	28000	6.8			121	15100					128	1480	7870				<2	648	<0.01	0.34	2530
	15-Jan-04	3530	25000	6.9	0.006	4.1	133	10000	<0.002	0.031	0.005	0.1	118	1240	6310	0.37	<0.02	0.24	<2	991	<0.01		2060
	18-Feb-04	3580	22000																		0.01		2150
	21-Apr-04	3260	25000	7.5	<0.005	4.9	145	12000	<0.002	<0.005	<0.005	0.025	128	1310	6910	0.07	<0.02	0.007	<2	1010	<0.01		2150
	20-May-04	3700	25000	7.4	0.028	4.2	149	12000	<0.002	<0.005	0.006	0.7	128	1350	7230	0.13	<0.02	0.052	<2	988	0.01		2230
	12-Aug-04	3720	22000	7.5	0.012	4.9	149	10500	<0.002	<0.005	0.005	0.038	146	1340	6700	0.09	<0.005	0.03	<2	1010	0.01		2480
	08-Sep-04	3670	25000	7.5	<0.005	4.7	153	12000	<0.002	<0.005	<0.005	0.18	130	1330	6730	0.03	<0.005	<0.005	<2	1010	0.03		2300
	28-Oct-04	3630	25000	7.1	<0.005	4.9	149	13000	<0.001	<0.005	<0.005	0.093	121	1380	7310	0.03	<0.005	<0.005	<2	1060	<0.01		2310
	28-Oct-04	4400	26000	7	<0.005	3.6	151	14000	<0.001	<0.005	<0.005	<0.005	122	1240	6380	0.06	<0.005	0.027	<2	985	<0.01		2070
	24-Nov-04	3860	30000	7.6	0.031	4.7	159	14000	<0.001	<0.005	0.017	0.65	140	1430	7320	0.06	<0.005	0.032	<2	329	0.02		2320
	22-Dec-04	3810	26000	7.8	0.015	4.9	155	14000	<0.001	<0.005	0.008	0.79	128	1340	7440	0.06	<0.005	0.031	<2	909	0.01		2340
	25-Jan-05	3950	28000	7.5	<0.005	5.1	130	14000	<0.002	0.009	0.013	<0.005	118	1440	7700	0.09	<0.002	0.04	<2	885	<0.01		2510

Type of Sample Location		Date Sampled	EC	TDS	pH	Al	B	Ca	Cl	Cd	Co	Cu	Fe	K	Mg	Na	Ni	Pb	Zn	CO3	HCO3	Nitrate as NO3	Nitrate as NH3	Sulphate as SO4
			mS/m	mg/l		mg/l	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/L	mg/L	mg/l	mg/L
MONITORING BORE		16-Feb-05	4260	28000	6.9	0.005	5.6	130	15000	<0.001	0.018	0.021	<0.005	142	1510	7660	0.12	<0.001	0.029	<2	671	<0.01		2670
		22-Mar-05		31000	7.1	<0.05	5.3	138	12000	<0.002	<0.05	<0.05	<0.05	138	1660	8760	0.12	<0.002	<0.05	<2	634	<0.01		2650
		19-Apr-05		31000	7	<0.005	5.7	130	15500	<0.002	0.015	0.01	0.019	136	1530	8300		<0.001	0.012	<2	659	<0.01		2540
		19-May-05		31000	7.2	0.019	6.4	121	18000	<0.002	0.024	0.075	<0.005	132	1670	9000	0.15	0.003	0.087	<2	622	<0.01		2670
		21-Jun-05		30000	7.3	0.18	6.1	118	16500	0.001	0.021	0.51	0.29	140	1510	8170	0.19	0.022	0.41	<2	671	<0.01		2540
		18-Jul-05		31000	7	0.021	7.3	144	18600	<0.001	0.021	0.041	0.047	695	1960	9970	0.16	0.001	0.055	0	695	0		3420
		10-Aug-05		31000	7.1	0.18	7.5	177	16700	<0.001	0.019	0.082	0.2	166	1940	10100	0.21	0.004	0.12	<2	659	<0.01		3300
	WMB04	01-Jul-03	3290	25000	6.6				11000											<2	555	0.02	0.11	3290
		09-Oct-03	3310	25000	6.6				11000											<2	616	<0.01		3030
		15-Jan-04	3310	23000	6.5	0.006	2.3	122	11000	<0.002	<0.005	<0.005	3.6	115	1420	5550	0.03	<0.02	<0.005	<2	663	<0.01		3020
		18-Feb-04	3360	21000																		0.01		3380
		11-Mar-04	3460	25000	7	<0.005	4.4	128	11000	<0.002	<0.005	0.01	0.046	101	1220	5830	0.58	<0.02	0.051	<2	1020	0.01		2210
	WMB07	07-Aug-02	3000	22000	6.8				11900											<2	793	3.4		2110
		08-Nov-02	3140	24000	6.9				9600											<2	1280	2.5	0.09	2040
		23-Dec-02	3540	25000	7				11000											<2	799	1.2	1.7	2330
		04-Mar-03	3930	28000	7.2				15000											<2	537	0.22	0.08	2600
		22-May-03	3940	28000	7.8				15000											<2	750	0.12	0.09	2720
		30-Jul-03	3810	27000	7.3				14000											<2	747	0.29	0.02	2640
		09-Oct-03	3870	27000	7.1				12000											<2	732	0.46		2470
		21-Apr-04	4070	29000	7.6	0.14	6.4	115	15000	<0.002	<0.005	<0.005	0.14	130	1600	7990	0.11	<0.02	0.015	<2	750	0.11		2640
		18-Jul-05		29000	7.2	0.028	6.3	143	15300	<0.001	<0.005	0.035	0.024	163	1780	8760	0.16	0.001	0.11	0	720	0.13		2930
	WMB08	29-Jan-03	4750	32000	7				16000											<2	857	0.03	0.62	3040
		30-Jul-03	4300	32000	6.4				16000											<2	528	0.1	7.8	4240
		11-Mar-04	4230	30000	6.9	<0.005	6.5	172	15000	<0.002	0.032	0.017	0.037	107	1540	8170	4.7	<0.02	0.094	<2	875	0.02		2940
		15-Jun-04	4360	31000	6.7	0.1	6.4	241	16000	<0.002	0.2	0.026	27	117	1560	8220	27	<0.02	0.19	<2	872	0.01		3320
	WMB09	07-Aug-02	4270	33000	6.4				16400											<2	933	0.01		3200
		16-Oct-02	3380	32000	6.6				13000											<2	891	0.03		2830
		23-Dec-02	4300	31000	6.9				15000											<2	854	0.1	0.26	2750
		04-Mar-03	4290	31000	7				16000											<2	744	<0.01	0.05	2720
	WMB10	05-Sep-02	3340	31000	5.7				15000												372	0.1		2930
		16-Oct-02	3260	35000	6.3				16000											<2	390	0.1		2830
		01-May-03	4820	31000	7				15000											<2	854	<0.01	0.28	2810
		03-Jul-03	4080	32000	6.7				15000											<2	375	0.12	0.12	3000
		15-Sep-03	4110	29000	6.6												0.86					0.2		
		09-Oct-03	4050	29000	6.5				14000											<2	433	0.44		2640
		16-Oct-03	3970	29000	6.3			106	14000					114	1440	7660				<2	433	0.08	0.1	2750
		15-Jun-04	4130	29000	6.5	0.017	5	114	15000	<0.002	0.069	0.044	0.22	114	1400	7580	0.44	<0.02	0.19	<2	530	0.06		2630
		28-Oct-04	4520	27000	6.5	<0.005	3.7	109	14000	<0.001	0.048	0.043	<0.005	101	1230	6870	0.43	<0.005	0.2	<2	488	1.1		2360
		25-Jan-05	3990	26000	6.4	<0.005	4.8	111	15000	<0.002	0.079	0.028	0.74	108	1320	7970	0.72	<0.002	0.1	<2	397	0.13		2710
		22-Mar-05		30000	6.5	<0.05	4.9	121	15800	<0.001	0.09	<0.05	<0.05	127	1400	8400	-	<0.001	0.15	<2	390	0.13		2630
		18-Jul-05		28000	6.6	0.018	5.3	109	17200	<0.001	0.082	0.18	0.48	119	1600	9250	0.96	0.003	0.37	0	397	0.19		3380
	WMB11	07-Aug-02	3880	30000	6.7				15400											<2	1020	0.03		2600
		16-Oct-02	3140	29000	7				12000											<2	958	0.34		2520
		08-Nov-02	3680	29000	6.9				14000											<2	952	0.04	0.06	2390
		04-Mar-03	3750	26000	7.6				13000											<2	903	0.07	0.05	2380
		01-May-03	3770	26000	7.8				13000											<2	927	0.14	0.19	2480
		03-Jul-03	3890	28000	7.4				14000											<2	994	0.04	0.13	2740
		03-Jul-03	4040	28000	7.6				15000											<2	830	0.02	0.79	2660
		16-Sep-03	3930	28000	7.5												0.69					0.12		
		09-Oct-03	3770	27000	7.4				13000											<2	927	0.66		2340
		16-Oct-03	3670	26000	7.2			138	13000					106	1400	6620				<2	970	0.2	<0.01	2320
		21-Apr-04	3660	25000	8	0.006	5.1	140	12000	<0.002	0.01	0.047	0.014	104	1370	7100	0.83	<0.02	0.15	<2	946	2		2290

Type of Sample Location	Date Sampled	EC	TDS	pH	Al	B	Ca	Cl	Cd	Co	Cu	Fe	K	Mg	Na	Ni	Pb	Zn	CO3	HCO3	Nitrate as NO3	Nitrate as NH3	Sulphate as SO4
		mS/m	mg/l		mg/l	mg/l	mg/l	mg/L	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/L	mg/L	mg/L	mg/l	mg/L
	15-Jul-04	3890	29000	7.6	0.019	4.7	138	14000	<0.002	0.008	0.042	0.051	103	1410	8090	0.68	<0.005	0.34	<2	949	1.4		2370
	08-Sep-04	3940	27000	7.6	0.032	5.4	138	14000	<0.002	0.01	0.019	0.045	113	1410	7090	0.62	<0.005	0.18	<2	946	1.3		2570
	24-Nov-04	3880	26000	7.4	0.047	5.2	128	14000	<0.001	0.006	0.089	0.07	111	1450	7520	0.63	<0.005	0.37	<2	961	2.2		2470
	16-Feb-05	4020	27000	7.2	0.008	5.4	132	14000	<0.001	0.02	0.034	0.008	123	1360	7070	0.53	<0.001	0.28	<2	952	0.6		2540
	19-Apr-05		29000	7.2	<0.005	5.7	124	14500	<0.002	0.026	0.01	0.36	113	1390	7960		0.002	0.054	<2	961	0.34		2490
	21-Jun-05		27000	7.6	0.048	5.6	115	15000	0.0022	0.023	0.058	1	108	1390	7830	0.5	0.0051	0.44	<2	891	0.27		2510
	10-Aug-05		26000	7.4	0.18	6.2	125	12600	0.002	0.025	0.068	0.081	117	1650	9110	0.59	<0.001	0.47	<2	921	0.29		3000
WMB13	04-Mar-03	3820	28000	7				13000											<2	580	0.45	0.23	3650
	30-Jul-03	3850	28000	6.7				14000											<2	625	0.07	1	3930
	12-Aug-04	2670	19000	6.7	<0.005	5.1	220	9200	<0.002	0.019	0.1	0.068	83.4	848	4850	3	<0.005	0.23	<2	1140	0.07		1250
	19-Apr-05		18000	6.9	0.25	4.3	257	8930	<0.002	0.072	0.008	0.11	87.3	800	4910		0.003	0.1	<2	1210	0.01		1220
WMB14	22-May-03	4810	35000	7.7				18300												424	0.14	0.42	3190
	03-Jul-03	4660	33000	6.7				18000											<2	515	0.02	0.27	4410
	09-Oct-03	4720	35000	6.5				15000											<2	586	0.02		3770
	15-Jul-04	4700	35000	7	0.019	6	465	18000	<0.002	0.39	0.008	16	77.8	1700	10500	26	<0.005	0.21	<2	552	0.02		3610
	24-Nov-04	4700	33000	6	0.012	6.4	384	17000	<0.001	0.42	0.034	9.5	91.3	1700	8920	20	<0.005	0.23	<2	555	0.03		3530
	25-Jan-05	4460	26000	6.5	<0.005	6.1	436	16000	<0.002	0.34	<0.005	19	82.8	1550	8820	20	<0.002	0.21	<2	534	<0.01		3490
WMB15	11-Mar-04	4180	32000	6.8	<0.005	6	102	16000	<0.002	0.019	0.025	<0.005	91	1490	8010	2.5	<0.02	0.13	<2	869	0.03		2780
	12-Aug-04	4280	33000	6.6	<0.005	6.2	104	16000	<0.002	0.024	0.069	<0.005	111	1510	8440	2.3	<0.005	0.26	<2	869	0.06		3000
	16-Feb-05	4240	29000	6.8	<0.005	5.7	94.9	16000	0.0011	<0.005	<0.005	0.095	110	1330	8070	1.2	<0.001	<0.005	<2	830	0.05		2560
WMB16	07-Aug-02	4810	36000	6.3				19400											<2	372	2.2		3880
	05-Sep-02	3870	37000	6.6				18000												360	2		3810
	16-Oct-02	3740	38000	7.1				18000											<2	329	2.1		3590
	08-Nov-02	4760	35000	6.7				18000											<2	366	2	0.06	3470
	23-Dec-02	4980	36000	7				18000											<2	366	1.9	0.27	3600
	29-Jan-03	5280	36000	7.2				19000											<2	390	1.1	0.21	3730
	01-May-03	4620	33000	7				17000											<2	360	1	1.2	3530
	16-Sep-03	4920	36000	7			53.4	18000					94	2210	10200	6.2			<2	421	0.15		371
	16-Oct-03	4690	35000	6.6			42.2	18000					79.3	1970	9230				<2	415	0.07	0.58	3450
	18-Feb-04	4800	32000																		1.5		3510
	20-May-04	4680	34000	7.4	0.19	8	51.5	18000	<0.002	0.029	0.058	0.48	83.1	1980	8860	2.4	0.02	0.19	<2	390	1.8		3620
	15-Jun-04	5390	39000	6.7	0.02	12	26.9	21000	<0.002	0.028	0.019	1.7	77.4	2220	10100	2.6	<0.02	0.058	<2	354	0.02		4070
	08-Sep-04	4620	33000	7.4	0.042	8.8	38.1	17000	<0.002	0.024	0.044	0.24	77.4	1930	8630	3.3	<0.005	0.15	<2	397	0.1		3440
	24-Nov-04	4800	34000	6.9	0.021	8.7	31	18000	0.001	0.032	0.1	0.059	78.5	2000	9240	2.4	<0.005	0.24	<2	320	3.3		3410
	25-Jan-05	5160	32000	6.7	<0.005	9.9	23.9	20000	<0.002	0.052	0.01	0.15	86.7	2120	10500	3.3	<0.002	0.072	<2	397	0.04		3760
	22-Mar-05		39000	6.9	<0.05	9.9	34.9	21100	<0.002	0.06	<0.05	<0.05	91.6	2130	10700	4.6	<0.002	0.12	<2	381	0.02		3550
	21-Jun-05		40000	7.2	0.035	11	21.3	20000	<0.001	0.16	0.026	3.3	106	2170	10100	13	0.0025	0.14	<2	415	<0.01		3700
	10-Aug-05		33000	6.9	0.47	11	19.9	18900	0.002	0.17	<0.05	1.2	104	2260	10500	14	0.004	0.1	<2	403	<0.01		4130
WMB17	15-Sep-03	3690	25000	8																	<0.01		
WMB18	23-Dec-02	4000	28000	4				14000											<2	<2	0.01	1.2	2610
	29-Jan-03	4140	27000	4.3				14000											<2	3	0.02	0.6	2560
	15-Sep-03	4640	33000	8																	0.01		
	09-Oct-03	4260	29000	4.5				13000											<2	24	<0.01		2630
	20-May-04	4500	32000	4.8	14	5.5	143	17000	<0.002	0.46	0.19	0.84	44.9	1440	8810	0.77	0.04	0.2	<2	3	0.01		3170
	12-Aug-04	4610	34000	4.2	14	6.2	155	18000	<0.002	0.46	0.16	0.59	49.1	1490	9240	0.3	<0.005	0.12	<2	<2	0.01		3330
	24-Nov-04	4610	30000	4.3	11	4.9	134	17000	<0.001	0.41	0.16	0.72	49.8	1520	9710	0.18	0.005	0.11	<2	<2	<0.01		2940
WMB19	22-May-03	3530	25000	8.2				13500											<2	293	0.02	2	2170
	15-Sep-03	1730	11000	8.4																	<0.01		
	15-Jul-04	4040	28000	6.4	0.008	5.1	115	15000	<0.002	<0.005	<0.005	1.5	113	1330	8430	0.02	<0.005	0.005	<2	549	0.02		2150
	16-Feb-05	3660	24000	6.6	0.008	4.8	122	12000	<0.001	<0.005	<0.005	0.9	120	1110	6440	0.03	<0.001	0.005	<2	549	0.03		220

Type of Sample Location		Date Sampled	EC mS/m	TDS mg/l	pH	Al mg/l	B mg/l	Ca mg/l	Cl mg/L	Cd mg/l	Co mg/l	Cu mg/l	Fe mg/l	K mg/l	Mg mg/l	Na mg/l	Ni mg/l	Pb mg/l	Zn mg/l	CO3 mg/L	HCO3 mg/L	Nitrate as NO3 mg/L	Nitrate as NH3 mg/l	Sulphate as SO4 mg/L
		10-Aug-05		23000	7	0.091	4.1	90.9	9900	<0.001	<0.005	<0.005	3	93.1	1040	6420	0.04	<0.001	0.02	<2	390	0.01		1980
	WMB20	29-Jan-03	3660	25000	7.3				13000											<2	1340	0.47	0.31	2220
		30-Jul-03	3470	24000	7				12000											<2	1240	0.28	0.02	2220
		16-Sep-03	1280	7800	8																	0.01		
		09-Oct-03	3440	27000	6.9				9900											<2	1240	0.22		1960
		21-Apr-04	3530	24000	6.9	<0.005	5.8	38.8	12000	<0.002	0.009	0.007	0.008	115	1330	6980	0.52	<0.02	0.024	<2	1180	0.23		2110
		22-Dec-04	3540	23000	7.7	0.2	5.3	42.9	12000	<0.001	0.007	0.032	1.4	112	1260	6800	0.71	<0.005	0.084	<2	1140	0.17		2170
		19-Apr-05		24000	7.1	0.005	5.2	42.9	11500	<0.002	0.005	0.008	0.005	127	1220	6750		0.002	0.025	<2	1150	0.15		2050
OTHER WATER DAMS	DAWS DAM	21-Jun-02	733	5800	5.1				1990											<2	415	0.05		1520
	PADDOCK DAM	23-Dec-02	3760	26000	7.4				12000											<2	287	0.05	0.31	2210
		29-Jan-03	5520	36000	7.6				10000											<2	339	0.01	0.73	3320
		04-Mar-03	6080	46000	7.5				26000											<2	311	<0.01	<0.01	3990
		22-May-03	561	3100	8.3				1630											<2	116	<0.01	0.02	414
		01-Jul-03	676	4500	8				2000											<2	159	0.04	0.06	496
		19-Apr-05		910	7.8	0.17	0.4	60.6	270	<0.002	<0.005	0.01	0.01	9.9	46.8	183		0.0005	0.006	<2	104	0.21		261
	STOCK DAM	16-May-02	50.4	280	8.3				37											<2	171	0.07		8



Rockwater
PROPRIETARY LIMITED

KUNDIP COPPER & GOLD PROJECT

IMPACT OF FINAL MINE VOIDS ON GROUNDWATER FLOW SYSTEM

OCTOBER 2005

REPORT FOR
TECTONIC RESOURCES LTD

253.1/05/02

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1 INTRODUCTION

Tectonic Resources is planning to mine the Kundip copper and gold deposit, east of the Ravensthorpe-Hopetoun road, approximately 16 km south of Ravensthorpe. The Kundip project site encompasses the previously mined Beryl, Harbour View and Flag underground workings. Several open-cut pits will be mined, and underground workings will extend beneath the old workings.

This report presents an assessment of the impact of the final mine voids on the groundwater flow system, based on historical records and data collected during a groundwater testing and monitoring bore installation programme (Rockwater, 2004).

2 HYDROGEOLOGICAL SETTING

2.1 CLIMATE

Ravensthorpe has a Mediterranean-type climate with cool wet winters and warm to hot, dry summers. Average rainfall is 425 mm (508 mm at Hopetoun), and average pan evaporation is about 2,000 mm. Agricultural dam evaporation rates are lower, averaging about 1,640 mm/a (Luke, Burke and O'Brien, 1988): a similar rate would apply to mine pits.

2.2 GEOLOGY

The Kundip mining area lies in a region of steeply-dipping mafic to intermediate volcanic rocks of Archaean age (Annabelle Volcanics) with some ultramafic schists (Witt, 1997). The volcanic rocks have been intruded to the west by granitic rocks, also of Archaean age. The upper reaches of the Steere River follows the contact between the granitic and the volcanic rocks.

Immediately south of the Kundip mining area, the Archaean rocks are overlain by the Proterozoic Mount Barren Group, including sediments of the Kundip Quartzite and the Kybulup Schist. The quartzite dips at about 15 degrees to the south-south-west.

2.3 HYDROGEOLOGY

The Kundip mining area is described as having "minor local aquifers" (Johnson, 1998). The Archaean volcanic rocks are generally of low permeability. Fractures and joints in the rocks, and mineralised zones, can be moderately permeable.

Drainage lines may follow zones of weakness such as fractures in the underlying rocks.

The old mine workings are reported to have intersected water-bearing fractures, and there are significant volumes of water stored in the workings. Anecdotal evidence suggests that Flag is the wettest mine, with inflows possibly in the order of 400 to 500 m^3/d; one report (Lea 1989) indicated that "the heavy inflow of water at the face of the No. 3 level east drive had caused the cessation of operations because the existing pumps were totally inadequate to cope with the volume". The Harbour View workings were also reported to be 'wet', and apparently, a large Flygt pump was run continuously during periods of mining in the 1980's to keep them dry. Inflows to Harbour View in 1903 required pumping rates of only 5,000 gallons per day (about 25 m^3/d) for a main shaft depth of 160 ft (about 50 m) (Montgomery, 1903). The Beryl workings were said to have yielded moderate amounts of water (less than 250 m^3/d), which were used as a source for tailings re-treatment. Apart from the Montgomery report, there is no written record of dewatering rates for the Kundip mining area.

These inflow rates indicate that even the mineralised zones have relatively low permeability.

Six groundwater exploration/test holes were drilled in the area and were completed as monitoring bores (Rockwater, 2004). Two (KMB1 & KMB4, Fig.1) were planned to intersect the Harbour View mineralised zone. The others were designed as regional exploration holes/monitoring bores and included two sites at the intersection of linear drainages that might follow fracture zones. An existing exploration hole was also cased for groundwater monitoring (Bore KMB7).

The bore details are summarised in Table 1.

Only trace amounts of water were intersected during drilling, with the exception of KMB6, which is situated in a drainage line along-strike of the Harbour View workings: a small flow of 60 m^3/day was measured from this hole.

The results show that in general, rocks in the area are of low permeability, even within the Harbour View mineralised zone. A very small proportion of the rainfall, probably around 0.1 percent based on the groundwater salinity, infiltrates the ground to recharge the groundwater that seeps slowly through the rocks, eventually discharging to low-lying areas in the south, possibly along Kuliba Creek.

Groundwater in the area is generally saline, with salinity ranging from about 20,000 to 40,000 mg/L TDS. The pH is near neutral at 6.8.

Table 1. Summary of Kundip Drilling Results

Bore	mE (AMG)	mN (AMG)	Elevation (m AHD)	Depth Drilled (m bgl)	Slotted Interval (m bgl)	Lithology	Static Water Level (m btc)**	Static Water Level (m AHD)	Maximum Airlift Yield (m^3/d)	Final Salinity (mg/L TDS)*
KMB1	239975	6269578	158.40	70	52 - 70	Mafic, some Ultramafic minor BIF	36.75	121.65	Trace	N/A
KMB2	240402	6270011	180.44	76	58 - 76	BIF, Interm. Volcanic Below 38m	58.04	122.40	Dry	N/A
KMB3	239985	6269062	142.18	70	46 - 70	Ultramafic	21.28	120.90	Trace	N/A
KMB4	240092	6269758	163.93	76	52 - 76	Mafic, minor porphyry	41.82	122.11	Trace	21,800
KMB5	239221	6269810	132.85	70	45 - 63	Felsic volcanic, mafic below 48m	4.08	128.77	Dry	N/A
KMB6	239580	6269319	145.71	70	46 - 70	Mafic, minor porphyry	23.56	122.15	57	37,200
KMB7^	240162	6268581	143.41	106	76 - 106	Phyllite, Conglomerate, felsic volcanic	25.85	117.56	N/A	N/A

*by electrical conductivity

**below top of surface casing, 23/1/2004

^old exploration, hole cased

Static water levels measured on 27 April 2004 ranged from 117.7 m AHD in KMB7 to 130.9 m AHD in KMB5 and 144.1 m AHD in the Beryl shaft, with a hydraulic gradient trending downwards to the south (Fig. 2). The shape of the water table is somewhat irregular, and does not closely reflect the topography, as would be expected. In particular, the water table between bores KMB1, KMB2, KMB4 and KMB6 has a very low gradient, with less than one metre fall in elevation between KMB2 and KMB6, compared with a 20 m difference in the topography. The low hydraulic gradient in this area may reflect increased permeability resulting from mine voids at the water table near the Harbour View workings.

3 PLANNED MINE PITS

Seven pits are planned at Kundip, four of which (Kaolin, Hillsborough, Maydon, and Flag West) will extend below the water table (Fig. 2). Hillsborough pit will only just be below the water table. The other pits will capture, contain, and allow some rainfall-runoff to infiltrate to the groundwater, probably resulting in local groundwater level rises and lower groundwater salinities. These pits will act as groundwater sources.

3.1 CHARACTERISTICS OF FINAL VOIDS

The characteristics of the final voids that will extend below the water table have been assessed by simple water balances to determine whether they will act as groundwater sinks or throughflow lakes.

It is estimated that about 60 percent of rain falling within the pit perimeters, i.e. 300 mm/a will report to the bases of the pits. Evaporation from the pit ponds would be at a rate similar to that for agricultural dams (1.64 m/a). A water balance for the four pits that will extend below the water table, based on these rates, is given in Table 2. It assumes that the pond levels are at current static groundwater levels.

Table 2: Pit Water Balance with Pond Levels at Static Groundwater Levels

Pit	Total Pit Area	Pit Area at Initial Groundwater Level	Net Flow to Groundwater From Pit	
	(m^2)	(m^2)	(m^3/a)	(m^3/d)
Kaolin	85,410	29,500	-22875	-63
Hillsborough	26,550	1,500	5499	15
Maydon	15,930	3,500	-975	-3
Flag West	20,430	7,300	-5872	-16

The results show that the water level in Hillsborough pit will rise to slightly above the static groundwater level as on average, input from rainfall will slightly exceed evaporation losses. It will, therefore, be a throughflow lake.

The other three pits will, on average, be minor groundwater sinks. Water levels in the pits will fall to a little below static groundwater levels, until small groundwater inflows (less than 60 m^3/d) and evaporation from a reduced pond area balance rainfall accumulation.

4 IMPACT OF MINE WORKINGS ON GROUNDWATER FLOW SYSTEM

Evaporation from the Kaolin, Maydon and Flag West pits will cause a small increase in groundwater salinity in an already saline aquifer. Rainfall accumulation and infiltration to groundwater from the Western Gem, Hillsborough, Flag Central and Try Again pits will introduce fresh or less saline water to the aquifer, and probably result in an overall decrease in groundwater salinity in the area.

Surface, and open underground mine workings (new and existing), will act as local zones of high permeability that will reduce the hydraulic gradient of the water table. The effect of any groundwater level changes would be undetectable more than, say, 500 m down-gradient, because of the low permeability of rocks in the area.

There are no groundwater users or groundwater dependent ecosystems near the Kundip project that could be impacted by the changes described above.

5 CONCLUSIONS

Archaean volcanic rocks in the Kundip area are of low permeability, as shown by flow rates during previous mining in the area, and low flows from groundwater exploration holes. Of six holes drilled at Kundip, only four intersected water with a maximum airlift yield of 60 m^3/day from bore KMB6.

The groundwater has a salinity of about 22,000 mg/L to 38,000 mg/L TDS, and a near-neutral pH.

Seven pits are planned at Kundip, four of which (Kaolin, Hillsborough, Maydon, and Flag West) will extend below the water table. Hillsborough pit will only just be below the water table. The other pits will capture, contain, and allow some rainfall-runoff to infiltrate to the groundwater, resulting in local groundwater level rises and lower

groundwater salinities. These pits will act as groundwater sources. The Hillsborough pit will also act as a groundwater source and a throughflow lake.

The Kaolin, Maydon and Flag West pits will, on average, be minor groundwater sinks. Water levels in the pits will fall a little below static groundwater levels, until small groundwater inflows (less than 60 m^3/d) and evaporation from reduced pond areas balance rainfall accumulation.

Evaporation from the Kaolin, Maydon and Flag West pits will cause a small increase in groundwater salinity in an already saline aquifer. Rainfall accumulation and infiltration to groundwater from the Western Gem, Hillsborough, Flag Central and Try Again pits will introduce fresh or less saline water to the aquifer, and probably result in an overall decrease in groundwater salinity in the area.

Surface, and open underground mine workings (new and existing), will act as local zones of high permeability that will reduce the hydraulic gradient of the water table. The effect of any groundwater level changes would be undetectable at more than, say, 500 m down-gradient, because of the low permeability of rocks in the area.

There are no groundwater users or groundwater dependent ecosystems near the Kundip project that could be impacted by the changes to the groundwater flow system.

Dated: 12 October 2005 **Rockwater Pty Ltd**

P H Wharton
Principal Hydrogeologist

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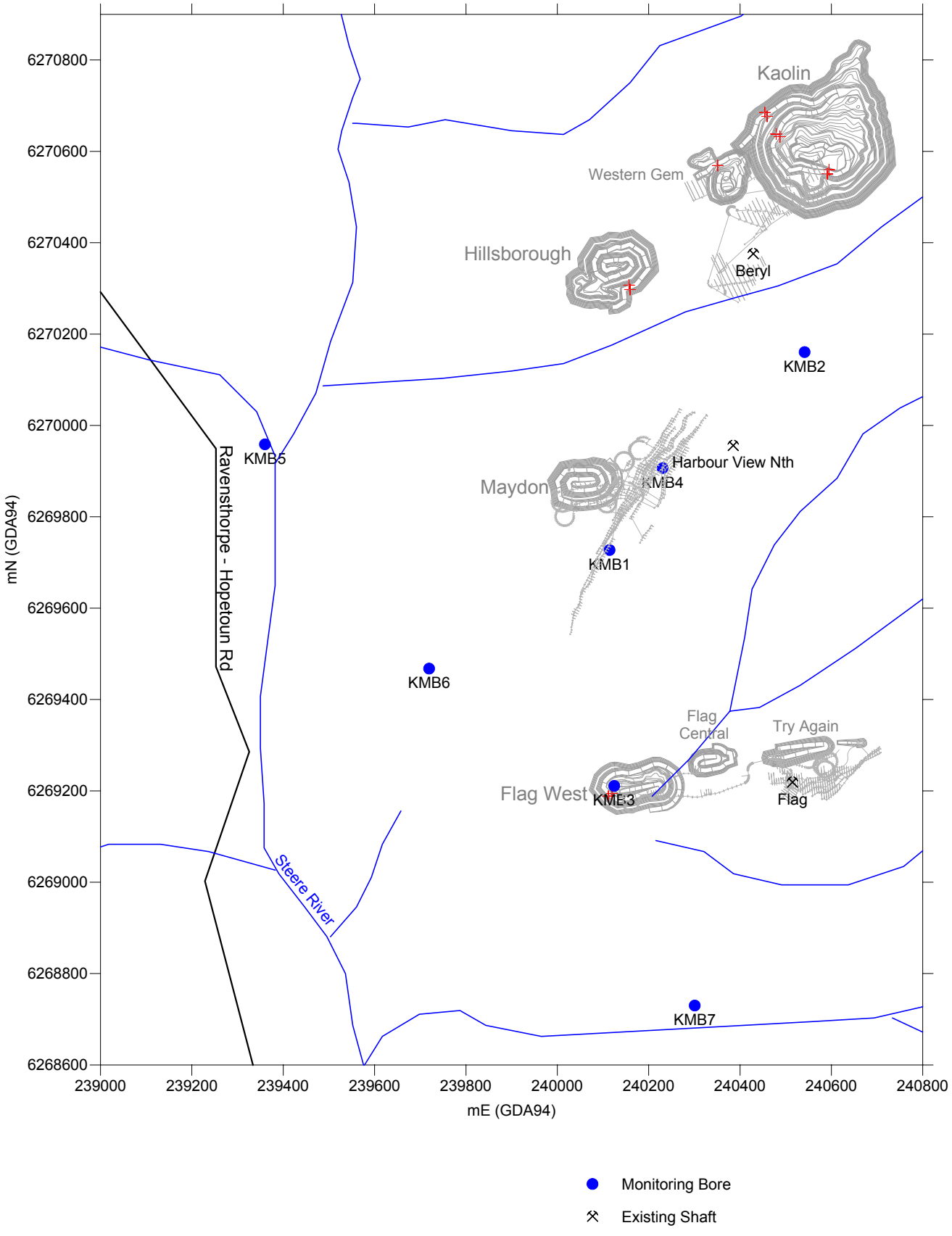
FIGURES

FIGURE 1



Location.srf

CLIENT: Tectonic Resources

PROJECT: Kundip

DATE: October 2005

Dwg No: 253.1/05/2-1

LOCATIONS OF MONITORING BORES, SHAFTS AND PLANNED MINE WORKINGS, KUNDIP

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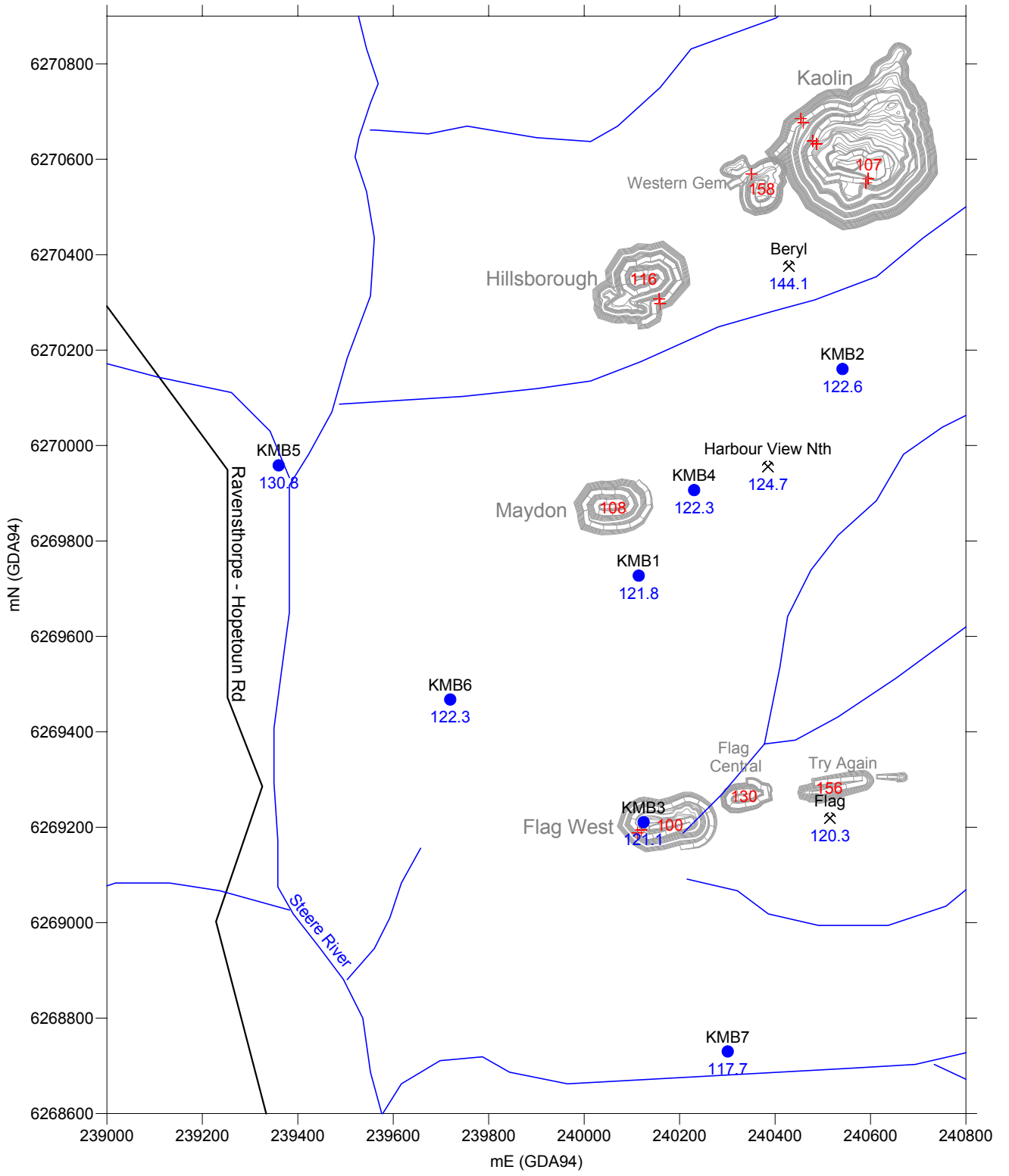
FIGURE 2



107 Planned Pit Base Elevation (m AHD)

117.7 Groundwater Level April 2004 (m AHD)

Existing Shaft

apr04gwls.srf

CLIENT: Tectonic Resources

PROJECT: Kundip

DATE: October 2005

Dwg No: 253.1/05/2-2

GROUNDWATER LEVELS APRIL 2004,

AND PLANNED LEVELS OF PIT BASES

Rockwater Pty Ltd