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COMSTOCK SILVER LEAD ZINC
MINING AND PROCESSING PROJECT

ZEEHAN ZINC Pty Ltd

February, 2001

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Zeehan Zinc Pty Ltd – Comstock Mining Project

Executive Summary

More than a total length of 3 kilometres of ore lodes can be traced on the surface in the Comstock Mine lease. Drilling has shown that some of these can be traced to over 400m below the surface (Balstrup Fault Lode) and Watson's Lode (200m). Independent consultants estimate that the Comstock area contains a zinc-lead-silver resource exceeding 8.7 million tonnes lead-zinc ore of at least 5% zinc. Independent consultants estimate over 2.5 million tonnes of ore with a grade of 5% zinc, can be open-cut to a depth of 50m. Ore at depth is estimated to exceed 6,000,000 tonnes. This shallow resource includes 700,000 tonnes at 12% zinc, and 897,000 tonnes at 8% zinc. Ongoing exploration is expected to both confirm and increase these estimates. Zeehan Zinc and former exploration partners have undertaken extensive, geophysical, drilling, geochemical, geological and environmental programs throughout the 146-hectare lease.

Investigations and mining are focussing on the Balstrup, Main and Allison's Lodes. Permission for limited mining of the Allison's, Main, Sylvester and Britannia Lodes has already been given by the Mines Department. A large open cut/decline is being developed and 8000-10,000 tonnes of high-grade ore from Allison's Lode has so far been stockpiled. At least 8 other lodes, several gossans and geophysical and geochemical anomalies remain to be investigated.

Zeehan Zinc is planning to expand the present open cut operation on the Allison's Lode northwards to the Balstrup Lode, build a tailings dam, open-cut the Main Lode, develop an underground mine on the Balstrup Lode and install a contract mill with a throughput of up to 1200 tonnes of ore per day. Zeehan Zinc is investigating (i) gravity and (ii) flotation methods of concentrating the ore using a contract mill on site but at no capital cost to the company. Metallurgical and financial analyses show that a flotation plant is profitable at only 5% zinc in ore assuming current zinc metal prices. The zinc bulk concentrate will then be sold in Tasmania or elsewhere at a yearly surplus that depends mainly on ore grade:

- 200,000 tonnes at 5% zinc in ore yields \$ AUD 1.8 million dollar pre-tax profit per year,
- 200,000 tonnes at 6% zinc in ore yields \$AUD 10.3 million dollar pre-tax profit per year,
- 200,000 tonnes at 7% zinc in ore yields \$AUD 14.7 million dollar pre-tax profit per year.

A gravity plant is financial at only 4% zinc. Zeehan Zinc is investigating the possibility of constructing a fumer plant at a capital cost of \$AUD 63 million in order to produce high quality zinc metal using Comstock, local and imported concentrate feedstock. The fumer plant option doubles the profits shown above (including paying back the capital cost within two years) and has an expected life of at least ten years.

Coffey Ltd has constructed a conceptual mine plan and designed a tailings dam. SEMF Holdings Pty Ltd has produced a Development Proposal and Environmental Management Plan and these plans have been submitted to government departments for approval.

Introduction

The Zeehan Mineral Field lies between the Heemskirk Granite and the town of Zeehan on the west coast of Tasmania (Figure 1). Zeehan is on the west coast region of Tasmania, which is one of the most intensely, commercially, mineralised regions in the world.



(Modified after Western Metals, 2000)

Figure 1. Locality map of western Tasmania. MLs = Mining Leases.

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Zeehan Zinc Pty Ltd is developing a 146-hectare mining lease 5km south west of Zeehan (Figure 2).

Historical and Previous Work

The Comstock lease is within the Zeehan mineral field, which contains several known deposits of zinc (Zn), lead (Pb), silver (Ag). Between 1887 and 1913 approximately 42 mines produced 190,000 tonnes of lead, 71 tonnes of zinc and 27 million ounces (840 tonnes) of silver from pits and shallow underground workings (Blissett 1962). Underground mines were usually shallow due to the inefficiency of water pumps at that time. Zeehan (“the Silver City”) became a large thriving centre, with an opera house and a Mining School.

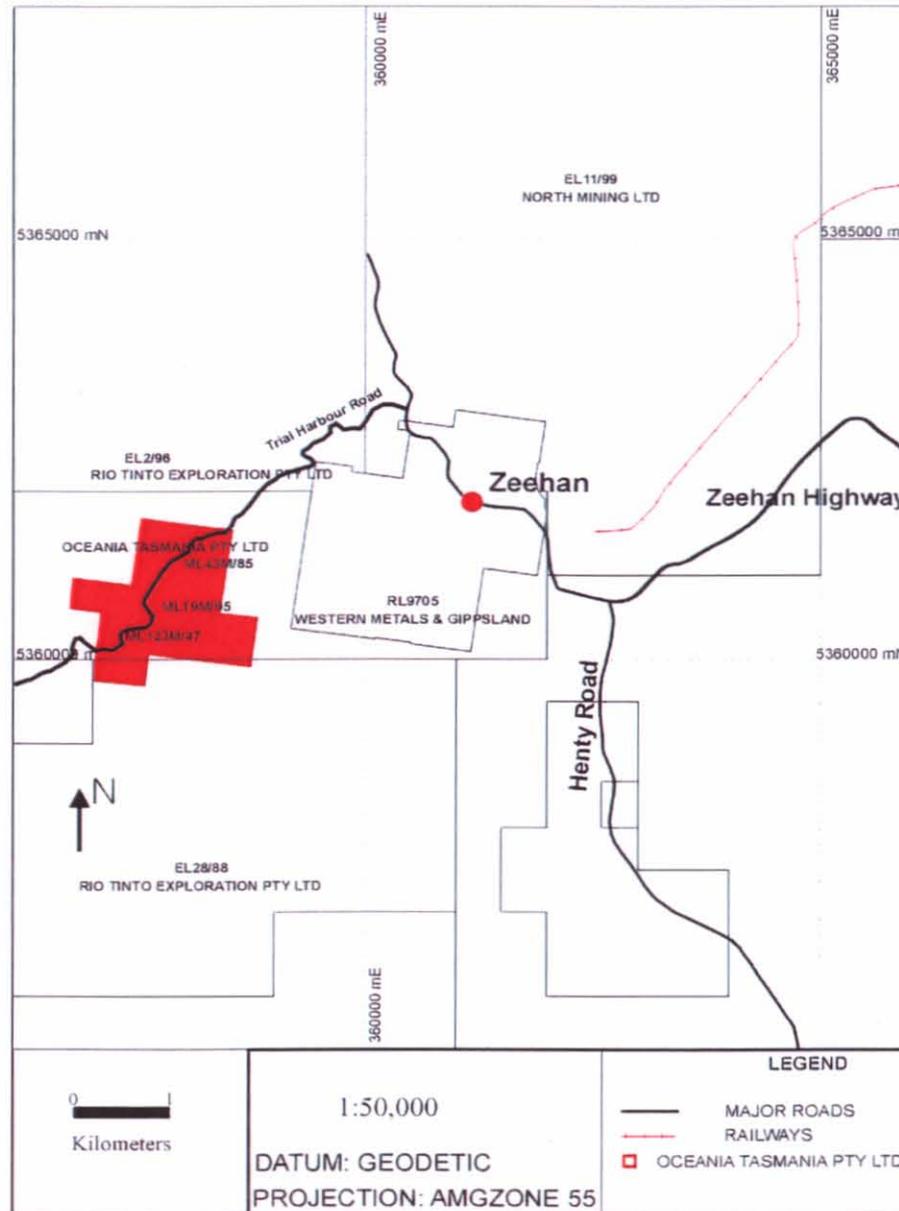


Figure 2. Map showing Zeehan area in western Tasmania and mining leases. Modified after Richardson (2000). The mining leases are being operated by Zeehan Zinc Pty Ltd on behalf of Oceania Tasmania Pty Ltd which is part of the Bass Group of companies.

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The lease area was mined from the 1880's to the 1950's in small, shallow subsurface operations for lead and silver and also for zinc after 1900 (Table I). The many small companies on the field invariably lacked capital to install adequate pumps to control the heavy inflow of water. The deepest mine near Zeehan was 63m and most were less than 10m (Blissett 1962). In the early years, the zinc ore (sphalerite) was of no commercial value and considerable quantities are now available on mine dumps by modern processing techniques, both on Zeehan Zinc's lease and elsewhere in the Zeehan field. Production from several small mines on the lease from 1887-1913 was 2670 tonnes of zinc, 3676 tonnes of lead and 165,000 ounces of silver. Zeehan Zinc carried out open pit mining at the South Comstock and Sylvester lodes in 1988-89. About 70,000 tonnes of ore were mined and stockpiled and 7000 tonnes of ore with average grades of 14.8% zinc and 3.6% lead were trucked to Rosebery for processing. Operations ceased after disputes concerning payment.

In 1990, RGC (Renison Ltd) signed a 5-year option deal with Zeehan Zinc and carried out an extensive exploration project that included drilling 13 holes on the present lease and 3 holes near to the lease. Although a significant resource of over 6 million tonnes of lead-zinc-silver ore was inferred, RGC decided that the size of the resource did not meet its corporate objectives. Following trial mining by Sundew on Allison's Lode (1240 tonnes, averaging 15.4% zinc and 2.4% lead) and intensive geophysical surveys commissioned by Zeehan Zinc, Western Metals took out a joint venture agreement in 1999-2000 but after drilling 2000 metres of holes decided that a deposit of sufficient size to keep their Hellyer Mill operating was unlikely to be present.

Table I. Summary of work on the Comstock lease areas.

YEAR	COMPANY	DETAILS
1888 - 1900	Various	Discovery and mining of fissure lode mineralisation at surface and from shallow underground workings
1989	Oceania	South Comstock open cut worked by Oceania – 7334 tonnes shipped to Pasmaenco, Rosebery. Drilling SY001
1989 / 90	RGC	C- horizon soil sampling, aeromagnetics, mapping, rock chip sampling. Drilling SY003
1990 / 94	RGC	Costeaning. Drilling SY004 and SY016, Downhole EM
1995	RGC	Feasibility study continued, joint venture partner sought
1996	Sundew	RGC relinquishes surrounding EL 42 /87. Withdraws from Comstock option agreement.
1999	Oceania	Costeaning. Allison's Lode open cut worked – trial shipment to Pasmaenco, Rosebery
1999	Oceania	Helicopter borne EM flown. Detailed gravity survey.
2000	Oceania	Drilling SY017, SY018, SY019. Surface EM survey.
2000	Oceania - Zeehan Zinc	Five months of development work to Allison's Lode. One month of mining produced a stockpile of 10,000 tonnes of high-grade ore.
2000-01	Oceania - Zeehan Zinc	1)Geophysical techniques on the Comstock Prospect (Honours Project). 2)Monitoring of waterways from around the Comstock Prospect (Honours Project).
2000-01	Oceania - ZZ	Coffey Geoscience Pty Ltd prepare mine plan and design tailings dam.

Geology (non-technical summary)

Technical summaries of the geology may be found in the attached reports by Crossing (1993), Knight (1997) and Tear (2000a,b). A summary of the geology and mineral resources of Tasmania may be found in Burrett and Martin (1989). Figures 3 and 4 are maps showing the major geological features of the Comstock area.

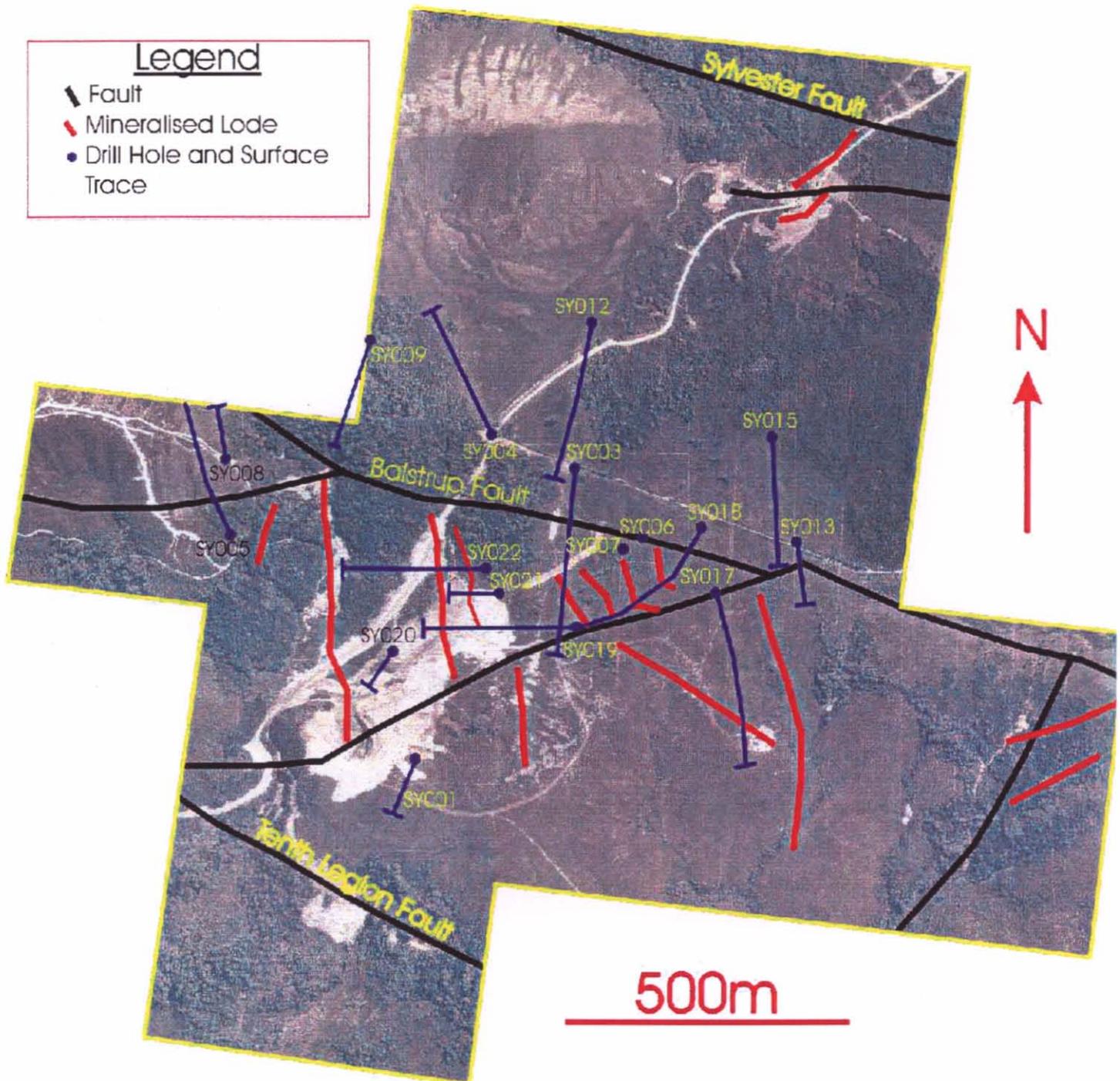


Figure 3. Aerial photograph (flown in 1991) of Comstock area showing major features.

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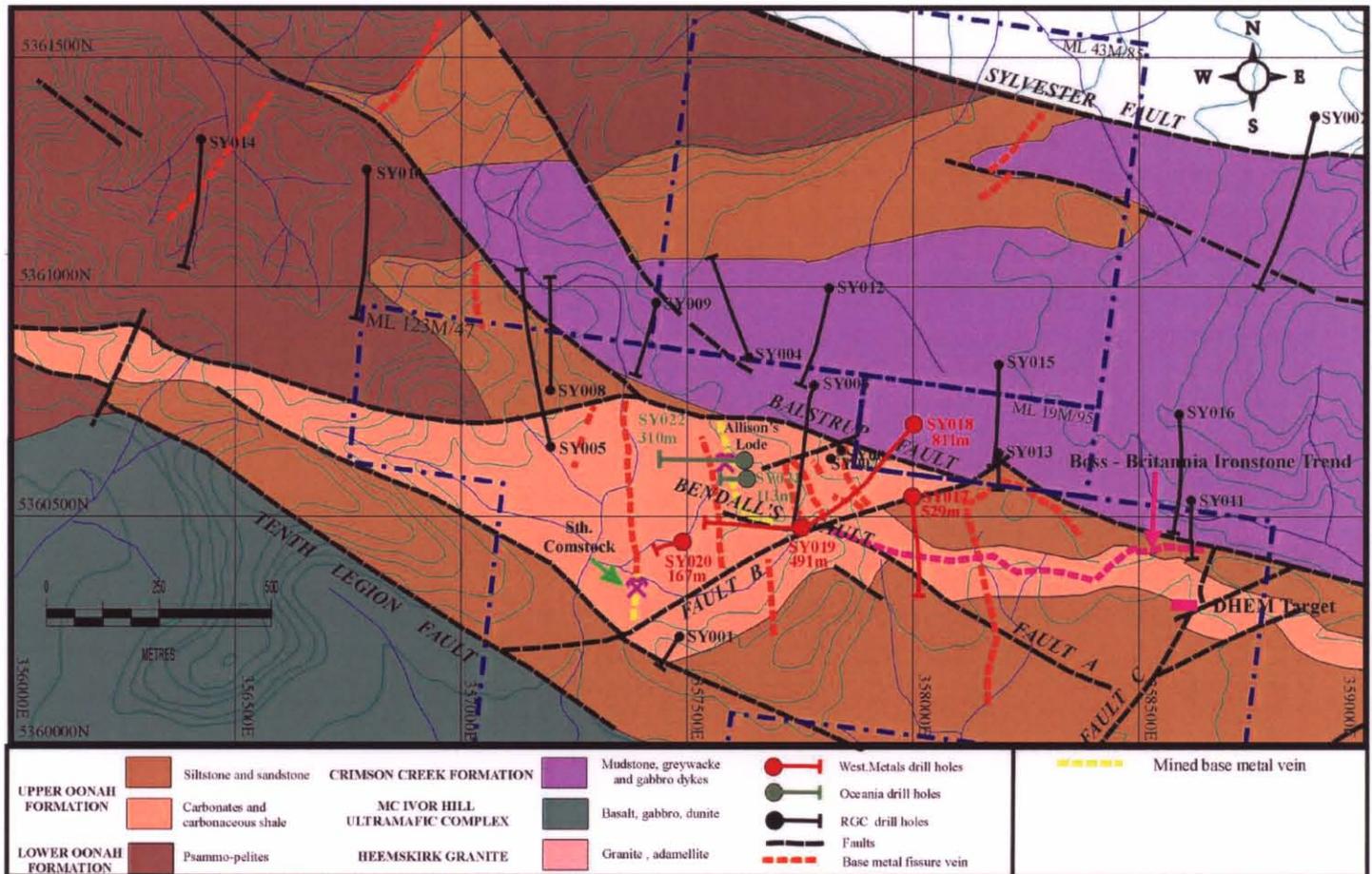


Figure 4. Geological map of the Comstock area adapted from Richardson (2000).

The Comstock lead-zinc-silver-ores are found within the Precambrian age Oonah Formation (about 800 million years old). This formation consists of altered limestones (dolomites), sandstones and mudstones (slates) that have been intensely folded and refolded and faulted. A fault is a planar dislocation of rock bodies. During the Cambrian Period (about 510 million years ago) the Oonah Formation rocks were thrust along a flat lying shallow dipping fault (the Tenth Legion Fault) and placed on top of the younger Cambrian rocks that include dark coloured igneous rocks (gabbro and basalt) (Figure 5).

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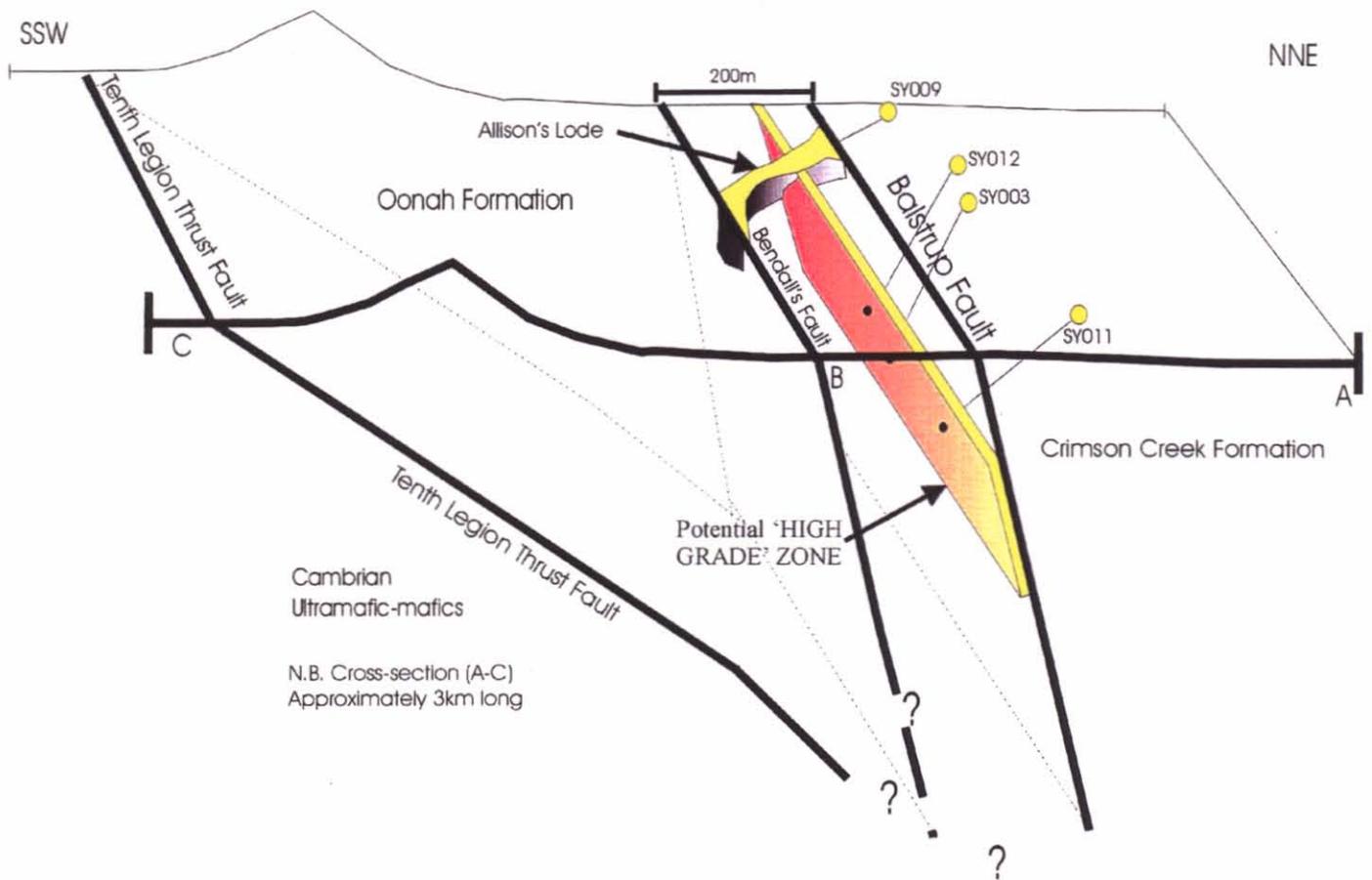


Figure 5. Generalised block diagram showing wedge shape at depth of the Oonah Formation in the Comstock area. Potential 'High Grade Zone' is an inferred resource of 2.9 million tonnes at 8.6% Zinc, 4.6% lead and 59 grams per tonne of silver (Knight, 1997; Hancock, 1999).

During the Devonian, about 360million years ago, the rocks and the old, flat lying, thrust fault were folded and the steep Balstrup and Bendall Faults were formed. A combination of the older and younger faults produced a wedge-shaped block of Oonah Formation resting on top of younger volcanic rocks.

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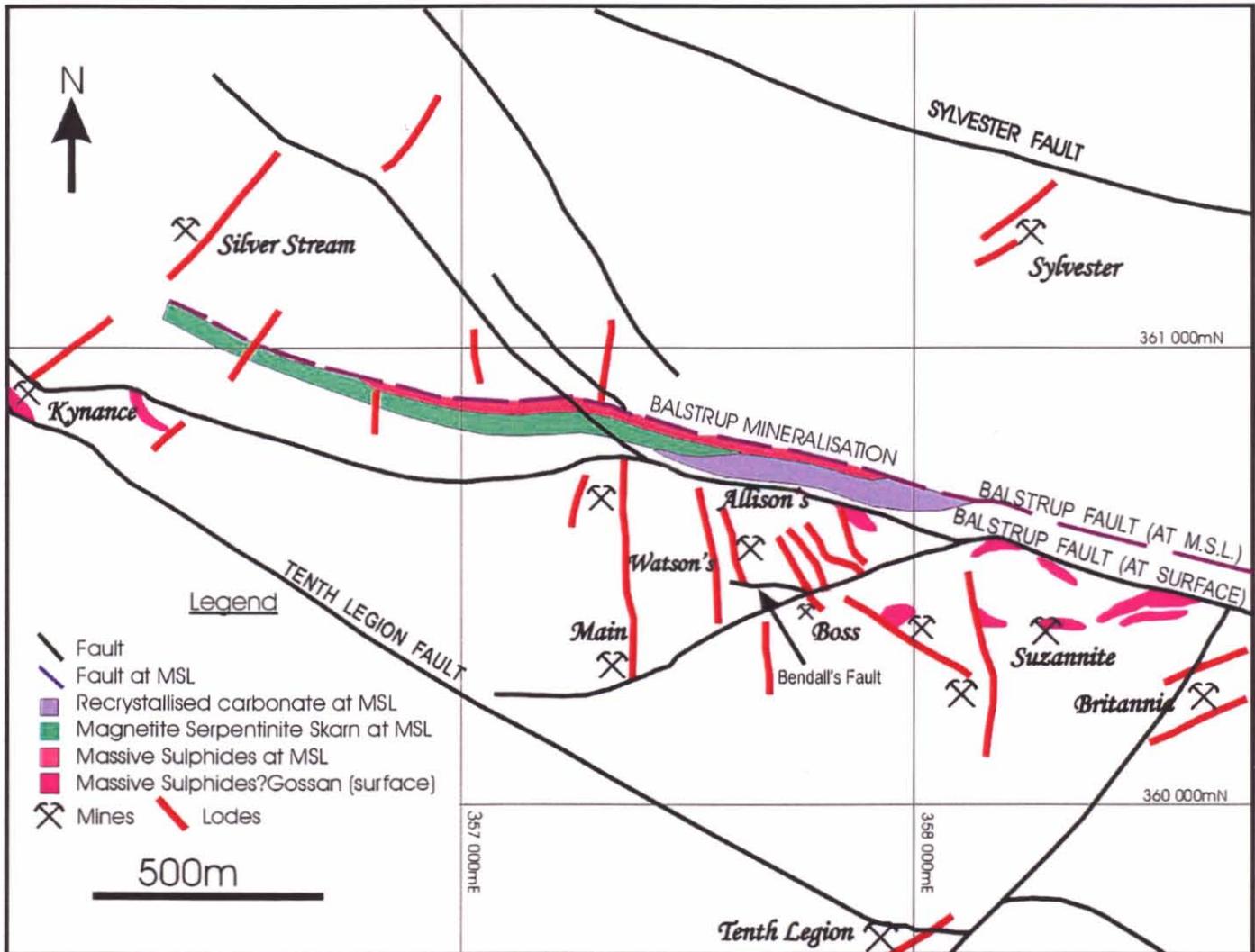
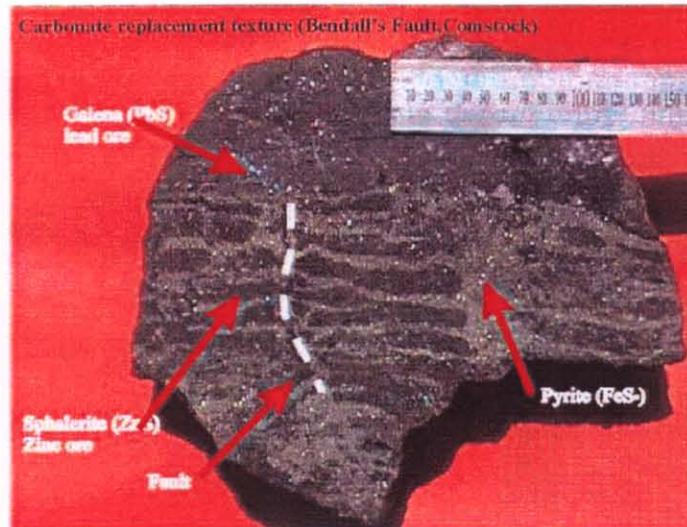


Figure 6. Major lead-zinc-silver lodes in the Comstock lease area. Based on many sources. MSL = Mean Sea Level. Gossan = weathered, iron rich surface expression of mineralisation. Pink area along Balstrup Fault is surface trace of major mineralisation.

A shear system opened-up large northward trending fissures in the Oonah. The intrusion of granite (of which the Heemskirk Granite is a surface exposure) underneath the area, then introduced hot, metal-bearing fluids into the wedge shaped block of Oonah Formation. The main pathways for the hot fluids were the Tenth Legion, Bendall's and Balstrup Faults. The hot fluids cooled down and deposited ore in the linear fissures (fissure lodes and fissure replacement lodes, see Figure 6), along the faults and replaced parts of the dolomitic limestone with ore (Figure 7). Minor faulting then further dislocated some of the rocks and lodes. 300 million years later, erosion has brought the deposits close to the present day land surface.

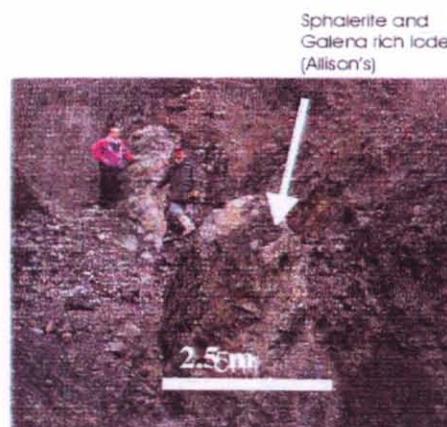
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A Typical Carbonate Replacement Textures



B Galena (Lead) and Banded Sphalerite (Zinc)



C Allison's Lode

Figure 7. Types of lead-zinc-silver ore from the Comstock area.

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Lodes

Both long linear lodes and replacement types of mineralisation are present within the Precambrian age Oonah Formation. Approximately 3 kilometers of lode are traceable at or near to the surface on the Comstock Lease (Tear, 2000, 2001). The deposits extend from the surface or from shallow depths to depths of up to 450m. The Balstrup Fault Lode extends to depths in excess of 450 metres below the surface and Watson's Lode to 205 metres depth.

The company's recent geological and geophysical work shows that there is good cause for optimism in finding similar size deposits elsewhere on the lease. The presence of thick limestone sequences and the discovery by Oceania of replacement-style mineralisation (see Figure 7A) suggests the possibility of discovering a large limestone replacement deposit.

The lease area contains several north trending lodes and a major east-west lode following the Balstrup Fault. Mineralisation also occurs along Bendall's Fault (Figure 7A) and possibly along the many major faults on the lease (Figure 6).

The principal North- NNW trending fissure lodes are the Main Lode (also known as Comstock Lode), Watson's Lode (also known as Comstock Number 2 and Flaherty's), Allison's Lode (also known as East Lode), Boss Lode, Susannite Lode and Britannia Lode (see Tear 2000b Fig 5 Appendix 3). The Sylvester Lode is in the northern part of the lease (Figure 3 & 6).

Allison's Lode has been the focus of mining and assaying during 2000-2001. Allison's Lode, which is over 180m long (up to 250m) and up to 19m wide (Tear 2000b), was intersected at a depth of 60-75m in hole number SY022 and consists of four sub-parallel veins (Figure 8). This lode has been mined to a depth of 15m during the construction of the main open cut and a decline advancing towards the mineralisation along the Balstrup Fault. During 2000, approximately 9,000 tonnes of ore have been mined from Allison's and placed in a stockpile. These have been carefully grid sampled in order to obtain statistically and commercially valid samples for assaying (see Appendix 6, Report 1). An average grade of 20% zinc, 13% lead and 340 parts per million of silver is obtained. The lode was excavated and exposed in the open cut (see Figure 8), mapped in detail by independent consulting geologist Simon Tear (see Appendices 2-4) and channel samples across the lode were taken by Zeehan Zinc geologist Paul Heath (see Appendix 6). These samples average 12% zinc (Zn), 5% lead (Pb) and 84 parts per million silver (Ag). Grades intersected in holes SY021 and SY022 are shown in Appendix 6. Allison's Lode is variable in width but appears to widen towards both the Bendall's and Balstrup Faults as shown in the schematic block diagram of Figure 5. A channel sample (Traverse A) across the full 19m of lode gives 11.84% Zn, 3.57% Pb and 52 grams/tonne Ag. Other, shorter, traverses give higher grades (see Appendix 6). The lode has been intersected in drill hole SY022, 70m below original ground surface with 15m (true width) averaging 3% Zn, 3.8% Pb and 48 grams per tonne of silver. Independent consultants Stephenson and Hancock (2000 p6) write that based on 120m of exposure length "200,000 to 300,000t of mineralised material could be present to a depth of approximately 50m below current exposure." Drillhole SY022 intersected Allison's at a true depth of 60 m below the open cut floor. Tear (2001) estimates a total resource of 725,812 tonnes at 12% zinc for Allison's Lode.

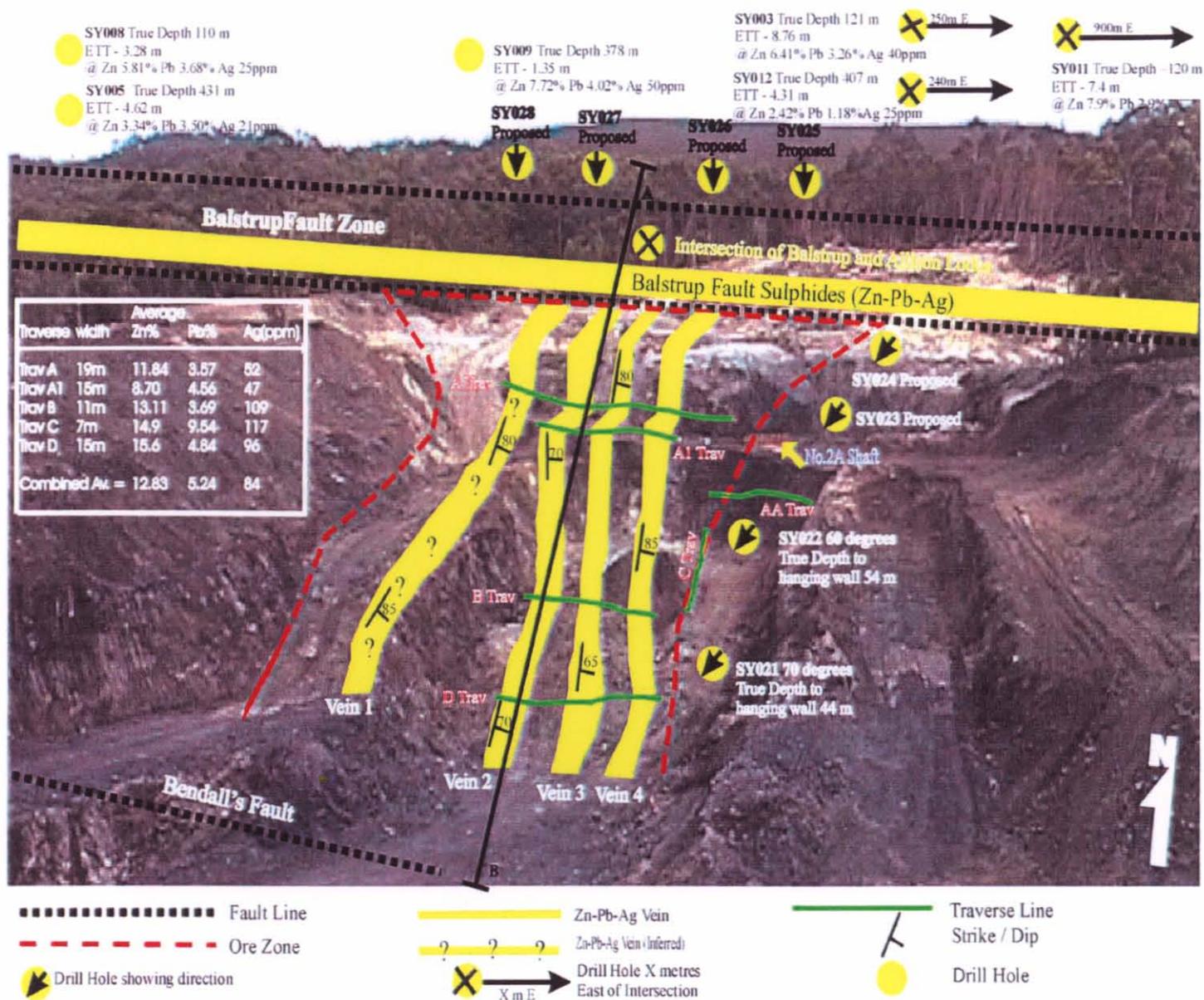
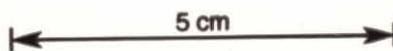


Figure 8. Photograph of Allison’s open cut in August, 2000 showing individual veins within Allison’s Lode as mapped by Tear and Heath. Channel sample transects of Heath (Appendix 6) are shown. Drill hole locations are shown SY003 etc. Zn =zinc, Pb = lead and Ag = silver.

Main Lode

The Main Lode (Figure 6) is more than 800m long and up to 50m wide (Tear 2000b Appendix 3). Malcolm Bendall’s open cut mining operation in 1989 at South Comstock on the southern end of the Main Lode removed about 40m of its length and resulted in 7334 tonnes of high grade ore (13.8% Zn, 3.4%Pb, Knight 1997) being treated at the Rosebery mill by Pasminco. If drilling proves the continuity of the Main Lode to a depth of 50 m then over 410,570 tonnes of ore at 8% zinc may reasonably be estimated (Tear, 2001). Coffey (2001p.5 Appendix 7) estimate a ‘mineralised volume’ of over 2 million tonnes for the Main Lode.



Balstrup Fault

An extensive sampling and drilling program was carried out by RGC Exploration Pty Ltd (Renison Goldfields Consolidated Ltd) in the early 1990's that outlined an inferred underground resource of some 6 million tonnes of lead-zinc-silver mineralisation along one kilometre length of the Balstrup Fault at 5.5% zinc, 3.3% lead and 40 grams per tonne of silver (Crossing 1993 Appendix 5). This estimate includes ore from about 80m below surface to a depth of 450m. Following the terminology of RGC deposit this 6 million tonnes is labelled 'SYLVESTER' on the Mineral Resources Tasmania map of the major mineral deposits of Tasmania (Appendix 12). A higher grade zone was recalculated by Swansea Mining Company (see Knight 1997) as 2.9 million tonnes at 8.6% Zn, 4.6% Pb and 59 grams per tonne of silver. Both of these resource estimates are regarded as inferred resources by independent commodity geologist Malcolm Hancock (Hancock, 1999). A higher grade zone of 2.8 million tonnes, within this one kilometre length, was also outlined by Western Metals (Richardson 2000). Western Metals' drill hole SY018 was sited just to the east of the kilometre-length of massive sulphide outlined by RGC but found very limited mineralisation. Western Metals' planned hole, between SY009 and SY0012, to test RGC's estimated mineralisation did not eventuate.

Although RGC was primarily interested in tin mineralisation, RGC commissioned a report (Elmer 1994) on the economics of an underground mining operation on the 6 million tonnes along the Balstrup Fault. Elmer concluded that underground mining was uneconomic at that time but that mining of adjacent vein style mineralisation could support a mining operation. Financial modelling by Zeehan Zinc using modern costings for underground mining and current metal values suggests that a profitable underground mine could be based on the 2.9 million tonne inferred resource (see Table IV).

Coffey (2001p.3 Appendix 7) estimate 2,220,000 tonnes of mineralised material are accessible by an underground mining operation.

RGC cut exploration trenches (costeans) across the Balstrup Fault at the surface and found evidence of considerable mineralisation. This suggests that there is a very significant tonnage of ore at shallow depths along the Balstrup Fault. The extent of this mineralisation will be tested soon when the open cut reaches the Balstrup Fault, but Tear (2001) estimates 787,500 tonnes at 5% zinc may be present at open cut depths.

Crossing (1993 p.8) considers that "...there is considerable scope for greater tonnages along the Balstrup Fault below 450m." and that "...there is the possibility of cupriferous (copper) and /or stanniferous (tin) replacement deposits at depth."

Watson's Lode

Watson's Lode (also known as Comstock Number 2 or Flaherty's) is 150m long in plan view, over 2m wide at surface and was intersected at a depth of 228 and 232m (205m below surface) in Oceania's hole SY022 (see Appendix 6) with an average grade of 7% lead and 2.6% Zinc and 59 grams per tonne of silver. One metre of this load also contains 1 gram per tonne of gold and the remainder contains 0.43 grams of gold per tonne (see Appendix 6). If these gold values are present throughout the lode, then there are 5000 ounces of gold of which possibly 2500 ounces are recoverable (with a metal value of about \$ 1,200,000 Australian). Twelvetrees (1900 page 38) records that the Stockyard

Lode's weathered surface zone (gossan) also contains 1.55 grammes per tonne gold. Tear's (2001) estimate for Watson's Lode is an open cut resource of 175,000 tonnes at 3% zinc (Appendix 4).

Total Estimated Resource

Using similar assumptions as above and based on historical records and recent investigations by Sundew Pty Ltd, the following resources may be estimated (Tear, 2001, Appendix 4):

Estimated Resources (Tear 2001 Appendix 4)

- **Total estimated resource = 8,740,057 tonnes at about 6%**
- **Total inferred resource = { 6,125,600 t at 5.5% zinc (Balstrup)
{725,812 t at 12% zinc (Allison's)**
- **Total open cut resource at more than 5% zinc = 2,540,057 tonnes**
- **Total open cut resource at more than 8% zinc = 897,945 tonnes**
- **Total open cut resource at more than 12% zinc = 725,812 tonnes**

Table II. Data on Comstock lodes from historical and modern sources with estimates of ore resources. (Tear 2001 Table 1-see Appendix 4 for details).

Lode	Length (m)	Average Width (m)	Depth (m)	Tonnage (SG 3.5) tonnes	Estimated Zinc Grade
1 Main Lode					
North Section	293	2.74	50 (5-55m)	140,494	8%
Middle Section	253	6.1	50 (5-55m)	270,076	8%
South Section	266	?	?	?	?
			Total	410,570	8%
2 Balstrup Fault					
Underground					
Main Section	1000	4.03	400 (50-450m)	6,125,600 (RGC)	5.5%
	1000	4.03 (assumed)	400 (assumed)	5,100,000 (Western Metals)	4.1%
Main section: High Grade	500	6.5	90 (20-110m)	2,800,000 (Western Metals)	8.6%
Possible surface mineral	1000	5	45 (5-55m)	787,500	5%
			Possible total	6,287,500	
3 Allison's Lode					
Vein System	215	15	50 (20-70m)	564,375	12%
Vein System	110	15	15 (5-20m)	86,625	12%
Mined	95	15	15 (5-20m)	74,812.5	12%
			Total	725,812	
4 Bendall's Fault					
Outcropping Lode	50	2.5	50	21,875	8%
Inferred to the Boss Mine	130	2.5	50	56,875	
			Total	78,750	

	Length (m)	Average Width (m)	Depth (m)	Tonnage (SG 3.5) tonnes	Estimated Zinc Grade
5 Boss Lode					
Folded stratabound	370	5.5	50 (5-55m)	356,125	8%
6 Watson's Lode					
Inferred surface	250	4	50	175,000	3%
Possible underground	250	2	300	525,000	2%
			Total	700,000	
7 Susannite Lodes					
Eastern Lode	100m	3.7	40 (10-50m)	51,800	5%
Western Lode	100m	5.5	40 (10-50m)	77,000	5%
			Total	128,800	
8 Britannia Lodes					
East Lode	100m	3	50	52,500	8%

An extensive drilling and costeaning (trenching) program to prove the continuity of the lodes is needed to confirm these resource estimates, and to convert the inferred category of 6,860,000 tonnes to the indicated category.

Future Work

RGC's drilling program intersected interesting boron mineralisation consisting of the mineral szaibelyite (magnesium borate) at depth on the lease. Boron is a valuable metal which is relatively light in weight but has a high melting temperature. It has a wide variety of industrial uses that include glass insulation fibres, soaps, plasterboards, ceramic tiles, detergents, fertilizers, enamels, glazes, fibreglass and radar transparent ('stealth') materials (Lyday 1999). Zeehan Zinc knows of no other deposits in Australia. Most deposits are in Europe, Asia, South America and the USA with Turkey and the USA being the largest producers.

Zeehan Zinc is investigating the extent and economics of this potential ore deposit and has commissioned a preliminary report on the production of boron from szaibelyite. Zeehan Zinc will be applying for R & D funding for a project on the metallurgy and processing of boron (Firek, 2000, Appendix 11).

An extensive geophysical program was completed in 1999 (see CD video - Appendix 13) and resulted in a number of major anomalies being identified on the lease. In addition, a geophysical study as part of an honours degree by Russell (2000) also found geophysical anomalies of interest. These anomalies will be drilled in Zeehan Zinc's upcoming exploration program.



A. Looking to the north from South Comstock open pit



B. Drill hole SY021 and Allison's Pit



C. 100 tonne excavator moving wasteout of Allison's Pit



D. Current status of Allison's Pit (February, 2001)



E. Decline into Allison's Pit



F. Removal of waste along Bendall's Fault

Figure 9. Photographs of current Comstock mine site showing mining operations.

Mine Development

Coffey Geoscience Pty Ltd have prepared a mine plan and designed a tailings dam (Coffey Pty Ltd 2001 Appendix 7). Stage 1 (Figure 10) is designed to extend the present open-cut northwards in order to complete mining of Allison's Lode. Stage 2 will open-cut the mineralisation at shallow depths on the Balstrup Fault. Stage 3 will be the construction of an elongate open cut designed to mine the Main (Comstock) Lode and Stage 4 links the two open cuts to continue mining the western surface section of the Balstrup Fault. Underground mining along the Balstrup Fault could start during Stage 2.

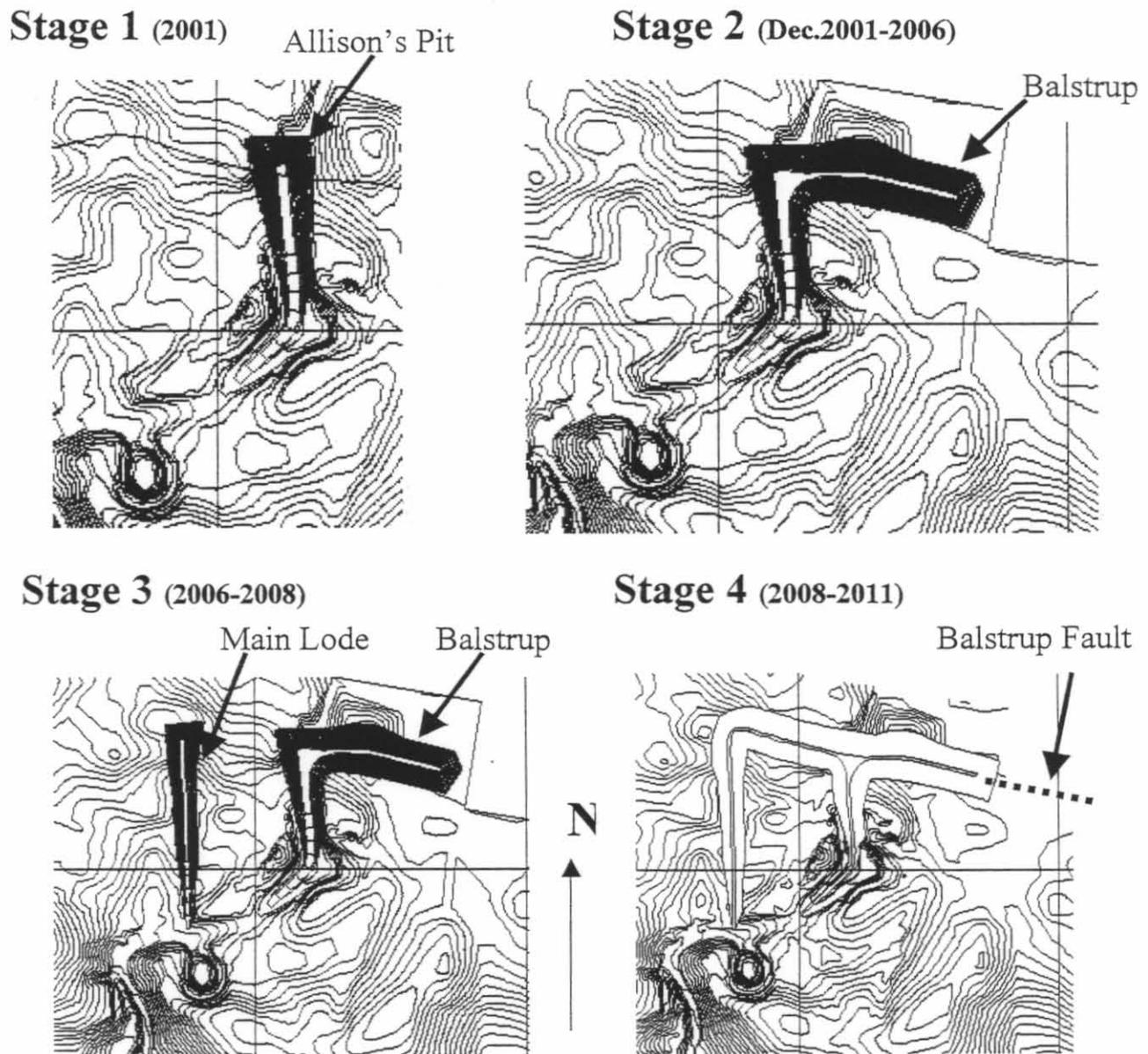


Figure 10. Maps showing planned stages in development of the Comstock mine. From Coffey (2000). Surface excavation will remove 126991 tonnes of mineralisation during Stage 1, 855478 tonnes during stage 2, 469544 tonnes during stage 3, and 694087 tonnes during stage 4, which is a total of 2,146,101 tonnes (Coffey, 2001, page 5, Appendix 7).

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Environmental Management

Zeehan Zinc and associated companies are committed to the highest standards of environmental management. The company financed a recent environmental research project on the Comstock lease area by University of Tasmania honours student Nicki Meskanen (2000). She found that, at times of high water flow (i.e. most of the year), water entering the mine area was of higher acidity than water exiting. The considerable thickness of dolomite within the mine area is probably responsible for decreasing the water acidity. Zeehan Zinc has placed limestone in its silt traps to further reduce acid mine drainage (see Figures 11 and 12, CD video Appendix 13). However, we should emphasise that the natural west coast Tasmania surface water is very acidic due to a high humic acid content. Animals and plants have adapted to high acidity waters and the company has to be careful not to lower this natural acidity. Acidity values based on an Australian standard are inappropriate in this unusual acid and metal-rich environment.

Topsoil is being removed and stockpiled for rehabilitation work and many areas are being re-seeded with local vegetation.

A Level 2 Development Proposal and Environmental Management Plan (DPEMP) has been approved by the West Coast Council and the Department of Environment to allow mining of 100,000 tonnes of ore per annum.

A detailed DPEMP covering mine expansion has been produced by SEMF Holdings Pty Ltd (SEMF 2000) and has been submitted to local and state government departments for comments and approval.

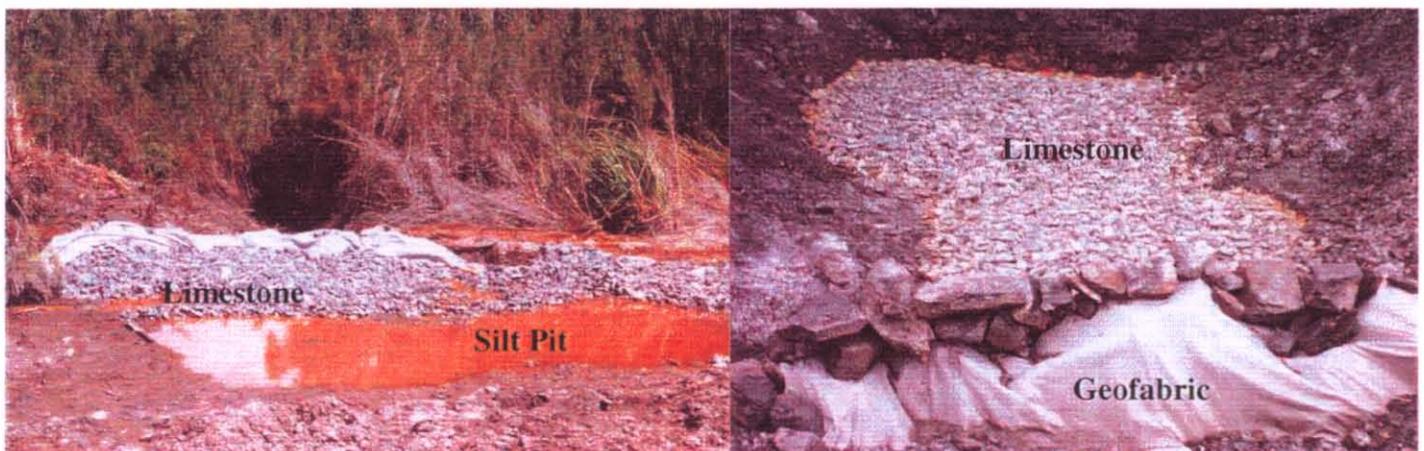
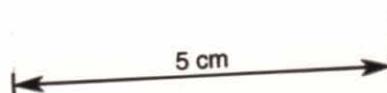


Figure 11. Environmental management at Comstock. Silt trap with geofabric to collect fine particles and limestone to neutralise acid.





A. Site 1. Measuring background water quality before entering the mine workings.



B. Site 2. Water quality before entering the tunnel system.



C. Site 3. Water is diverted from the decline, utilising an old shaft (photo prior to decline excavation).



D. Site D. Looking north into the decline, another shaft draining the decline is in the centre of this photograph (under arrow).



E. Site 5. Water quality downstream of mine, but prior to mixing with main adit (site 6) waters.



F. Site 6. Water exiting from the tunnel system (the main adit).



G. Site 7. Water flowing downstream out of the mine lease.

Figure 12. Photographs showing aspects of environmental monitoring on the Comstock mining lease (from Meskanen 2000).

Processing and Financial Modelling

Metallurgical and financial analysis shows that a profitable open cut and processing operation can be operated at low grades of zinc in ore. Much higher profits follow with increasing zinc grades. A detailed analysis has been carried out by Esker (2001 see Appendix 8). It is proposed to establish a contract mill on site from Ironwork Pty Ltd of New South Wales, Australia. Ironwork Pty Ltd will supply, man and manage the complete plant for a fixed rate per tonne of ore (Appendix 9). Therefore Zeehan Zinc incurs no capital costs for the processing plant. The plant can be established within 4 months of contract signing.

Zeehan Zinc is investigating (i) gravity and (ii) flotation methods of concentrating the ore using a contract mill from Ironworks Pty Ltd. Metallurgical and financial analyses show that an open-cut operation with flotation plant is profitable at only 5% zinc in 200,000 tonnes of ore per year (see Appendix 8). The zinc bulk concentrate will then be sold in Tasmania or elsewhere at a yearly surplus which depends mainly on ore grade:

- 200,000 tonnes at 5% zinc in ore yields \$ AUD 1.8 million dollar pre-tax profit per year,
- 200,000 tonnes at 6% zinc in ore yields \$AUD 10.3 million dollar pre-tax profit per year,
- 200,000 tonnes at 7% zinc in ore yields \$AUD 14.7 million dollar pre-tax profit per year.

A gravity plant is economic at 4% zinc. Esker (2001 see Appendix 8) has also considered an option to build a fumer plant with electro-win circuit and blast furnace at a cost of \$AUD 63 million. This plant will produce high quality zinc metal using Comstock and imported concentrate feedstock. The fumer would be sited on the old Zeehan smelter site and would have access to 400,000 tonnes of slag averaging 15% zinc with 'excellent' fuming properties (Esker 2001). The fumer option doubles the profits shown above, has an expected life of at least ten years and the capital costs would be repaid within two years.

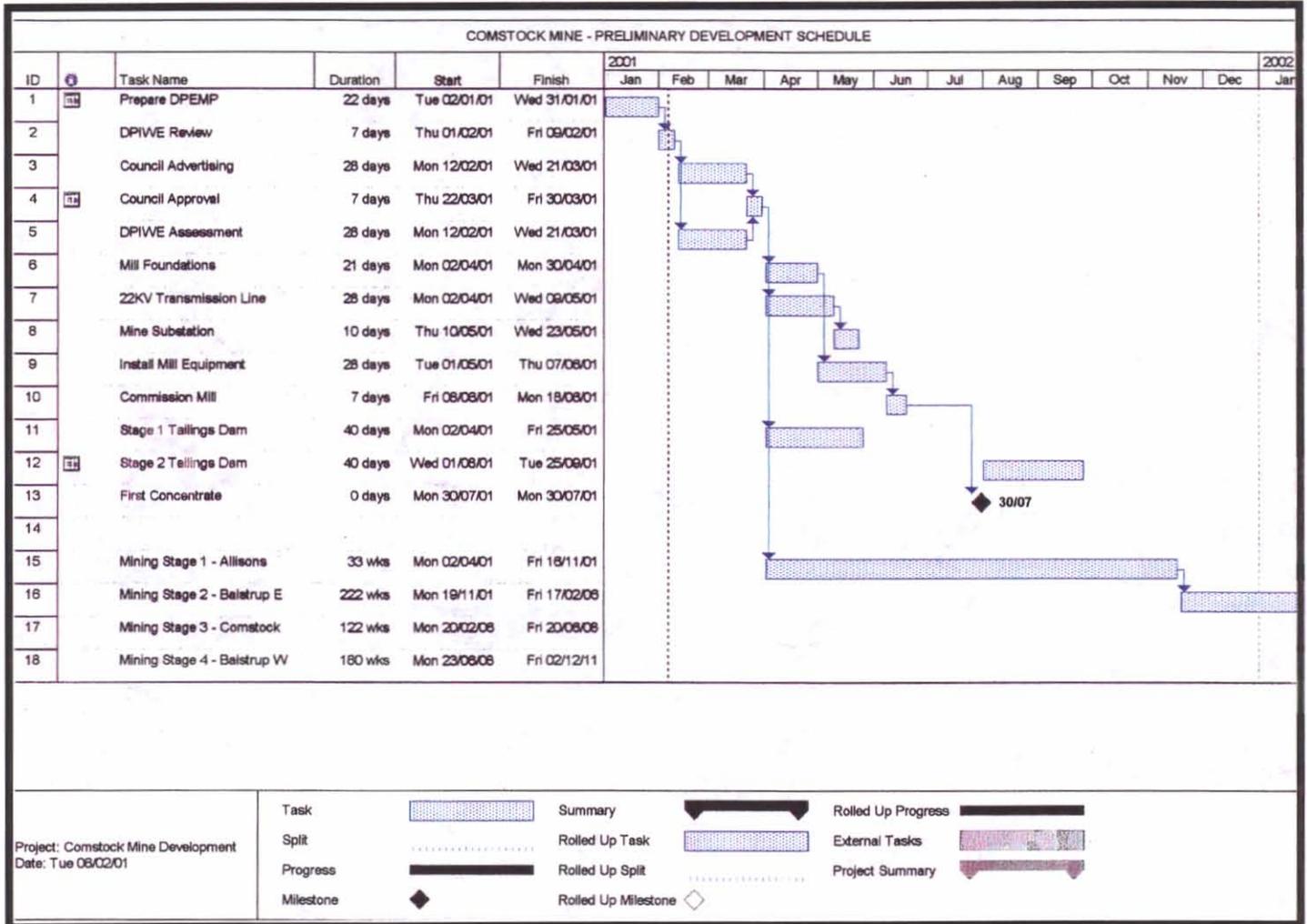
Zeehan Zinc's financial modelling has used a value of AU\$1800 for zinc metal. The forecasts for zinc prices are good and strong global demand is expected over the next ten years although the price of all metals is expected to decline slightly in 2001 along with the global economy (Brook Hunt 2001).

Zeehan Zinc's financial model as for the flotation-plant-only option are included as Appendix 10.

Timetable

Zeehan Zinc's timetable for mine expansion and the establishment of a processing plant on site is shown below as Table V.

Table III. Development schedule for the Comstock project.



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*All of the references cited below may be obtained from Zeehan Zinc. Those marked * are attached as appendices.*

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*Tear, S., 2000b Aspects of the mineral lodes on the Comstock prospect, Zeehan West Tasmania, Benmore Exploration Pty Ltd. (Appendix 4).

*Tear, S., 2001 Potential Estimates of ore tonnages for the Comstock lodes, Zeehan, western Tasmania, Benmore Exploration Pty Ltd. (Appendix 5).

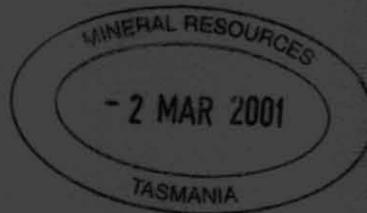
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DATED FEBRUARY 2001

**ZEEHAN
ZINC**

APPENDICES
ANNUAL REPORT 2001



Appendix 1

Comstock Silver-Lead-Zinc Prospect
Information Memorandum

Jonathan M Knight
J M Knight and Associates, 1997

**COMSTOCK SILVER LEAD ZINC PROSPECT
INFORMATION MEMORANDUM**

NOVEMBER 1997

PREPARED BY J.M. KNIGHT & ASSOCIATES PTY LTD

FOR

**OCEANIA TASMANIA PTY LTD
AND
SWANSEA MINING COMPANY**

CONTENTS

1. Qualifications
 2. Summary
 3. Location and ownership
 4. Geological overview
 5. Past mining and exploration
 6. Recent exploration
 7. Prospectivity
 8. Access to data and site visits
 9. References
- Appendix I - Letter from Australian Mining Consultants
- Appendix II - Surface diamond drill hole assay values

1. QUALIFICATIONS AND DISCLAIMERS

This Information Memorandum was prepared by J.M. Knight & Associates Pty. Ltd. ("Knight"), a consulting company based in Hobart, Tasmania, offering geological and geophysical services. The Principal, Jonathan Knight, has a B.Sc. (Hons) from the University of Tasmania, with majors in geology and geophysics, and 25 years worldwide experience in both the mining and petroleum industries. Oceania Tasmania Pty Limited ("Oceania") and Swansea Mining Company ("Swansea") commissioned this document for a fee in accordance with prevailing rates. Knight has no other financial connection with Oceania, the sub-lessees, nor in any other way with the project.

The information contained in this report was drawn from open files at the Mineral Resources Tasmania library, and from documents supplied by Oceania. Knight has relied upon, and assumed, without verification, the accuracy and completeness of all information that has been furnished to it, but cannot take any responsibility to guarantee its accuracy. The database, the resource estimates, and the production statistics have not been subjected to audit. This report is effective 30th November 1997, and accordingly, any conclusions contained within it may change according to future work and conditions.

The report does not purport to include all the relevant information, and is simply a summary of what are seen to be the main facts, aimed at providing enough information for a party to decide whether or not to go into detailed assessment.

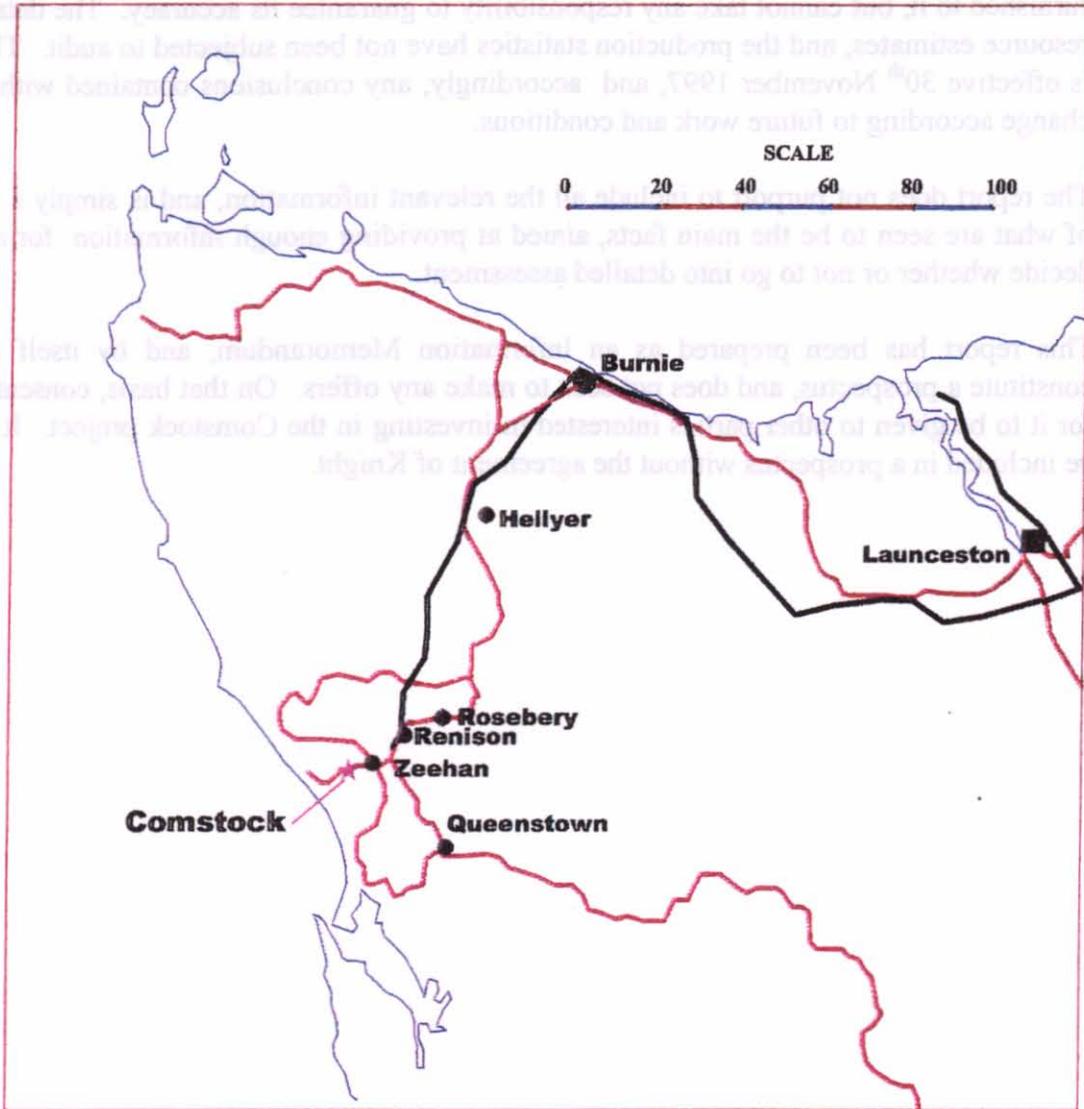
This report has been prepared as an Information Memorandum, and by itself does not constitute a prospectus, and does not seek to make any offers. On that basis, consent is given for it to be given to other parties interested in investing in the Comstock project. It is not to be included in a prospectus without the agreement of Knight.



This Information Memorandum was prepared by J.M. Knight & Associates Pty Ltd ("Knight"), a consulting company based in Hobart, Tasmania, offering geological and geophysical services. The Principal, Jonathan Knight, has a B.Sc. (Hons) from the University of Tasmania, with majors in geology and geophysics, and 22 years worldwide experience in both the mining and petroleum industries. Oceanic Tasmania Pty Limited ("Oceanic") and Swains Mining Company ("Swains") commissioned this document for a fee in accordance with prevailing rates. Knight has no other financial connection with Oceanic, the sub-lessee, nor in any other way with the project.

The information contained in this report is based on the information provided to Knight by the sub-lessee, Oceanic, and on the information that has been assumed, without verification, by Knight. Knight has relied upon, and is not responsible for, the accuracy of the information provided to it. This report and the production statistics have not been subjected to audit. This report may contain information that is not true and accurate, and accordingly, any conclusions drawn from it may be incorrect.

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2. SUMMARY

Located in the heart of the mining belt of Western Tasmania, just west of Zeehan, the Comstock area is prospective for the discovery of new silver lead zinc deposits. There is good potential for the discovery of large deposits, within which there are indications that smaller high grade bodies exist. The concentrator at Pasma's Rosebery mine is close by, and this facility currently has up to a hundred thousand tonnes a year of ore surplus capacity. Large scale operations could take advantage of the nearby railway connection to the Port of Burnie where concentrates from other mines are handled.

Mining in the immediate area dates back to the previous century and there are numerous old surface and underground workings. There was little modern exploration work until RGC Exploration Pty Ltd ("Renison") carried out a major programme during the early nineties, including deeper drilling, which showed the high potential for larger deposits to exist at mineable depths, within, and beyond the current mining lease boundaries. Renison reported an inferred resource estimate exceeding 6 million tonnes at 5.5% Zn, 3.3% Pb, and 40 g/t Ag. However, Renison's primary target was tin, and it was a lack of any indication of a major tin deposit, rather than the economics of a silver/lead/zinc mine which, as Knight understands it, caused Renison to conclude their exploration programme.

Swansea calculated a smaller, higher grade estimate of 2.9 million tonnes at 8.6% Zn, 4.6% Pb and 59 g/t Ag, based on narrower, higher grade intervals. Further infill drilling may demonstrate the consistency of these intersections, sufficiently to satisfy the requirements for an inferred resource estimate.

Mining leases over the most prospective part of the area are held by Oceania via the associated company, Swansea, subject to shallow rights of sub-lessees over the area. Oceania has already proved that economic grades can be mined and processed at Rosebery. Currently a new mining operation has been established (via a sub-lessee), focussing on shallow, vein-hosted mineralisation.

Oceania is currently seeking to sell its interests in the property. New investment in detailed exploration is justified to confirm the presence and size of larger, deeper deposits. This memorandum presents a summary of the key aspects of previous exploration, the geological setting, details of the most recent exploration and mining operation and current space ownership, and a discussion of the prospectivity of the area. The document outlines how data can be examined and site visits arranged.



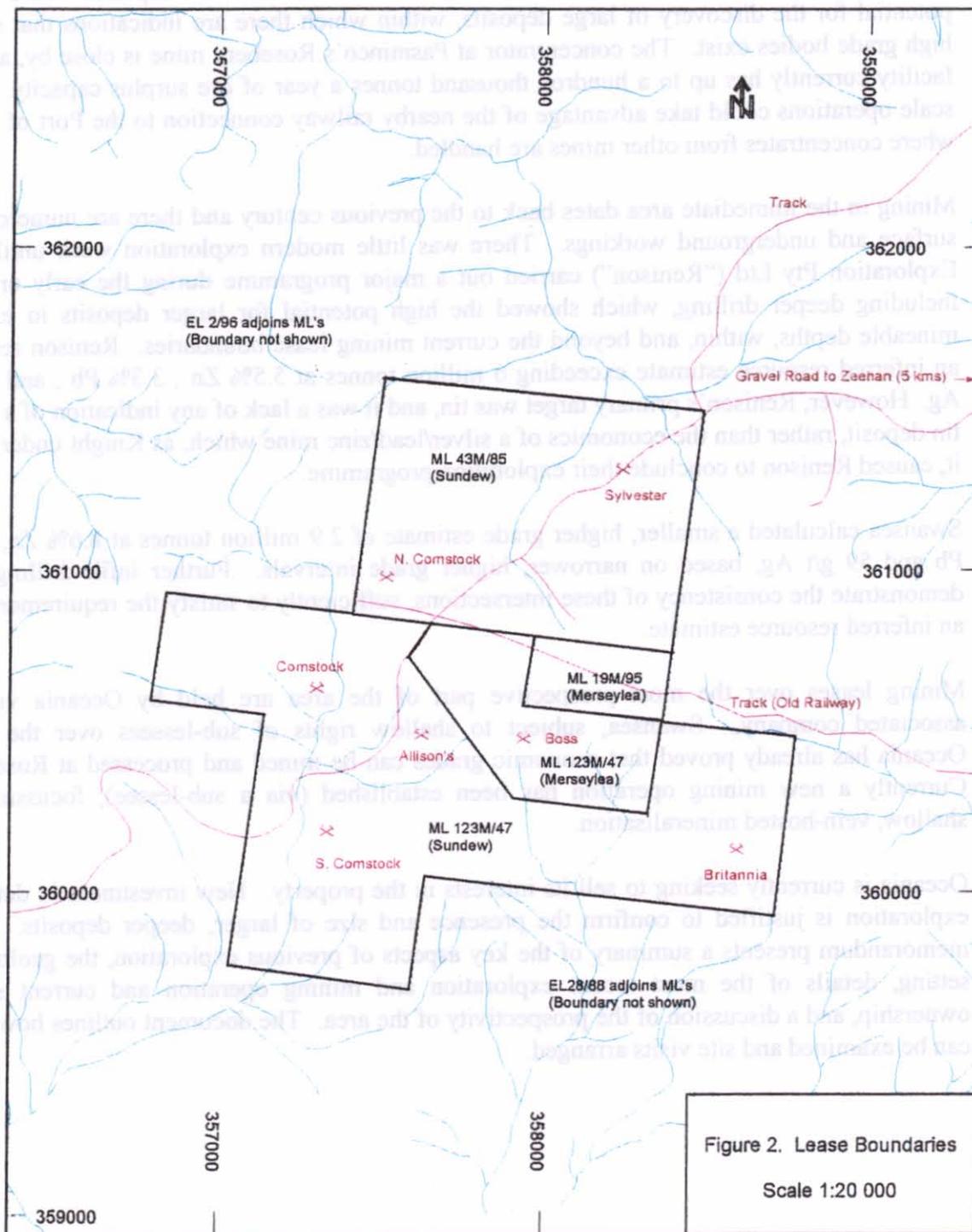


Figure 2. Lease boundaries, access, drainage and location of workings

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3. LOCATION, ACCESS AND TITLE

Figure 1 shows the location of the Comstock area in western Tasmania. The locations of other major operating mines are shown, together with the roads and railways. Figure 2 shows the mining leases held by Oceania, which form the subject of this document. These leases adjoin exploration licenses EL 2/96 to the north, held by Rio Tinto Exploration Pty Limited ("Rio Tinto"), and EL 28/88 to the south held by Riotinto and Allegiance Mining NL ("Allegiance"). They were surrounded formally by EL 42/87, which was held solely by Renison Limited, and was explored by RGC Exploration Ltd ("Renison") from 1989 to 1995. They are readily accessible via approximately 5 kilometres of well maintained gravel road from the town of Zeehan which currently provides the accommodation for the nearby Renison tin mine, and is connected by sealed road with the State highway system, 5 kms to the east. The railhead used by Copper Mines of Tasmania for concentrate shipment to the port of Burnie, is just 12 kms from Zeehan at Melba Flats, and the Pasmenco mine, which also uses the railway, is 29 kms by sealed road from Zeehan. We are advised that any sale agreement would include a freehold property in Zeehan.

Current title details are as follows: (refer to figure 2)

EL 2/96 - Riotinto
 EL 28/88 - Riotinto and Allegiance
 ML 43M/85 - Oceania, sub-leased to Sundew Holdings Pty Ltd
 ML 123M/47 - Oceania, partly sub-leased to Sundew Holdings Pty Ltd, and partly to Merseylea Mining.
 ML 19M/95 - Oceania, sub-leased to Merseylea Mining

Renison retained the right to explore within the mining leases from 1990 until 1995, but has no residual interest.

Under the sub-lease agreements, Sundew and Merseylea have the rights to explore and mine from surface to a depth of 70 metres, subject to payment of a profits based royalty, according to registered sub-lease agreements signed in 1995 for ten year terms.

The exploration and mining rights on all three ML's below 70 metres from surface, have been assigned by Oceania to the associated Swansea.

Figure 1 shows the location of the Comstock area in western Tasmania. The location of other major operating mines are shown, together with the roads and railways. Figure 2 shows the mining leases held by Oceania, which form the subject of this document. These leases adjoin exploration licenses EL 396 to the north, held by Rio Tinto Exploration Pty Limited ("Rio Tinto"), and EL 2878 to the south, held by Kromin and Alliance Mining NL ("Alliance"). They were surrendered formally by EL 4204 which was held solely by Kromin Limited, and was explored by RGC Exploration Ltd ("RGC") from 1989 to 1992. They are readily accessible via approximately 2 kilometers of well maintained gravel road from the town of Zeehan which currently provides the accommodation for the Zeehan Railway and is connected by sealed road with the State highway system. The railway used by Copper Mines of Tasmania for concentrate shipment to the port of Burnie, is just 12 kms from Zeehan at Melba Flat, and the Zeehan mine, which also uses the railway, is 29 kms by sealed road from Zeehan. It is advised that any sale agreement would include a freehold property in Zeehan.

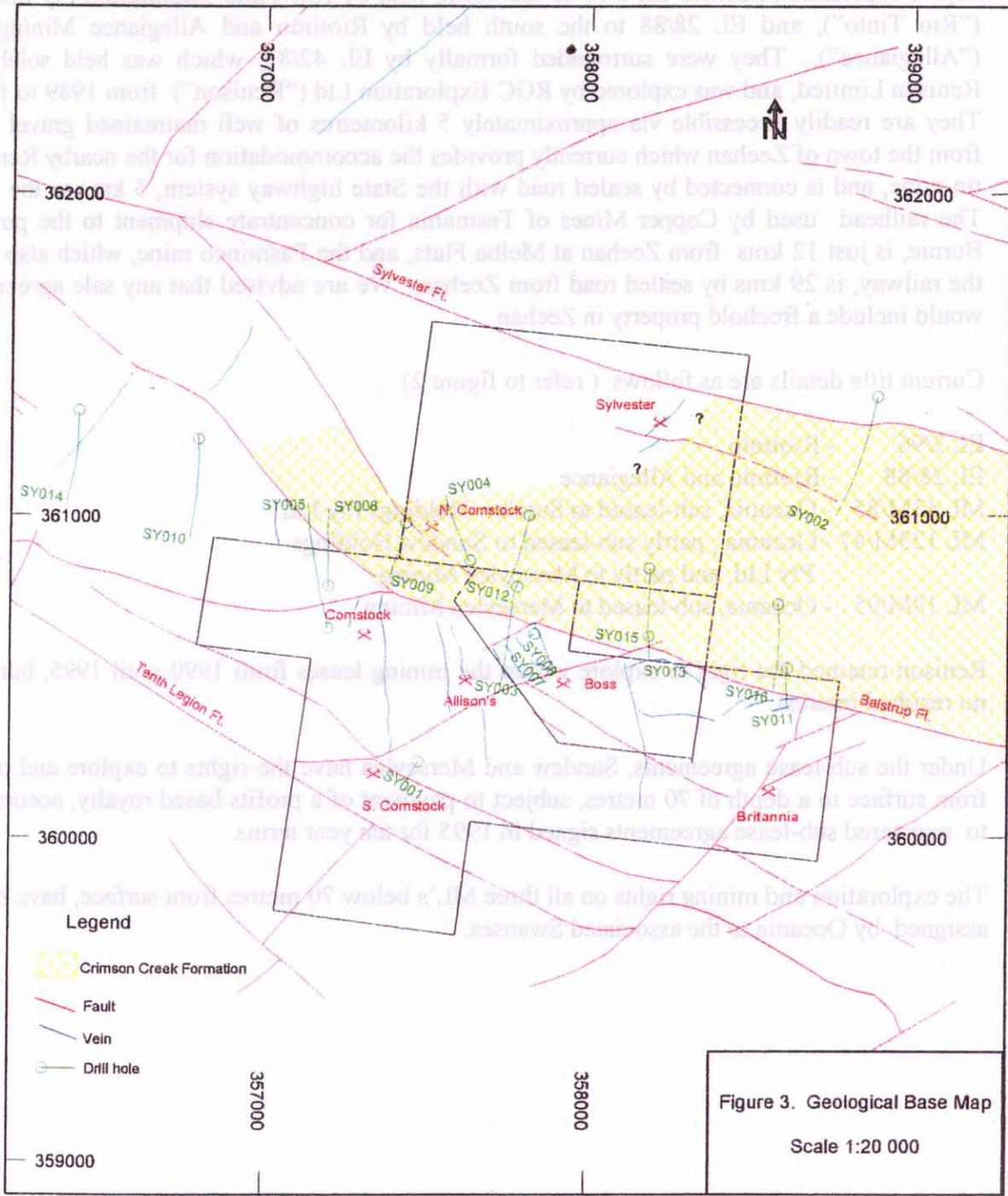
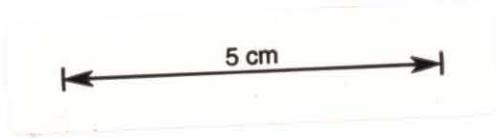


Figure 3. Geological basemap with lease boundaries, drill holes and workings.



4. GEOLOGICAL SETTING

Figure 3 is a geological base map for the area.

Stratigraphy

Broadly, the geology consists of tightly folded, highly faulted Proterozoic and Palaeozoic sediments which have been intruded by Devonian granites. In the Comstock area the key formations are the Proterozoic Upper Oonah formation, and the Cambrian Crimson Creek formation. These two formations form the footwall (south) and hanging wall (north) respectively, of the major, WNW trending Balstrup fault.

The Oonah Formation has been interpreted as being a distal turbidite sequence (Brown, 1986). Towards the top of the Formation, finer grained lithologies become more dominant and carbonates and spilitic volcanics appear. In the Comstock area the spilites are rare and the carbonates are the dominant lithology. Early phase isoclinal folding has produced structural repetition, and WNW thrusts hamper stratigraphic correlation.

A significant feature of the Upper Oonah Formation is the presence of broad "melange" zones characteristically consisting of chaotic, unsorted angular to lenticular fragments of Oonah sandstone in a fine carbonaceous matrix. These melanges are most abundant towards the contacts with upper units, particularly along the Oonah/Crimson Creek contact where they include some fragments of the latter unit.

The Crimson Creek Formation consists of a poorly outcropping sequence of weathered turbidites. The dominant lithologies are arenites, wackestones, tuffs and mudstones. There are also massive, poorly bedded siltstones and shales, and occasional carbonate interbeds.

Regionally, an unconformity is inferred at the base of the Cambrian sequence because the underlying Oonah formation sediments have been affected by isoclinal folding which has not been recorded in the younger units.

Cambrian gabbros and ultramafic dykes have been observed, but the major intrusive is a Devonian granitoid ridge interpreted to extend regionally from the Heemskirk Granite batholith, north-west of the prospect, towards the south east, at least as far as the town of Zeehan. Along this ridge, a culmination (cupola) is interpreted (based on gravity surveys), beneath Queen Hill, on the western outskirts of Zeehan and another culmination may occur beneath the Comstock area. The Queen Hill area was central to the historic mining of silver and lead, and it was via old workings that a major body of cassiterite in massive pyrite mineralisation was discovered in 1965-71. The only outcropping granitoid rocks in the area are a few thin, quartz-porphyry dykes.

Structure

It appears that an early (Pre-Cambrian) phase of deformation produced isoclinal folds, extreme local variability in bedding attitude and facing, and locally developed crenulation cleavages in the Oonah Formation. It is believed that the Oonah Formation lies over Cambrian volcanics, the boundary being a thrust fault. Fragments of Cambrian units in the melanges within the upper Oonah Formation are believed to have been introduced during faulting during the mid-Devonian Tabberabberan orogeny. This was the most significant period of deformation and it comprised two phases of compression producing NW trending folds, and then NE trending folds. A series of NW to WNW trending faults also resulted, the most significant being the Tenth Legion, the Sylvester and the Balstrup. The Balstrup Fault dips steeply to the north and is believed to be normal, with the north block wrenched to the west. The Tenth Legion Fault is a thrust fault, with a shallower dip to the NNE.

Another major set of faults, apparently normal, trends NNE, and dips are mainly steeply east. The Heemskirk batholith is thought to have intruded towards the end of this orogeny, and the intrusion appears to have been controlled by the major folds and regional structures, with culminations occurring between major anticlinal axes where they cross the regional trend.

Mineralisation

Virtually all economic production from the Zeehan field was silver-lead, and some of the mines were located within the boundaries of the mining leases described in this report. The lodes occupy small faults belonging to the NNE and NW trending sets described above. They rarely occupy major structures, but often appear to be spatially related to them. Host lithologies have little effect on mineralisation, and wallrock alteration is mostly absent.

Regional mineralogical zonation patterns, primarily based on distance from the Heemskirk granite, have been recognised in the past, but there is currently some difference of opinion on the detailed zonation, as new work uncovers variations.

In the Comstock mine/Tenth Legion Fault area, mineralisation is spatially associated with the Heemskirk granite and with the major structures, notably the Balstrup and Tenth Legion faults. Three main styles of mineralisation are present:

1. Magnetite-serpentinite skarns hosted by carbonates, mostly within the contact metamorphic aureole.
2. Base metal sulphide skarns hosted by carbonates, mostly outside the contact metamorphic aureole.
3. Sphalerite rich base metal pyrite veins, hosted by various lithologies.

Styles 2 and 3 are of main interest within the ML's.

TABLE 1

Ore Shipments by Oceania from South Comstock to Pasmenco

Lot	Date Delivered	Tonnage Delivered	Moisture %	Tonnage Moisture	Tonnage Payment	Zinc Assay Base	Gross Metal Zinc Tonnes	Lead Assay %	Gross Metal Lead Tonnes	Silver Assay G/T	Gross Metal Silver Kilos	Zinc Price/T	Lead Price/T	Silver Price/t	Payment Received	Gross Metal Value
1	26.3.89	1,202	4.1	49.31	1,153	18.4	212	5.1	58.82	86	89.19	2,429	727	228	140,813	580,955
2	7.5.89	815	3.5	18.05	497	21.8	108	4.3	21.40	86	42.79	2,235	833	222	87,108	269,853
3	14.5.89	569	5.5	31.30	537	17.0	91	3.0	16.13	61	32.81	2,235	833	222	37,280	225,127
4	28.5.89	508	4.5	22.80	485	15.3	74	3.9	18.95	78	37.80	2,235	833	222	35,125	190,405
5	4.8.89	580	4.5	26.12	554	19.6	108	4.2	23.28	63	34.92	2,209	882	225	60,433	268,412
6	11.8.89	1,022	7.7	78.71	943	17.8	166	4.4	41.52	68	64.16	2,209	882	225	81,238	417,984
7	16.6.89	267	8.2	21.92	246	16.6	40	4.6	11.29	81	19.88	2,209	882	225	17,804	104,431
8	15.6.89	725	10.8	78.40	647	9.0	58	2.2	14.25	33	21.37	2,209	882	225	18,655	146,151
9	9.7.88	1,228	8.5	104.39	1,123	8.0	89	2.0	22.47	35	38.33	2,204	909	222	25,890	227,399
10	23.7.89	713	5.2	37.13	676	9.5	64	2.9	19.63	52	35.19	2,204	909	222	21,692	167,454
		7,334	6.4	468.23	6,865	14.8	1014	3.6	247.74	62	427.54	2,261	838	225	506,041	2,598,177

Silver-lead veins were discovered near the present town of Zeehan in 1882. The Zeehan field developed rapidly and flourished until 1914. The area was explored and mined extensively and there are numerous old surface and underground workings. A brief resurgence of silver-lead mining occurred during the period 1947-1960, by which time the field had produced a total of 194,816 tonnes of lead, and 26,585,000 ozs of silver.

Oceania worked on the open pit at the old South Comstock Mine in 1989, and established that economic head grades could be supplied to the Rosebery (Pasminco) mill (see Table 1). Some 7,334 tonnes of ore were shipped and concentrated. A thousand tonnes were also mined at the Sylvester site in 1988. Oceania also commenced drilling with a hole to look for mineralisation associated with the extension of the Tenth Legion Fault which is visible at surface, just south of the South Comstock mine.

Renison explored EL 42/87, including the mining leases, for five years until the agreement with Oceania expired in May 1995, leaving with no residual interest. The initial target was tin, relating to major faults crossing the area on easterly trends. Tapping of a mineralising porphyry stock or cupola could have produced fissure/stockwork/carbonate replacement style tin deposits such as those known at nearby Queen Hill.

Exploration involved establishing 100m spaced grid lines, 1:1000 scale geological mapping, c-horizon soil sampling, weathered bedrock auger sampling, ground magnetics, costeaning, and diamond drill testing of magnetic and geochemical anomalies. The anomalous soil sample assay values for lead, zinc, arsenic and antimony are shown in figures 4 to 7. The field lines were run approximately north-south to achieve normality to the major faults, and a large suite of about thirty elements were analysed in the weathered bedrock samples. Little encouragement was obtained for the presence of shallow tin mineralisation, but some strong lead-zinc geochemical anomalies were revealed along the footwall of the Balstrup Fault, and in a number of other spots.

A total of 16 holes were drilled to test the Balstrup Fault mineralisation, and their location is also shown on figures 3 and 8. Downhole Sirotem surveys were run in some of the holes. Drilling between the Boss Mine vicinity and an along-trend, strong magnetic anomaly to the west, disclosed a large resource of skarn-related, lead-zinc mineralisation. Costeans were cut to look for surface expression of the mineralisation intersected by the drill holes. Figure 8 shows three north-south sections, and their location relative to the drill holes and structure, as depicted at surface. The sections show the consistent intersections of the mineralised zone immediately below the Balstrup Fault. Section 4 is shown in Figure 10 to illustrate the possibility of mineralisation associated with the Tenth Legion Fault, and is discussed later (see Prospectivity)

Renison was sufficiently encouraged by these intersections to investigate the economics of an underground operation, based on a body inferred to start 80 metres below surface to 480 metres below surface, dipping about 68 degrees to the NE and averaging 4 metres wide, for a strike extent of 1000 metres. Figure 9 shows the extent of the area included and the drill hole intersections within it, in longitudinal projection. Mineralisation is also evident beyond the strike extent chosen, in both directions, and the body is also open at depth. By 1995, when Renison's option period to explore within the mining leases expired, the potential for a large

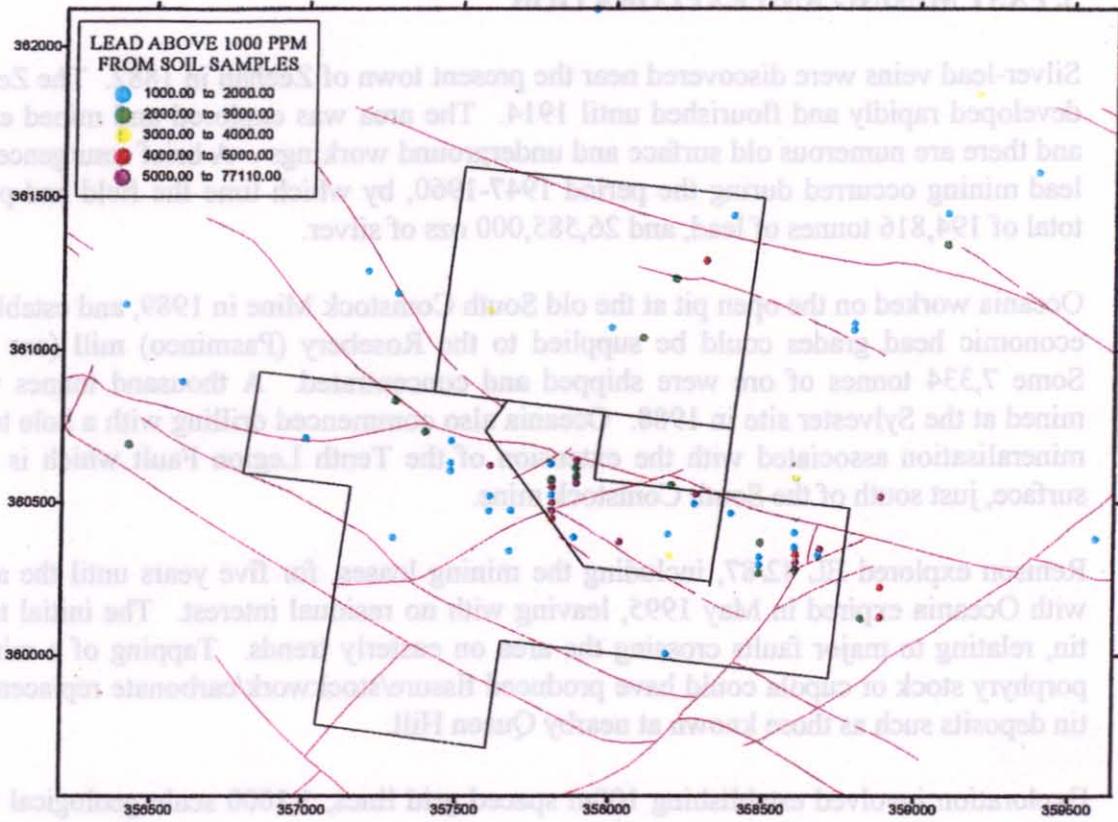


Figure 4. Lead assay values above 1000 ppm from soil samples

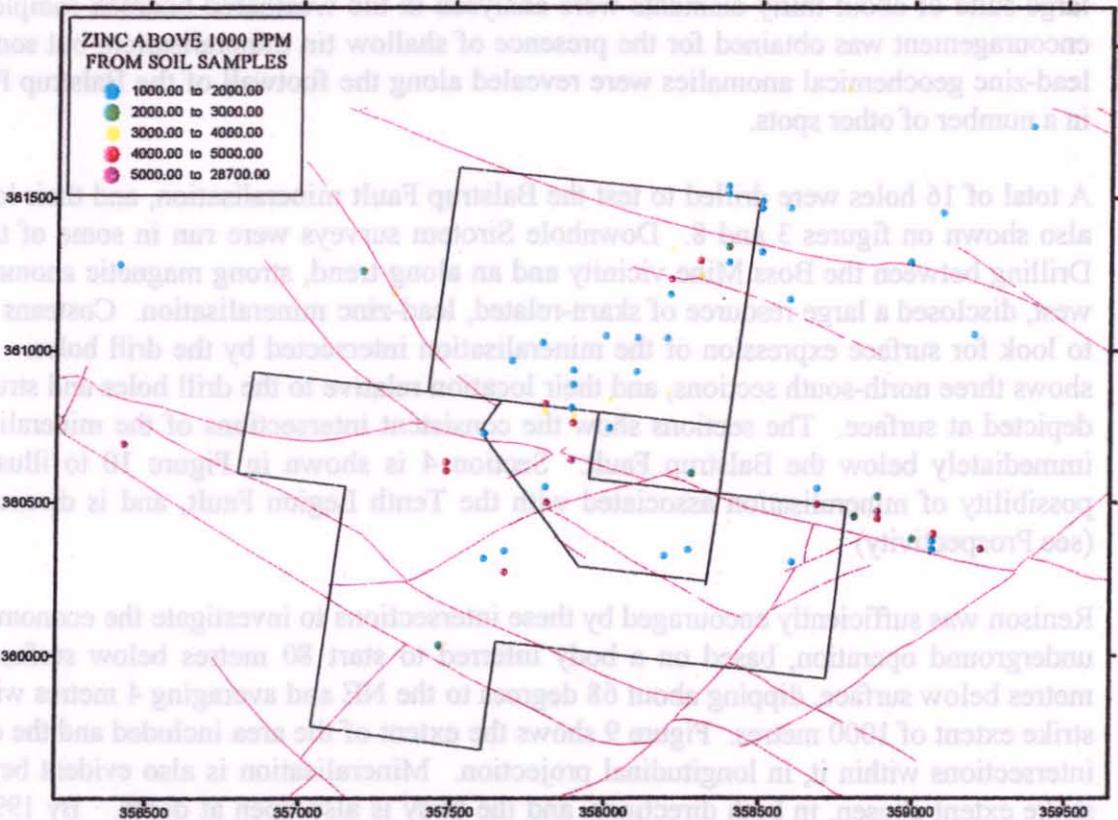
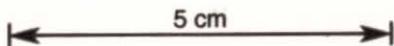


Figure 5. ZINC assay values above 1000 ppm from soil samples



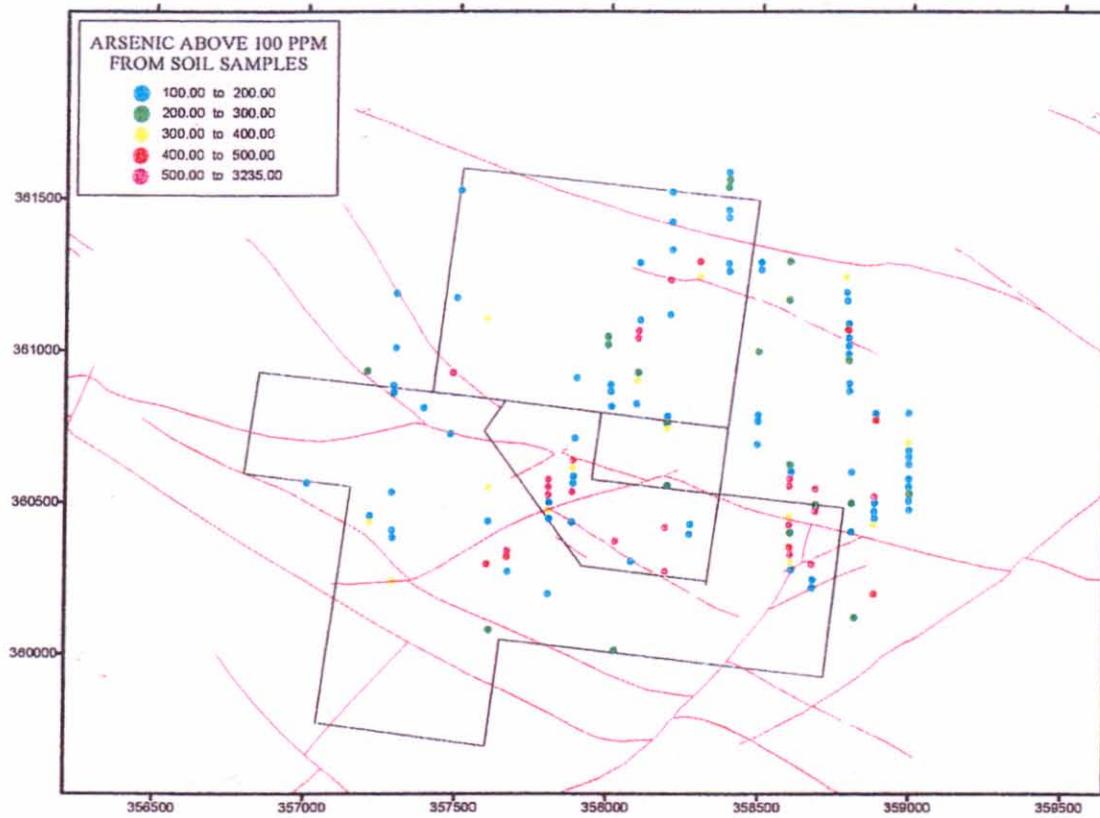


Figure 6. Arsenic assay values above 100 ppm from soil samples

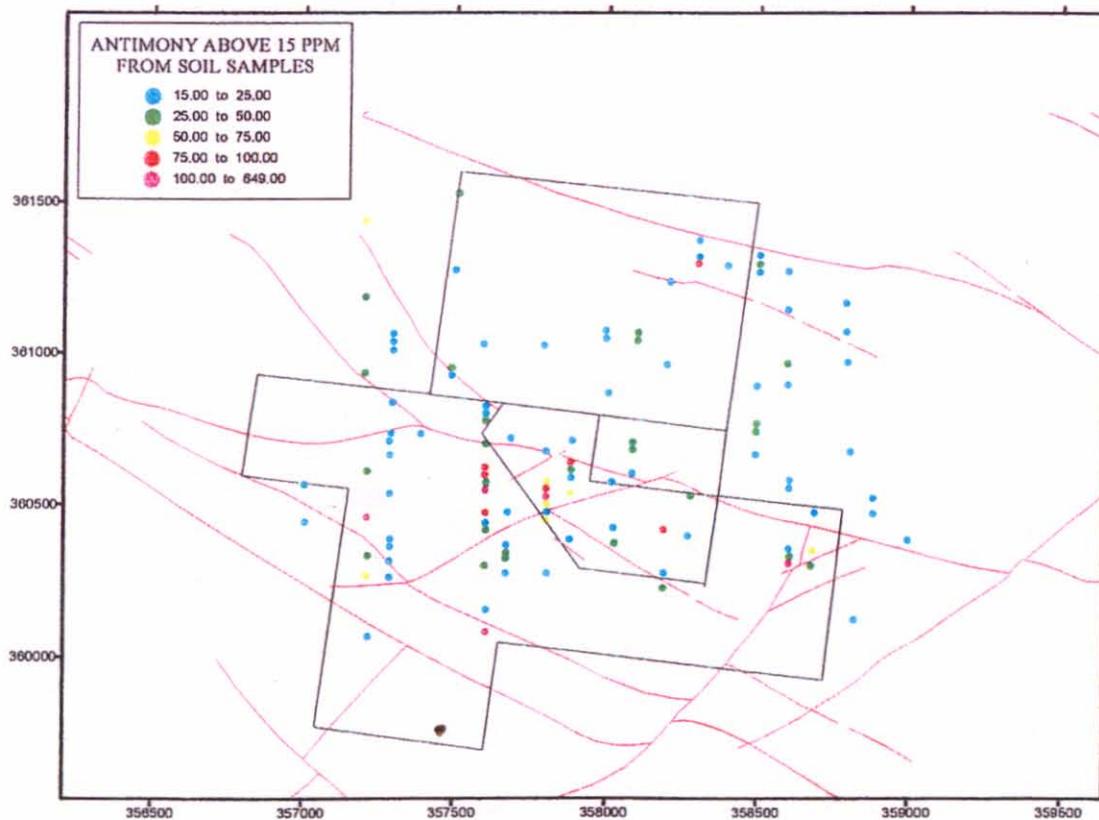


Figure 7. Antimony assay values above 15 ppm from soil samples

5 cm

low grade body to exist had been established, with inferred resources of more than 6 million tonnes at 5.5 % zinc, 3.3% Pb and 40 g/t silver. Metallurgical studies indicated that there would be no significant processing problems, as has been proven recently during Sundew's 500 tonne bulk sample trial at Pasminco in Rosebery.

Renison deemed the deposit to be sub-economic, following a study of the economics of underground mining, while noting that there was potential for a smaller, higher grade deposit to be mined within the main body, by choosing narrower intersections based on higher cutoffs. This also could, they noted, result in overcoming potential hanging wall geotechnical problems. By selecting narrower intersections, and using the same strike and depth extents assumed by Renison, Swansea calculated a tonnage of 2.9 million tonnes at 8.6% Zn, 4.6% Pb and 59 g/t. The intersections used by Swansea and Renison are included in Appendix II. Swansea's higher grade estimate is heavily dependent on the intersections in SY005 and SY008 (see figure 8, section 1), and their consistency needs to be demonstrated by further infill drilling to allow an estimate to be calculated which satisfies the requirements of an inferred resource estimate.

Renison did not attempt to follow up numerous spot anomalous lead and zinc values present on lines beyond the immediate vicinity of the Balstrup Fault, recognising that some of these might express veins similar to those exposed in the old Comstock workings, which would be too small to support the larger style of operation a company of its size was seeking. It is worth noting that the north-south orientation of geochemical grid lines is not considered optimal for the discovery of vein-hosted mineralisation, which recent work indicates trends NNE to SSW.

The assay surface sample and drill hole assay data are contained in the annual reports on exploration submitted by Renison to Mineral Resources Tasmania (MRT), and are on open file in the MRT library, as well as on the Datamine database prepared by Knight.

Sundew commenced exploration in January 1996 with a re-evaluation of the Renison results. This programme is discussed in more detail in the next section.

6. RECENT EXPLORATION

While recognising the potential for a larger scale of operation based on a deeper resource, Sundew commenced exploration in January 1996 with the objective of finding deposits of lead-zinc ore which could be extracted by open cut mining, and which would be acceptable for purchase by Pasminco at Rosebery, or Aberfoyle at Hellyer. Accordingly, their sub lease rights extend to 70 metres below surface. Exploration to date has included evaluating previous exploration data, particularly the geochemical anomalies, costeaning by mechanical excavator, sampling of costeans, and diamond drilling.

This work has resulted in the discovery of 5 new lodes previously unknown to prospectors, as well as the mining of a bulk sample at the previously known Allison's lode. Metallurgical tests have been carried out at Pasminco, an agreement has been signed to cover bulk sample trials, and 1000 tonnes has been transported to the mill for processing. 500 tonnes have now been processed, yielding grades of 20% Zn, 2.3% Pb, and 49 g/t Ag. Metallurgically, the ore is performing quite satisfactorily in the mill. The mining lease rights also permit a similar 1000 tonnes to be mined at the new Sylvester lode for bulk trials.

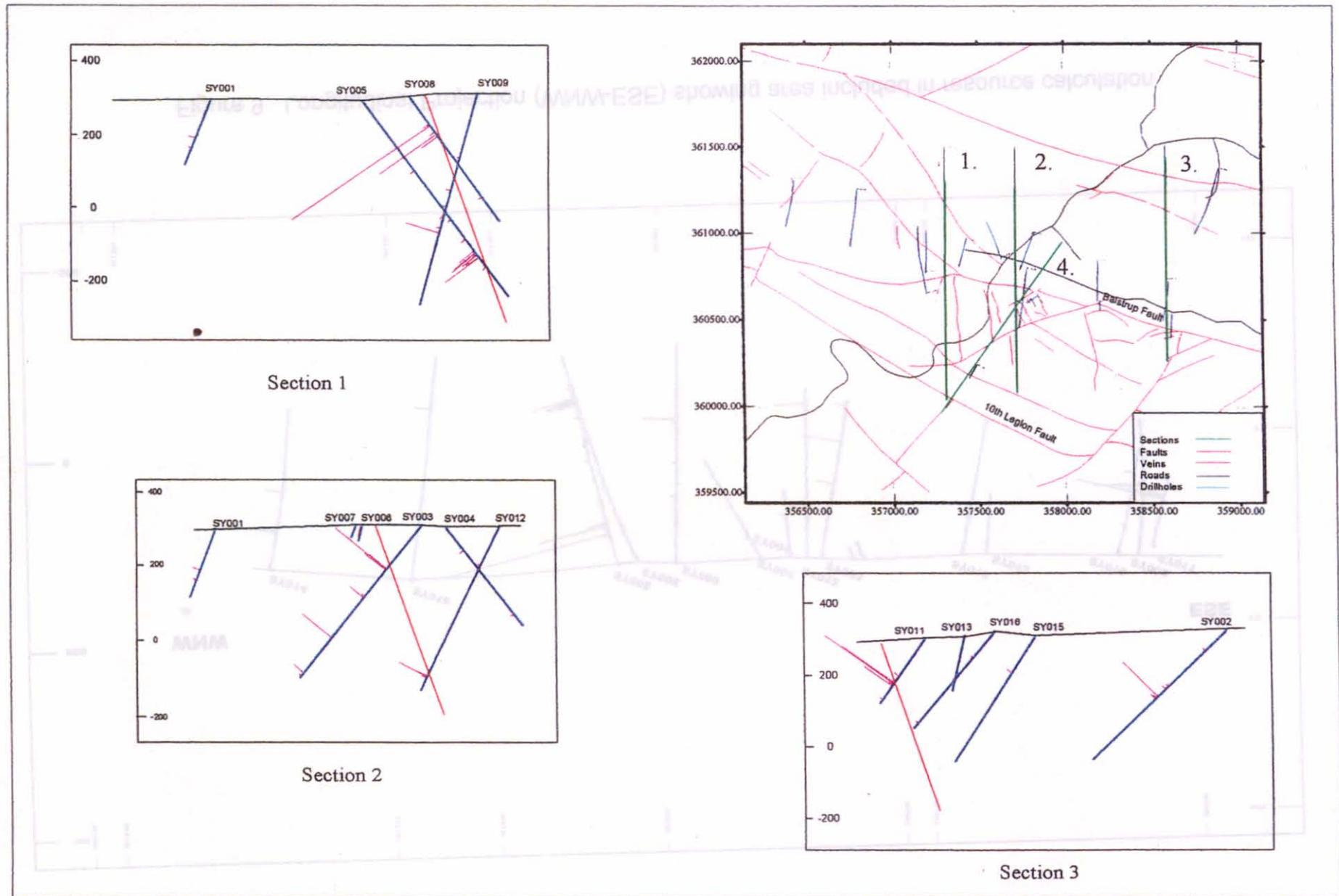


Figure 8. Sections across the Balstrup Fault with Zinc intersections above 1000 ppm (See Figure 10 for section 4)

Figure 8. Sections across the Belairup Fault with $\Delta\sigma$ intersections above 1000 ppb (see Figure 10 for section 4)

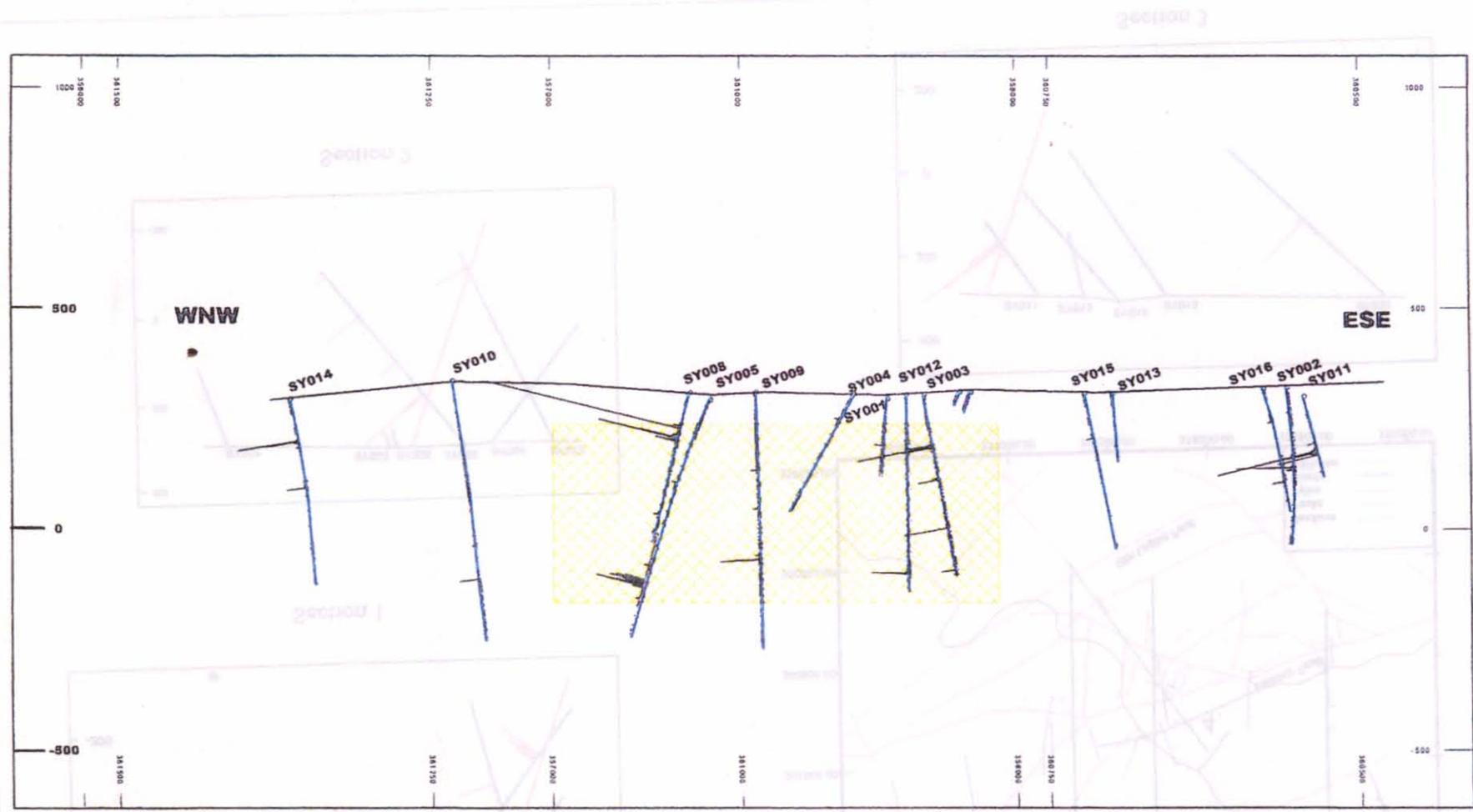


Figure 9. Longitudinal Projection (WNW-ESE) showing area included in resource calculation

5 cm

250040

7. PROSPECTIVITY

The prospectivity of the Comstock area is based geologically on its proximity to the Heemskirk granite, and the surface expression of silver-lead-zinc mineralisation. It is enhanced by a history of mining production based on silver and lead, which has left numerous old workings, providing further direct exposure of mineralisation. Since the area lies beside the intensely mined, and highly prospective Mount Read Volcanics belt of mineralisation, there is already a suitable infrastructure for new mining operations. The existence of granted mining leases is also a positive factor.

The total cost of Oceania's exploration and mining was \$1.2 million which covered upgrading the road from Zeehan and diverting it around the South Comstock mine area, tunneling to re-open access to underground workings, diamond and other drilling, geophysics, and open pit mining. Since Renison concluded its exploration programme, at a reported cost of approximately \$1.6 million, Sundew have recommenced exploration which has led to mining of shallow, vein-hosted ore, and bulk sample trials at Pasminco (Rosebery). Results are encouraging, and this operation could be seen to operate in conjunction with further exploration.

In Knight's opinion, Renison's exploration programme established the prospectivity for a major silver/lead/zinc orebody. However, their primary target was tin. Their economic assessment of the viability of a silver/lead/zinc mine was based on a very simple view of the resource and geological structure. Only one scale of mining was considered and the assessment did not take into account the inclusion of the vein-hosted style of mineralisation now being exploited from surface. Renison recognised that further infill drilling results could substantially alter the economics. Oceania now has a mining software database which can be used to analyse drill hole assay data and structural interpretation in three dimensions, in the planning of future infill drilling.

There are several exploration targets to be considered.

1. Shallow, high grade vein-hosted mineralisation

This has formed the basis of previous and current mining, from surface, and via underground workings. Currently, surface operations are proving to be viable based on the lodes being mined by Sundew in the Allison's workings area. It is encouraging that the tonnage per vertical metre is increasing as this mining proceeds. There are similar targets for the development of medium tonnages of economic silver-lead-zinc mineralisation in the vicinity of known intersections (costeans and drill holes), and elsewhere along the major faults, such as the Sylvester. These possibilities certainly exist in the Boss area, and possibly also in the Britannia and Comstock areas. Renison interpreted the deeper mineralised intersections in SY003 as being associated with the depth extension of the Boss Mine mineralisation.

Soil sampling on an east-west oriented grid would better achieve the potential to define more targets for multiple, shallow, vein-hosted mineralisation. Self Potential surveys are known to be very efficient in locating this type of mineralisation, and should be included in future exploration.

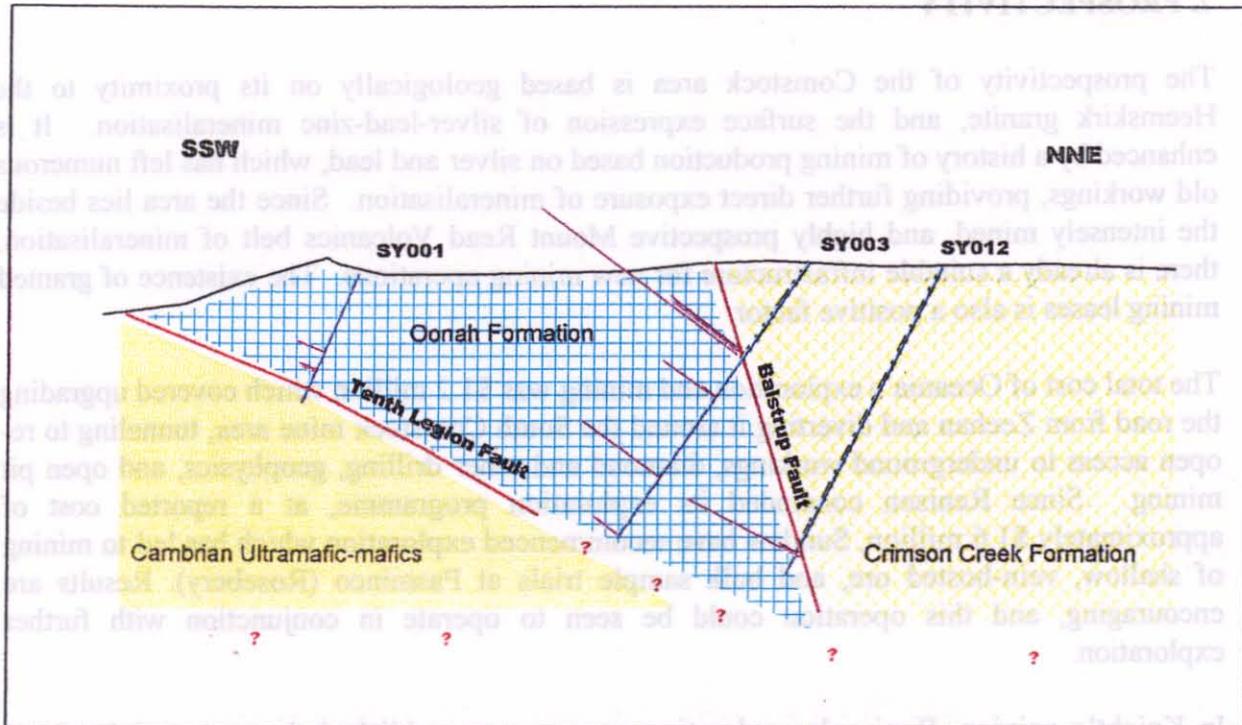


Figure 10. Section 4 through SY001 and SY003 showing Tenth Legion Fault Interpretation

5 cm

This has formed the basis of the...
 Currently, surface operations are proving to be viable based on the lodes being...
 mined by Sander in the Allison's workings area. It is encouraging that the tonnage per...
 vertical metre is increasing as this mining proceeds. There are similar targets for the...
 development of medium tonnage of economic silver-lead-zinc mineralisation in the vicinity...
 of known intersections (costans and drill holes), and elsewhere along the major faults, such...
 as the Sylvester. These possibilities certainly exist in the Bosz area, and possibly also in the...
 Britannia and Comstock areas. Reasoner interpreted the deeper mineralised intersections in...
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Soil sampling on an east-west oriented grid would better achieve the potential to define more...
 targets for multiple, shallow, vein-hosted mineralisation. Self Potential surveys are known to...
 be very efficient in locating this type of mineralisation, and should be included in future...
 exploration.

2. Massive skarn-hosted , fault-controlled bodies

There is sufficient evidence, in the form of drill hole intersections and geophysical data, to indicate the presence of massive, skarn-hosted, fault-controlled bodies beyond the limits of small scale, surface mining. The Renison inferred resource along one section of the Balstrup fault should be investigated further by infill drilling and down-hole geophysics. Other intersections along the Balstrup fault, and extending into the exploration leases (owned by other parties), which enclose the mining leases, provide more targets for verification of larger tonnages of fault controlled mineralisation. In addition there is the potential for similar mineralisation along the Sylvester and Tenth Legion faults which has yet to be properly tested by drilling.

3. Tenth Legion mineralisation

In the South Comstock area, drill hole SY001 intersected 8 metres of mineralisation directly above the Tenth Legion thrust fault zone which was identified by the characteristic melanges in the Oonah Formation, overlying gabbro belonging to the Cambrian ultramafic-mafic formation. Figure 10 shows a section from the surface intersection of the fault zone, through SY001, and SY003, SY012 to the NNE. The concept has been proposed by Swansea that this zone was a conduit, and is host for further large scale mineralisation.

8. ACCESS TO DATA AND SITE VISITS

Apart from the information set out in this memorandum, other reports, maps and diagrams can be viewed in a data room in a Hobart office. There is also a Datamine database (see References) which can be viewed interactively in Hobart. Guided site visits can also be arranged.

9. REFERENCES

The information in this document has been drawn heavily from the annual reports by Renison on exploration in EL42/47 (incorporating M.L.'s 43M/85, 123M/47 and 19M/95) from 1990 to 1995 (See MRT library references below) and the annual report (30/9/96) covering exploration completed by Sundew (then McCormick Civil Constructions) in 1996. Additional contributions from David O'Connor, Exergy, Pty Ltd, the author of that report, are gratefully acknowledged. A Datamine data-base was prepared in 1996 by Knight for Oceania, comprising topographic and other cadastral data, geology, drill hole geometry, downhole and surface assay data. This has formed the basis for preparation of some of the figures in this document.

TCR 89-3014 1989 Annual Report
TCR 91-3309 1991 Annual Report
TCR 93-3503 1993 Annual Report

TCR 90-3200 1990 Annual Report
TCR 92-3386 1992 Annual Report
TCR 94-3624 1994 Annual Report

Information was also drawn from Burrett C.F. Martin E.L. (editors) 1989, *Geology and Mineral Resources of Tasmania. Special Publication Geological Society of Australia 15.* ISBN 0 909869 69 3

APPENDIX I

Letter from Australian Mining Consultants Pty Ltd

25 November 1997

Directors
Swansea Mining Company Pty Ltd
84 Wells Parade
BLACKMAN BAY TASMANIA

*Australian Mining Consultants Pty Ltd
ACN 008 129 164*

*Level 19, 114 William Street
Melbourne Victoria 3000 Australia
Telephone +61 3 9670 8455
Facsimile +61 3 9670 8311
email: amcmelb@ausmin.com.au*

Dear Sirs,

Comstock Silver Lead Zinc Prospect, Information Memorandum, November 1997

We have been provided with a copy of the Final Draft of the "Comstock Silver Lead Zinc Prospect, Information Memorandum, November 1997", prepared by J M Knight and Associates Pty Ltd ("Knight") for Oceania Tasmania Pty Ltd ("Oceania") and Swansea Mining Company Pty Ltd ("Swansea"), and have been asked to provide this letter to be read with that Information Memorandum.

In October 1996, Australian Mining Consultants Pty Ltd ("AMC") was requested by Knight on behalf of Swansea to evaluate the mining leases listed in the Information Memorandum and described as the Comstock Silver Lead Zinc Prospect. Its advice was to be provided in stages, such that the first stage would involve a field visit and data review with a recommendation as to further activities.

The writer visited the area on 30 and 31 October 1996 in company with Messrs J Knight and D O'Connor. He carried out a field inspection including historical workings and sites of more recent activities, including drilling by RGC Exploration Pty Ltd ("Renison"). Subsequently, AMC advised Swansea that, in its view, the area represented an exploration project which could be logically advanced by introducing a new party capable of funding ongoing work by means of a farm-in or other agreement or, alternatively, it might be vended to a group wishing to include it in a portfolio for a prospectus issue. AMC provided its opinion that targets for exploration included larger tonnages of fault controlled mineralisation along the Balstrup Fault and other similar structures; medium tonnages of economic lead, zinc, silver mineralisation in the vicinity of the known drillhole intersections and elsewhere, that potential being possibly increased by the proximity of a number of Comstock-style smaller lodes; and further testing of magnetic anomalies for medium to larger tonnages of skarn-style mineralisation. It recommended that the most sensible approach would be to offer the property for farm-in or similar, accompanying such offers or approaches with a well-prepared Information Memorandum.

In September 1997, at Knight's request on behalf of Swansea, the writer discussed the format of an Information Memorandum with Knight and subsequently reviewed drafts of it leading to the Final Draft. At Swansea's request, AMC also provided advice on terms it considered appropriate in regard to the sale of all rights to the project.

Based on our field visit and the information which we have reviewed, we are of the opinion that the Information Memorandum provided by Knight contains a comprehensive summary of the technical aspects of the project and is consistent with that information. AMC has not reviewed matters relating to the title or to agreements between any of the parties involved in operations on the project.

In particular, we are of the view that Knight's description of the geology and style of mineralisation and its comments on prospectivity are reasonable. We concur with the view that there are several targets for exploration including both small higher grade lode deposits and larger, lower grade bodies which, at least in part, may be controlled by the major faults. We have seen evidence of much of the earlier work by Swansea and Renison, as well as of at least one of the recent near surface lode discoveries of the lessees. We have not seen any of the work carried out by the latter since the time of our visit nor had any access to information concerning it.

To the extent of our review, the Information Memorandum in its description of other past production and exploration is consistent with the information we have seen.

AMC is being paid a fee commensurate with its normal per diem rates and out of pocket expenses for the work it has carried out in the past and for preparation of this letter. It has no other interest in the project, in Swansea or in other companies involved or in the outcome of any transaction which may result.

Subject to the payment of all outstanding fees due to AMC, we consent to the inclusion of this letter as an annexure to the Information Memorandum and to its disclosure to parties interested in acquiring an interest in the project. Knight has stated that the Information Memorandum does not constitute a prospectus and this letter should not be read as in any way constituting part of or contributing to a prospectus.

We have prepared this letter based upon information which we believe to be accurate at the time of writing but which is not guaranteed. We make no representation or warranty as to the accuracy, reliability or completeness of the information contained in this letter, and will not accept liability to any person for any errors or omissions, or for losses or damages claimed as a result, directly or indirectly, of items discussed or opinions rendered in this letter, except for statutory liability which may not be excluded.

Yours faithfully,



G R Appleyard FAusIMM, CP (Geo), MCIM, MMICA
- Director

APPENDIX II

Surface diamond drill hole assay data

APPENDIX II

Surface diamond drill hole assay values - Balstrup fault mineralisation

BHID	FROM	TO	ZINC	LEAD	SILVER	BHID	FROM	TO	ZINC	LEAD	SILVER
SY003	146	147	100	200	TR	SY008	102.1	103	451400	131700	334
SY003	147	148	1700	1600	TR	SY008	105.6	110	3659	1347	2
SY003	148	148.7	10500	5400	TR	SY008	110	115	1224	831	TR
SY003	148.7	150	60300	29400	57	SY008	115	121	953	923	TR
SY003	150	151	52700	24800	67	SY008	121	123	10000	16200	11
SY003	151	152	173000	52500	50	SY008	123	125	7774	4965	5
SY003	152	153	145000	46700	55	SY008	125	127	12400	4698	3
SY003	153	154	68600	60300	32	SY008	129	130.9	87400	79200	42
SY003	154	155	69300	71200	46	SY008	130.9	132.1	183400	93800	61
SY003	155	156	46800	24000	43	SY008	132	134	8007	2819	5
SY003	156	157	5200	5650	20	SY008	134	136	14200	10400	NS
SY003	157	158.2	6350	4500	21	SY008	136	138	11700	12000	11
SY003	158.2	159	1900	290	TR	SY008	138	139.9	48500	18600	22
						SY008	139.9	141	1031	290	1
SY005	507	508	730	45	3						
SY005	508	509	39800	31800	36	SY009	381	382	1037	1669	4
SY005	509	510	47100	46800	70	SY009	382	383	3468	1248	3
SY005	510	511	41600	40700	44	SY009	383	384	9185	7750	10
SY005	511	512	13100	37800	35	SY009	384	384.6	744	206	2
SY005	512	513	29200	99400	78	SY009	384.6	386	1003	493	1
SY005	513	514	66600	18500	35	SY009	386	387.6	237	63	TR
SY005	514	515	7700	1250	8	SY009	387.6	388	126	20	1
SY005	515	516	1050	180	1	SY009	388	389	84	27	1
SY005	516	517	1700	295	2	SY009	389	389.7	116	37	TR
SY005	517	518	275	55	TR	SY009	389.7	391	102	36	1
SY005	518	519	80600	3350	10	SY009	391	392	61	TR	TR
SY005	519	520	39300	4500	10	SY009	392	392.8	51	TR	TR
SY005	520	521	46900	10900	12	SY009	392.9	394	66000	27900	38
SY005	521	522	25200	11200	12	SY009	394	395.1	89000	53000	64
SY005	522	523	10200	840	TR	SY009	395.1	396	214	126	1
SY005	523	524	7300	760	TR						
SY005	524	525	44500	1150	TR	SY012	438	439	52	28	TR
SY005	526	527	62900	59000	36	SY012	443	443.8	1026	507	4
SY005	527	528	29000	105600	50	SY012	443.8	445	2110	1470	12
SY005	528	529	10700	2100	7	SY012	445	446	85	250	TR
SY005	529	530	109300	17100	12	SY012	446	447	60	100	TR
SY005	530	530.9	23500	1850	7	SY012	447	448	55	TR	TR
SY005	530.9	532	15800	4050	13	SY012	448	449	65	30	TR
SY005	532	533	11900	4000	10	SY012	449	450	630	180	TR
SY005	533	534	23900	6850	9	SY012	450	451	4900	5900	15
SY005	534	535	3300	220	4	SY012	451	452	6000	5200	14
SY005	535	535.8	120	15	1	SY012	452	453.1	30800	10800	20
						SY012	453.1	454	24800	26600	50
						SY012	454	455	83000	19000	37
						SY012	455	456	1800	3300	12
						SY012	456	457	12800	8800	15
						SY012	457	458	165	1510	3

Appendix 2

Geological Report on the Comstock Prospect
Zeehan, West Tasmania

Simon J Tear
Benmore Exploration Pty Ltd, 2000a

**Geological Report on the Comstock Prospect,
Zeehan, West Tasmania**

For

Oceania Tasmania Pty. Limited

by

Simon J. Tear

BSc (Hons), ARSM, P.Geo, MIMM, MAusIMM

Benmore Exploration Pty. Ltd.

(ACN 086 267 834)

**Benmore Exploration Pty. Ltd.
30 Alton Terrace
The Gap
QLD 4061**

15th January 2000

Geological Report on the Comstock Prospect, Zeehan, West Tasmania

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Qualifications and Disclaimer

Benmore Exploration Pty Ltd, a consulting company based in Brisbane, Queensland, prepared this geological report at the behest of Oceania Tasmania Pty. Limited. Simon Tear, the Principal Geologist, has a BSc (Hons) from The Royal School of Mines, London, U.K. and has over 16 years worldwide experience in the mineral exploration industry. He was Team Leader for Rio Tinto's Tasmanian exploration program from 1995-1996. That program successfully explored some of the area around the Comstock Prospect, accounting for nickel and lead/zinc discoveries (see Allegiance Mining N.L. Annual Reports).

The information used in this report was supplied by Oceania Tasmania Pty. Ltd and comprises a mixture of open file data from the Mineral Resources Tasmania Library and Oceania Tasmania in-house data. In addition a five day site visit was made to the property. Benmore Exploration has relied upon and assumed without verification the accuracy and completeness of all information provided and cannot take any responsibility to guarantee its accuracy.

Abstract

The Comstock Prospect is located on the Trial Harbour road, 7km west of Zeehan, West Tasmania. The area under investigation comprises three mining leases held by Oceania Tasmania Pty. Limited with zinc as the principal commodity of interest. Previous exploration work, including substantial diamond drilling, was completed by RGC in the early 1990's. Recent work by Oceania Tasmania Pty Limited has included detailed ground and airborne geophysical surveys. In addition Western Metals under an option agreement with Oceania Tasmania Pty Limited completed a phase of diamond drilling during late 1999.

The geology of the Comstock area comprises a complexly folded and faulted series of Pre-Cambrian fine grained clastics and carbonates (the Oonah Formation). These sediments are thrust over Cambrian-aged mafic rocks in the southern half of the area by the Tenth Legion Fault, whilst in the northern half the Balstrup Fault has downthrown to the north sediments and volcanics of the overlying Crimson Creek Formation. The Oonah Formation south of the Balstrup Fault comprises the main target area for zinc mineralisation

The area contains several old lead workings dating back to the late 19th Century and early 20th century. Small scale open pit mining has occurred within the last fifteen years in the Allison and South Comstock areas. Mineralisation comprises massive sulphide lodes usually of pyrite, galena and sphalerite. A review of previous RGC drill logs and observations on recently drilled diamond core suggests that some of the zinc mineralisation could be stratabound/skarn-type related to a contact between carbonaceous siltstones and recrystallised dolomitic limestones/skarns. In this area the rocks have a generally flat dipping attitude with good potential to host blind, stratabound orebodies.

Proof of continuity of the RGC-discovered mineralisation along the steeply dipping Balstrup Fault requires more drilling to confirm and improve its resource definition. Additional drilling is required to test the carbonate lithological contact(s) associated with zinc mineralisation as well as down dip expressions of vein mineralisation. Geological evidence also suggests that shale hosted base metal mineralisation maybe an alternative target type within the mine lease area and that drill testing down dip expressions of surface gossans is recommended. The potential for a substantial accumulation of zinc mineralisation relatively near surface (<200m) remains good.

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Figure.	Title	Scale
1	Location Map <i>-(IN TEXT)</i>	1:1,250,000
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3	Mine Lease : Interpretative Geology Map	1 : 5000
4	Oonah Formation Stratigraphy <i>-(IN TEXT)</i>	1 : 2000
5	Geological Cross Section 357200E	1 : 5000
6	Geological Cross Section 357400E	1 : 5000
7	Geological Cross Section 357600E	1 : 5000
8	Geological Cross Section 357800E	1 : 5000
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1. Surface Geology Observations
2. RGC Drill Logs – Observations and Significant Results
3. RGC Surface Geochemistry - Observations
4. Oceania Tasmania Geophysical Datasets - Observations
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Geological Report on the Comstock Prospect, Zeehan, West Tasmania

1] Introduction

The purpose of this report, under instruction from Oceania Tasmania Pty. Ltd, is to provide the geological context for the Comstock Prospect zinc mineralisation. The aim is to use new and pre-existing datasets to create an interpreted geological map and an associated set of cross sections that explain the geological scenario. This work will allow for a better understanding on the control of zinc mineralisation at Comstock and help to identify target areas for further drilling.

The area under review covers the mine leases ML 43M/85, ML123M/47, and ML19M/95. This includes the Comstock Prospect, which lies close to the Trial Harbour Road, 4km west of Zeehan in Tasmania (figure 1). Further details of the prospect and the tenement situation are supplied in an information memorandum prepared by J.M. Knight & Associates Pty. Ltd.

Observations made on the data sources provided for this geological compilation can be found in the relevant appendix :-

1. Mapping data from RGC's early 90's exploration (Appendix 1)
2. Drillhole data from RGC's early 90's exploration (Appendix 2).
3. Soil geochemistry from RGC's early 90's exploration (Appendix 3).
4. Airborne EM from a recent survey by Oceania (Appendix 4).
5. Airborne magnetics from a recent survey by Oceania (Appendix 4).
6. Detailed gravity from a recent survey by Oceania (Appendix 4).
7. Recent Western Metals' diamond drilling (Appendix 5).

Additional information comes from the author's existing knowledge of the area and from air photographs (partial stereo pair coverage only).

Knight's report details the regional geological setting (figure 2) and some exploration history of the area. He identified three base metal exploration targets for the mine leases. Some additional comments are added below :-

1] Shallow, high grade vein mineralisation

Mining in the late 1800's and early 1900's discovered vein widths up to 50 feet (15.24m), as reported in Blissett, 1962. These veins contained a combination of massive sphalerite, galena and pyrite, generally medium to coarsely crystalline and thus easily separated. The Comstock Lode, which appears to pass through to the South Comstock open pit was reported to be 1500 feet long (457m).

Several of the major veins of the area have an approximate north-south strike and due to RGC's north-south line oriented work there may be other undiscovered N-S striking veins of significant size. The depth extent of these vein structures is unknown and thus mineral potential remains untested.

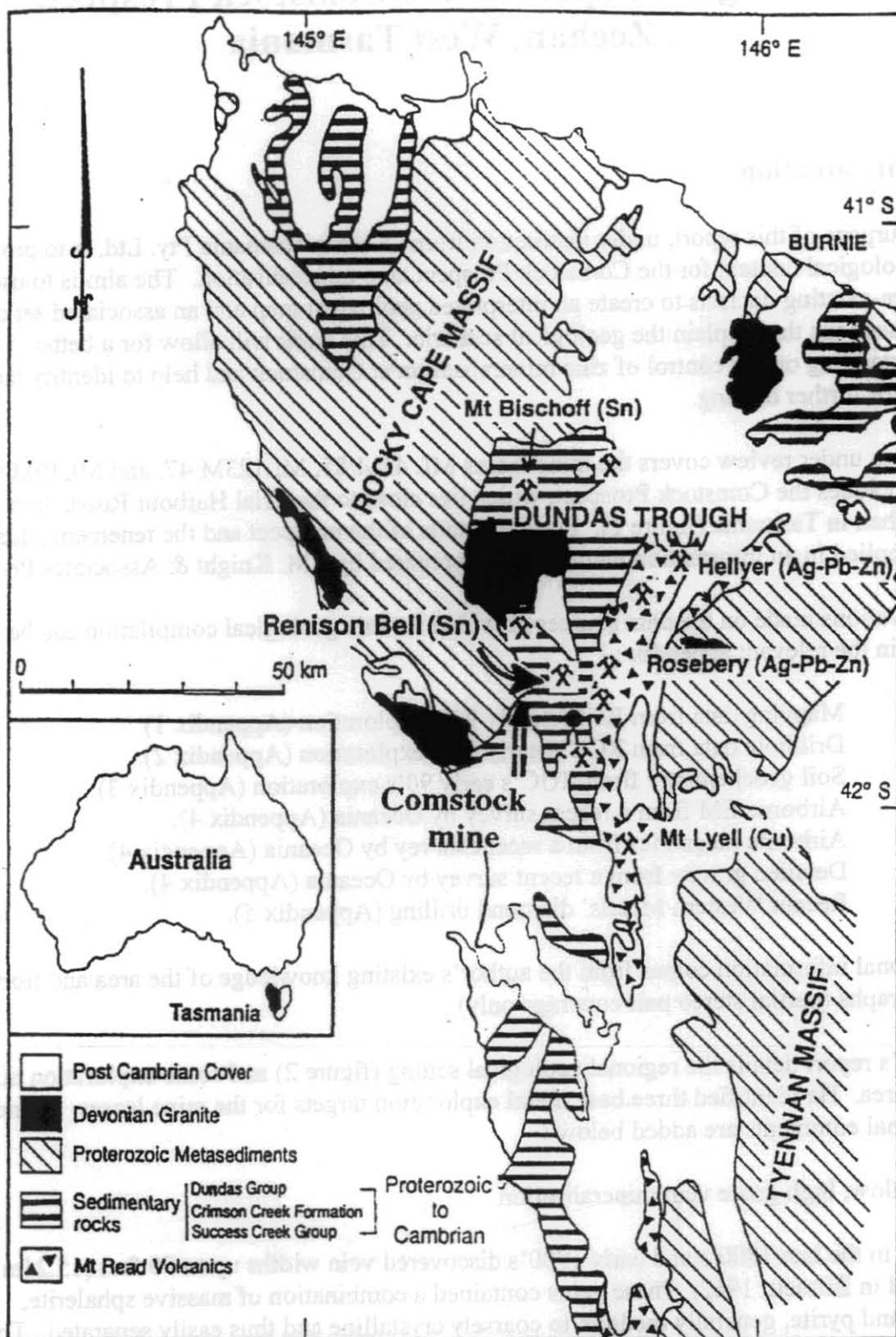


Figure 1. Regional geology of western Tasmania and the location of the Renison and Comstock mines. (Adabi: 1999)

5 cm

2] Massive sulphide skarn-hosted, fault controlled bodies.

RGC's drilling of skarn hosted mineralisation along the Balstrup Fault appeared to show a level of geological continuity to this mineralisation despite the wide drill spacing (200m). There is the hope that infill drilling may also highlight higher grade zones.

In addition it is possible that substantial zinc/lead mineralisation may occur within the skarn-type rocks away from the Balstrup Fault as exemplified by some of the base metal intersections within drillhole SY003. Thus it is important to establish the nature of subsidiary faulting south of the Balstrup Fault and the spatial distribution of the potential host carbonate rocks. Favourable fault arrangements in combination with carbonate hosted hydrothermal breccias would represent potential targets for zinc mineralisation.

3] Tenth Legion Fault Mineralisation

Low levels of zinc mineralisation are associated with those drillholes that are believed to have penetrated the Tenth Legion Fault. The potential for higher grade mineralisation to be associated with the fault is fair but evidence to date does not indicate potential ore.

4] Shale Hosted Mineralisation

An additional target for the rocks of this area not considered by Knight may be stratabound sediment hosted base metal mineralisation within the shalier rocks of the Oonah Formation. This concept was the thrust of Rio Tinto's recent Proterozoic exploration that yielded a best diamond drill intercept of approximately 6m@ 6% zinc located 1.5km south east of the Oceania Tasmania mine lease eastern boundary.

2] Geology of the Comstock Property

RGC's geologists completed a detailed series of geological fact maps. The maps show considerable geological complexity with bedding strike being highly variable and lithological coherency seemingly very low. However there is an acceptable level of quality exposures to permit attempts at a detailed interpretation map (figure 3).

Late Proterozoic siliciclastics and carbonates of the Oonah Formation host the Comstock lead/zinc mineralisation. These are a complexly folded series of rocks that are unconformably(?) overlain by siliciclastics and volcanics of the early Cambrian Crimson Creek Formation. Major faulting has occurred particularly during Cambrian and Devonian times, giving rise to many faults including the Tenth Legion Thrust Fault and the normal, steeply dipping Balstrup Fault.

South of the Balstrup Fault multiphase folding of the Oonah Formation has produced a broad, open anticlinal feature in the central-west part of the mine leases. The fold hinge is inferred to have a NNW strike with a shallow plunge to the north. This plunge may have steepened near the Balstrup Fault although it is conceivable that parallel fault zones to the

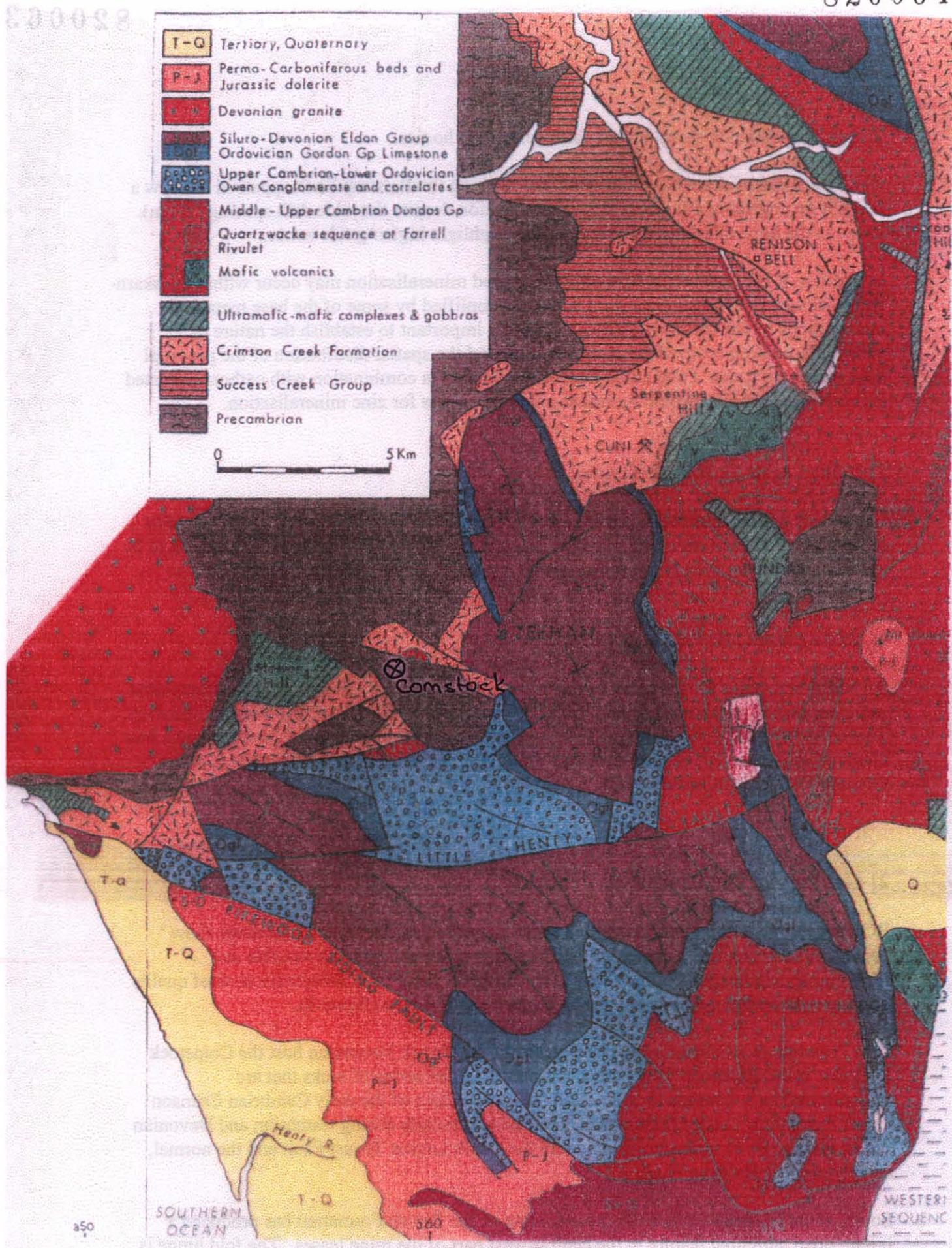
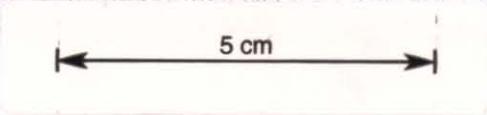


Figure 2 Geology of the Zeehan Area
(source unknown)



Fault may have downthrown and possibly rotated blocks clockwise creating the illusion of a steeper plunge. There is some suggestion that the rocks in fact form a doubly plunging anticline with a gentle southerly plunge in the south west of the mine leases. Within the anticline are subsidiary anticlines and synclines seemingly with NW striking hinge lines. In the east of the mine leases the fold hinge was rotated by subsequent faulting to an E-W line with just one fold limb now visible, dipping gently to the south. The structural history of this area has combined to produce rocks with a relatively flat lying attitude south of the Balstrup Fault.

North of the Balstrup Fault lie lithic arenites and wackes of the Crimson Creek Formation. These units are thought to dip south into the Balstrup Fault and are seemingly underlain by a siltstone package and a quartzite unit respectively, both possibly with Oonah Formation affinities. The lithological boundaries of these units are parallel to but do not coincide with lithogeochemical delineations reported by RGC. A non-magnetic mafic dyke/sill occurs within the Crimson Creek units eventually running parallel to the inferred Oonah/Crimson Creek contact. This may signify an unconformity or a fault between the two formations. The siltstone package is important in that it is host to a large base metal soil anomaly that has only been partially drill tested at its westernmost end (SY004). From the RGC mapping data a small gossan outcrop is recorded in the middle of this unit.

The geological issue is much more complicated around the Sylvester Mine, where there is a small exposure of limestone in amongst mafic dykes, quartzites and siltstones. A lack of drill data makes a meaningful interpretation impossible at this stage.

South of the Tenth Legion Fault lie gabbroic rocks associated with the McIvor Basic Complex and are believed to be Crimson Creek Formation or even the basal part of the later Cambrian Dundas Group.

2.1. Stratigraphy

Western Metals drillhole SY017 provides a relatively unfaulted stratigraphic section particularly from 170 to 450m downhole (figure 4). Stratigraphy of the Oonah Formation, south of the Balstrup Fault going down sequence is as follows :-

1. Interbedded graphitic and carbonaceous siltstones and shales with occasional fine grained sandstone units (Posb). There may be occasional coarsely recrystallised and silicified carbonate units present. These carbonate units on weathering may give the appearance of 'quartzite' and be a cause of lithological mismapping.
2. Thick recrystallised carbonate units often as skarn interbedded with fine grained siliciclastics including carbonaceous and pyritic siltstones/shales. (Posd)
3. Interbedded siltstones and micaceous sandstones. (Pos)

The remaining stratigraphy is cut off by the Tenth Legion Fault.

From the RGC mapping stratabound gossans are observed to exist close to the Balstrup Fault in both the carbonate units (Posd) and the black shales (Posb) with the latter predominant in the east of the property.

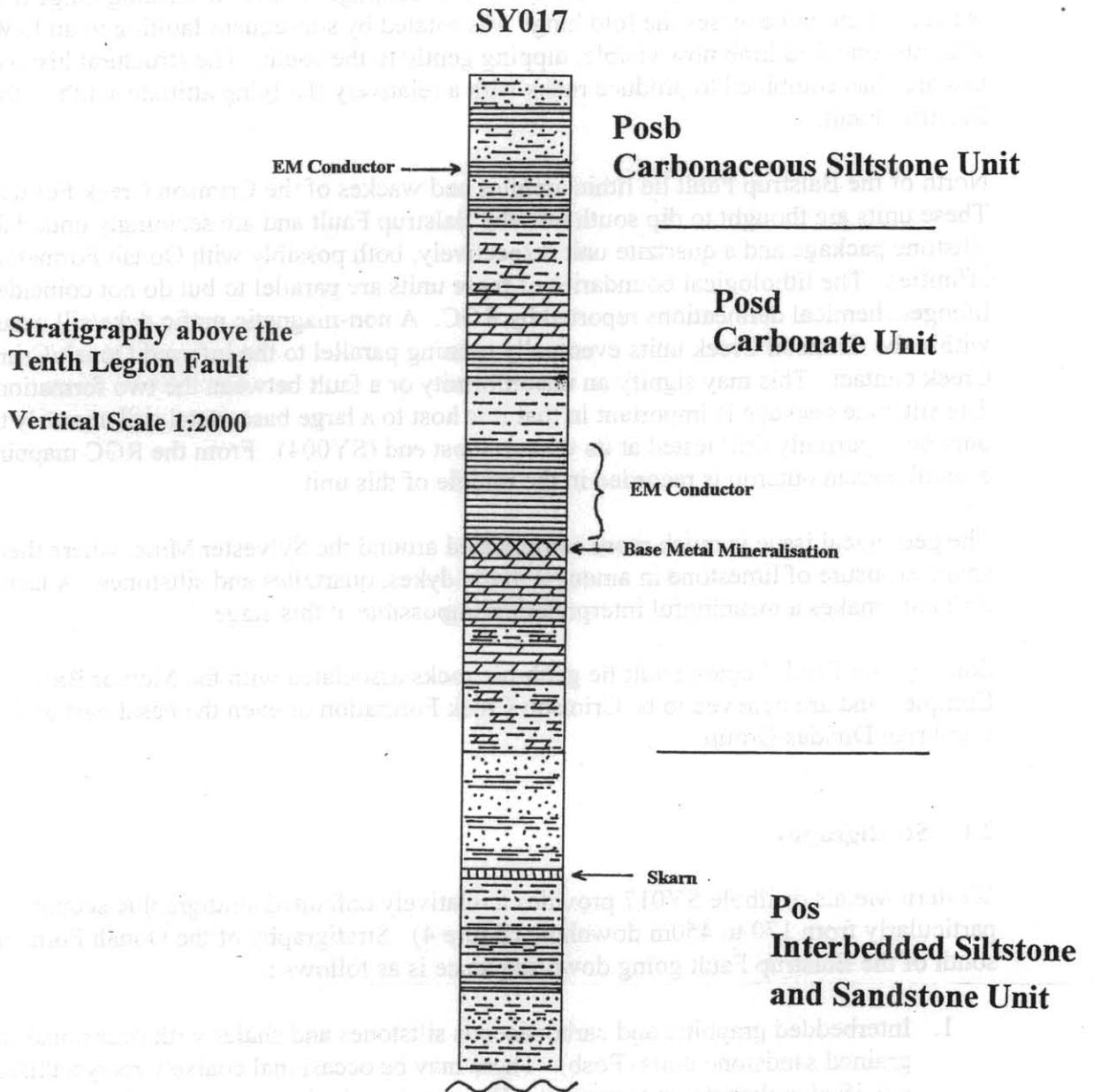


Figure 4

**Stratigraphic Section for the Oonah Formation,
Comstock Prospect, South of the Balstrup Fault**

These gossans could be due to weathering of :-

1. Heavily pyritic carbonaceous siltstones,
2. Stratabound sulphides eg as at the top of SY017,
3. A 'limestone-shale' mineralised contact,
4. Mineralisation hosted within the carbonate units eg SY003.

Additional interpretation of the RGC mapping suggests that massive quartzites (Poq) overlie the Posb units. These units seem to reappear north of the Balstrup Fault and are overlain by a series of interbedded siltstones and shales (Posi). The nature of the contact between the lithic arenites, mudstones and mafic units of the Crimson Creek Formation and the top of the Oonah Formation is unknown, but is assumed to be a faulted contact as there is seemingly no display at surface of the Success Creek Formation (unless all these rocks north of the Crimson Creek lithic arenites and wackes are Success Creek Formation).

The stratigraphy of units underneath the Tenth Legion Fault includes gabbros and volcanics supposedly of the Dundas Group. Beneath the Fault Western Metals' drillhole SY018 intersected a major package of mixed shallow water siliciclastics and carbonates with some lithologies indicating possible evaporitic replacement textures. The formation that these rocks belong to remains unclear but they could be part of the Success Creek Formation.

2.2. Structure

The structure of the area is complicated with generally flat lying folded beds being disjointed by normal, wrench and possibly reverse faulting. The presence and effect of shallow dipping structures, perhaps parallel to the Tenth Legion Fault, is not known and can only be guessed at this point in time.

The main fault orientations in order of age, oldest first are :-

1. Tenth Legion Thrust (WNW) : regarded as an early (?Devonian) thrust plane which outcrops in the south of the mine lease and dips north at about 35°. It is likely to have suffered offsetting from later faults.
2. N and NW faults : associated with Devonian folding and the inferred N-S fold hinge identified in the west of the leases. This relates to the Devonian-aged D3 and D4 of Findlay and Brown.
3. Balstrup Fault and Sylvester Faults : WNW faults (with E-W splays) acting as normal faults and are part of Findlay and Brown's D4 latest event. The Balstrup Fault is important, as it is believed to play a significant role in the formation of zinc mineralisation. The Sylvester Fault is a parallel structure to the Balstrup Fault and occurs in the far north of the mine lease. Not much information is available on this fault.

4. NE to ENE faults : late structures associated with fault-block jostling caused by the emplacement of the Heemskirk Granite

Evidence from air photograph interpretation and field observations appears to show that the later NE striking structures cut the Balstrup Fault. As these faults may be related to the emplacement of the Heemskirk Granite they may have provided an ore fluid pathway to a potential ore trapping site(s). These later NE faults are believed to continue striking NE beyond the Sylvester Mine.

It is interesting to note the parallel strike of the Tenth Legion Fault with that of the Balstrup Fault suggesting that they were active during the same phase of faulting.

A parallel structure occurs 100-250m to the north of the Tenth Legion Fault. This fault is believed to have had major throw on it juxtaposing the Posd and Posb sequences on its north side with the Pos sequence on its south. A small gossan is reported by RGC in Posb units just north of this fault in the west of the leases i.e. perhaps a similar setting to the gossans near the Balstrup Fault.

Previous authors have suggested that the area lies within a recumbent fold, closing to the south. Whilst it is true that the rocks in this southern area are relatively flat lying, recent interpretations by Findlay and Brown contradict the recumbent theory. They, in conjunction with Calver and Seymour, outline the structural history of the area as containing N and NW plunging folds with the former being D3 and the latter being D4 (D3 folds were folded by D4). These authors also suggest that these folds were early Cambrian features that were tightened during the Devonian D3 and D4 episodes (Tabberabberan Orogeny). They also suggest that the D4 NW structural event evolved and developed later WNW faults. A NNW trending cleavage with NE to ENE conjugates is linked to the intrusion of the Late Devonian Heemskirk Granite and possibly the emplacement of the main Comstock NNW zinc lodes.

2.3. Mineralisation

The major occurrences of zinc mineralisation on the property are :-

1. Adjacent to the Balstrup Fault hosted within carbonate/skarn lithologies (west of line 358000E) and comprises several drill intercepts with the best being 8m @ 8% Zn and 4% Pb using a 1% Zn cut off (SY003).
2. Adjacent to the Balstrup Fault hosted by siliciclastic lithologies (east of line 358400E) and comprises two drill intercepts with the best being 7.4m @ 7.85% Zn and 2.85% Pb using a 1% Zn cut off (SY011).
3. At a sheared? contact between recrystallised carbonate and carbonaceous/graphitic siltstone/shale is the South Comstock Open Pit (and along strike of this contact to the ENE). See Knight's report
4. Vein systems eg at Allison's and in the Comstock areas (early 20th Century workings)

RGC descriptions of the Balstrup Fault mineralisation implied a replacive mineral style in association with hydrothermal brecciation within the Posd unit. An initial inspection of the RGC long section suggests continuity of mineralisation over a strike length of 1km with a down dip extent of 400m.

The recent Western Metals' drilling intersected only minor zones of low grade zinc mineralisation in combination with pyrite (and/or pyrrhotite) and minor galena. The mineral style appears in most cases to be a replacive-type associated with carbonate/carbonaceous lithological contacts, although small scale (<0.5m) higher grade veins were encountered locally. This drilling has also highlighted the structural complexity of the area which has implications on mineral and grade continuity. For example :-

1. SY018 failed to intersect any mineral as it passed through the Balstrup Fault. It ought to be noted that core loss was associated with the expected mineral position but no vestiges of mineral were seen.
2. SY019 attempted to intersect at depth Allison's Lode. Some mineral was encountered near the expected position but contained poor grade but looked quite different to the vein at surface.
3. SY020 was reported by Western Metals' to have failed to intersect the Comstock Lode due to faulting out by the Tenth Legion Fault. This is a much higher position for the fault than previously thought. Alternatively mineralisation may have been weathered out as there were several cavities encountered at the top of the carbonate unit in conjunction with brown siderite? alteration.

3] Geological Discussion

A review of past data, recent field observations, local knowledge and diamond drilling has confirmed the geological complexity of the Comstock Property as demonstrated by the enclosed geological map (figure 3) and the accompanying cross sections (figures 5-9).

The most important observation is that there are preferential 'host-to-ore' sub-units within the Oonah Formation and that this sequence of rocks is generally flat lying south of the Balstrup Fault. The inference from the flat lying sequence is that it offers the potential for blind, stratabound ore to exist near surface and that much of the previous drilling could have missed such flat lying orebodies.

The thick carbonate units of the Oonah Formation are not out of character for the formation in this area. The limestone/dolomites (Posd) are important in that they often host base metal mineralisation particularly at their top contact with the overlying carbonaceous siltstones and shales (Posb). This mineralisation appears to be a replacive, skarn type which can offer tonnage potential. If this style of mineralisation is stratabound and associated with a generally flat dipping sequence, mapping out of this "limestone-shale" contact is very important. Veins do exist, eg Allison's, but mineralisation in areas like the South Comstock open pit do not sit comfortably in a vein-type scenario.

The interaction of the Balstrup Fault (and any of its parallel and conjugate structures) with the later faulting associated with the Heemskirk Granite and with carbonate sequences may have created the right ground preparation via brecciation for providing locii for ore-forming fluids. For example a fault interaction could have caused brecciation and dilation within a) the carbonate units and b) at dilation zones associated with competency contrasts between the rigid carbonates and the ductile carbonaceous siltstones. This allows for a multiple of positions for ore to reside perhaps exemplified by the several base metal intersections seen in SY003 and other drillholes.

The eastern termination of mineralisation along the Balstrup Fault was confirmed by the drilling of SY018, which appears to show no significant mineralisation in the carbonates of the immediate footwall sequence to the Fault, although some minor mineralisation was encountered 50m into the Posd unit. If mineralisation is related to "limestone - shale" contacts then the Balstrup Fault may not be the key player in mineral formation, perhaps not even as an ore-fluid transporter. However the Balstrup Fault and its associates may have played a role in rotating the carbonate unit to a more vertical position nearer the fault.

No major soil anomalies occur in close proximity to the geological trace of the Balstrup Fault. Most of the major anomalies appear close to the limestone/shale contact and as significant zinc mineralisation is associated with this contact some of these anomalies may reflect the proximity of ore.

Evidence for ore fluid presence associated with the Tenth Legion Fault is encouraging, as there is low grade mineralisation in the footwall of the fault (SY017). This seems to suggest that fluids may have ponded below the impermeable fault melange, waiting to be accessed to receptive stratigraphy by later structures eg the NNW and NE faults rather than the footwall of the fault being an ore position itself. It is important to ascertain the whereabouts of receptive stratigraphy i.e. confirm the areal distribution of the carbonate units, how many carbonate bands (and carbonaceous siltstone contacts) there are and the nature of any facies variation within the units e.g. zones of brecciation. The drilling and mapping along with topographic features and vegetation differences etc suggest that there are two major carbonate bands. The NW and WNW structures may have produced brecciation of the carbonate units during folding, and thus preparing the ground for the potential influx of ore fluid via the later ENE-NE structures. Brecciation can occur at lithological competency contrasts which is similar to a recent proposal for the ground preparation mechanism for the Irish Carbonate hosted deposits of Lisheen and Galmoy.

Past work may have ascribed some of the gossans of the area to weathering of sulphide veins, but this may not always be the case. Drilling of gossans is a worthwhile exercise, the problem being that the depth of weathering can go down to 70-80m and in an area of such structural complexity there is no guarantee of hitting unweathered sulphides projected from surface at 100 - 150m depth. In an area of moderate topographic relief and good vegetation cover, it is difficult to get a measure of the existence and influence of flat lying structures that may or may not be related to the Tenth Legion Fault. In flat lying stratigraphy drilling down dip of surface gossans can involve a substantial drill step out which may not have been appreciated by earlier workers.

The concept of shale hosted mineralisation for this area is fundamentally underpinned by analogies to the Proterozoic-aged lead/zinc lodes of the Lawn Hill Mineral Field in NW

Queensland. In the Lawn Hill area up to 57 lead/zinc veins are hosted in the same sequence of rocks that host the large Century Zinc Mine. The numerous mineralised veins of the Zeehan Zinc Field are also hosted by Proterozoic siliciclastics and thus by comparison there is the potential for a large scale sediment hosted base metal orebody in the area. Thus in the Comstock area the Posb unit has the potential to host such an orebody and maybe the gossans in the east of the property are a reflection of such mineralisation.

The geology north of the Balstrup Fault was simplified on the enclosed geological map, the result of a the lack of drilling in the area. Lithic arenites are recognised north of the Fault and thus the rocks from this area would seem to differ from those rocks south of the Fault. However in the north of the property the rock descriptions provided by RGC seem to take on an 'Oonah-type' signature including a limestone/carbonate cored anticline near the Sylvester deposit. More attention ought to be paid to this area as the additive indices method of geochemical processing (see appendix 3) suggests at a large 800m by 300m stratabound anomaly hosted by siltstones and shales, occurring immediately west of the Sylvester deposit.

4] Areas of Potential

A better geological understanding of the area, including structural geometry has allowed for the identification of prospective areas for drilling (figure 10).

The identification of significant replacive style mineralisation associated with the top of the carbonate (Posd) units in contact with the overlying carbonaceous siltstones (Posb) is important. There are several of these contacts both within the Posd unit as well as its upper contact. This represents the main target type for substantial zinc mineralisation in the Comstock area. This contact in conjunction with favourable structure (described elsewhere) should be the main focus for further exploration.

Other target concepts are :-

1. A large scale skarn-type orebody, similar or better than the RGC Balstrup Fault mineralisation, may occur at fault intersections within the carbonate units. Orthogonal fault intersections can be major zones of brecciation/dilation that could host zinc mineralisation which is like the scenario for some of the Irish carbonate hosted zinc orebodies. In particular a NE fault intersecting an area with WNW and NNW faults may be productive. Thus the large carbonate body located south of the Balstrup Fault offers the best potential for substantial skarn (or possibly modified Irish) type mineralisation. Recognition of fault and/or brecciation zones extending out from and south of the Balstrup Fault could be an important clue to locating ore eg mineralised structures (veins) in contact with the Posd carbonates.

In addition to the above targets further drilling is required within the RGC long section in order to increase the level of confidence on the continuity of the Balstrup Fault mineralisation. It would also be desirable to see an increase in grade with any future drilling.

2. The potential for shale hosted mineralisation in the same area is good as Rio Tinto's work to the SE identified significant zinc mineralisation within black shales of the Oonah Formation. The presence of gossans within the pyritic and carbonaceous unit is encouraging as they may be weathered stratabound sulphides and not weathered veins. Flat lying beds could imply that any angled drilling might have missed the target. Targeting therefore should focus on selected areas south of the Balstrup Fault and drilling should consist of testing
 - Gossans
 - Areas of low resistivity
 - Elevated base metal geochemistry from the RGC soil sampling.

Note that drill tests should preferably aim to test down dip extensions of the surface anomalies beyond the influence of weathering.

3. If more veins could be located like the Comstock Lode as described in Blisset i.e. 17m wide by 450m long, and depth continuity could be proven to 500m then this is a valid target. The evidence for a significant vein deposit continuing at depth beneath Allison's is partially downgraded as a result of the recent Western Metals' SY019 drillhole, unless faulting has offset the vein. It must be remembered that many other veins exist at surface and that previous RGC drilling used N-S azimuths and thus were unlikely to intersect any NNW striking structures.

In light of the geological complexity of the area and the pursuit of a modest-sized resource it is recommended that drilling of Allison's and the Comstock Lodes be undertaken. Drilling should not aim to step out too far from the known significant mineral grades e.g. 50m. It is possible that whilst the vein structure may have a NNW strike at surface it may have significant ore shoots that have a plunge direction.

The above description of potential for the area has not addressed targets that may exist north of the Balstrup Fault. High grade zinc mineralisation appears to exist in veins at the Sylvester Mine, but the area is poorly understood as it is unclear what drilling has been done in this area. Oonah-type lithologies as described by RGC appear to exist in the north of the mine lease. A significant stratabound zinc/lead soil anomaly trends ENE terminating close to an anticline of carbonate rocks exposed near the Sylvester Mine (RGC mapping). It is recommended that scout drillholes be completed, testing beneath Sylvester, testing the down dip expression of the carbonate unit and its upper contact and testing the zinc soil anomaly.

5] Conclusions

The aim of this report is to provide a geological framework for the Comstock lead/zinc mineralisation.

The Comstock area is geologically complex with structural complications derived from major periods of orogenic tectonism ranging in age from Cambrian to Devonian. There is a

metamorphic overprint related to the late Devonian-aged Heemskirk Granite intrusion. Substantial zinc mineral accumulations occur either as skarn-related mineralisation or vein-type mineralisation. There is good potential for significant zinc orebodies.

The Late Proterozoic Oonah Formation comprises a sequence of interbedded sandstones, siltstones, shales and metamorphosed/recrystallised carbonate units with widespread graphitic zones. This formation in the main hosts the recorded zinc mineralisation on the Oceania Tasmania Pty Limited mine leases. The area is well known for its abundance of coarse grained zinc and lead-rich sulphide veins, many of which were worked in the late 19th and early 20th centuries.

South of the Balstrup Fault the Oonah Formation structurally comprises in the west of the property of a N-S anticlinal feature, possibly doubly plunging and in the east by an E-W gently south dipping sequence. Folding is thought to have initially begun in the Cambrian with the Devonian Tabberabberan Orogeny overprint tightening these folds. Substantial structural dislocation of the Oonah Formation has occurred as a result of multiple faulting episodes, generally of Devonian age.

RGC's diamond drilling of the prospect identified lead/zinc mineralisation hosted by altered carbonate/skarn rocks of the Oonah Formation adjacent to the steeply, north dipping Balstrup Fault. Based on drillcore descriptions at 200m centres the mineralisation appears to be continuous for 800m of fault strike length and potentially down dip to a depth of 400m. The resource lies in the inferred resource category as defined by JORC (see also Knights report).

Skarn mineralisation can be related to other structures than the Balstrup Fault specifically, thus an understanding of the geometry of the carbonate body is required in conjunction with any favourable structural arrangements eg intersecting faults, brecciation and plunge directions etc. An interpretive geological map produced from the available data shows a more complex structural pattern than previous authors and has attempted to delineate the main carbonate stratigraphic body. Recent drilling and field observations have shown that the contact between a carbonate facies in Posd and any overlying carbonaceous siltstone as being a locus for base mineralisation albeit rather weak in places. This stratigraphic trap in conjunction with the detailed structural scenario described elsewhere represents an ore target(s). The coincidence within the carbonate unit of NE structures (possibly related to the Heemskirk Granite) with earlier NW and WNW faults (and any anticlinal fold hinges) may provide suitable sites for the location of ore.

Seemingly stratabound gossans are prevalent in both the Posd and the overlying Posb particularly near the Balstrup Fault trace. In particular two 800m long E-W lines of gossan outcrops occur 50 and 250m south of the inferred surface trace of the Balstrup Fault. If these are weathered stratabound sulphide units, gently dipping to the south then previous drilling will have failed to intersect their down dip expressions.

Some of the high grade veins discovered at the turn of the century may have sufficient continuity and grade to be considered as ore targets.

6] Recommendations

1. Infill drilling is needed to improve and upgrade the resource definition along the Balstrup Fault.
2. Additional drilling outside the Balstrup Fault resource is required to test for stratabound skarn mineralisation in the Posd unit and for possible shale hosted mineralisation in the Posb unit. Drilling should target on and step out from known mineralisation
3. Drilling is required to measure the prospectivity and continuity of the sphalerite-rich NNW lodes, particularly for depth continuity e.g. the Comstock Mine area. (Note that drilling of either of the above options may require a change in the normal drillhole azimuths used, in accordance with vein strike and variations in bed dip direction).
4. Re-log the RGC drillcore to confirm recent observations from Western Metals' drilling and the accuracy of this report.
5. Archival research is undertaken to map out old workings and identify the strike of known lodes and other sulphide veins. This may enable better validation of the soil anomalies and provide insights into the structural patterns that were in play when mineralising fluids were active.
6. Detailed structural analysis of outcrop and drillcore may identify the orientation of major fold hinges and subsidiary fault directions. These subsidiary faults may play an important role in controlling the location of ore and any possible repositioning of ore blocks from faulting.
7. If it is technically feasible, modeling of surfaces from the EM data may help to resolve delineation of the Tenth Legion Fault at depth and recognise possible buried sulphide accumulations, particularly in flat-lying scenarios.
8. Based on some of the history of the area and on interpretation of the drill log descriptions for the skarn rocks, it is strongly recommended that past and future drillcore be analysed for nickel.
9. Thin section analysis of selected rock samples should be undertaken to confirm lithology identification particularly the skarn mineralogy e.g. the gabbros in SY001 and to check if some of the skarn mineralisation is in fact altered ultramafics.

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Appendix 1
Surface Geology Observations

Surface Geology Observations

Initial observations from the RGC geological fact maps include :-

South of the Balstrup Fault

- The Oonah Formation comprises a mixed sequence of lithologies including carbonaceous shale, limestones/dolomites, siltstones and quartzitic sandstones. The southern margin of the Oonah is bounded by the Tenth Legion Thrust Fault. This fault has caused the Proterozoic Oonah Formation to overlie the Cambrian Crimson Creek sediments and volcanics.
- There is an east-west line of gossanous material that is south of and oblique to the Balstrup Fault, cutting the latter on line 358600E. The gossans appear to be hosted by a mixed sequence of quartzitic sandstones and dark grey carbonaceous siltstones. The gossan unit may be oxidised sulphides or oxidised magnetite/pyrrhotite skarn.
- Carbonate lithologies occur along lines 357400E, 357600E and 357800E extending as far south as 5363000N and generally with a N-S striking pattern. This arrangement may symbolise a N-S fold axis running approximately along line 357500E.

North of the Balstrup Fault

- In one or two instances particularly around the Sylvester Mine the lithological sequences appear similar to the Oonah Formation south of the fault but with the addition of volcanic material.
- Between the Sylvester and Balstrup Faults poor outcrop precludes any real geological synthesis. RGC soil data interpretation delineates markedly different lithologies between this area and the Oonah Formation south of the fault

A visit to the field area established the following points: -

- The Oonah Formation south of the Balstrup Fault comprises complexly folded shales, siltstones and sandstones. There is a substantial amount of graphite associated with these rocks.
- The Tenth Legion Fault is characterised by a melange sequence of strongly sheared carbonaceous/graphitic material and is interpreted as a thrust fault.
- There is a sense from some of the outcrops eg south of Allison's Lode, that there may be flat lying sections of the Oonah Formation within the mine leases.
- Gabbroic rocks occur in road cuttings south of the Tenth Legion Fault.

- Strongly goethitic, equigranular massive units of the Crimson Creek Formation just north of the Balstrup Fault may be lithic wackes rather than volcanics.
- The E-W line of gossans just south of the Balstrup Fault occurs as outcropping knolls displaying botryoidal hematite and silica eg on survey lines 357800E to 358600E.
- Base metal mineralisation seems to consistently occur at the contact between recrystallised carbonate rocks and overlying black graphitic shale eg, S. Comstock pit and environs.
- Crystalline pyrite lodes, some sphalerite rich, exist within the Oonah sediments probably indicating late stage vein formation associated with the Devonian Heemskirk Granite.
- Pyrite-sphalerite veins locally display small-scale preferential stratigraphic replacement of the host wall rocks.
- Measured sulphide vein directions show a variety of orientations: -

Deposit/Mine	Vein Orientation	Sulphide minerals
Britannia Mine	030/80SE	Massive sphalerite with pyrite
Britannia Mine	120/80NE	Pyrite with sphalerite and galena
Britannia Mine	114/80S	Pyrite vein
Britannia Mine	128/80NE	Pyrite vein
Britannia Mine	164/90	Pyrite with sphalerite
Britannia Mine	168/70E	Not known
Sylvester Mine	122/80S	Pyrite (also float massive sphalerite and pyrite)
Boss Mine	107/90	Massive pyrite
Allison Mine (x2)	151/85E	Massive sphalerite and pyrite
S. Comstock	153	Massive sphalerite and pyrite

- The above table is complimented below by data extracted from Blisset (1962).

Deposit/Mine	Vein Orientation	Sulphide Minerals
TLE	NNE (025)	Fissure veins of galena and sphalerite
Sylvester	NNE dipping east	Pyrite galena and sphalerite
Boss – Main Lode West Lode East Lode	NE NW NNE	Pyrite, galena and sphalerite Gossan Sphalerite pyrite and galena
Silver Stream	NE	Limonitic gossan with patches of sphalerite and galena; includes 1m at 9.3% copper
Susannite – West Lode East Lode	NW NW	Galena and cerussite Cerussite and other lead secondaries
North Comstock	N with a west dip	Pyrite and galena
Comstock and Comstock South - Main Lode - - No. 2 Lode	NNW (155) dipping east	High proportion of sphalerite with pyrite and galena Pyritic orebody with <u>bands</u> of galena and sphalerite
Allison's	NNW with an east dip	Massive sphalerite

- There is a suggestion that the NNW veins contain more sphalerite than other orientations.

Mineral Codes for Recent Site Visits

Minerals		Alteration	
DO	Dolomite	CA	Calcite
FE	Ferruginous	DO	Dolomite
GA	Galena	GP	Graphite
GO	Goethite	SE	Sericite
GP	Graphite	SI	Silica
HM	Hematite	TA	Talc
MI	Mica	WE	Weathered
PY	Pyrite		
QZ	Quartz		
SP	Sphalerite		

Appendix 2

RGC Drill Logs - Observations and Significant Results

RGC Drillhole Log Observations

A review of the RGC diamond drill logs for the Comstock Prospect showed the following: -

- Melange units often report a shearing fabric suggestive of tectonic formation rather than any intraformational brecciation.
- Large thicknesses of carbonate/dolomite are recorded on SY003 and SY005 (and SY009). This carbonate unit is not recorded in any appreciable amounts in drillholes east of 358000E.
- Consistency of bed dip angle and direction from core orientations is poor.
- Multi-element analysis identified potassic-rich units in SY003. These units are logged as siltstones/shales within the dolomitic sequence. It may be possible to match up these units with anomalous potassium values from the soil geochemistry data and assist the three-dimensional mapping.
- Drilling through the Tenth Legion Fault may only be confined to drillholes SY014 and SY010, which encountered melange/fault zones followed by hornfels. Evidence for drillhole SY001 penetrating the fault is weak and requires a core inspection to validate the proposition. The confusing inference from this hole is that skarn lithologies are conformable with a gabbro at the base of the hole.
- Some descriptions of serpentinite skarn in the logs appears similar to the lithologies drilled by Allegiance Mining N.L. on their Avebury Nickel Prospect, 4km to the SSW. The rocks at this prospect are reported as serpentinitised ultramafics.
- Skarn rocks locally contain substantial amounts of magnetite often associated with massive sulphide mineralisation. Strongly magnetite-bearing skarn (>20% magnetite) occurs in several holes eg, SY003 475.2 - 486.2m, SY005 371.4 - 561.2m, SY009 359.1 - 546.1m, SY010 510.6 - 518m and 547.46, 567.9 and finally SY014 391 - 429.9m.
- Recognition of the Balstrup Fault within SY013 and SY015 is possible although the footwall lithologies are different to those that occur along strike to the WNW. Deeper drilling may intersect the carbonate rocks as seen elsewhere.
- Significant base metal mineralisation was encountered in several drillholes. A collection of drillholes appear to show consistent mineralisation associated with the immediate footwall of the Balstrup Fault. In each case the host unit is described as 'skarn hosting massive sulphide mineralisation' - drillholes SY005, SY008, SY009, SY003 and SY012.
- In SY011 high-grade mineralisation is described as a vein concordant with bedding. This 'vein' is located very close to the downward projection from the surface of the Balstrup Fault.

- Analysis of the recorded melanges shows that: -
 1. A major zone of substantial thickness occurs >500m downhole in several drillholes and this may be part of the Tenth Legion Fault.
 2. A second zone of major melange thickness occurs in several drillholes between 0 and 80m downhole. Some of these melanges may be a function of complexly folded/weathered Oonah graphitic shales and siltstones with possible collapse caused by dissolved out carbonate rather than being the result of actual fault zones.
 3. At other downhole depths large melange zones are seemingly absent.
- Characteristically galena and sphalerite occur together in the major base metal drill intercepts. In some instances this mineralisation is accompanied by elevated tin values eg SY005. Noticeably this is not always the case.

Drillcore assays for Zinc values >5000ppm

Drillhole	From	To	Zinc	Lead	Iron	Arsenic	Tin
SY001	116.4	117.2	17000	1450		61	48
SY001	145	146	7150	12200		170	7
SY001	147	148	5800	9950		252	5
SY002	83.7	84.5	5600	340		61	10
SY002	242	243	5800	2900		130	96
SY002	271	272	6700	1650		180	119
SY002	272.4	273	20800	9300		150	191
SY002	274	275	129700	17700		100	508
SY002	275	276	83300	32400		200	437
SY002	276	277	9600	8700		250	269
SY002	279	280	5800	3350		190	202
SY002	281.3	281.9	8700	2175		545	110
SY002	281.9	283	14200	7300		236	126
SY003	148	148.7	10500	5400	6.1	26	59
SY003	148.7	150	60300	29400	25.1	399	28
SY003	150	151	52700	24800	20.9	351	43
SY003	151	152	173000	52500	22	52	34
SY003	152	153	145000	46700	25.5	20	15
SY003	153	154	68600	60300	24.1	7.6	3
SY003	154	155	69300	71200	24.6	4.7	6
SY003	155	156	46800	24000	32.7	8.6	19
SY003	156	157	5200	5650	36.9	21	4
SY003	157	158.2	6350	4500	33.4	22	13
SY003	245.4	246	12400	7000	15.9	660	50
SY003	249.5	250	45900	9200	15.4	200	118
SY003	250	250.8	16000	4100	11.1	613	49
SY003	387.9	389	43400	42800	32.5	805	129
SY003	389	389.7	100300	94800	18.1	489	263
SY003	509.8	510.4	31800	27200	17.6	42	33
SY003	521	522	6200	1450	8.49	8.2	8
SY004	79	80	8250	335		100	25
SY004	80	81	9250	3000		100	30
SY005	237.8	238.8	9250	6650			12
SY005	381	382	6600	155			1
SY005	382	383	16600	195			4
SY005	383	384	6750	195			1
SY005	392	393	5800	2000			1
SY005	404	406	6400	2			26
SY005	471	472	10200	140			27
SY005	508	509	39800	31800			240
SY005	509	510	47100	46800			264
SY005	510	511	41600	40700			150
SY005	511	512	13100	37800			134
SY005	512	513	29200	99400			182
SY005	513	514	66600	18500			80
SY005	514	515	7700	1250			1150
SY005	518	519	80600	3350			139
SY005	519	520	39300	4500			43
SY005	520	521	46900	10900			206
SY005	521	522	25200	11200			67
SY005	522	523	10200	840			60
SY005	523	524	7300	760			86
SY005	524	525	44500	1150			98
SY005	526	527	62900	59000			471

Drillhoie	From	To	Zinc	Lead	Iron	Arsenic	Tin
SY005	527	528	29000	105600			616
SY005	528	529	10700	2100			100
SY005	529	530	109300	17100			282
SY005	530	531	23500	1850			427
SY005	531	532	15800	4050			208
SY005	532	533	11900	4000			499
SY005	533	534	23900	6850			838
SY005	561.2	562.2	6350	995			670
SY005	564	565	9450	195			193
SY008	96	98	14300	2327			9
SY008	102.1	103	451400	131700			74
SY008	121	123	10000	16200			9
SY008	123	125	7774	4965			9
SY008	125	127	12400	4698			49
SY008	129	130.9	87400	79200			127
SY008	130.9	132.1	183400	93800			245
SY008	132.1	134	8007	2819			25
SY008	134	136	14200	10400			55
SY008	136	138	11700	12000			11
SY008	138	139.9	48500	18600			86
SY008	341	342	7899	2917			8
SY008	342	343	11200	4600			15
SY008	343	344	11200	10300			21
SY009	184	185	10700	5200			93
SY009	185	185.7	13200	33500			71
SY009	274	275	5247	5941			8
SY009	275	276	11100	9100			13
SY009	383	384	9185	7750			107
SY009	392.85	394	66000	27900			83
SY009	394	395.1	89000	83000			46
SY009	519	520	6974	239			23
SY010	425	426	5390	3320			4
SY010	430.2	431	10060	685			6
SY010	510.6	511.5	43000	87			50
SY011	131.1	131.4	16000	15600			55
SY011	148	149	6793	471			20
SY011	149	150	12400	1100			45
SY011	151	152	5878	1052			29
SY011	152	153	173000	31100			178
SY011	153	154	232000	104000			198
SY011	154	155	72000	17400			102
SY011	155	156	27200	7600			76
SY011	156	157	44500	22900			127
SY011	157	158	12400	9200			62
SY011	158	159.4	14200	13400			41
SY011	163.5	164.5	9234				15
SY012	117	118	5720	4680			4
SY012	451	452	6000	5200			55
SY012	452	453.1	30800	10800			6
SY012	453.1	454	24800	26600			19
SY012	454	455	83000	19000			100
SY012	456	457	12800	8800			1
SY014	113	114	136000	28300			50
SY014	114	115	73000	106000			60
SY014	116	117	64000	1500			60
SY014	119	120	8600	3400			70

Drillhole	From	To	Zinc	Lead	Iron	Arsenic	Tin
SY014	132	133	5600	21000			75
SY014	242.6	243.8	42200	10100			160
SY015	120	121	13200	1336			20
SY016	96	97	9311	22200			90
SY016	277	278	17200	2514			40
SY016	278	279	21700	1324			25
SY016	279	280.1	10100	4056			45

Appendix 3

RGC Surface Geochemistry - Observations

RGC Surface Geochemistry

- RGC completed multi-element analysis for over 1,000 soil samples. Elements tested comprised the normal ore minerals and related pathfinders along with a number of trace elements. Iron and potassium were the only major elements analysed and no analysis was completed for calcium or magnesium making the detection of dolomite/calcic rocks very difficult.
- The area south of the Balstrup Fault has considerable widespread lead/zinc anomalism in surface soils. Unfortunately there is a lack of coherency when trying to contour the data but several of these anomalies can be explained by the coincidence with old lead/zinc workings.
- Processing of the soil data by RGC identified distinct chemical lithologies namely ASED, CSED, MSED etc and the author has used these categories to analyse lead/zinc anomalies. The technique used is called additive indices, which normalises the element data for each lithotype such that the relative strength of multi-element anomalies can be assessed and ranked. In effect it converts the assay results for several elements for a single lithology into a common 'currency' thus allowing comparison of anomalies within and between different lithotypes.
- Zinc, lead, arsenic, tin and iron assays were used in the initial additive indices exercise.
- The strongest anomalies for all five elements are :-
 1. Allison and Britannia mine workings.
 2. Possible up dip expressions of base metal intercepts in drillholes SY003, SY009 and SY0016.
 3. A 600m+ long anomaly associated with the southern margin of the EM anomaly 357200mE, 5360400mN.
 4. A small anomaly south of the Balstrup Fault, 358200mE, 5360250mN.
 5. North of the Balstrup Fault, 357800mE, 5361150mN, a 700 x 150m bed-parallel anomaly only partially tested by SY004.
- The strongest anomalies for lead and zinc only are similar to those for the five elements with addition of :-
 1. A single line anomaly 358400mE, 5360300mN.
 2. The north of the Balstrup Fault anomaly shows an increase in strength towards the Sylvester Mine.
- RGC attempted to define outcropping carbonate using a series of trace elements. A large, elongate unit was identified adjacent and parallel to the Balstrup Fault. The surface mapping and observations generally supports this delineation

- Potassium analysis was used to delineate more shale-rich units at surface within the ASED, CSED and MSED lithotypes. A major potassium low occurs south of the Balstrup Fault, partially matching RGC's chemically defined carbonate outcrop.
- An additional target is a base metal soil anomaly parallel to inferred bedding occurs in the SW part of the ML that is hosted by black shales with some minor associated gossans.
- The majority of anomalous zinc values occur in the MSED unit which rarely occurs south of the Balstrup Fault. It is assumed that this is due to the more mafic nature of the rocks and that the sediment source was different to the Oonah Formation. This does not make the lower grade anomalies in the ASED units south of the Balstrup Fault any less significant.
- The CSED unit is a carbonate sub-division of the ASED unit, and comprises a small population with a disproportionate amount of zinc anomalies.

Soil Assays for Zinc Values >500ppm

East	North	Lithology	Zinc	Lead	Iron	Arsenic	Tin
357199	5361287	ASED	805	80	0.85	43	8
357600	5360318	ASED	1400	95	1.3	1	21
358202	5361337	ASED	3000	80	1.8	120	5
358987	5361296	ASED	1350	75	2.6	79	3
357385	5360590	CSED	6500	1	1.5	25	1.5
357600	5360549	CSED	1600	4	5.26	306	191
357800	5360477	CSED	776	5850	12.9	386	5
357800	5360503	CSED	10001	10001	6.59	170	12
357800	5360528	CSED	620	0	35.9	2830	54
357800	5360553	CSED	1150	1	28	2000	34
357800	5360579	CSED	600	0	34.2	1560	44
357984	5361253	CSED	700	220	14.9	89	1.5
358187	5360400	CSED	940	1900	28.6	3150	18
358600	5360332	CSED	885	4000	19.3	1210	18
358602	5360307	CSED	1550	10001	3.7	303	236
357792	5361003	INTER	735	2.5	6.56	22	5
359218	5360294	INTER	800	90	31.7	2010	11
359385	5360627	INTER	700	170	14.9	180	1.5
360191	5360436	INTER	735	3500	25.9	697	38
357199	5361262	MSED	2700	1600	3.4	50	5
357209	5360611	MSED	2450	1	0.9	33	3
357598	5360730	MSED	1225	70	13.6	26	6
357600	5360299	MSED	710	425	15.9	429	11
357602	5360083	MSED	5000	7000	4	250	21
357790	5361030	MSED	1350	75	3.3	49	4
357795	5360803	MSED	3000	30	5.25	15	8
357795	5360828	MSED	9750	195	7.08	21	4
357795	5360854	MSED	890	15	2.7	4	6
357795	5360878	MSED	675	15	3.2	4	1.5
357797	5360778	MSED	600	100	3.7	4	4
357994	5361053	MSED	1250	80	6.52	215	4
358004	5360872	MSED	780	40	7.96	150	7
358004	5360895	MSED	670	100	7.96	11	7
358187	5360327	MSED	1150	3550	2.8	85	1.5
358202	5361187	MSED	1800	250	3.8	63	3
358202	5361237	MSED	5800	2700	5.82	2730	51
358392	5361293	MSED	1250	55	4.8	160	12
358392	5361344	MSED	2700	30	7.22	47	14
358394	5361244	MSED	870	50	5.67	62	11
358595	5361172	MSED	1850	15	5.91	232	11
358600	5360433	MSED	975	560	18.3	508	20
358600	5360509	MSED	785	5	8.51	40	6
358600	5360583	MSED	905	3150	13.7	1690	46
358600	5360627	MSED	535	360	8.13	230	3
358778	5361866	MSED	3350	105	9.37	25	1.5
358804	5360457	MSED	2350	200	2.9	28	10
358804	5360480	MSED	720	245	2.6	62	12
358954	5361970	MSED	585	505	10.8	140	16
358989	5361271	MSED	660	50	12.5	78	7
358991	5360724	MSED	595	65	17.7	44	1.5
358993	5360384	MSED	2300	40	3.4	63	4
359193	5361032	MSED	820	80	16.4	98	3
359196	5361056	MSED	1250	75	15.9	45	3
359197	5360901	MSED	660	715	10.2	91	10

East	North	Lithology	Zinc	Lead	Iron	Arsenic	Tin
359199	5360877	MSED	810	480	11.4	285	11
359213	5360349	MSED	5400	20	9.84	140	9
359385	5360580	MSED	820	40	10.9	48	7
359388	5360951	MSED	900	490	9.29	83	14
359983	5360529	MSED	1550	4650	16.7	35	29
359987	5360306	MSED	720	125	11.5	17	10
359987	5360332	MSED	590	175	21	89	25
360191	5360271	MSED	575	380	13.5	34	6
360191	5360388	MSED	975	455	9.34	17	16
360191	5360461	MSED	800	7900	10	393	22
360191	5360485	MSED	965	7950	13.3	359	57
360191	5360510	MSED	1450		17	247	41
360191	5360535	MSED	1650	5200	17.3	358	49
358005	5360844	SPIL	3400	5	11.7	99	1.5
358009	5360746	SPIL	1400	75	1.1	23	7
358192	5360768	SPIL	720	240	1.5	246	1.5
358192	5360868	SPIL	3000	60	4.8	49	7
358202	5361526	SPIL	605	2.5	3.7	110	9
358386	5360918	SPIL	645	80	3.5	11	10
358388	5360944	SPIL	600	300	1.8	22	13
358390	5361519	SPIL	1250	10	3.6	16	16
358390	5361545	SPIL	1200	230	3.3	234	13
358390	5361568	SPIL	580	2.5	27.7	214	5
358390	5361593	SPIL	640	20	2.6	180	14
358392	5361024	SPIL	705	20	2.1	7	15
358392	5361422	SPIL	600	285	7.8	65	7
358392	5361444	SPIL	560	1325	4.3	140	15
358593	5361499	SPIL	805	95	2.9	44	6
358594	5361620	SPIL	600	2.5	13.9	11	10
358595	5361473	SPIL	1450	625	2.2	44	12
358595	5361573	SPIL	800	15	6.19	8	11
358778	5361617	SPIL	610	5	5.53	10	15
358778	5361888	SPIL	655	2.5	6.03	8	10
358991	5360507	SPIL	700	20	14.2	130	9
359188	5361686	SPIL	850	560	11.5	36	7
359188	5361845	SPIL	820	3350	9.73	76	16
359386	5361587	SPIL	535	1000	11	25	21
359386	5361738	SPIL	1300	200	9.35	23	10
359386	5361770	SPIL	600	10	7.71	10	11
358201	5361479	SPIL1	600	2.5	4.7	32	7
359386	5361333	SPIL1	595	305	11.1	50	17

Appendix 4
Oceania Tasmania Geophysical Datasets -
Observations

Oceania Tasmania - Geophysical Datasets

Recent surveys completed over the property include: -

1. Detailed gravity
2. Airborne EM
3. Airborne Magnetics

Salient points from the above surveys are: -

- Within the mining leases the Oonah Formation gives a large and very low resistivity anomaly. This is attributed to graphitic shales and shallow dipping shear zones. This anomaly is abruptly terminated in the west but remains open to the east.
- Areas of very low resistivity within the overall anomaly low may be the result of :-
 1. Massive sulphide mineralisation
 2. A greater accumulation of graphitic material.
 3. Major water filled cavities associated with the carbonate sequences
- Another potential option for the EM anomaly is that the graphitic material may be a surface accumulation of weathered out carbonate material. This phenomenon is seen elsewhere in the Zeehan Zinc field eg atop outcropping Gordon Limestone.
- The Balstrup Fault is reasonably well defined in the EM data by default (the Oonah Formation boundary) but is poorly defined in the magnetic data. However the western end of the EM anomaly extends well north of the originally marked fault line possibly indicating a bifurcation in the Balstrup Fault or later offset faulting. This may have ramifications in the ore search and the targeting of structures.
- A weak conductor trends ENE about 500m north of the Balstrup Fault and is coincident with RGC's chemically distinct lithostratigraphy. Inspection of the RGC mapping and air photos suggest the presence of quartzites which seemingly fails to adequately explain this anomaly, unless it is a northerly down dip expression of less weathered interbedded siltstones exposed to the south. However this siltstone unit supposedly dips to the south.
- Within the western half of the lease area, the airborne magnetic data displays a major flat lying high straddling the surface trace of the Balstrup Fault. This may be a major magnetite body at depth possibly within the footwall of the Balstrup Fault.
- The magnetic signature for the eastern half of the area is flat, with the boundary between the east and west domains occurring close to the divide between those drillholes with magnetite-bearing skarn to the west and those without to the east.
- Identification of structural breaks from the geophysical data is very difficult. This is probably due to complex folding, possible flat lying nature of the rocks, the ductile

- nature of the sediments with rock competency contrasts that preclude the development of discrete faults.
- The provisionally contoured Bouguer gravity map supplied showed a gravity high domain in the south/south east of the survey. Flanking this high is a steep gradient zone striking approximately E-W. The significance of this is uncertain although the zone coincides with the line of gossans and with black shales hosting N-S striking mineral veins. The zone bifurcates as it approaches the Balstrup Fault and continues westwards to the South Comstock Open Pit. It may represent some form of structural zone possibly based on competency contrasts within sub-formations of the Oonah.

Appendix 5
Recent Drilling - Observations

Recent Drilling Observations

The following observations are based on a two-day viewing exercise and covered drillholes SY017, SY018 and SY019. Low level base metal mineralisation was recorded in all drillholes but none of it indicating major vein structures. This might suggest a possible alternative style of ore.

Drillhole	From	To	Mineralisation Style	Estimated Grade of Sphalerite
SY017	5	32.4	Pyritic Gossan	<1%
SY017	201.7	216.4	Pyritic veining in carbonaceous shale	<0.2%
SY017	234	239.3	Pyrite replacing recrystallised limestone including a 12cm massive galena vein	<0.1% except locally high lead
SY017	430.8	454.5	Pyrrhotite disseminations in melange clasts	<0.1%
SY017	461.15	504.5	Disseminated blebs of sphalerite in volcanics	<0.5% locally 3-4%
SY018	169.0	187.4	Recrystallised limestones with replacement style sulphide mineralisation – silicified and brecciated	<0.5%
SY018	195.2	216.5	Pyritic carbonaceous siltstone	<0.1%
SY018	450	456.5	Disseminated blebs of pyrite with veins of pyrrhotite accompanied by small zones of massive galena/sphalerite/pyrite; replacive	1-2%
SY018	488	492.1	Thinly bedded sandstones with veining containing pyrrhotite, pyrite and minor chalcopyrite	<0.1%
SY018	503.6	506.4	Thin veinlets of bedding parallel pyrrhotite in interlaminated siltstones	<0.1%
SY018	506.4	515.1	Disseminated sphalerite with occasional blebs and veinlets hosted by silicified skarn	1%
SY018	522	538	Zones of massive pyrrhotite and pyrrhotite lenses with minor ?sphalerite in melange material	<0.5%
SY018	538	548	Minor dissemination of pyrrhotite in melange clasts	<0.1%
SY018	548	556.1	Brecciated sandstones and melange with pyrrhotite veinlets and stringers	<0.2%
SY018	631.4	647.3	Black carbonaceous siltstones with pyrrhotite beds and extensional veins	<0.2%
SY019	236.7	240.3	Disseminated blebs and semi-massive pyrite/pyrrhotite with galena and sphalerite replacing recrystallised limestone	5%
SY019	263.8	264.3	Pyrite vein with sphalerite	3%
SY019	329.85	338.2	Silicified dolomite/recrystallised limestone with localised brecciation and replacement by sphalerite, galena and pyrite	Locally 5%
SY019	338.15	345.0	Interbedded sandstones and carbonaceous siltstones with pyrite stringers; minor blebs of sphalerite and galena	0.2%

Other drilling observations include :-

1. Zones of melange contained sediment clasts within a well-annealed carbonaceous/graphite matrix. Some of the clasts had disseminations of pyrrhotite which were absent in the matrix. The spatial position of these zones on cross sections corresponds to the Tenth Legion Fault.
2. There appears to be a range of carbonate lithologies:-
 - Recrystallised dolomitic and silicified limestone; characterised by a coarse equigranular, crystalline texture, and dark grey in colour.
 - Fine grained pervasively silicified dolomite; it is suggested that some of these lithologies may be silicified calcareous sandstones (?any magnesite).
 - Fine grained, weakly calcareous, green, skarn material with tremolite?
 - Interbedded calcareous and carbonaceous siltstones and sandstones
 - White dolomite with algal mat textures, locally silicified. (SY018 - below Tenth Legion Fault).
3. Localised weathering of the recrystallised limestone unit produced cavities. Weathering of this unit would also produce white sand, which may have confused the RGC surface mapping.
4. Thin <1-2m porphyritic dykes were observed. The margins of the dykes sometimes had base metal mineralisation associated with them and sometimes with a distinctive green mineral, mariposite.
5. SY017 provides a good unfaulted stratigraphic column for the Oonah Fm above the Tenth Legion Fault from 178 to 388m (downhole depths). A summarised stratigraphy is as follows (see also figure 3) :-
 - Interbedded carbonaceous siltstones/shales and sandstone (possibly silicified dolomite) overlying
 - A predominant mixed carbonate sequence of recrystallised limestone/dolomite, calcareous siltstones/sandstones and black carbonaceous siltstones.
 - A clastic dominant sequence of sandstones and interbedded siltstones, shales and sandstones underlies the carbonate sequence.
6. Finer grained clastics notably thinly bedded siltstones and shales often display contorted beds indicating substantial deformation and structural complexity.
7. Despite the implied structural complexity there were relatively few obvious late faults within the core – as characterised by brittle fractures, clay gouge, broken core, etc. It is supposed that the annealing phase was a late stage event and subsequent brittle faulting was related to post Heemskirk Granite faulting.
8. Marker units are difficult to recognise. A strongly conductive carbonaceous massive siltstone occurs in SY017 and SY018 with scattered veinlets of pyrite or pyrrhotite.

9. The units that underlie the Tenth Legion Fault in SY018 are not recognised as part of the Oonah or Crimson Creek Formation. They may be Success Creek Units, which have not been mapped in the local area. A wilder theory is that they may represent units that form part of the Arthur Lineament with its ophiolitic and carbonate-rich rocks, eg Savage River Dolomite.
10. SY017 exhibited tuffaceous volcanic rocks beneath the Tenth Legion Fault prior to passing into gabbroic type lithologies.
11. A 30m pyritic, carbonaceous siltstone/shale unit acts as a strong EM conductor in drillholes SY017 and SY018 but at depths of 200m. In a near surface, flat lying scenario this unit could account for the large airborne EM anomaly. However weathering and lithologies seen in the top of holes SY017, SY018 and SY019 also seem to indicate strongly graphitic and saturated material which may also contribute to the EM anomaly. A third contributor may be the development of cavities in the carbonate unit, which have subsequently filled with water. It is uncertain if anomalously conductive areas within the EM anomaly are the result of pyritic base metal accumulations or not.
12. The combined effect of contorted folding, faulting and weathering on the carbonaceous siltstones and shales in the upper part of the drillholes gave the appearance of being fault zones.

Appendix 6

Weighted Averages for the Balstrup Fault Mineralisation (RGC Drilling)

Balstrup Fault Mineralisation

Using a 1% Zinc Cut Off

Drillhole	From	Width	Zn	Pb
SY002	274	2m	10.65%	1.35%
SY003	148	8m	8.01%	4.02%
SY003	249.5	1.3m	2.75%	0.57%
SY003	387.9	1.8m	6.55%	6.3%
SY003	509.8	0.6m	3.18%	2.72%
SY005	508	6m	3.96%	4.58%
SY005	518	16m	3.72%	1.47%
SY008	125	14.9m	2.79%	1.77%
SY009	392.85	2.25m	7.72%	5.48%
SY010	510.6	0.9m	4.3%	20.01%
SY011	152	7.4m	7.85%	2.85%
SY012	452	5m	3.99%	1.53%
SY014	113	4m	8.54%	4.67%
SY014	242.6	1.2m	4.22%	1.01%
SY016	277	3.1m	1.6%	0.27%

Using @ 5% Zinc Cut Off

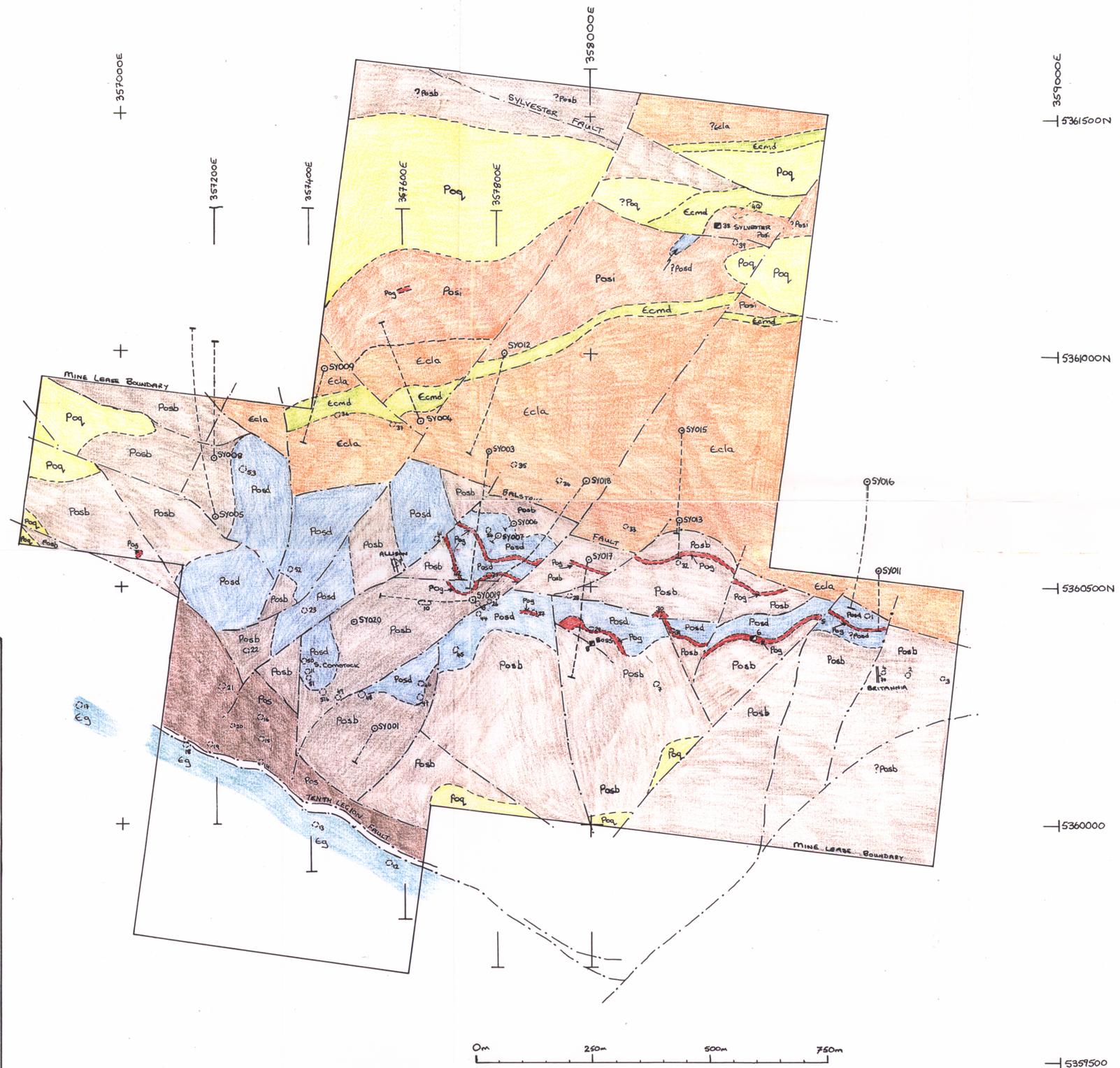
Drillhole	From	Width	Zn	Pb
SY002	274	2m	10.65%	1.35%
SY003	148.7	6.3m	9.3%	4.66%
SY003	389	0.7m	10.03%	9.48%
SY005	513	1.0m	6.66%	1.85%
SY005	518	1.0m	8.06%	.033%
SY005	526	1m	6.29%	5.9%
SY005	529	1m	10.9%	1.71%
SY008	102.1	0.9m	45.1%	13.17%
SY008	129	3.1m	12.46%	8.49%
SY009	392.85	2.25m	7.72%	5.48%
SY011	152	3m	15.9%	5.08%
SY012	454	1m	8.3%	1.9%
SY014	113	4m	8.54%	4.67%

Notes

1. Widths are downhole widths and not true widths
2. The from value represents the downhole start point of the intercept
3. The values are weighted averages
4. Where there was core loss an average value based on the encasing assays to the core loss was used

Legend

- | | | |
|---|---------------------------------|------------------|
|  Eg | Gabbro | Dundas Group |
|  Ecla | Lithic Arenites | Crimson Creek Fm |
|  Ecmd | Mafic Dyke/Sill | Crimson Creek Fm |
|  Posi | Interbedded Siltstones | Oonah Formation |
|  Poq | Massive Sandstones/Quartzites | Oonah Formation |
|  Pog | Gossan | Oonah Formation |
|  Posb | Carbonaceous Siltstones | Oonah Formation |
|  Posd | Dolomites and Skarns | Oonah Formation |
|  Pos | Micaceous Siltstones/Sandstones | Oonah Formation |
|  - - - | Inferred Fault | |
|  ····· | Lithological Boundary | |
|  ⊗ | Diamond Drillhole | |
|  ⊙ | 1999 Mapping Site | |
|  | Cross Section | |



820100 Figure 3
Oceania Tasmania Pty Limited
Comstock Zinc Prospect
Interpreted Geological Map
 1 : 5000 | Jan 2000 | S.J.Tear

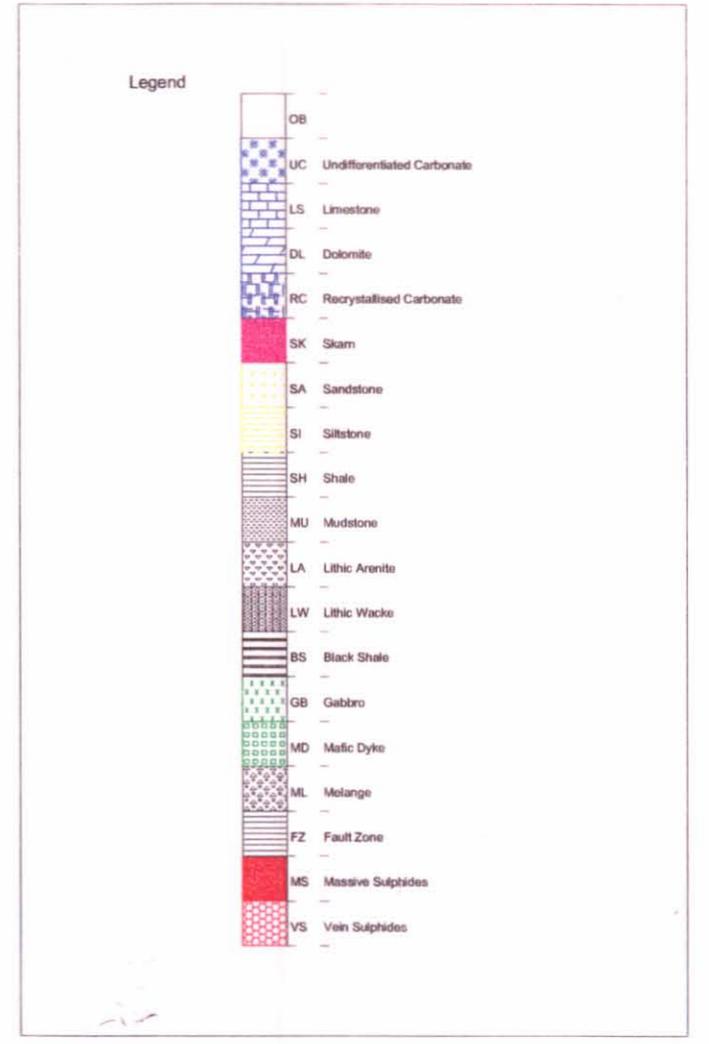
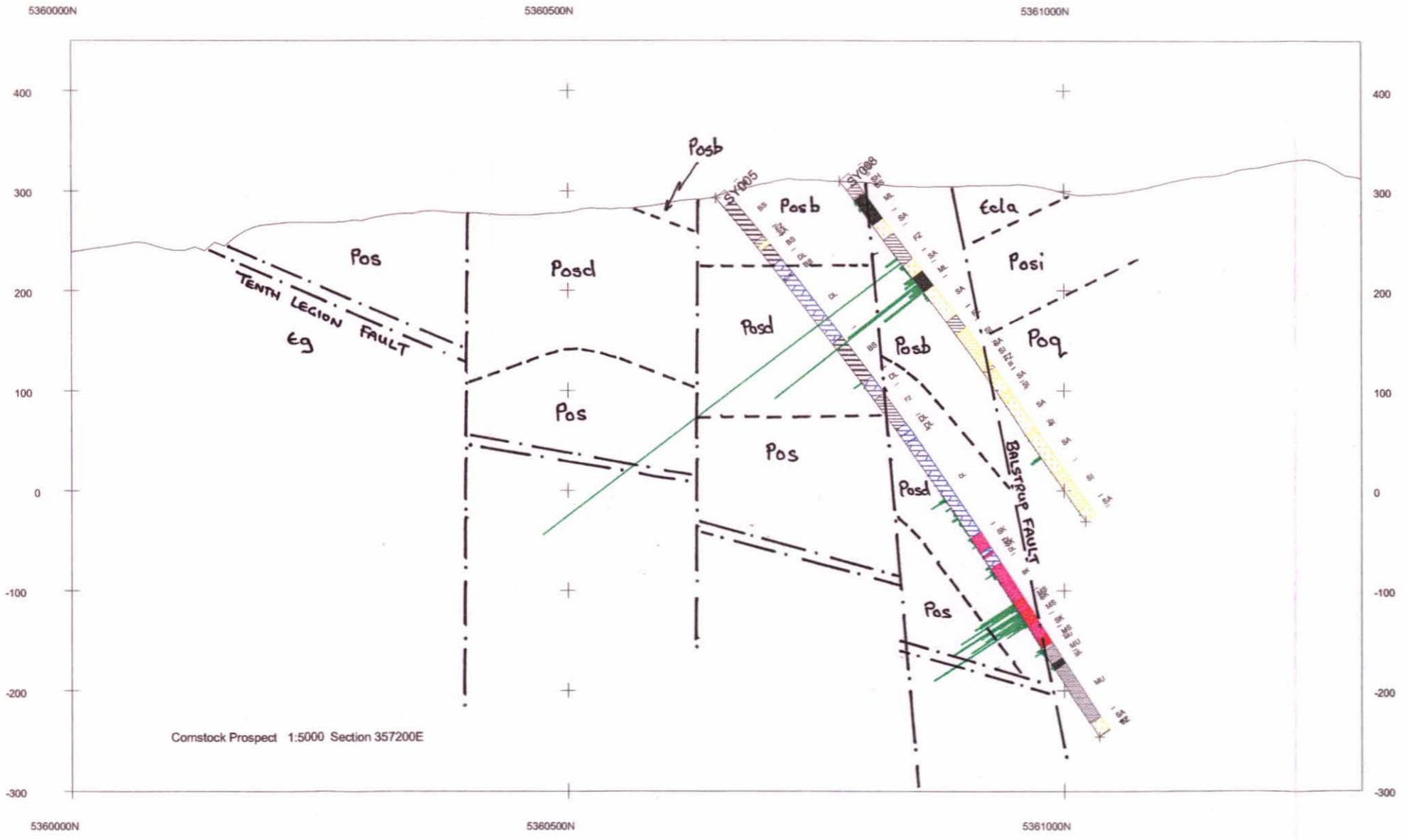
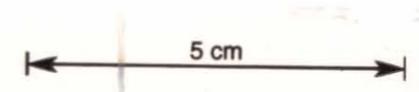
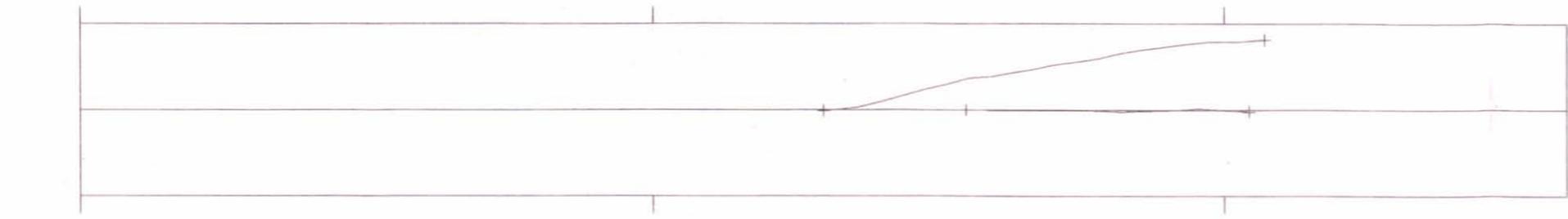
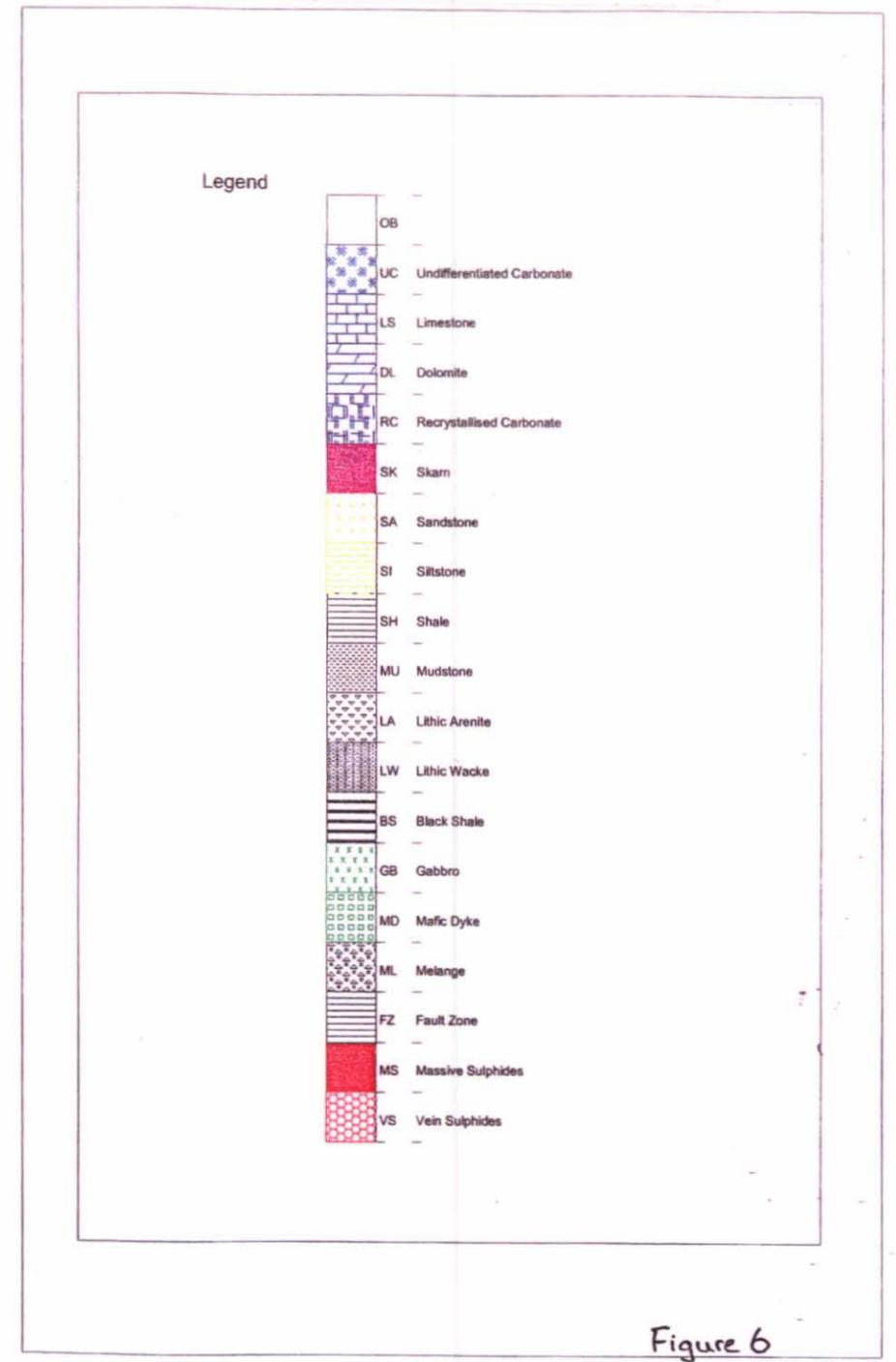
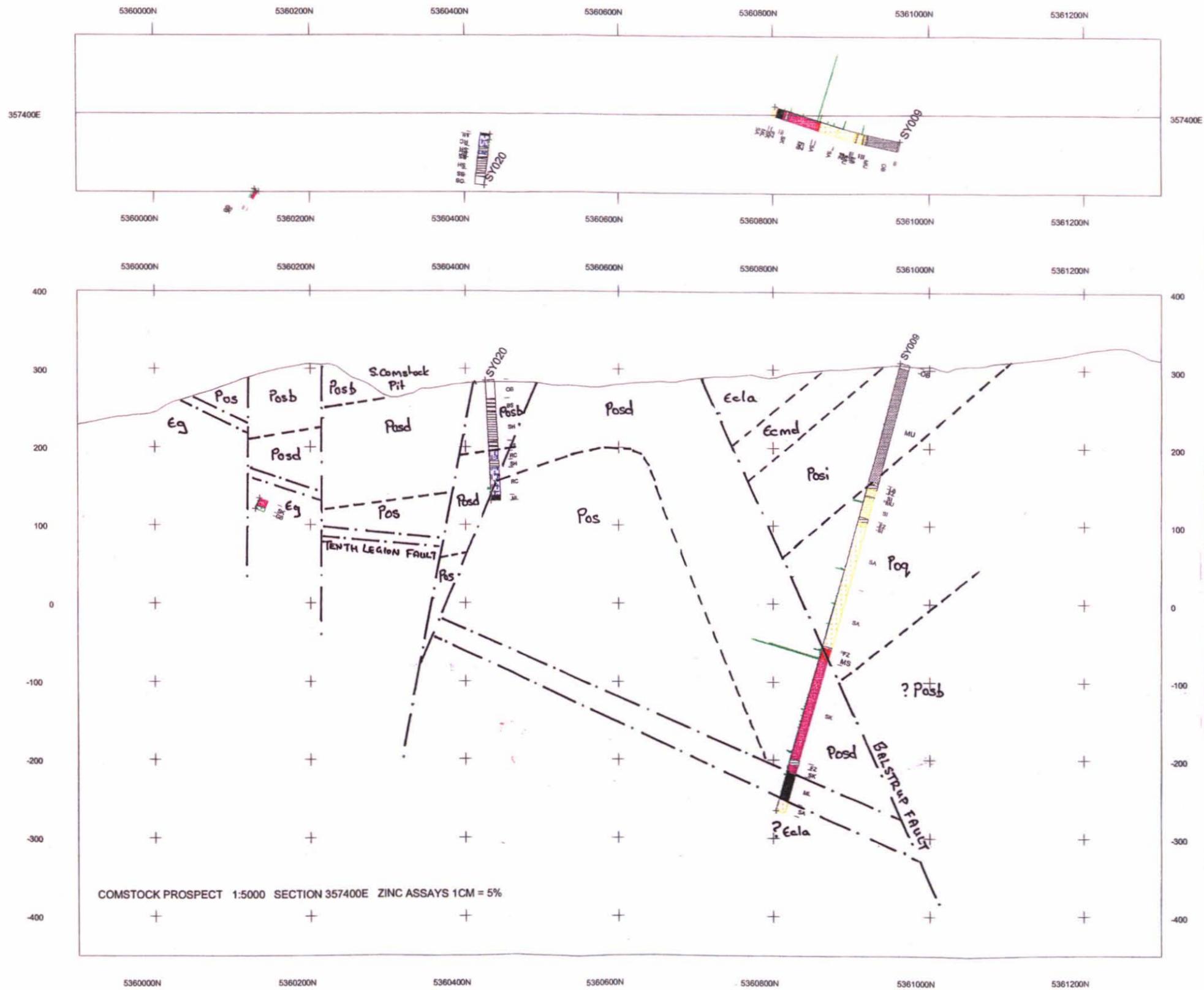


Figure 5



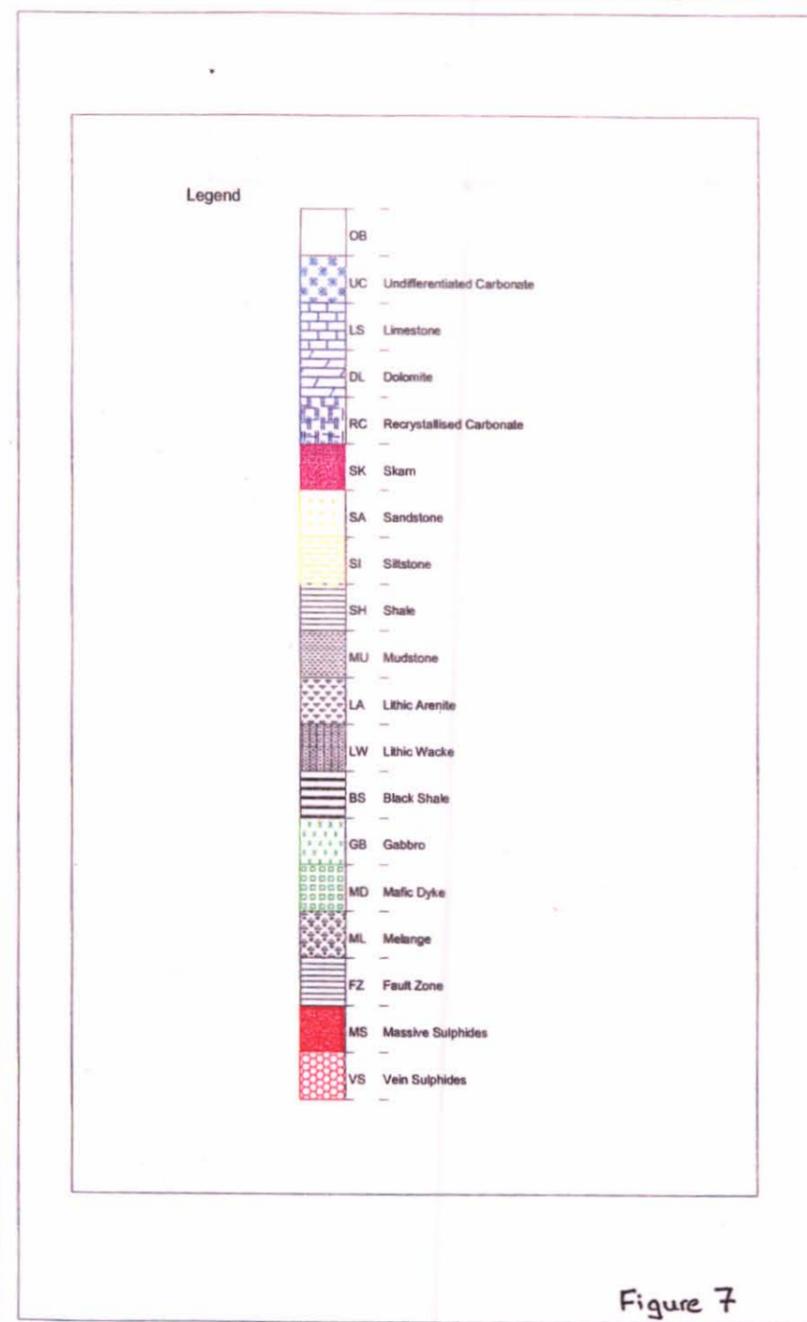
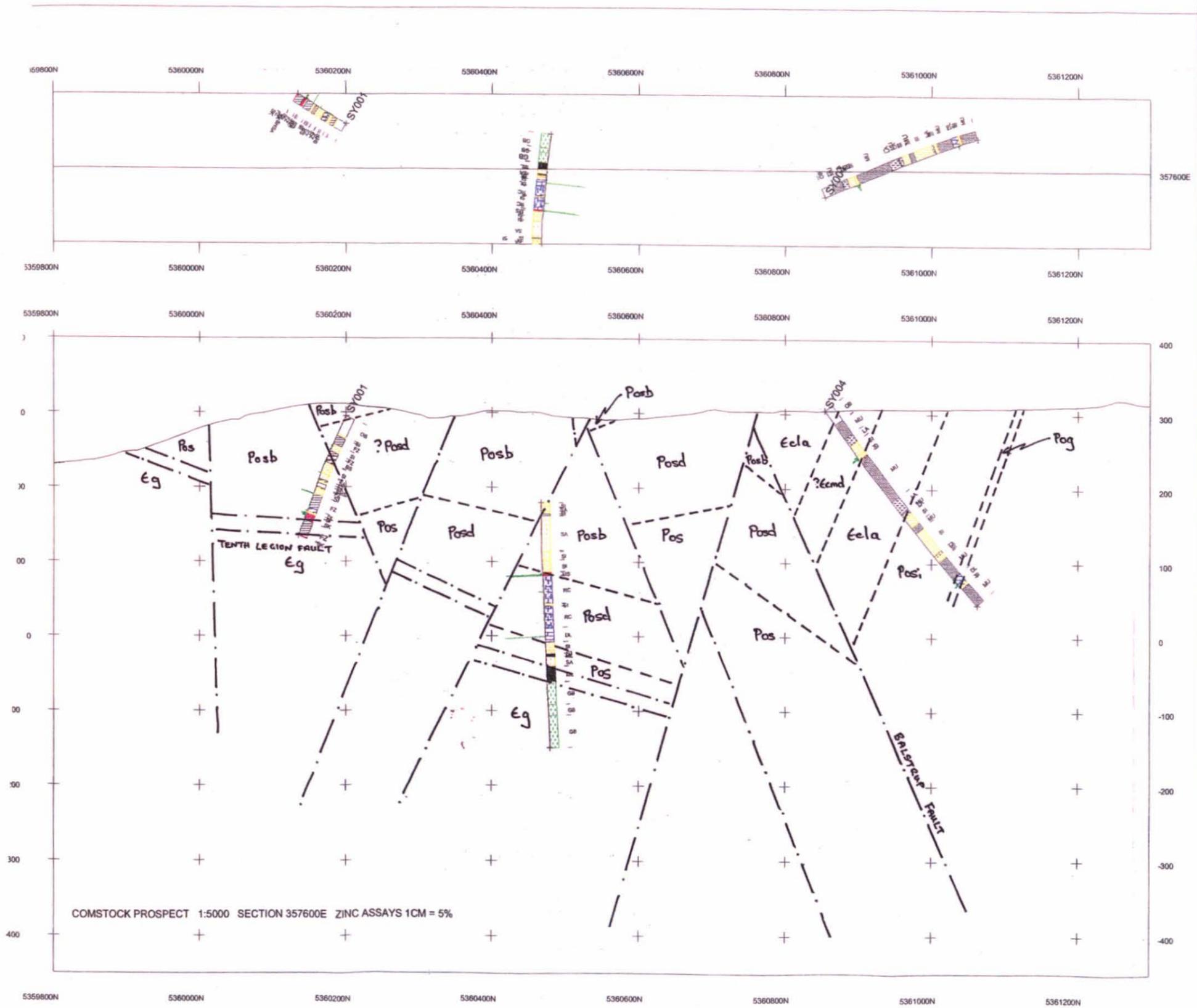


Figure 7

820103

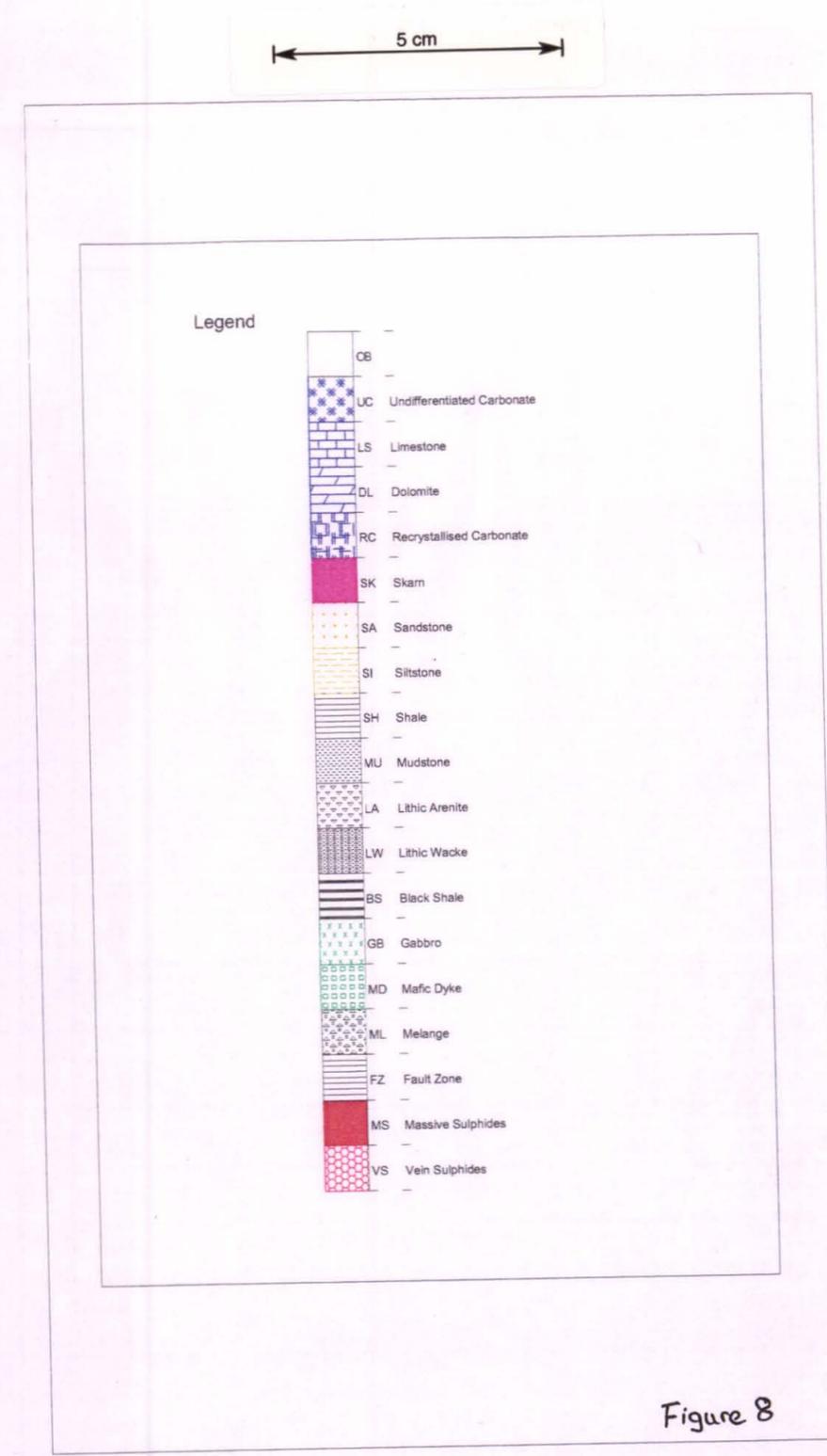
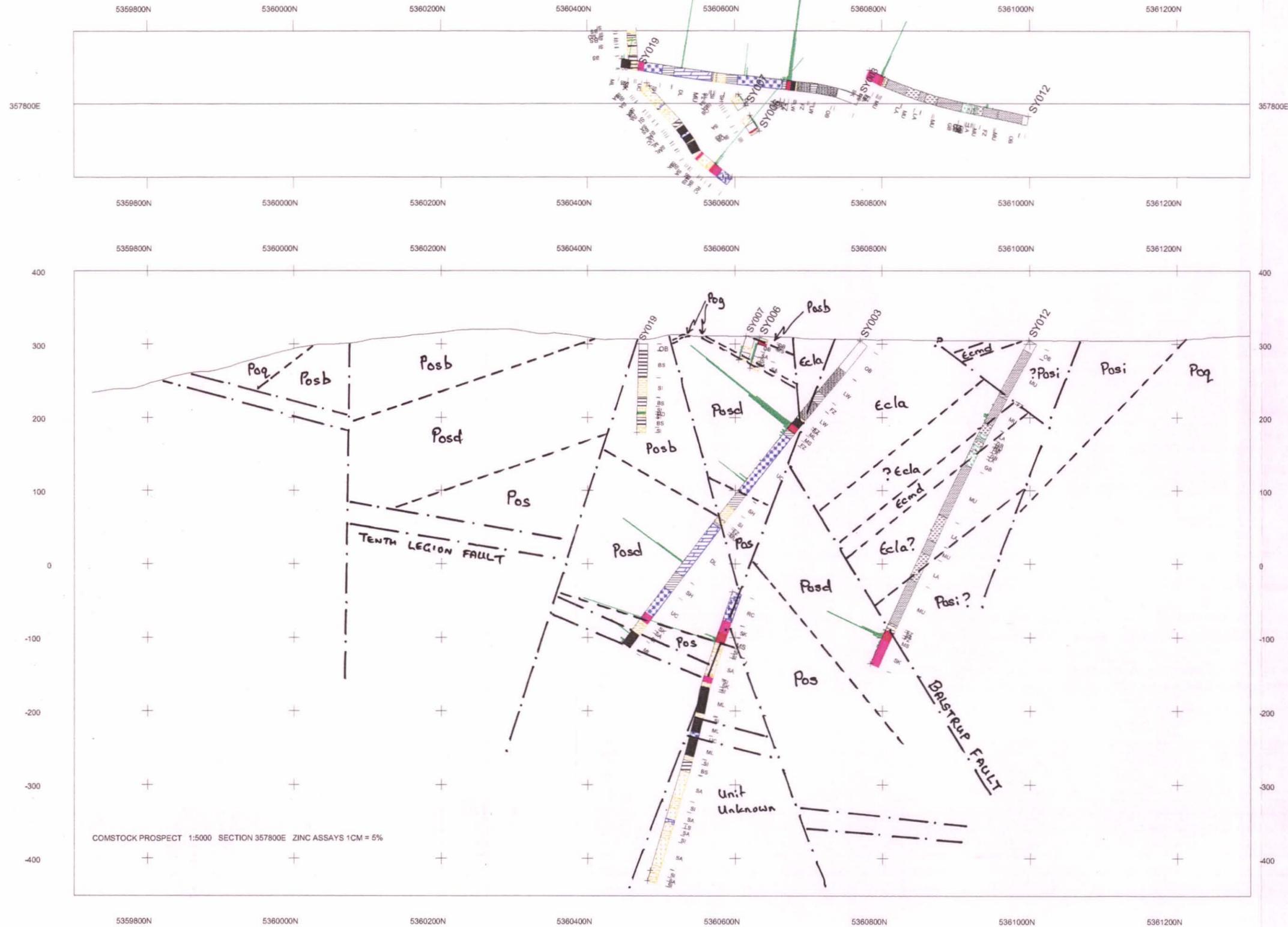


Figure 8

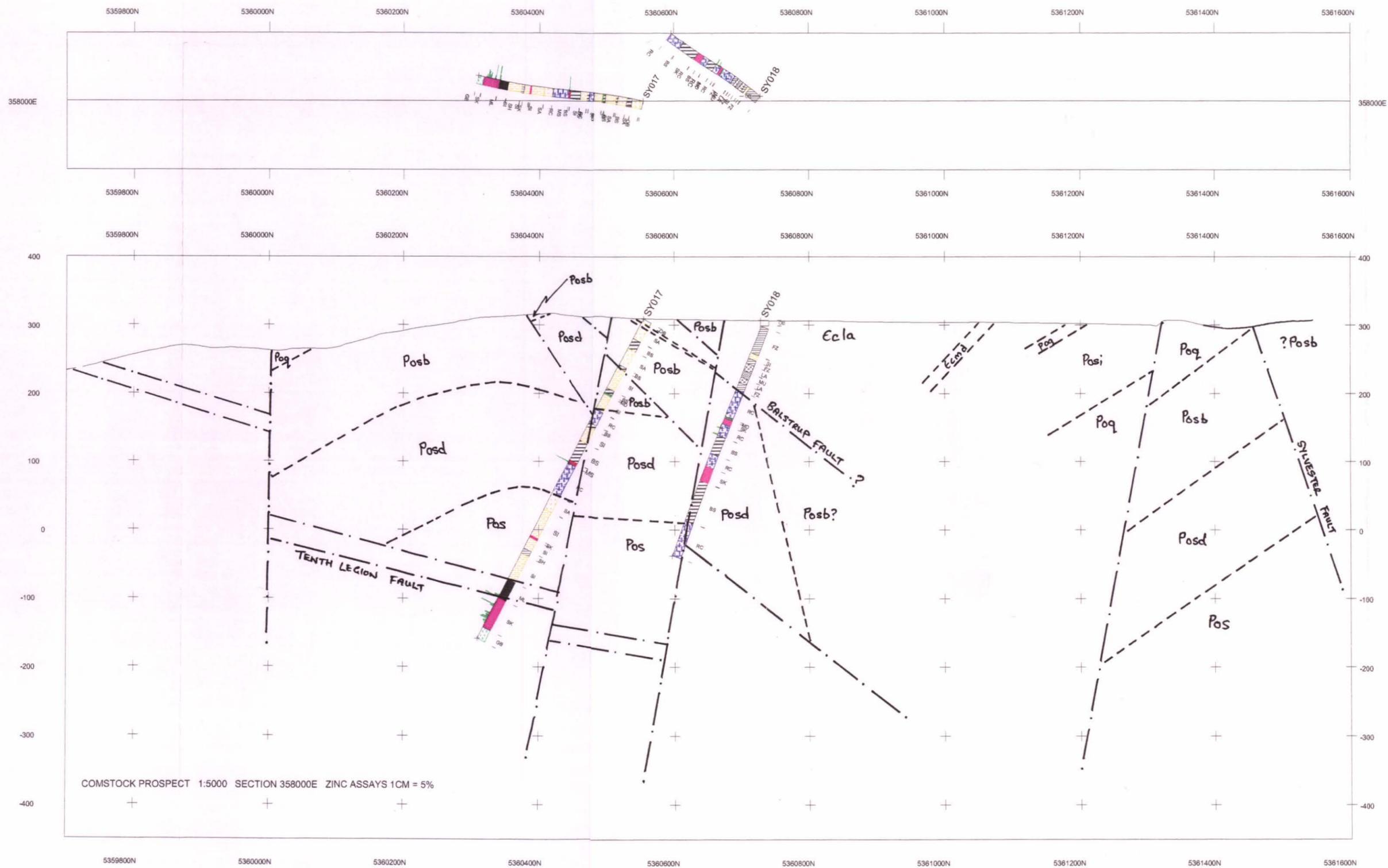
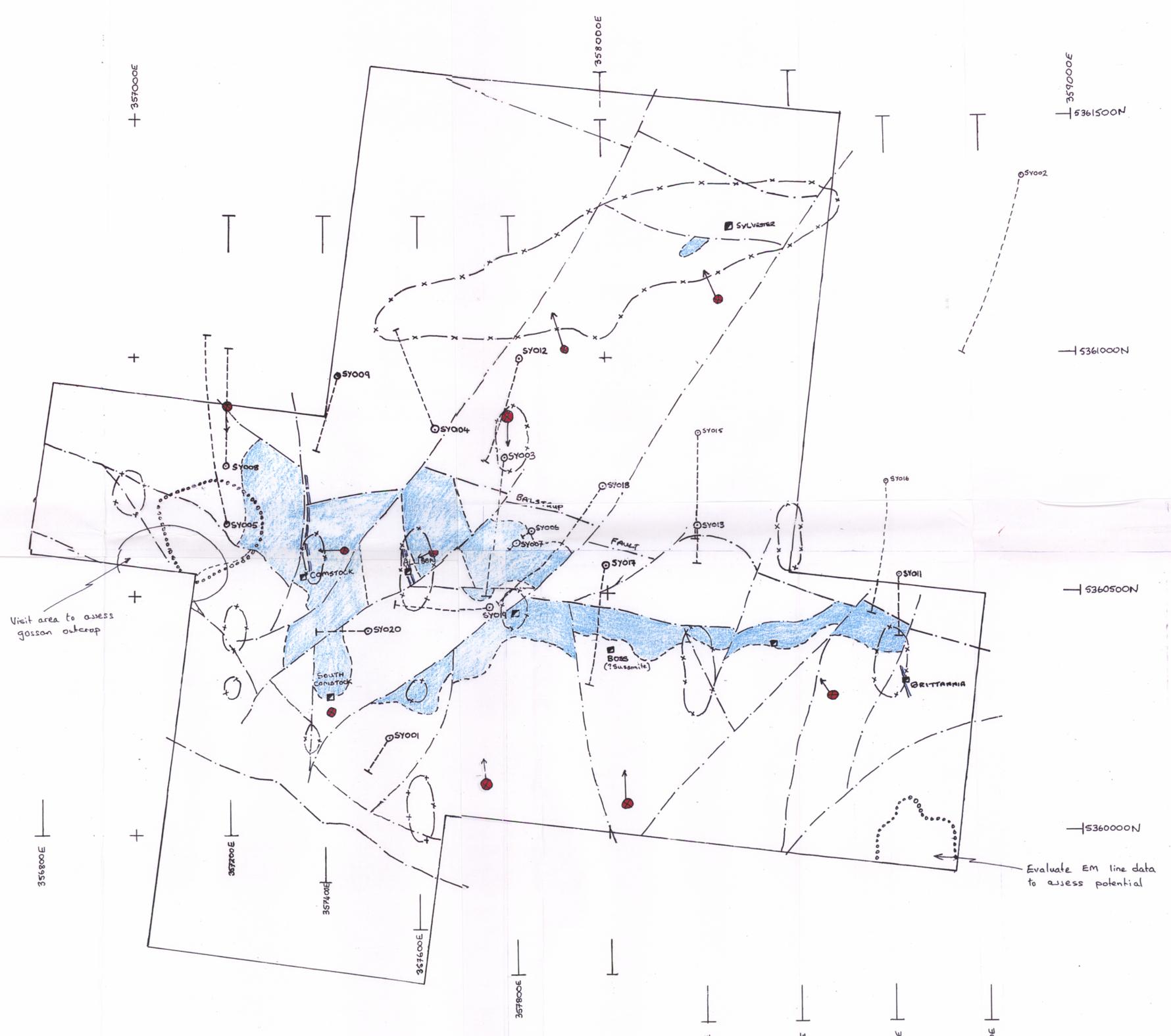


Figure 9



Legend

-  Inferred Fault
-  Geochemical Soil Anomaly
-  Airborne EM Anomaly
-  Posd Carbonate Unit
-  Diamond Drillhole
-  Proposed Drillhole
-  Old Mine Workings
-  Mineral Vein

Oceania Tasmania Pty Limited			
Comstock Zinc Prospect			
Target Map			
1:5000	Jan 2000	S.J.Tear	Fig. 10

5 cm

Appendix 3

Aspects of the mineral lodes on the Comstock Prospect
Zeehan, West Tasmania

Simon J Tear
Benmore Exploration Pty Ltd, 2000b

**Aspects of the Mineral Lodes on the Comstock
Prospect, Zeehan, West Tasmania**

For

Oceania Tasmania Pty. Limited

by

Simon J. Tear

BSc (Hons), ARSM, P.Geo, MIMM, MAusIMM

Benmore Exploration Pty. Ltd.

(ABN 40 086 267 834)

**Benmore Exploration Pty. Ltd.
30 Alton Terrace
The Gap
QLD 4061**

19th June 2000

Aspects of the Mineral Lodes on the Comstock Prospect, Zeehan, West Tasmania

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1. Introduction
2. Allison's Lode
3. Other Mineral Lodes
4. Conclusions
5. Recommendations
6. References

Qualifications and Disclaimer

Benmore Exploration Pty Ltd, a consulting company based in Brisbane, Queensland, prepared this geological report at the behest of Oceania Tasmania Pty. Limited. Simon Tear, the Principal Geologist, has a BSc (Hons) from The Royal School of Mines, London, U.K. and has over 16 years worldwide experience in the mineral exploration industry. He was Team Leader for Rio Tinto's Tasmanian exploration program from 1995-1996. That program successfully explored some of the area around the Comstock Prospect, accounting for nickel and lead/zinc discoveries (see Allegiance Mining N.L. Annual Reports).

The information used in this report was supplied by Oceania Tasmania Pty. Ltd and comprises a mixture of open file data from the Mineral Resources Tasmania Library and Oceania Tasmania in-house data. In addition ten days' worth of site visits were made to the property. Benmore Exploration has relied upon and assumed without verification the accuracy and completeness of all information provided and cannot take any responsibility to guarantee its accuracy.

Abstract

The Comstock Prospect is located on the Trial Harbour road, 7km west of Zeehan, West Tasmania. The area under investigation comprises three mining leases held by Oceania Tasmania Pty. Limited with zinc as the principal commodity of interest.

The geology of the Comstock area comprises a complexly folded and faulted series of Pre-Cambrian fine grained clastics and carbonates (the Oonah Formation). These sediments are thrust over Cambrian-aged mafic rocks in the southern half of the area by the Tenth Legion Fault, whilst in the northern half the Balstrup Fault has downthrown to the north sediments and volcanics of the overlying Crimson Creek Formation. The Oonah Formation south of the Balstrup Fault comprises the main target area for zinc mineralisation.

The area contains several old lead workings dating back to the late 19th Century and early 20th century. Small scale open pit mining has occurred within the last fifteen years in the Allison and South Comstock areas. Mineralisation comprises massive sulphide lodes usually of pyrite, galena and sphalerite.

The Allison's Lode is the subject of a recent major phase of excavation with the geological details included in this report.

Resource estimations for Allison's Lode are difficult to make due to a lack of sampling and diamond drilling. However a mineral stockpile was created from recent excavations and contains approximately 1500t at a grade of 20-23% zinc.

A review of historical data indicates that there is nearly 10km of lode length on the property. 2km of lode length is a more conservative modern estimate. The maximum depth of old mining appears to be around the 100-120 foot mark (~30-40m).

Recommended future work should comprise channel sampling and small scale diamond drilling of the Allison's Lode to establish a resource. Detailed mapping of the property for old prospectors' trenches should be done in order to establish a better measure of geological continuity of lode structures.

List of Figures

Figure Number	Title	Scale
1	Location Map	1:1,250,000
* 2	Geological Mapping of the Allison's Lode	1:500
3	Fault Patterns Associated with Wrench Tectonics	
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* 5	Mineral Lode Map	1:5000

* At end of App. II

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Appendix I : Surface Geology Observations

Appendix II : Mineral Lode Comments from Historical Data

Aspects of the Mineral Lodes on the Comstock Prospect, Zeehan, West Tasmania

1. Introduction

The purpose of this report is to provide a better appreciation of the extent of massive sulphide veins on the Comstock Property. The report comprises two parts, the first being a detailed assessment of the Allison's Lode which is currently being excavated. The second part aims to better quantify the nature of other veins within the mine leases using a variety of historical records. The data and interpretations supplied may be of use in determining some measure of the possible zinc resource that could exist on the property.

The area under review covers the mine leases ML 43M/85, ML123M/47, and ML19M/95. This includes the Comstock Prospect, which lies close to the Trial Harbour Road, 7km west of Zeehan in Tasmania (figure 1). Further details of the prospect and the tenement situation are supplied in an information memorandum prepared by J.M. Knight & Associates Pty. Ltd.

2. Allison's Lode

Substantial new excavations to the south of McCormack's pit have opened up the lode and extended it a further 35-40m with total length of lode in the open pits being about 80m. It was revealed that the lode comprises a series of massive sulphide veins generally parallel to each other and up to a maximum individual width of 3m. It is possible that there are at least six individual lodes giving an overall width of possibly 25m. There is some bifurcation of the veins.

The lodes have a general strike between 160 and 170° and dip steeply (75-80°) to the east. There is some sinistral rotation of the lodes where they have been caught up in Bendall's Fault.

The sulphide minerals within the lodes consist of a mixture of massive pyrite, massive sphalerite with subordinate galena. There are some minor amounts of quartz gangue. Some of the sulphide mineral textures observed on the mineral stockpile demonstrate replacement of possibly a carbonate-rich host lithology. There are also breccia textures in the lodes with later pyrite relative to sphalerite.

In McCormack's pit the lodes definitely cross cut the bedding whilst being slightly oblique to bedding strike. There appears to be no significant visible mineralisation between the lodes. There is also a pervasive silicification of the wall rocks in and around the hanging wall and footwall rocks to individual veins.

Unfortunately subsequent mining activity has tended to leave behind waste rock material making it very difficult to see contacts and accurately delineate in situ veins

Aspects of the Mineral Resources on the Comstock
Tasmania, Australia

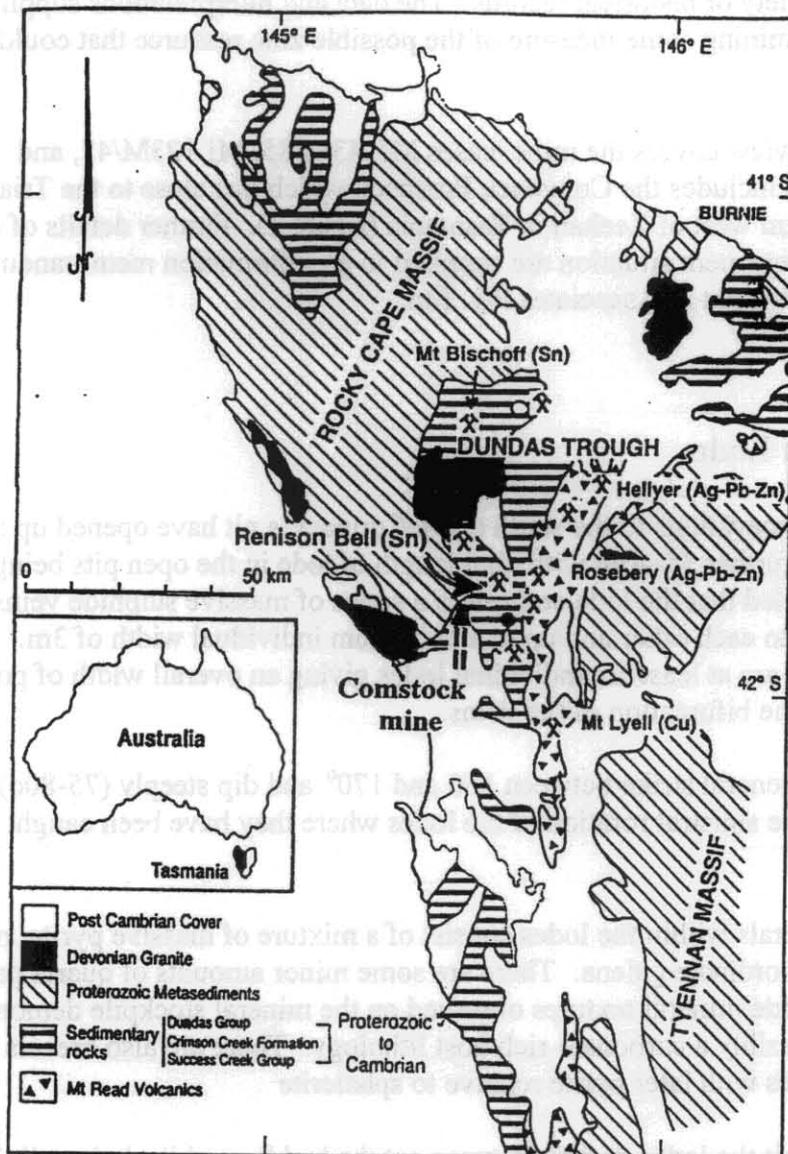


Figure 1. Regional geology of western Tasmania and the location of the Renison and Comstock mines. (Adabi 1999)

5 cm

contacts are shown on the map as being inferred. At the time of writing this report, no surface sampling of the in situ lodes has been undertaken.

The south end of Allison's Lode is truncated by the slightly south of east striking Bendall's Fault. It is difficult to judge the sense of movement on this fault but a preliminary interpretation is that it is a dextral wrench fault dipping steeply north with a normal component. The fault is believed to be part of the system associated with the Balstrup Fault. The actual true width of the fault is again difficult to judge but may be of the order of 25m. There also appears to be a second series of faults running approximately 070° and may be P-shears associated with the Bendall's Fault wrench system (figure 3). They appear to offset the veins with a sinistral movement and are identified by an increase in intensity of shearing and amount of graphitic material. This fault arrangement appears in contradiction with the fault timing that was proposed by Tear (2000) and as a result further structural study is required.

One of the veins within Bendall's Fault Zone appears to bend from just west of north to running parallel to the footwall of the fault and this is believed to be due to rotation within the fault zone. The eastern extent of this lode is uncertain, due to depth of weathering masking fresh rock in this part of the open pit, however it does appear to narrow. Historical data often seems to suggest that veins narrow and then widen out and vice versa.

Diamond drillhole SY019 (Western Metals) aimed at testing at depth the Allison's Lode. Unfortunately it passed through Bendall's Fault prior to its estimated intersection point of the lode. The hole did record narrow widths of vein style sulphide mineralisation eg 2.2m at 2.9%Zn and 2%Pb from 238.1m, also 0.2m at 5.4% Zn and 4.1%Pb from 329.9m. These intercepts indicate is that vein style mineralisation can exist at vertical depths of $>200\text{m}$. Due to the complex nature of the geology it is difficult to say if either of these intercepts represents the Allison's Lode at depth.

The far eastern wall of the open pit shows a cross section of Bendall's Fault as being represented by a zone of contorted graphitic shales/phyllite with localised areas of sulphide mineralisation, mainly rotted pyrite and minor sphalerite. However at the northern end of this section there exists a 4m wide pyrite breccia body seemingly parallel to the strike of the fault. This breccia consists of a partially rotted pyrite matrix with quite angular clasts of light grey/brown carbonate material. There are some minor amounts of rotted dark brown/grey material that is taken to be weathered sphalerite/galena. This breccia appears similar to some of the gossan zones seen elsewhere on the property, particularly at the Susannite Mine where weathering has caused hematite to replace pyrite in the breccia matrix that encases the angular, altered carbonate clasts. If Bendall's Fault was to continue eastwards on its present line it would pass very close to these breccias at the Susannite.

South of Bendall's Fault the geology of the new excavation shows a sheared, possibly conformable contact between rotted quartz-rich carbonates (probably silicified limestone) and heavily contorted graphitic, black phyllite. The stratigraphic position of this contact is thought to correspond to the basal contact of the upper carbonate unit (Posd) as defined in figure 4. This upper carbonate unit overlies a very graphitic black phyllite and is folded into a NW striking anticline possibly slightly overturned

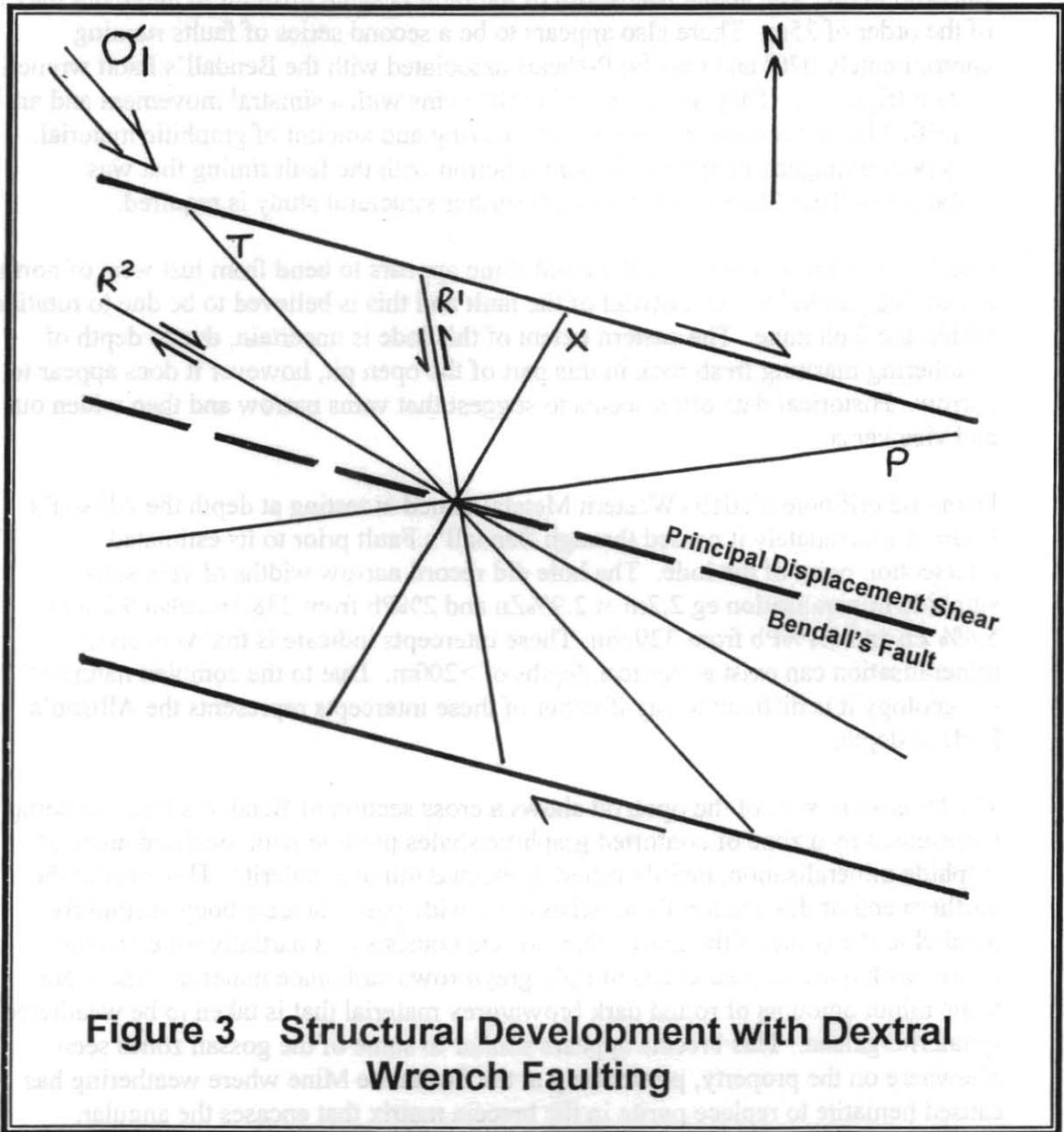


Figure 3 Structural Development with Dextral Wrench Faulting

5 cm

...the section of the pit... the lateral... several masses...
 ...placement... were noted up to 1m in size, but seemingly...
 ...on this contact, native silver contents can...
 ...progressed to its current state a 2m...
 ...was uncovered at the entrance to the...
 ...another lode. Relating to...
 ...is possible that this is the Comstock. The lode also referred to as...
 ...and Liberty's Lode.

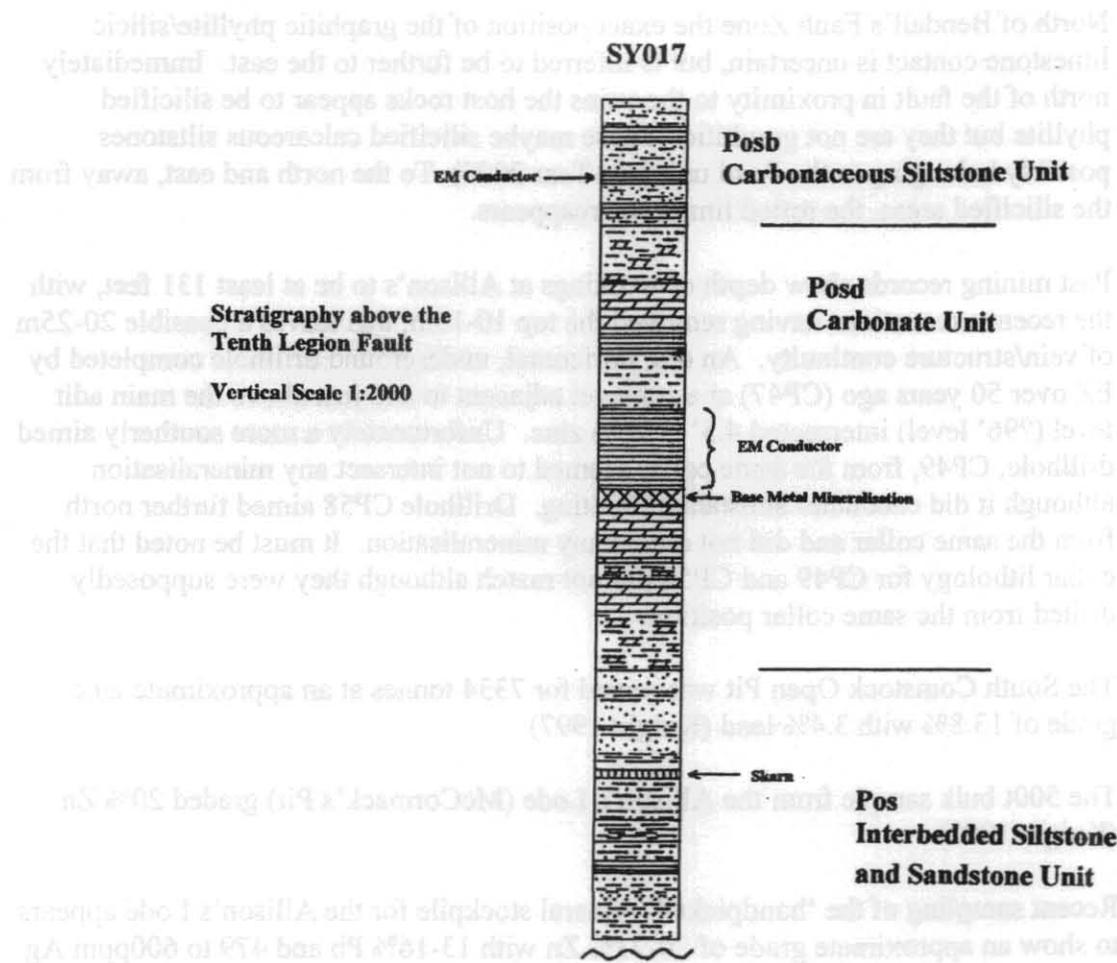


Figure 4

**Stratigraphic Section for the Oonah Formation,
 Comstock Prospect, South of the Balstrup Fault**

5 cm

(as seen in the decline to the pit). Near the base of the rotted limestone several masses of silica and pyrite replacement(?) lenses were noted, up to 1m in size, but seemingly with no base metal mineralisation. Locally on this contact, native silver coatings can be found on the phyllite planes. Before mining progressed to its current state a 5m wide patch of rotted dark grey clay material was uncovered at the entrance to the decline. It is suggested that this might represent an another lode. Referring to historical maps it is possible that this is the Comstock 2nd Lode also referred to as Watson's Lode (and Flaherty's Drive).

North of Bendall's Fault Zone the exact position of the graphitic phyllite/silicic limestone contact is uncertain, but is inferred to be further to the east. Immediately north of the fault in proximity to the veins the host rocks appear to be silicified phyllite but they are not graphitic. These maybe silicified calcareous siltstones possibly belonging to the Posd unit (see Tear 2000). To the north and east, away from the silicified areas, the rotted limestone reappears.

Past mining records show depth of workings at Allison's to be at least 131 feet, with the recent excavations having removed the top 10-15m, this leaves a possible 20-25m of vein/structure continuity. An old, horizontal, underground drillhole completed by EZ over 50 years ago (CP47) at a sublevel adjacent to and just above the main adit level (?96' level) intersected 4.5' at 20% zinc. Unfortunately a more southerly aimed drillhole, CP49, from the same collar seemed to not intersect any mineralisation although it did encounter substantial faulting. Drillhole CP58 aimed further north from the same collar and did not obtain any mineralisation. It must be noted that the collar lithology for CP49 and CP58 did not match although they were supposedly drilled from the same collar position.

The South Comstock Open Pit was mined for 7334 tonnes at an approximate zinc grade of 13.8% with 3.4% lead (Knight 1997)

The 500t bulk sample from the Allison's Lode (McCormack's Pit) graded 20% Zn (Knight 1997).

Recent sampling of the 'handpicked' mineral stockpile for the Allison's Lode appears to show an approximate grade of 20-23% Zn with 13-16% Pb and 479 to 600ppm Ag (Heath 2000). A rough estimate of the tonnage present in the stockpile at the middle of May 2000 is about 1500 tonnes (20 by 25m by 1m at a density 4 tons/m³ with a discounted 30% expansion factor for mined material).

It is also important to note that some of the massive pyrite actually can grade up to 10% zinc and therefore should not be regarded as totally barren. However it must be re-iterated that no systematic in situ sampling has been done on the Allison Lodes and thus there is no real measure of the dilution factor, particularly the inter-vein material. This would be very important if the operation was to become an underground one.

3. Other Mineral Lodes

A review of historical data for the Comstock area was made to try and better define the exact locations of lodes mentioned in the old text. The reports of Twelvetrees, Waller, Blake, Blisset and Williams et al were reviewed.

Twelvetrees provided the most comprehensive account of the Comstock field ably supported by Waller. Twelvetrees provided a map that attempted to show proven and inferred lode positions. This map has formed the basis for figure 5. The criterion for a proven lode was that its line could be traced on surface by shallow prospecting trenches (often into weathered material). It does appear however, that often Twelvetrees was reporting what was said to him by optimistic miners rather than what he could actually see or measure, in particular silver grades. From these reports, some recent mapping and modern day resource definitions, it is possible to propose a more realistic picture of the length of some of the lodes:-

Lode Name	Length	Max width
Comstock	500m	50 foot zone of veining
Boss	500m	Up to 19 feet
Allison's	180m	Up to 25m zone
Susannite	2 lodes each 300m	Up to 16 feet
Britannia	Complex zone ?stockwork	Up to 32 feet

The author advises that the above figures are felt to be conservative estimates. Twelvetrees suggests at 6km of proven lode within the area and a further 3.4km of inferred lode. These figures do suggest some level of confidence of mineral continuity for lodes of the Comstock Field. The author's experience of vein systems suggests that what can be mapped in plan can often be representative of what may be seen in section with a similar level of continuity. It is suffice to say that the depth limit to the Comstock veins is unknown but could be of the order of 100's of metres (see Western Metals drilling 2000). A major complicating issue is the effects of any flat lying faults that may exist in the area.

Translating Twelvetrees 'Sketch Map' into a modern map is fraught with distortions and scaling errors. The estimated positions of certain lodes in figure 5 may have an error of up to 40m and some of the location descriptions in the old text are ambiguous. A best-fit attempt was made with the data available.

4. Conclusions

Allison's Lode

- The Lode appears to be a complex zone of multiple, massive sulphide veins, giving a zone up to 25m wide in places.
- Sampling of the high grade zinc mineralisation from these veins is of the order of 20-23% zinc. Approximately 1500t of this material lies within a 'handpicked' stockpile. Another 500 tons of similar grade material were previously mined (McCormacks Pit)
- A total of 80m of strike length is exposed for the lode with seemingly a consistent grade of 20%Zn. An initial estimate of depth continuity from surface of the lodes based on recent mining is at least 10-15m with the optimism of at least a further 10-15m.

- There is no measure of grade of the inter-vein material but visual inspection suggests $\ll 1\%Zn$.

- The lode is truncated in the south by Bendall's Fault with some of the lodes running parallel to the fault. The northern extent is not known but is assumed to be at least the Balstrup Fault. This gives a potential lode/lode zone strike length of 180m to at least a depth of 30m with a variable width of 1.5m to 25m. There is some indication from recent drilling that vein depth could be in the order of 100's of metres. Complications may arise from the complex structural geology of the area and multiple phases of faulting.

Other Property Lodes

- Twelvetimes identified nearly 10km of proven and inferred lode continuity in the Comstock area. Width of lode ranged from a few inches to nearly 50 feet within relatively shallow depths (<30m).
- The author suggests a more conservative figure of 2km of 'proven' lode only and then it may not necessarily show high grade continuity. This reduction in length is due to the complex geology of the area and a more rigorous application of modern resource definitions
- Veins generally strike NNW or NE except at Britannia where there is a more random orientation to the mineralised veins.
- Better zinc grades were reported from the west of the property eg Comstock, Allison's and the Boss Mines.

5. Recommendations

Allison's Lode

It is important that a resource figure be identified for the Allison's Lode. This must take priority over any further exploration work on the property. This work should consist of channel sampling and diamond drilling of the lodes.

1. Once into fresh rock conduct channel sampling across the lodes. Channel sample lines should be at five to ten metre intervals and should pass well into background country rock. Each channel sample ideally will be lithologically controlled ie main lodes not sampled with wall rock. However a minimum sample length should be 0.5m. This will help to define some surface measure of the resource.
2. A diamond drilling program should be designed to test beneath the Allison's Lode and aim to provide a measure of vertical continuity of grade. Drillholes should aim to intersect the lodes at about 30-40m below the current surface and should be spaced 30m apart along the strike of the vein system. The pyrite breccia body within Bendall's Fault should also have a drilltest (core orientations must be measured).

Other Property Lodes

For the rest of the property it is suggested that accurate mapping of old prospecting trenches be undertaken in an effort to increase the confidence of Twelvetrees' lode continuity assertions.

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- 11. Comstock (Zeehan) Project ML's 123M/47, 43M/85 and 19M/95 Final Report Western Metals 2000

Appendix I
Surface Geology Observations 2000

Comstock Mine Lease - Site Visit Observations

16th - 18th April 2000

This brief site visit consisted of an inspection of the new excavations along strike from the Allison's Lode and a reconnaissance traverse across the southeast corner of the Mine Lease.

The recent excavations showed :-

- Bendall's Fault : a major structure striking 108° and dipping 67° N; at least 5m wide. 25m to the east rotted limestone appears in the hanging wall. Parallel to and within the fault at this eastern locality there exists a 2-3m wide small, massive sulphide body comprising sphalerite, galena and pyrite. A second subsidiary fault strikes 109° and dips 52° N.
- Small pods of high grade sulphide material seem to occur along Bendall's Fault 50m east of the old shaft (poor exposure of lode due to mine spoil).
- At the east end of Bendall's Fault patches and accumulations of tar/bitumen occur overlying the sulphide body. The Tar is Permian age (M. Bendall pers. comm.)
- Another contact south of the main shaft obliquely cuts the decline and contains textures that suggest a sheared lithological contact striking 012° to 043° with rotted limestone/skarn on the NW side and black, carbonaceous siltstones/shales on the SE side. Native silver occurs locally on shear planes within the shales proximal to this contact. Rafts of silica and pyrite in the rotted limestone also occur proximal to this contact - these bodies may possibly represent replacement textures at the contact between the limestone (Posd) and the overlying shales (Posb).
- Black carbonaceous siltstones/shales display heavily contorted bedding and abundant signs of shearing, and locally is very graphitic. Overall tendency for the beds to be relatively flat lying in the decline area.
- Depth of weathering of the carbonaceous siltstones is about 10-15m. The limestone is completely rotted to buff coloured sand.
- The main fault directions in the open cut are :-
 1. 106° dipping steeply to north
 2. 170° dipping $30-45^{\circ}$ to west (possibly another set dipping 35° to the east)

The SW part of the mine lease contains disrupted interlaminated siltstones and massive to thinly bedded sandstones.

Site No.	Station	Easting	Northing	Type	Lithology	Formation	Minerals	Alteration	Code	Bedding	Joint	Vein	Comments
1	980031	358587	5360453										View Point
2	980040	358674	5360327	O/C	Siltstones	Oonah	PY SP		Posb	007/27S		164/89W 128/80NE	Britannia trenches
3	980037	358740	5360322	O/C	Siltstones/Shales	Oonah	GO FE	SE CA	Posb				Poss Drillpads
4b	980042	358624	5360320	O/C	Siltstones	Oonah	PY QZ		Posb	053/50SW	003/70W 106/85N 064/89N W	114/80S 030/80SE	Britannia trenches
5b	980032	358534	5360446										Over hill
5	501259	358491	5360450	Float	Gossan		GO		Pog				RGC site 58500E 60450N
6	501246	358346	5360401	O/C	Silica	Oonah	HM		Posd				Old shaft
7	940150	358126	5360314	O/C	Siltstones & shales	Oonah	PY	SI	Posb		107/80N		Small open cut
8	930189	358000	5360390	O/C	Siltstones & sandstones	Oonah		SI	Posb	120/70N			Small mullock dumps
9		357689	5360777	O/C	Siltstones & shales		PY SP	SE	Posb	020/34E		151/85E 160/85E	Allisons Mine
10	950632	357642	5360472	O/C	Siltstones & shales	Oonah			Posb				Backfilled cutting
11	900608	357391	5360326	O/C	Phyllites	Oonah		SE	Posb	063/60SE	155/75W	153?	Comstock South
12	501006	357564	5359926	O/C	Mafic	Crimson Ck	GO		Eg		177/65E		
13	500998	357409	5360018	O/C	Cataclasite	Tenth Legion Fault		SI	Pos				Tenth Legion Fault
14	500949	357294	5360136	O/C	Mafic	Crimson Ck	GO	SI	Eg		179/40W		
15	500951	357297	5360184	O/C	Phyllites	Oonah			Pos	007/50W			
16	500953	357294	5360233	O/C	Phyllites	Oonah		SI	Pos				
17	990494	356909	5360253	O/C	Gabbro		GO		Eg				Trial Harbour Road
18	990499	357134	5360171	O/C	Cataclasite	Tenth Legion Fault		TA					Tenth Legion Fault
19	990501	357184	5360182	O/C	Phyllites	Oonah		GP	Pos	179/40W 033/63N W			
20	990502	357236	5360213	O/C	Phyllites	Oonah	GO		Pos	143/20SW			
21	990504	357226	5360298	O/C	Siltstones & sandstones	Oonah	Mica	GP	Pos	076/14N			
22	990506	357265	5360360	O/C	Phyllites	Oonah			Posb				
23	990511	357389	5360456	Float	Sandstone	Oonah			Posd				
24	910290	357787	5360626	Float	Silica	Oonah	GO QZ		Posd				Backfilled excavation
25	910286	357785	5360528	O/C	Gossan	Oonah			Pog				Topo High
26	910284	357784	5360478	O/C	Gossan	Oonah			Pog		107/85N 136/85SW 016/80W		Small excavation
27	830800	357883	5360450	Float	Gossan	Oonah	GO		Pog				Dump material
28	960079	357939	5360498	Float	Silica	Oonah	QZ DO		Posd				
29	930188	357998	5360417	O/C	Gossan	Oonah	GO	SI	Pog				
30	940147	358125	5360456	O/C	Phyllites	Oonah		GP	Posb	062/44NW			
31	930686	358186	5360436	Float	Silica	Oonah	GO		Posb				Small backfilled excavation
32	930681	358187	5360561	O/C	Silica	Oonah	GO		Posb				
33	930722	358076	5360638	Float	Sandstone	Crimson		WE	Ecla				RGC 58100E/60625N Excavation

Site No.	Station	Easting	Northing	Type	Lithology	Formation	Minerals	Alteration	Code	Bedding	Joint	Vein	Comments
34	980011	357933	5360739	O/C	Sandstone	Crimson Ck			Ecla		101/85S 126/72NE 020/80E		
35	980009	357839	5360773	O/C	Sandstone	Crimson Ck		SI	Ecla				
	500969	357463	5360920										?SY009 DDH
36	500967	357463	5360872	O/C	Volcs	Crimson Ck	GO		Ecnd				Steep hill in road
37	500962	357579	5360855	O/C	Volcs	Crimson Ck	GO		Ecnd				
38	990579	358274	5361276	Float	Mafic	Crimson Ck	PY QZ SP GA		Ecnd				Sylvester Mine
39	990580	358308	5361240	Float	Phyllites		GO		Ecla				Sylvester Mine
40		358288	5361297	O/C	Phyllites	Crimson Ck			Ecla				Sylvester Trenches
41	501411	357670	5360604	O/C	Recrystallised Limestone	Oonah		DOSI	Posd				Air Shaft and Drainage Ditch
42	920227	357712	5360494	O/C	Gossan	Oonah	HM		Posd				
43		357750	5360470	O/C	Graphitic Shale	Oonah	PYGP		Posb				SY019 Sump
44		357760	5360445	O/C	Graphitic Siltstone	Oonah	GP		Posb				
45	920223	357713	5360363	O/C	Graphitic Shale/Limestone	Oonah	GPPY	DOSI	Posd	178/80W	015/17W		Old Oceania Trench
46	840780	357635	5360294	O/C	Graphitic Shale/Limestone	Oonah	GO		Posd				1800's Deep Trench
47		357635	5360270	O/C	Calcareous Sandstone	Oonah		SI	Posd				Old Oceania Trench
48	900333	357507	5360271	O/C	Graphitic Shale/Limestone	Oonah	GP	DOSI	Posd	Flat Lying			Deep Water Filled Trench
49	950102	357459	5360267	O/C	Graphitic Shale/Limestone	Oonah	GP		Posd	160/47W			
50	900603	357388	5360345	O/C	Dolomite/Graphitic Shale	Oonah	GP	DO	Posd		093/90 fault		S. Comstock Open Pit
51	900607	357397	5360311	O/C	Dolomite/Graphitic Shale	Oonah	PYGP	DOSI	Posd				S. Comstock Open Pit
51b	900617	357430	5360280	O/C	Dolomite/Graphitic Shale	Oonah	GP	DO	Posd	054/90 029/30N W		?006/80W	S. Comstock Open Pit
52	970063	357356	5360537	O/C	Dolomite	Oonah		DO	Posd				Comstock Lode
53	870435	357261	5360752	O/C	Graphitic Shale/Limestone	Oonah	GPPYSPH	SIDO	Posd			174/52E	Big Open Trench
54	Open Cut	357607	5360494	O/C	Graphitic phyllite	Oonah	GP		Posb		029/50E		Shaft Excavation
55	Open Cut	357641	5360483	O/C	Graphitic phyllite	Oonah	GPSPGAP Y		Posb	008/47E	096/67N		Bendalls Fault
56	Open Cut	357609	5360478	O/C	Graphitic phyllite	Oonah	GP		Posb		106/47N 177/35E 090/65N		West wall of decline. Heavily contorted to Leanes
57	Open Cut	357537	5360432	O/C	Rotted limestone	Oonah		DO	Posd		121/50NE		
58	Open Cut	357559	5360445	O/C	Rotted limestone	Oonah	DOPYQZ		Posd		161/46W 188/62SW		
59	Open Cut	357568	5360452	O/C	Graphitic phyllite	Oonah	GP		Posb		155/30SW		

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Site No.	Station	Easting	Northing	Type	Lithology	Formation	Minerals	Alteration	Code	Bedding	Joint	Vein	Comments
60	Open Cut	357601	5360495	O/C	Graphitic phyllite	Oonah	GP		Posb		100/70N 093/32N 088/57N		As for 54 Bendall Fault
61	930208	357856	5359975	O/C	Bedded sandstones	Oonah			Poq	070/52SE			?? Any chance of being dolomitic
62				O/C	Siltstones and Sandstone	Oonah			Poq	139/80SW			
63	830816	357907	5359913	O/C	Sandstones	Oonah			Poq				
64	930803			Float	Quartz vein	Oonah			Poq				
65	830818	357998	5359828	O/C	Siltstones and Sandstone	Oonah			Poq				
66	830819	358024	5359820	O/C	Sandstones	Oonah			Poq				thickly bedded
67	501024	357933	5359697	O/C	Silicic andesite	Crimson Ck	QZGO		Ecnd				Porphyritic
68	501025	357958	5359698	Float	Goethite and fragments	Oonah	GO		Ecnd				
69	501026	357982	5359699	O/C	Rotted phyllite?	Crimson Ck	GOGA	SI DO?	Ecla				Old working + adit
70	501028	358032	5359694	O/C	Blocky Goethite	Crimson Ck	GO		Ecla				near deep shaft TLE?
71	501030	358081	5359691	O/C	Goethitic material	Crimson Ck	GOSP		Ecla				Old excavation TLE
72	791127	358239	5359990	Float	Thin bedded sandstone	Oonah	QZ		Poq				25m on 274° from site
73	940154	358130	5360125	O/C	Graphitic phyllite	Oonah	QZGASP		Posb				Old working - deep shaft 55m 50.5
74	940150	358126	5360313	O/C	Siltstone + pyrite	Oonah	GPPY	DO	Posb				Old excavation
75	930189	358000	5360390	O/C	Dolomitic limestone	Oonah	QZ	DO	Posd				Old workings
76	960080	357930	5360446	O/C	Gossan	Oonah	HM		Pog				o/c 30m on 290o from site
77	840756	357543	5360431	O/C	Rotted limestone	Oonah			Posd		14		West face of decline
78	Open Cut	357595	5360490	O/C	Phyllite	Oonah		GP	Posd	080/44N 165/65W			Bendall's Fault
79	Open Cut	357611	5360491	O/C	Phyllite	Oonah		GP	Posd	32 to 084			Bendall's Fault
80	Open Cut	357640	5360480	O/C	Sulphide vein/fault zone	Oonah	PYSPGA		Posd			70o dip N	Bendall's Fault
81	Open Cut	357600	5360553	O/C	Sandstone/phyllite	Oonah		SI DO?	Posd	016/32E			McCormack's Pit
82	Open Cut	357655	5360491	O/C	Fault Zone; phyllite and rotted limestone	Oonah	PY		Posd	30-50o to East	114/65NE 106/70N 126/74NE		Bendall's Fault East Wall Cut
83	Open Cut	357639	5360492	O/C	Fault Zone; silicified phyllite and rotted limestone	Oonah	PY	SI	Posd	177/53E	Shear 068/47SE		Bendall's Fault

Comstock Mine Lease - Site Visit Observations

13th to 14th May 2000

- Allison's Lode appears to comprise a series of parallel, crosscutting massive sulphide veins which are locally parallel to bed strike but cut across the bedding at an oblique but steeper angle. Most veins appeared partially weathered (awaiting subsequent mining)
- Pervasive silicification in immediate proximity to mineralisation occurs in more phyllitic-looking lithologies
- Mineralisation of the Allison Lodes consists of massive coarse grained pyrite, galena and sphalerite
- Individual lode widths range up to 3m wide in places. Whilst the lode zone appears, at time of observation, greater than 15m (approximately 50')
- Bendall's Fault truncates NNW striking mineralisation of the Allison's Lode
- The Bendall's Fault subsidiary faults have dislocated the vein system with a sinistral sense of movement. One of the veins appears to have been dragged into running parallel to the footwall strike of Bendall's Fault.
- The exact nature of the vein contacts with the wallrocks is generally obscured due to weathering and residual mine spoil.
- In some instances hydrocarbon material in the form of solid but soft tar is observed just above the sulphide lodes. This and the pervasive silicification is a good indicator of sulphide lodes lying beneath.
- The graphitic shales/siltstones south of Bendall's Fault are considerably contorted but generally appear to be flat lying possibly dipping to the east on the east side of the decline but appear to dip west on the west side of the decline. This probably represents a gently folded anticline with a NW hinge line and a NW plunge. Their contact with the overlying rotted limestone appears to dip west. The contact is assumed to be conformable but has evidence of shearing having occurred along it.
- The eastern most bench wall on level 292 contains a 4m wide breccia with limestone clasts in a matrix of coarse but partially rotted pyrite. There is some trace of rotted galena/sphalerite.

Appendix II
Mineral Lode Comments from Historical Data

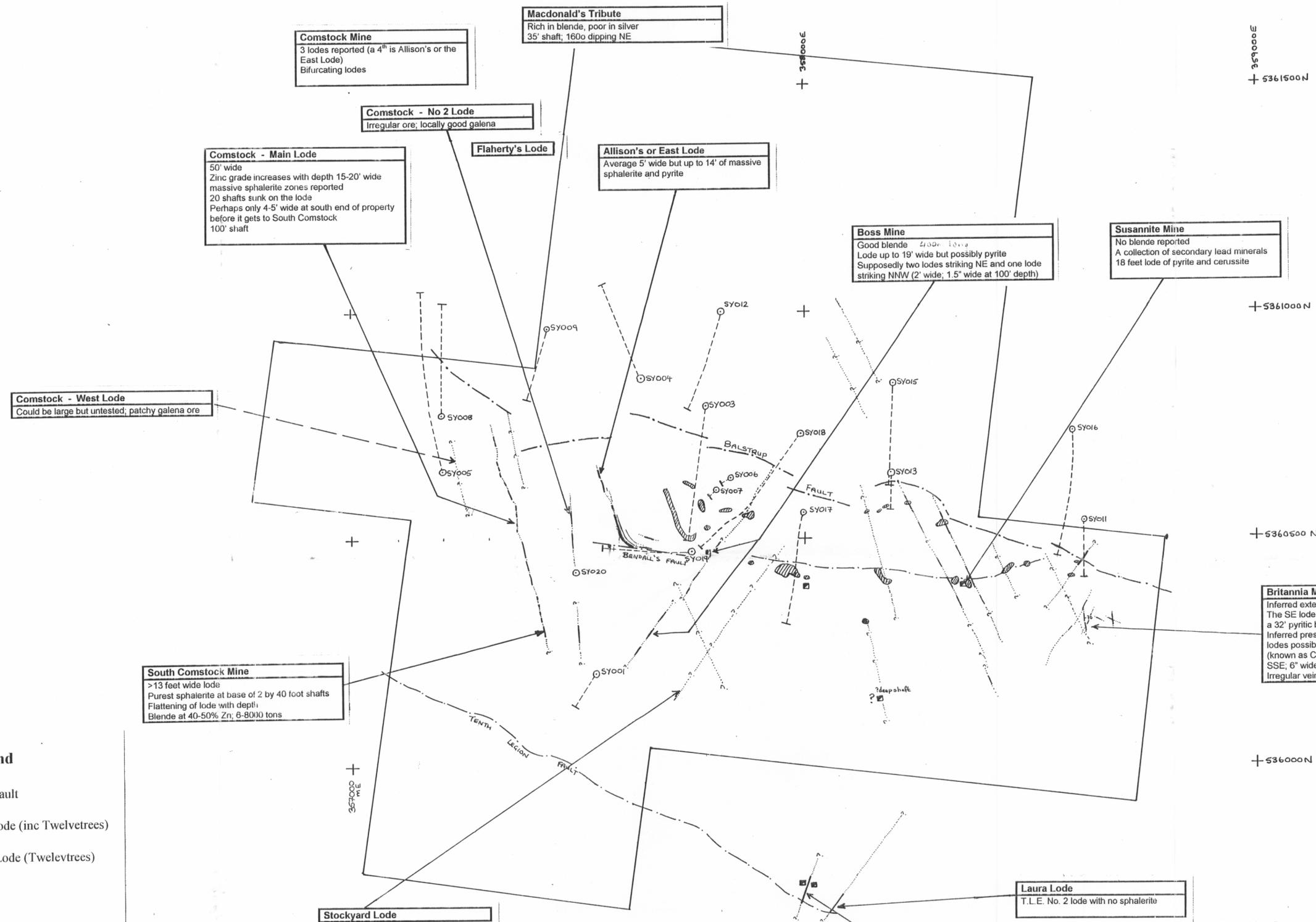
Notes from recent field visits

Deposit/Mine	Vein Orientation	Sulphide minerals
Britannia Mine	030/80SE	Massive sphalerite with pyrite
Britannia Mine	120/80NE	Pyrite with sphalerite and galena
Britannia Mine	114/80S	Pyrite vein
Britannia Mine	128/80NE	Pyrite vein
Britannia Mine	164/90	Pyrite with sphalerite
Britannia Mine	168/70E	Not known
Sylvester Mine	122/80S	Pyrite (also float massive sphalerite and pyrite)
Boss Mine	107/90	Massive pyrite
Allison Mine (x2)	151/85E	Massive sphalerite and pyrite
S. Comstock	153	Massive sphalerite and pyrite

Notes from past authors

Deposit/Mine	Vein Orientation	Sulphide Minerals
TLE	NNE (025)	Fissure veins of galena and sphalerite
Sylvester	NNE dipping east	Pyrite galena and sphalerite
Boss – Main Lode West Lode East Lode	NE NW NNE	Pyrite, galena and sphalerite Gossan Sphalerite pyrite and galena
Silver Stream	NE	Limonitic gossan with patches of sphalerite and galena; includes 1m at 9.3% copper
Susannite – West Lode East Lode	NW NW	Galena and cerussite Cerussite and other lead secondaries
North Comstock	N with a west dip	Pyrite and galena
Comstock and Comstock South - Main Lode - - No. 2 Lode	NNW (155) dipping east	High proportion of sphalerite with pyrite and galena Pyritic orebody with <u>bands</u> of galena and sphalerite
Allison's	NNW with an east dip	Massive sphalerite





Comstock Mine
3 lodes reported (a 4th is Allison's or the East Lode)
Bifurcating lodes

Macdonald's Tribute
Rich in blende, poor in silver
35' shaft; 160o dipping NE

Comstock - No 2 Lode
Irregular ore; locally good galena

Comstock - Main Lode
50' wide
Zinc grade increases with depth 15-20' wide massive sphalerite zones reported
20 shafts sunk on the lode
Perhaps only 4-5' wide at south end of property before it gets to South Comstock
100' shaft

Flaherty's Lode

Allison's or East Lode
Average 5' wide but up to 14' of massive sphalerite and pyrite

Boss Mine
Good blende
Lode up to 19' wide but possibly pyrite
Supposedly two lodes striking NE and one lode striking NNW (2' wide; 1.5' wide at 100' depth)

Susannite Mine
No blende reported
A collection of secondary lead minerals
18 feet lode of pyrite and cerussite

Comstock - West Lode
Could be large but untested; patchy galena ore

South Comstock Mine
>13 feet wide lode
Purest sphalerite at base of 2 by 40 foot shafts
Flattening of lode with depth
Blende at 40-50% Zn; 6-8000 tons

Britannia Mine
Inferred extension of the T.L.E. lodes
The SE lode reported as 10' wide within a 32' pyritic body
Inferred presence of two NNW parallel lodes possibly the Tasmanian Lodes (known as Carson's Lodes) further to SSE; 6" wide?
Irregular veins and masses of sulphide

Laura Lode
T.L.E. No. 2 lode with no sphalerite

T.L.E. Mine
110 foot shaft on west side of lode
Bottom levels go for 275' along vein strike
Best ore on the field

Stockyard Lode

Legend

- Normal Fault
- Proven Lode (inc Twelvetrees)
- Inferred Lode (Twelevtrees)
- Gossan
- Sulphide
- Diamond Drillhole
- Old Mine Workings/Shaft

Comments based on descriptions from Twelvetrees (1900), Waller (1903) and Blisset (1962)



Localised errors due to differences in map accuracy generally <40m



Oceania Tasmania Pty Limited

Comstock Zinc Prospect
Mineral Lode Map

1:5000 Jun 2000 S.J.Tear Fig. 5

Appendix 4

Potential Estimates of ore tonnages for the
Comstock lodes, Zeehan, Western Tasmania

Simon J Tear
Benmore Exploration Pty Ltd, 2001

**Potential Estimates of Ore Tonnages for the
Comstock Lodes, Zeehan, West Tasmania**

For

Oceania Tasmania Pty. Limited

By

Simon J. Tear

BSc (Hons), ARSM, P.Geo, MIMM, MAusIMM

Benmore Exploration Pty. Ltd.

(ABN 40 086 267 834)

**Benmore Exploration Pty. Ltd.
30 Alton Terrace
The Gap
QLD 4061**

06th February 2001

Qualifications and Disclaimer

Benmore Exploration Pty Ltd, a consulting company based in Brisbane, Queensland, prepared this geological report at the behest of Oceania Tasmania Pty. Limited. Simon Tear, the Principal Geologist, has a BSc (Hons) from The Royal School of Mines, London, U.K. and has over 17 years worldwide experience in the mineral exploration industry. He was Team Leader for Rio Tinto's Tasmanian base metal exploration program from 1995-1996. That program successfully explored some of the area around the Comstock Prospect, accounting for nickel and lead/zinc discoveries (see Allegiance Mining N.L. Annual Reports). The author also has experience in the complexities and vagaries of vein systems.

The information used in this report was supplied by Oceania Tasmania Pty. Ltd and comprises a mixture of open file data from the Mineral Resources Tasmania Library and Oceania Tasmania in-house data. In addition ten days' worth of site visits were made to the property. Benmore Exploration has relied upon and assumed without verification the accuracy and completeness of all information provided and cannot take any responsibility to guarantee its accuracy.

The Author confirms that he has no financial interest in the property or in Oceania Tasmania or any of its affiliates.

The JORC Code definition of a Competent Person precludes using this report in any public document in respect to the potential for resources on the Comstock Prospect.

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II	Waller's Map of the Comstock Lodes
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V	Other Significant Drill Intercepts

Potential Estimates of Ore Tonnages for the Comstock Lodes

1. Introduction

The purpose of this short report is to provide an estimate of what potential tonnages might be expected in the course of mining several zinc-rich lodes on the Comstock Property of West Tasmania (figure 1).

The potential resources given below do not comply with the Australasian Code of Reporting of Mineral and ore reserves ("The JORC Code") as prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and the Mineral Council of Australia (JORC). Resources given below were compiled from historical reports and data obtained from various sources. Some of the information is over 100 years old.

The calculation of estimated tonnages is simply done by taking the product of the strike length and the thickness of the lode and multiplying it by the depth for surface mining (usually <50m) or by the depth for underground mining. This volume is multiplied by a specific gravity of 3.5t/m^3 . This figure was chosen to take into account massive sphalerite (at an SG of 4t/m^3), interstitial low grade sulphidic/silicic material and the localised occurrence of denser lenses of massive pyrite. For steeply dipping features the reported widths are assumed to be true thicknesses.

In assessing potential for the area it is important to remember that the old mining (pre 1910) was for silver with the galena. At that time the market for zinc blende was small and economic mining of zinc at the Comstock was inhibited by poor infrastructure and outmoded mining techniques. It has been demonstrated that the old miners did not 'find everything' in the Comstock field eg. the new Allison's Lode. Twelvetrees 1900 reports that some of the mining was half-hearted and that the true potential of the field was not appreciated.

2. Geology of the Lodes

The lode mineralisation referred to on the Comstock property is geologically complex. The exact nature of the zinc mineralisation appears to fall into two, possibly three categories.

1. Vein or Vein Zone : The Comstock Lode and Allison's Lode
2. Carbonate replacement or skarn-type : The Boss Lode
3. Pyrrhotite-rich skarn replacement : The Balstrup Fault mineralisation
(Item 3 in the list is perhaps a variant on item 2.)

In past literature the old lead mines refer to massive sphalerite occurring in 'fissure lodes'. Recent excavations at Allison's Lode show anastomosing veins of high grade massive sulphide mineralisation intermixed with low grade sheared and silicically altered sediments. The author proposes that these two lithologies combine to give a 'vein zone'. As a result of this style of mineralisation continuity of individual sulphide masses will be poor but the vein zone continuity will be very good. This can account for the variability in grade of the lode system. It is more important more to prove/infer the continuity of the vein zone rather than individual veins or pods. The structural nature of the lodes may also imply the possibility of plunging ore shoots within the overall vein zone and this can account for good surface intersections (eg Allison's Lode channel sampling; see Summons report in appendix III figs.3 & 4) with seemingly poor sulphide development beneath eg drillhole SY021. The Author observed the same phenomena when working on an economic gold vein system in Northern Ireland. where the incongruence was exacerbated by limited drilling (figure 2). Thus in calculating possible tonnages for the Comstock Lodes a significant factor is the establishment of vein zone/lode continuity to give the strike length figure for calculations. In most instances this will rely on previous reports on the old mining and the mapped extent of workings eg Waller 1898, Twelvetrees 1900, Blake 1938 and Blisset 1962

It is the aim of the author to provide a more detailed explanation of the geology of the Allison Lode at a future date.

A brief review of core from the Balstrup Fault mineralized zone, Western Metals drilling and Oceania's drilling has established that some of the zinc mineralisation occurs as replacement of the carbonate host rock. It is uncertain whether this is stratabound replacement or cross cutting structurally induced replacement. In either case identifying a favourable intersection of structures and host lithology may offer substantially greater amounts of mineral tonnages eg the intersection of 'vein zones' with the Balstrup Fault.

The aim of the above descriptions is to move the mindset away from a the single sulphide vein style of mineralisation at Comstock towards a larger, mineralised system associated with significant structure(s) ie a vein zone. In addition this opinion the author is reminded of the geographic coincidence between the Lawn Hill Mineral Field (57 vein structures) and the large stratabound Century Zinc Mine in NW Queensland. The stratabound orebody has yet to be found at the Comstock.

3. Notes on the Lodes

The following notes expand on the calculations for Table 1

The Balstrup Fault

The figures used by RGC and Western Metals are quoted and the Author has not checked them (figure 3 and appendix I). It is important to note that the drill spacing is very large and that the current resource could just be described as an inferred resource.

The additional surface potential maybe reduced if there is serious depth depletion by weathering of the zinc material eg drillholes SY006 and SY007 and the RGC costeans.

The SG figure used in the calculations is unknown

The Main Lode (figure 4 and appendix II)

The lode at the South Comstock Pit is reported to have been 50' wide (Blisset) several wide intersections were recorded with high grade zinc values. Based on the data available the lode was divided into to two sections to account for variable widths reported and hence different tonnage sections. There is still reports of substantial zinc mineralisation in the floor of the open pit at South Comstock. As a result this Middle Section has a greater thickness than the Northern Section.

At the northern end of the Main Lode historical records and recent Oceania trenching appear to show that the 'vein zone' at Whitlaw's Shaft appears to be very much wider than normal with estimates of a 50m wide zone. Waller believes that the lode splits in to many lodes at this northern end. There are no available assay values for this work but there are thin sulphide veinlets present within brecciated carbonate. Thus the potential for this area is unknown and is not included in the estimates. The distance to the Balstrup Fault from the Pothole, which has 8' of massive blende, is about 40m

There is a report of a tunnel coming in from the Tramway south of the South Comstock Pit with references to small sulphide veins. If this were to join up to the South Comstock Pit an additional 266m of strike length is available for assessment.

Allison's Lode (figure 5 and appendix III)

The mined numbers are based on recent extractions. The width of the vein zone appears to be increasing towards the Balstrup Fault. However problems seem to occur with the variation in grade and/or mineralised widths between the drillholes and the channel traverses (see channel sample traverse results in appendix IV and drillhole intercepts in appendix V). This suggests plunging ore shoots and thus the width and grade figures have been downgraded from the channel sample work. It must also be noted that channel sample traverses B and D did not cut across the complete width of the vein zone.

Table 1 Potential Estimates of Ore Tonnages for the Comstock Lodes

Lode	Length (m)	Average Width (m)	Depth (m)	Tonnage (SG 3.5) tonnes	Estimated Zinc Grade
Main Lode					
North Section	293	2.74	50 (5-55m)	140,494	8%
Middle Section	253	6.1	50 (5-55m)	270,076	8%
South Section	266	?	?	?	?
			Total	410,570	8%
Balstrup Fault					
Underground					
Main Section	1000	4.03	400 (50-450m)	6,125,600 (RGC)	5.5%
	1000	4.03 (assumed)	400 (assumed)	5,100,000 (Western Metals)	4.1%
Main section : High Grade	500	6.5	90 (20-110m)	2,800,000 (Western Metals)	8.6%
Possible surface mineral	1000	5	45 (5-55m)	787,500	5%
			Possible total	6,287,500	
Allison's Lode					
Vein System	215	15	50 (20-70m)	564,375	12%
Vein System	110	15	15 (5-20m)	86,625	12%
Mined	95	15	15 (5-20m)	74,812.5	12%
			Total	725,812	
Bendall's Fault					
Outcropping Lode	50	2.5	50	21,875	8%
Inferred to the Boss Mine	130	2.5	50	56,875	
			Total	78,750	
Boss Lode					
Folded stratabound	370	5.5	50 (5-55m)	356,125	8%

820141

Lode	Length (m)	Average Width (m)	Depth (m)	Tonnage (SG 3.5) tonnes	Estimated Zinc Grade
Watson's Lode					
Inferred surface	250	4	50	175,000	3%
Possible underground	250	2	300	525,000	2%
			Total	700,000	
Susannite Lodes					
Eastern Lode	100m	3.7	40 (10-50m)	51,800	5%
Western Lode	100m	5.5	40 (10-50m)	77,000	5%
			Total	128,800	
Britannia Lodes					
East Lode	100m	3	50	52,500	8%

The author has been informed that Western Metals took a bulk sample for channel traverse A and that their result compared favourably with Oceania's. Inspection of the traverse by the author confirmed some of the assays but the poor state of outcrop after 4 months of West Tasmanian weather made it difficult to confirm other assay intervals. There is no obvious evidence for any zinc supergene enrichment although this possibility should be checked out.

Inspection of various cross sections appear to suggest that Allison's Lode may have some depth continuity eg SY003 at 387.9m (see appendix V). The intercept is narrow ie 2m but the structural complexity of the area makes 'joining the dots' with the surface mineralisation inadvisable. Problems also arise with confusion between the exact orientation and trace of the Allison's, Watson's and Boss Lodes. Nevertheless these intercepts do confirm that the mineralisation is not restricted to near surface occurrences, particularly away from the Balstrup Fault. A lot more drilling is required to confirm any resource and hence no tonnage figure has been ascribed for underground resources at Allison's and Boss areas.

Bendall's Fault (figure 6)

This mineralised zone appears at its western end to be sheared Allison's Lode caught up in Bendall's Fault. The lode maintains a line parallel to the Fault for 50m but the true width of the zone is difficult to ascertain with it possibly being up to 10m thick. However Bendall's Fault appears traceable to the east passing through the shafts related to the Boss Mine and thus it may be a separate lode. The tonnage estimate is based on running the lode to the Boss Mine. There is some speculation that this fault goes all the way to the Britannia Mine. In addition inspection of figure 7 suggests that there may be some expression at depth of the Bendall's Fault mineralisation, however no tonnage has been allocated for any underground resource.

Blake 1936, mentions an approximate ESE striking lode within cross cuts of the drainage adit west of Allison's Lode. Mineralisation seems as per Allison's but maybe this is a western extension of Bendall's Fault Lode.

Watson's Lode (or No.2 Lode)

The persistence of this structure is deduced from the plan of the old drives and the intersections recorded in drillholes SY019 and SY022 (figure 7). Unfortunately the level of mineralisation is weak in these two holes and hence the low value of the grade estimate. The underground resource figure looks too low to be able to sustain mining. However the concept of north plunging ore shoots with Allison-type dimensions may allow for a better chance of profitability underground.

The Boss Mine

The figures for the Boss represent a series of NW-striking lodes. There is the strong suggestion from the RGC costean work that the mineralisation is as stratabound skarn that has been folded in to anticlines and synclines (figure 8).

The trenching work identified significant lead enrichment (up to 5%Pb) associated with gossanous/limonitic material. Corresponding zinc values are low (<1%). This phenomena implies surficial leaching of mineralisation that may be of similar potential grade to Allison's Lode (see also the Sussanite Lode). Hence the zinc grade for the Boss (below weathering depth) is assumed to be the same as for the Allison's and Main Lodes.

Table 2 RGC Costean Results from the Boss Area

Interval	Pb %	Zn %	Ag ppm
Costean 1			
15mE to 21mE	1.9	0.04	199
33mE to 36mE	3.4	0.05	682
26mW to 34mW	4.9	0.86	101
75mW to 80mW	3.17	0.37	17
Costean 4			
65 to 69m	4.06	2.01	11
116 to 123m	5.43	0.37	63
171 to 175m	2.87	0.35	163

A big concern for the stratabound mineralisation at the Boss is that the depth of weathering is greater than normal (see figure 8) and that all zinc has been leached out. Although it must be noted that the Allison host rocks exhibit strong weathering but the lodes remain relatively unaffected.

Susannite Mine

Limited historical data precludes any confident definition of potential. Blisset (p202) refers to 2 parallel striking NW lodes, the Western and Eastern Lodes. The former was 18' wide consisting of pyrite and galena (and cerussite), the latter was 12' wide with cerussite in a "broad band of loose pyrite". The Eastern Lode was intersected in an adit 100' below surface. For potential tonnage purposes a nominal 100m of strike is inferred (could be more according to Blissett and Twelvetrees) with Blisset's printed width figure used as the average thickness. The cerussite occurrence may indicate a deeper weathering profile than normal and so the depth figure used in the calculations is put at 40m. As with the Boss the zinc grade is inferred to be the normal Comstock type ie 8% over a total vein zone width.

Britannia

Several lodes mainly striking NE and NW were recorded by Twelvetrees (p.47) including the East Lode, which had a 10' wide vein with 6' of massive sphalerite. A notional set of numbers is used to calculate a possible tonnage. Disjointed data for the Britannia Mine suggest at greater potential eg Blisset (p.171) cites a 32' wide pyrite body with erratic [ore] mineralisation.

4. Conclusions

The data available does allow for a conservative calculation of possible tonnages of potential ore material from the Comstock Property Lodes. Addition of the tonnage figures in Table 1 give an overall value of 8,740,057t the bulk of which comes from the Balstrup Fault mineralisation as identified by RGC and Western Metals (72%). An estimated grade for that overall tonnage figure is 6% Zn. However higher grade pockets do exist eg Allison's Lode.

Potential for ore grade mineralisation can easily be demonstrated at the Comstock property, the problem is with the nature of the mineralisation ie vein zones and the difficulty with proving up tonnages without having to actually mine in order to do so. Nevertheless the best potential lies with the vein zones intersecting mineralisation on the Balstrup Fault. There is already the observation that the vein zone at Allison's (and also the Main Lode) widens as it progresses north towards the fault.

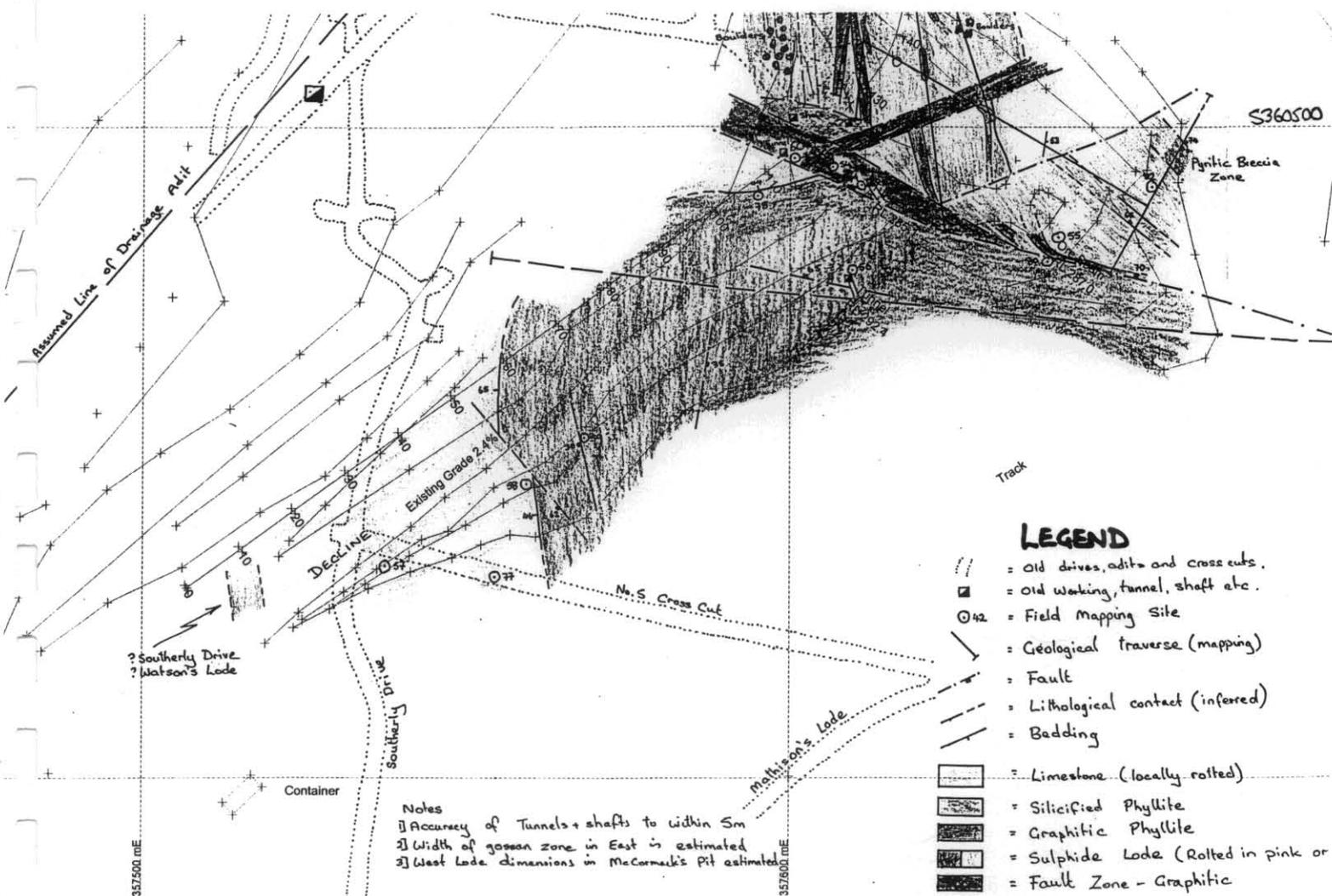
Some of the resources calculated here eg Balstrup Fault Allison's etc would make the inferred category under the JORC system. However the author is not deemed a Competent Person by the JORC definition and therefore before this data can be issued in a public document a Competent Person must sign it off.

5. References

1. Report on the Mineral District of Zeehan and Neighbourhood, W. H. Twelvetrees, October 1900
2. Report on the Iron and Zn-Pb Ore of the Comstock District, G. A. Waller, 1903
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13. Tasmanian Base Metals Project EL 42/87 incorporating ML 123M/47 and ML 43M/85, Zeehan, Mat 1995, prepared by RGC Exploration
14. Sylvester Mining Review by T. Elmer, Renison Goldfields Consolidated Pty. Ltd. For RGC Exploration
15. A summary Review of the Zeehan (Sylvester) Project, May 1993, prepared by RGC Exploration

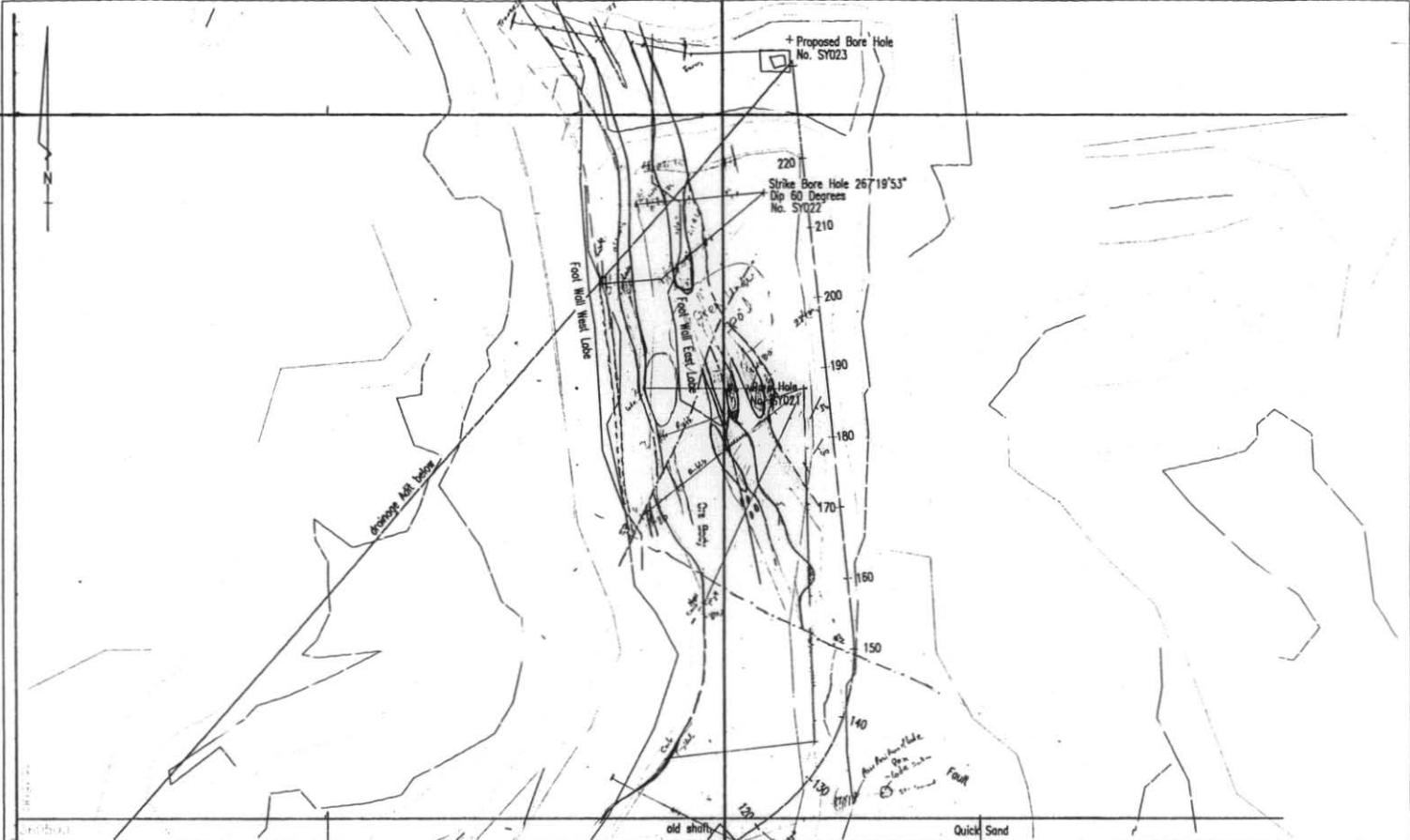
5 cm



LEGEND

- = Old drives, adits and cross cuts.
- = Old working, tunnel, shaft etc.
- = Field Mapping Site
- = Geological traverse (mapping)
- = Fault
- = Lithological contact (inferred)
- = Bedding
- = Limestone (locally rotted)
- = Silicified Phyllite
- = Graphitic Phyllite
- = Sulphide Lode (Rotted in pink or ...)
- = Fault Zone - Graphitic

Notes
 1] Accuracy of Tunnels + shafts to within 5m
 2] Width of gossan zone in East is estimated
 3] West Lode dimensions in McCormack's Pit estimated



NOTES :
 All measurements are in metres
 Co-ordinates are A.M.C.
 Datum for Levels is A.H.D

Northern Surveying Services

495 Melrose Road , Eugeneva - 7310
 Telephone (03) 6427 2785
 Fax (03) 6427 3040
 Mobile 0418 141 244

Trial Harbour Road, Zeehan, Tas.
 existing northern pit & workings
 Workings at 1st of September 2000

Drawn : J.A.T | scale 1:500 | Date: 7/9/00

Drawing No.
CSTOCK-1(g2)

J. Edwards

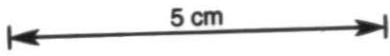


Figure 1

Please refer to
Comstock Zinc Prospect Mineral Lode Map

Appendix 3 of Main Appendices

Aspects on the mineral lodes on the Comstock Prospect
Zeehan , West Tasmania

Simon J Tear
Benmore Exploration Pty Ltd, 2000b

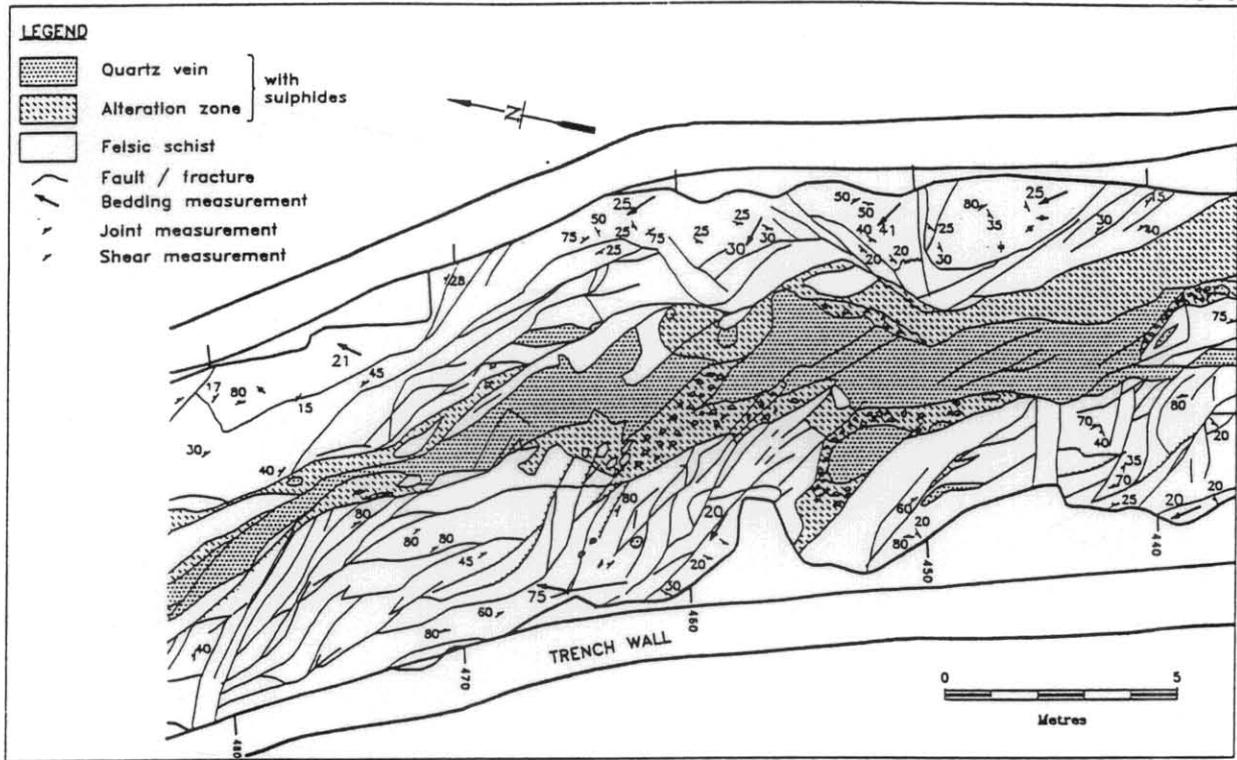
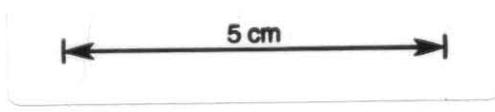


Figure 6. Geology of part of the Kearney excavation trench.



The Lack gold deposit Cliff and Wolfenden

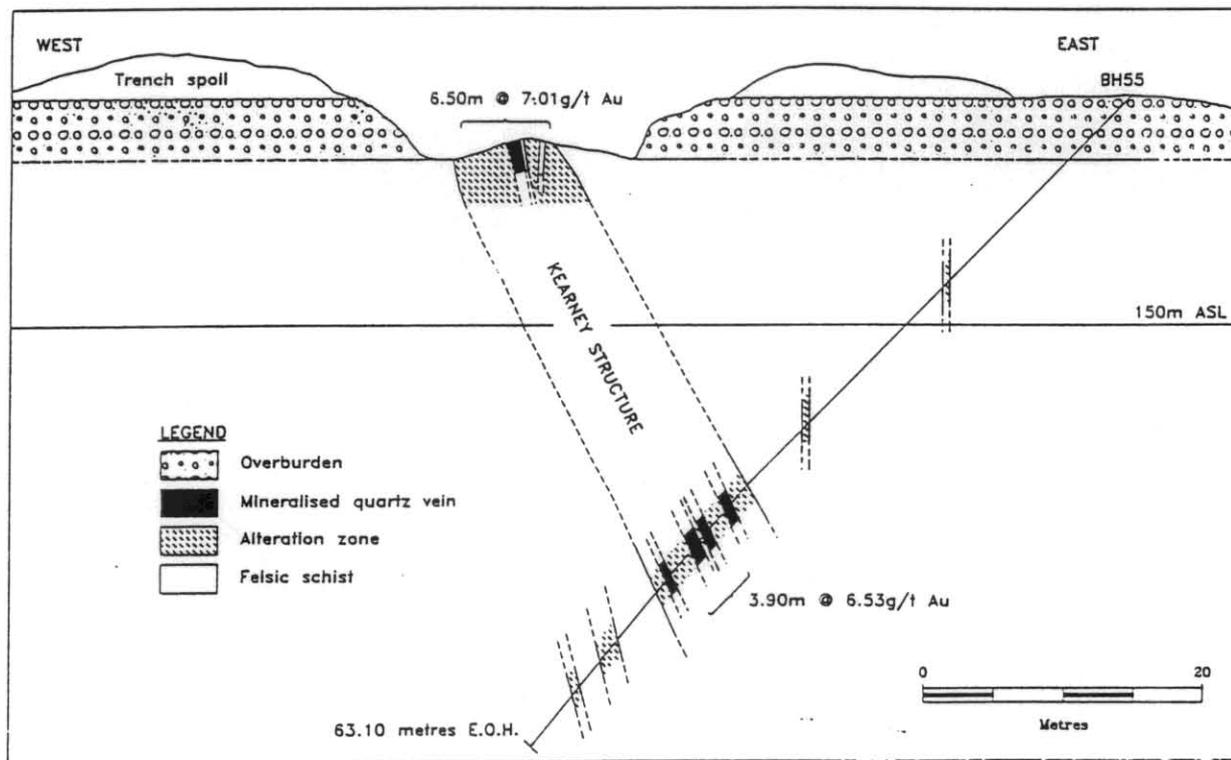


Figure 7. Section through the north end of the Kearney excavation trench.

Figure 2 : Diagrammatic Representation of a Gold Vein System

820150

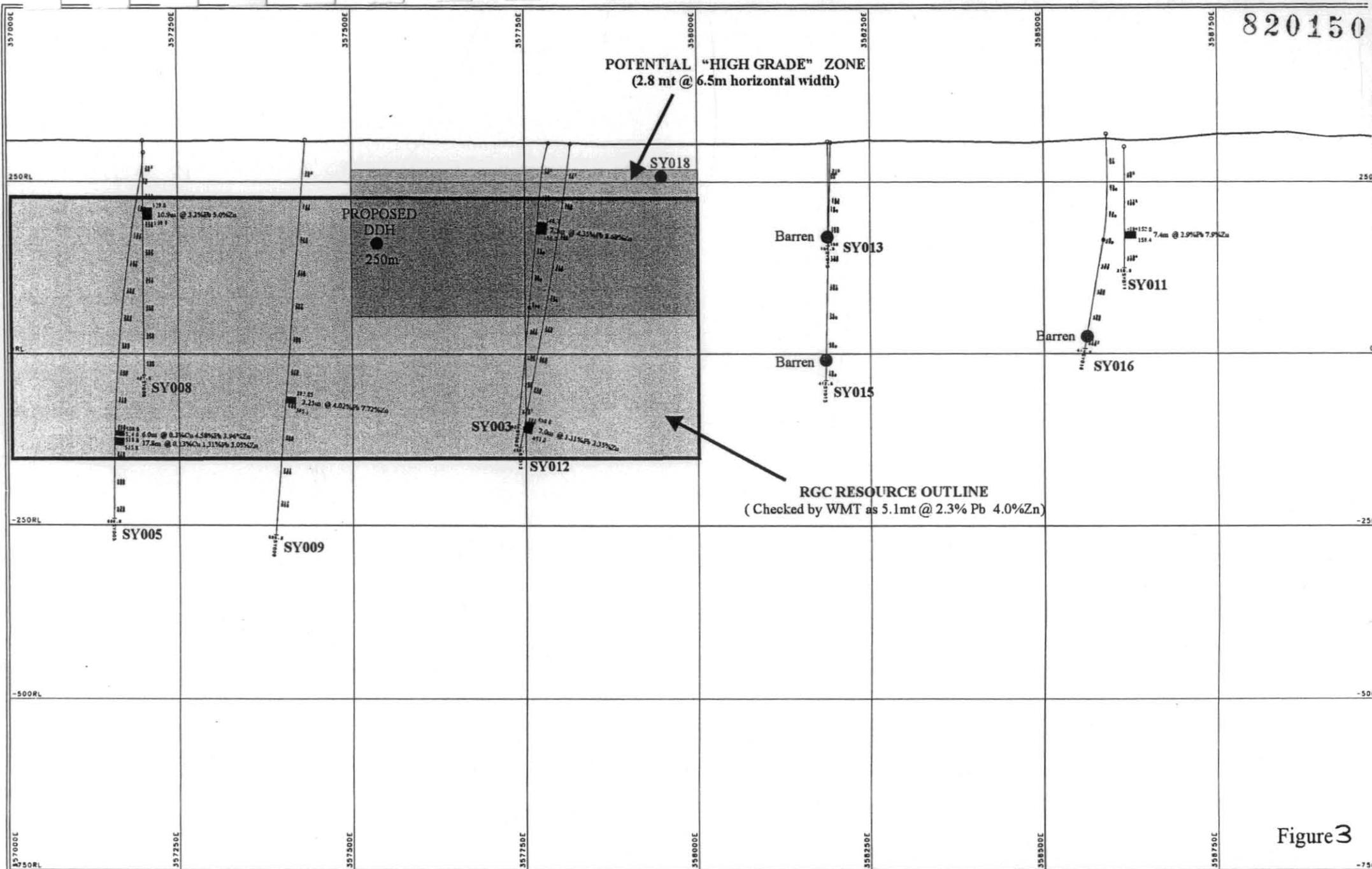


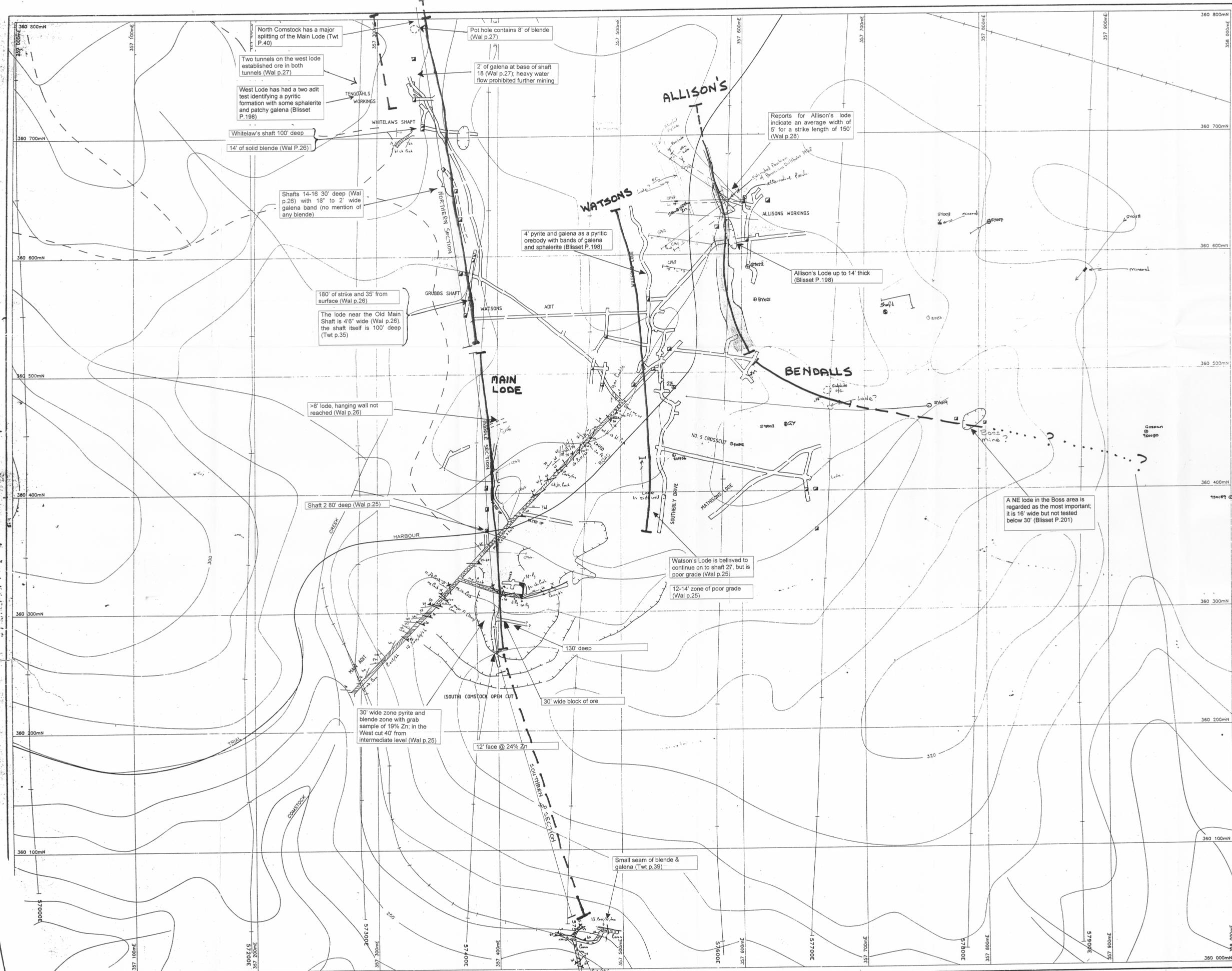
Figure 3

5 cm

DATE	DESCRIPTION	BY	APP	DATE	DESCRIPTION	BY	APP

SCALE	As shown
DRAWN	
CHECKED	
DESIGNED	
REVISION	
DATE	
PROJECT	

Western Metals Resources Limited	
Balstrup Fault Mineralisation Long Projection	REVISION 15/02/99



- = LORE LENGTH USED IN CALCULATION FIGURES
- = POSSIBLE LORE LENGTH (not used in calculations)
- = VEIN ZONE
- = Gravity (1999) Survey Station
- = Fault

Plans are derived from various Mine Plans and are approximate only.
 Legend as for 1:5,000 Geological Fact Map Sheet C.

5 cm

SHEET LAYOUT

SHEET 1	SHEET 2	SHEET 3
SHEET 4	SHEET 5	SHEET 6

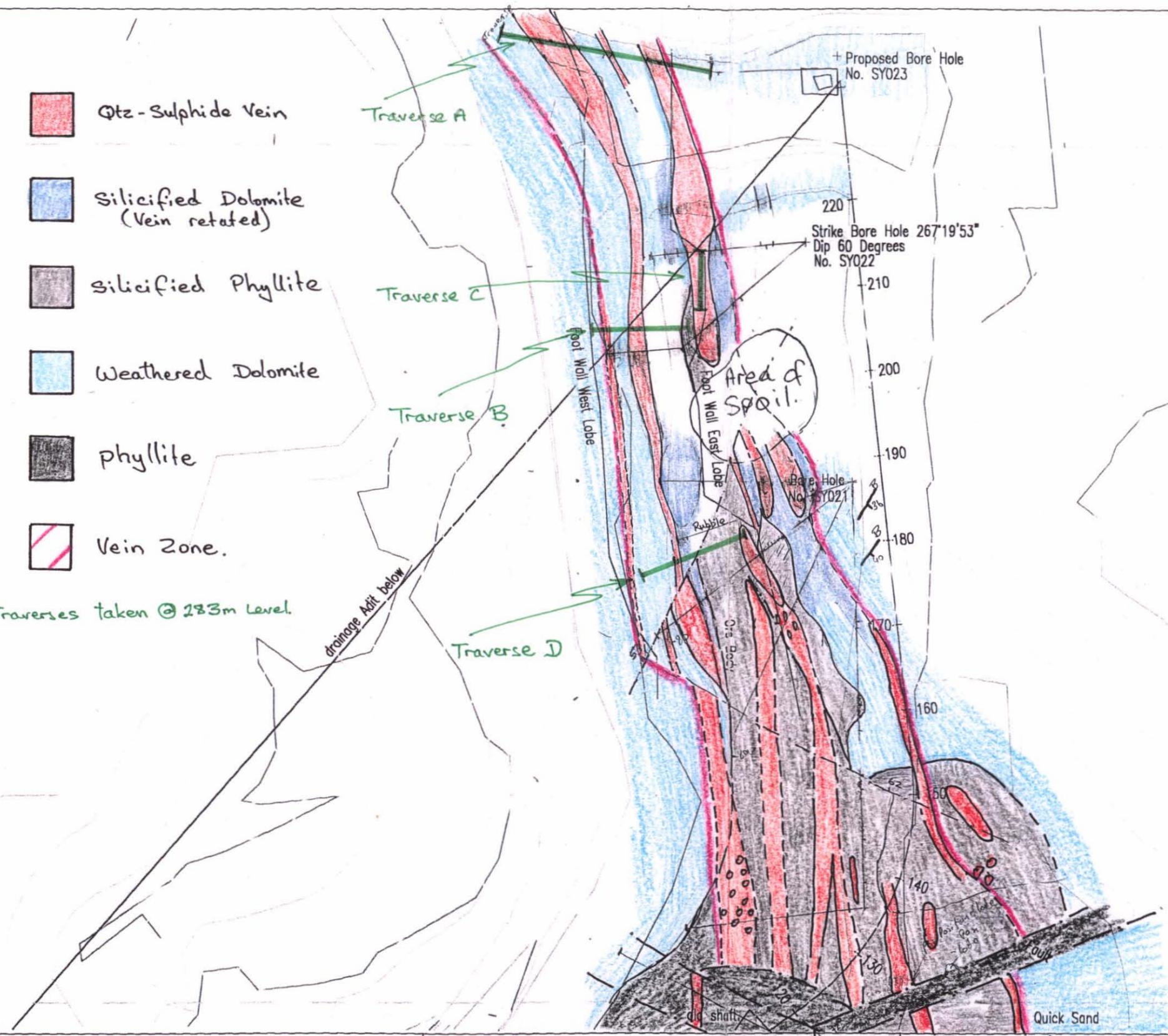
SCALE 1:1000 **Fig 4** PLAN 11

RGC EXPLORATION PTY. LIMITED INCORPORATED IN NEW SOUTH WALES	
COMPILED J.C.	ZEEHAN E.L. 42/87
DRAWN M.O.W.	FACTUAL GEOLOGY
DATE 21/3/91	OLD WORKINGS
CHECKED	
SCALE 1:1000	
DRAWING ID. 5521/1111	

5 cm

-  Qtz-Sulphide Vein
-  Silicified Dolomite (Vein related)
-  silicified Phyllite
-  Weathered Dolomite
-  phyllite
-  Vein Zone.

Note: Traverses taken @ 283m Level.



**Geology of the Allison's Lode
288-278m Level
Fig 5**

NOTES :

All measurements are in metres .
Co-ordinates are A.M.G.
Datum for Levels is A.H.D

Northern Surveying Services

495 Melrose Road , Eugeneria 7310
Telephone (03) 6427 2765
Fax (03) 6427 3040
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*Trial Harbour Road, Zeehan, Tas.
existing northern pit & workings
Workings at 1st of September 2000*

Drawing No.
CSTOCK-1(g2)
S.J.Tear Feb 2001

Drawn : J.A.T | scale 1:500 | Date: 7/9/00

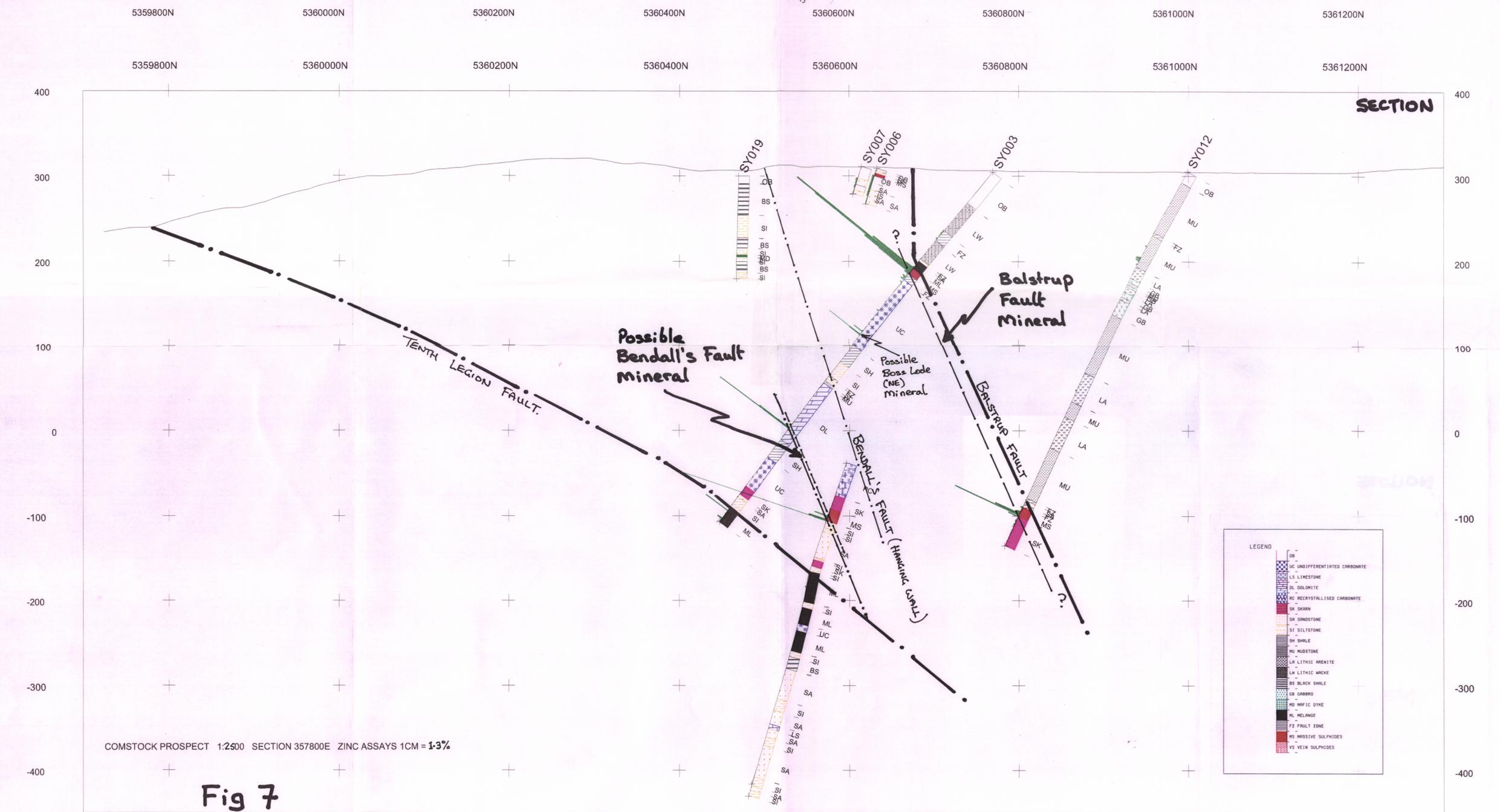
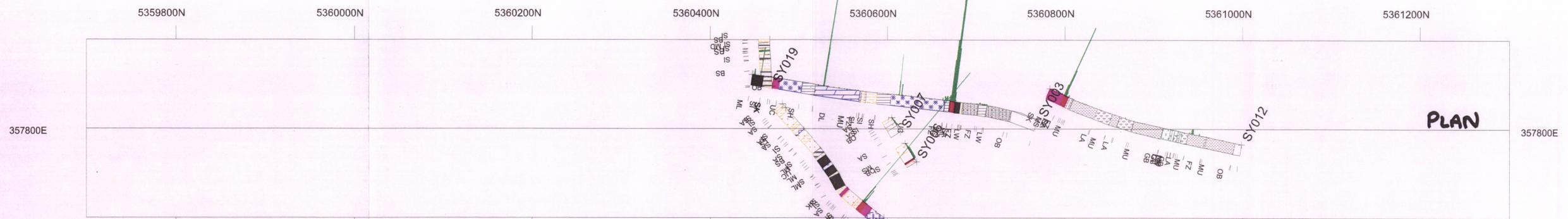
J. Edwards



- Line of Lode used in tonnage calculation
- Quartz-Sulphide Vein
- RGC Gossan
- ALLISON VEIN ZONE
- CHANNEL TRAVERSES
- MINERAL INTERCEPTS
- DRILLHOLE + TRACE
- FAULT

820153 Fig 6
**Detailed Geology
 Allison's and
 Boss Lodes**
 1:1000 Feb 2001 S.Tear

5 cm



COMSTOCK PROSPECT 1:2500 SECTION 357800E ZINC ASSAYS 1CM = 1.3%

Fig 7

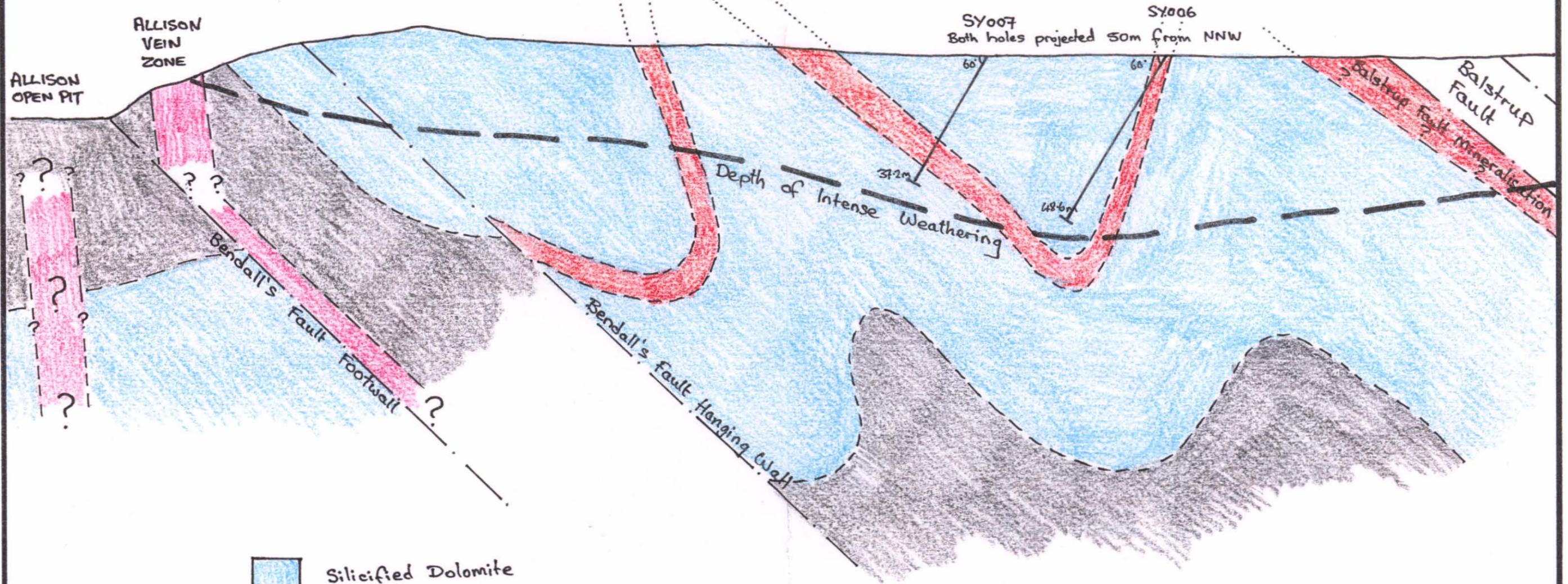
5 cm

5359800N 5360000N 5360200N 5360400N 5360600N 5360800N 5361000N 5361200N

SW

NE

Possible north plunge to Anticline towards Balstrup Fault.



- Silicified Dolomite
- Phyllite
- Gossan / Sulphide
- Vein Zone

820155 Fig 8

**COMSTOCK
BOSS MINE
NW LODGE GEOLOGY
SCHEMATIC SECTION**

1:1000 Feb 2001 S.J. TEAR

5 cm

Appendix I
Drillhole Intercepts used for the
Balstrup Fault Mineralisation

Grade and Thickness Calculations : Method 1 (RGC)

Drillhole	From	To	HT	HD	HB	ETT	Pb	Zn	Ag
SY003	148	158	10.2	50.8	187.5	8.76	3.26	6.41	40.4
SY005	507.4	525.8	28.4	57	353	5.75	1.9	2.97	18.3
SY008	129	139.9	10.9	52	0.5	3.28	3.68	5.81	25
SY009	378.7	397.1	16.4	73	197.3	9.83	0.6	1.06	8.5
SY0012	443.8	457	13.2	63	204.5	9.47	0.64	1.31	14.8
Overall Average						7.42	2.02	3.51	21.4

HT = Down Hole Thickness

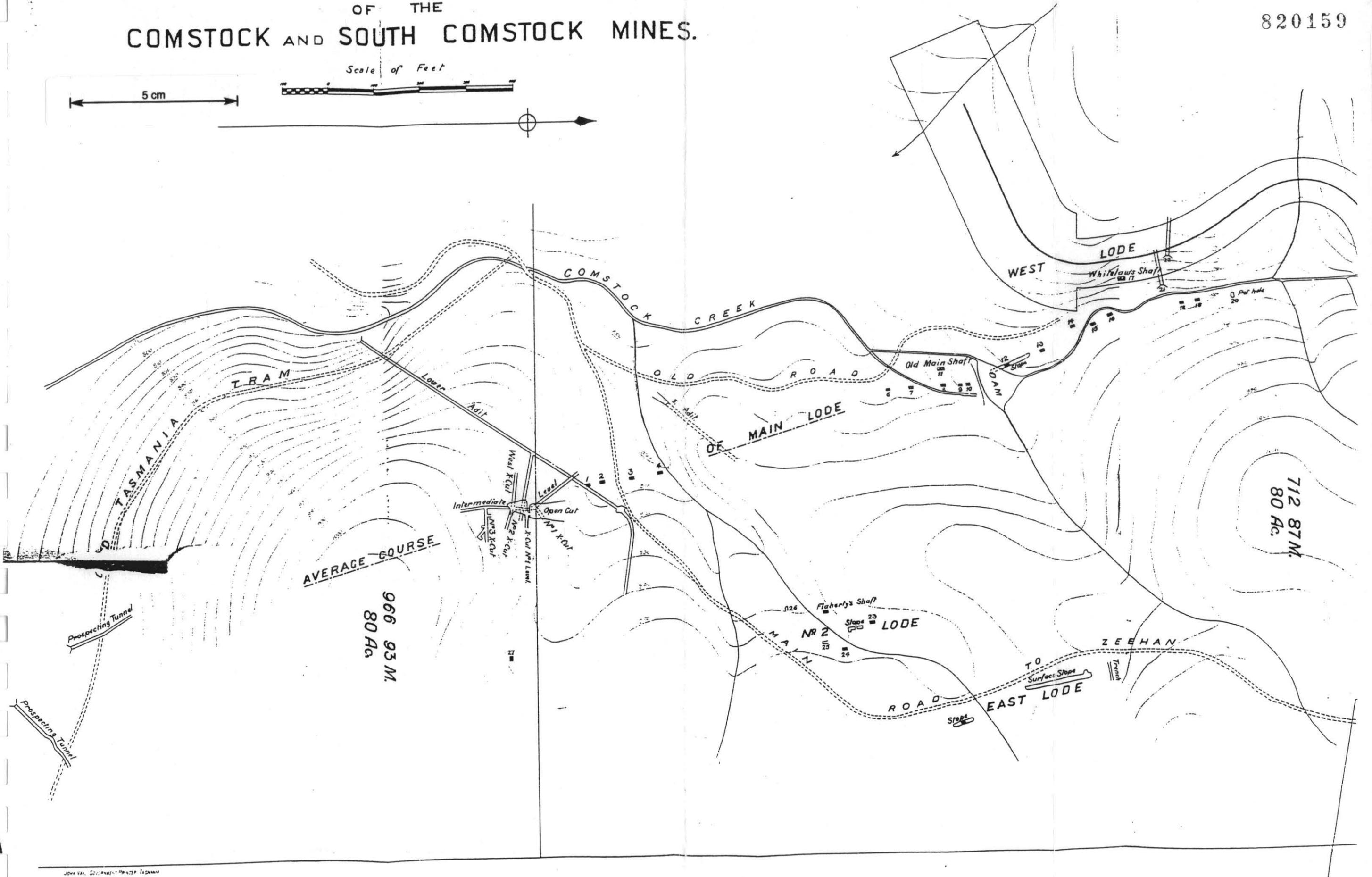
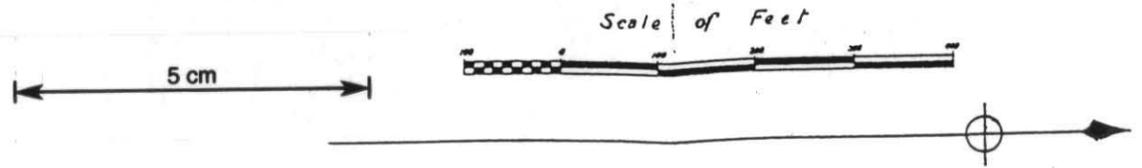
HD = Hole Dip

HB = Hole Bearing

ETT = Estimated True Thickness

Appendix II
Waller's Map for the Comstock Lodes

OF THE COMSTOCK AND SOUTH COMSTOCK MINES.



Appendix III
T. Summons Report and Figures

Ag-Pb-Zn MINERALIZATION

THE COMSTOCK GROUP OF VEINS

THE MINSTOCK TRIBUTE AREA (WITHIN CONSOL. ML123M/47)

ZEEHAN DISTRICT

WESTERN TASMANIA.

T.G. SUMMONS,
SUMMONS GEOSERVICES PTY. LTD.
NOVEMBER, 1983.

TO: DAVID O'CONNOR.
91 Steele St
Devonport 7310
Ph 004 248621

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C/. MINERALOGY	5/.
ORE RESOURCES	
COMSTOCK MAIN LODE	8/.
COMSTOCK NO. 2 LODE	11/.
COMSTOCK EAST LODE	12/.
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RECOMMENDATIONS	17/.
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} MISSING

INTRODUCTION

The Zeehan mineral field lies between the Heemskirk Granite and the town of Zeehan on the west coast of Tasmania. Between 1887 and 1913, approximately 42 mines on the field produced approximately 200 000 tonnes of lead (Pb), 2750 tonnes of zinc (Zn), and 27 000 000 ozs of silver (Ag), (840 tonnes).

Production from the Comstock mines. (Silver Stream, Slyvester, Comstock, Boss, Susannite, TLE and Swansea), located approx. 5km west of Zeehan was 3676 (1625) tonnes of Pb, 2670 (2100) tonnes of Zn, and 276, 421 (165,000) ozs of Ag, with the Comstock production figures shown in brackets.

Accordingly, the Comstock group of mines are characterized by sphalerite (Zn) rich ore, which is relatively galena (Pb) poor.

The Minstock group of properties include the Silver Stream, Comstock, Boss and Swansea mine areas; this report covers the geology, Ag, Pb, Zn, mineralization and Ag, Pb, Zn ore potential of the Tribute Area (held by Minstock Mining), within consolidated Mineral Lease 123M/47 (held by the Electrolytic Zinc Coy. of A'sia) over the Comstock area.

2/

REGIONAL GEOLOGICAL
SETTING

A. STRATIGRAPHY

The Comstock area consists of Late Proterozoic and early Palaeozoic sedimentary rocks forming the southwest flank of the northwest trending Heemskirk Anticlinorium. The appropriate section of the stratigraphic sequence is as follows:

Cambrian : grey/red mudstone, grey wacke and spilitic tuffs,
(correlate of the Crimson Creek Formation);

Eo Cambrian : quartzite, slate, dolomitic shale, spilite and spilitic
tuff, (correlate of the Success Creek Group);

Late Proterozoic : Donah Formation

Upper Unit : ? acid/intermediate volcanics, siltstone,
limestone, dolomite, and basal graphitic shales;

Lower Unit : quartzite and shale/slate.

Details of the distribution of these sediments are shown in Figure 1., from which it can be seen that the Comstock mines are situated in the Donah Formation. In addition, limited lithological data suggest the Comstock lodes are located in the upper unit of the Donah Formation.

B. STRUCTURE

The area has experienced several deformational events namely the Penguin, Jukesian, Tabberabberan and an un named post-Permian (? Tertiary) event. Major structure in the area are due to the Tabberabberan deformation which induced two phases of folding, resulting in main NW trending folds, superimposed on, or contemporaneous with, W-E and NE-SW cross folds. Associated faulting was orientated NNE, NE and WE. Probably Tertiary age structures are mainly block faults which strike NW and WE, and which essentially represent reactivation of older Tabberabberan faults (eg. Tenth Legion Fault).

? Tertiary movement along older faults appears to range from thrusting to high angle reverse faults. The Tabberabberan (M. Devonian) and ? Tertiary deformations are expressed in the statistically preferred directions.

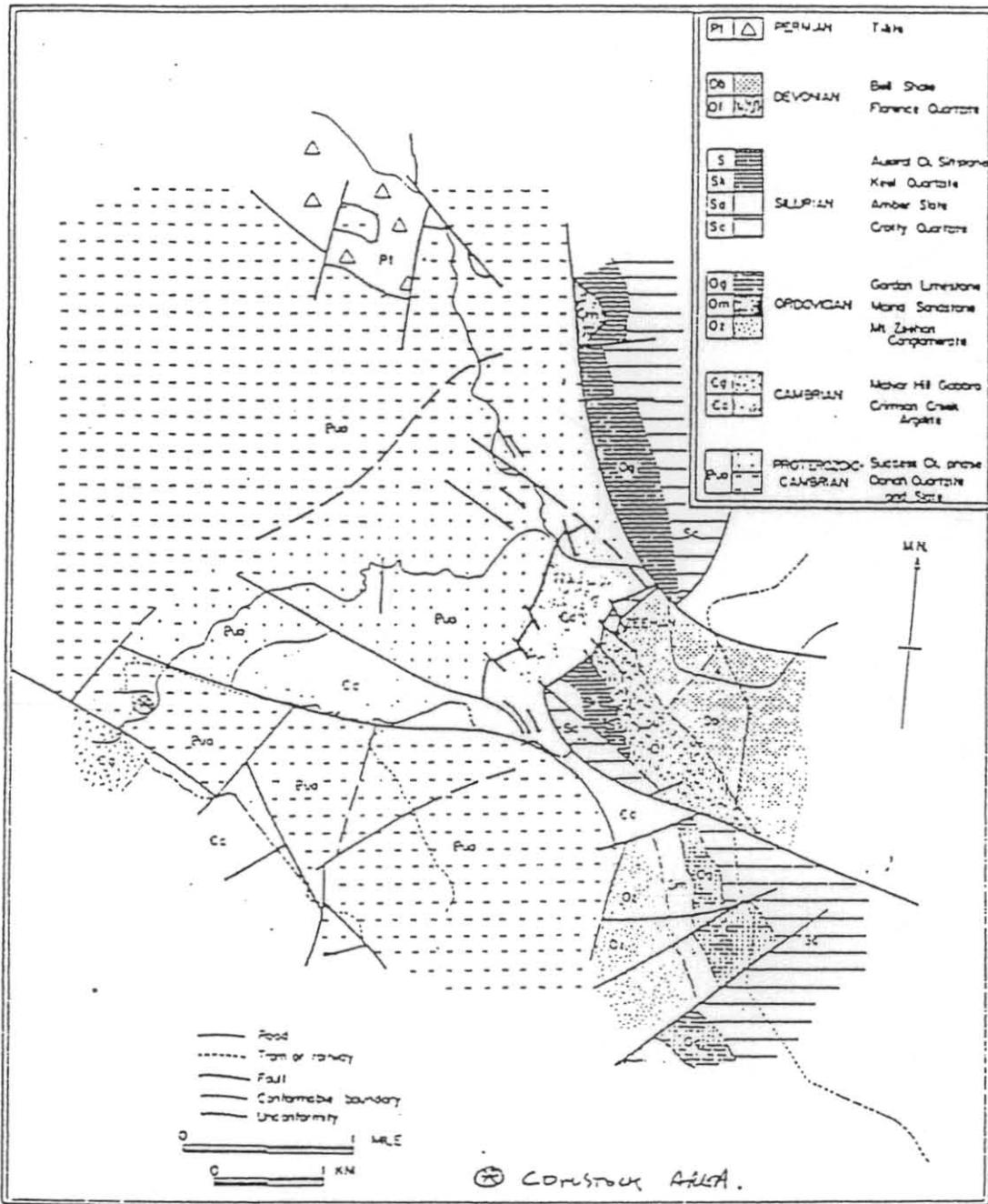
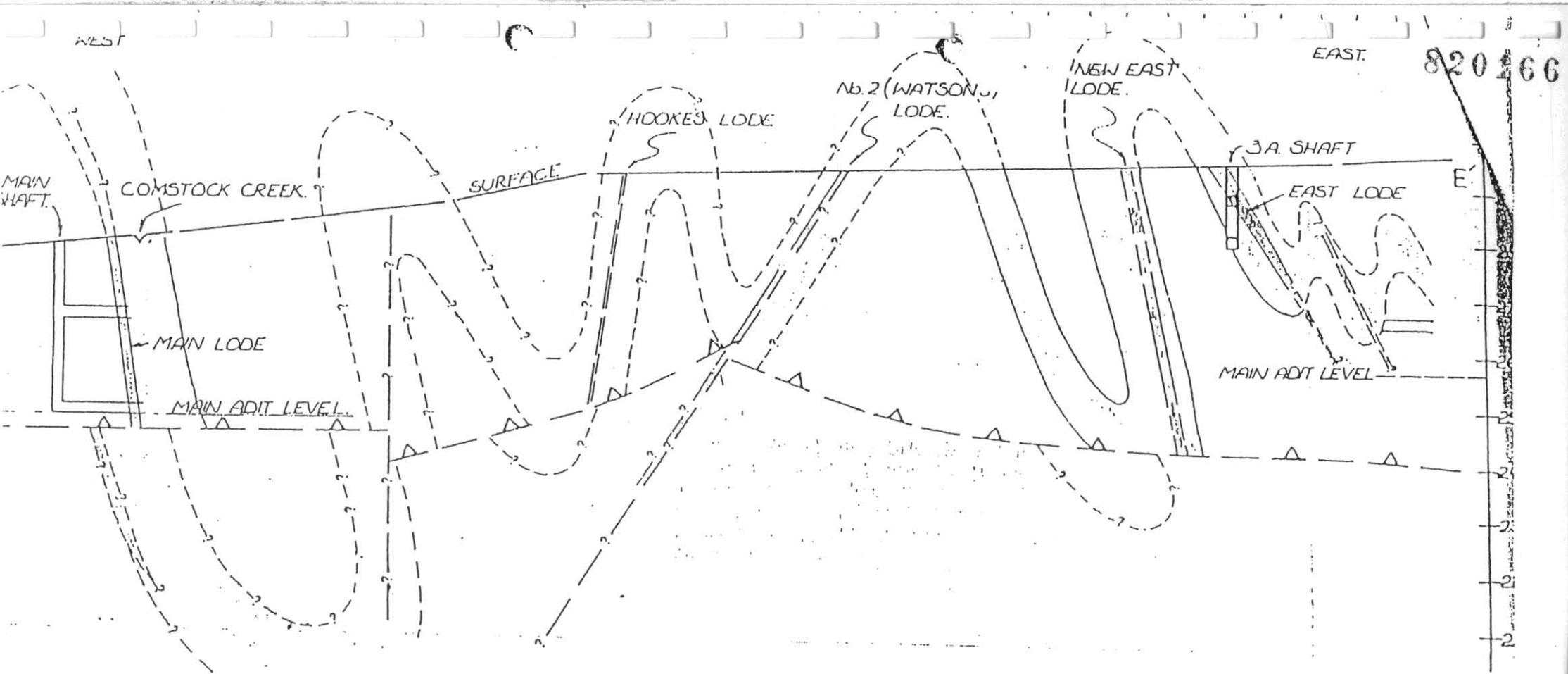


Figure 1. Geology of the Zeehan field

5 cm



△ — △ REVERSE FAULT. (INFERRED)
TEETH ON UPPER PLATE.

- - - - - NORMAL FAULT (INFERRED)

 LODE

 LIMESTONE/DOLomite.

 SLATE.

SCHEMATIC CROSS SECTION (E-E)

OF

THE COMSTOCK LODES

SCALE 1:1000  V/H .1.

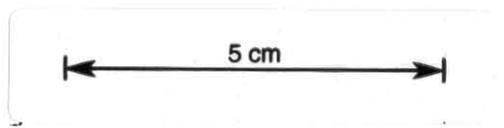


FIGURE 4.
T.G. SUMMONS
OCT. 1983.

300 WEST

EAST

D'

290

280

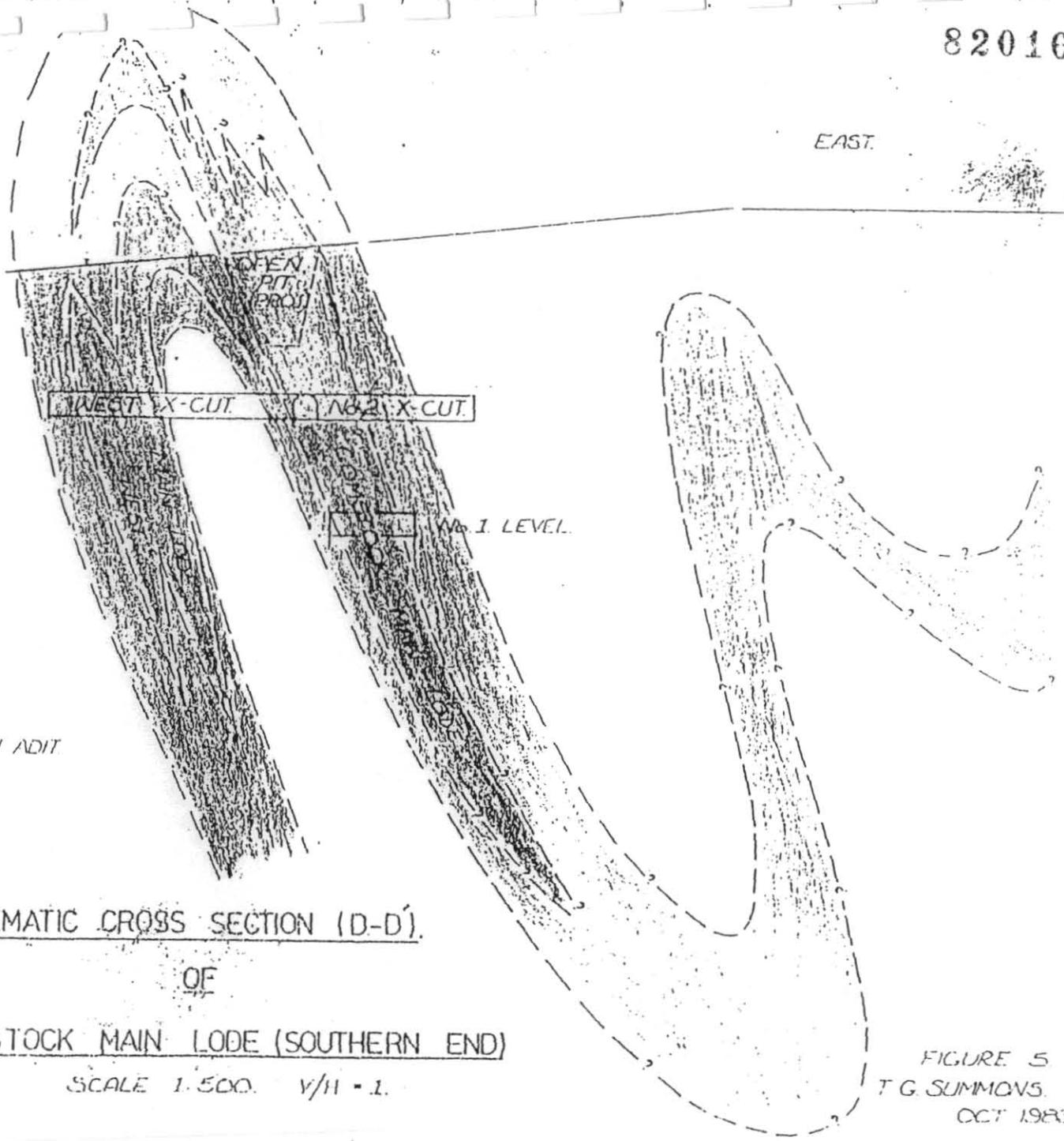
INTERMEDIATE LEVEL

No 1 LEVEL

260

MAIN ADIT LEVEL

□ MAIN ADIT



-  LODGE.
-  LIMESTONE/DOLOMITE.
-  SLATE.
-  STORED / MINED AREA

SCHEMATIC CROSS SECTION (D-D')
 OF
COMSTOCK MAIN LODGE (SOUTHERN END)

SCALE 1:500. V/H = 1.

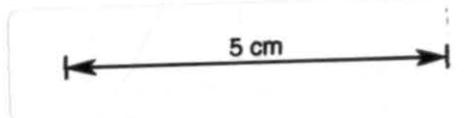


FIGURE 5
 T.G. SUMMONS.
 OCT 1983

6/.

siderite.



The most common ore minerals are sphalerite (ZnS) and galena (PbS), with minor chalcopyrite ($Cu Fe S_2$), tetrahedrite $[(Cu, Fe, Zn, Ag)_{12} Sb_4 S_{13}]$ and boulangerite ($Pb_5 Sb_4 S_{11}$). The tetrahedrite may also contain trace amounts of Hg, Pb, Ni, Co and Bi.

Pyrite ($Fe S_2$) is the most common gangue mineral, with minor arsenopyrite ($Fe As S$) and siderite ($Fe Co_3$). Pyrrhotite ($Fe_{1-x} S$) has been largely replaced by marcasite ($Fe S_2$); and to a lesser extent by pyrite.

The former presence of pyrrhotite characterises the Comstock ores from many of the other Zeehan field types, although the full significance of this feature is presently unresolved.

The sphalerite is dark in colour due to the high iron (Fe) and manganese (Mn) contents;

ie: FeS = 10.6 - 14.8 wt.%
MnS = 1.0 - 1.5 wt.%

It is also relatively free of inclusions, and when present the latter consist of pyrite or quartz. The galena is relatively free of inclusions as well, except near siderite, when it contains both tetrahedrite and boulangerite.

Although galena has been regarded as the main source of silver in the Zeehan field, most of the Ag occurs in tetrahedrite, although there is minimal practical difference because the two minerals are spatially and paragenetically closely related.

Quantitative details on the proportions of the sulphide minerals in the Comstock ores are non-existent, but the following features are considered to portray the general nature of the ore;

1/. Production data for the period 1888-1952 indicate apparent average grades of :

22.4% Pb (equivalent to 26 wt% galena)
23.9% Zn (" " " 53 wt% sphalerite)
22.7 oz/ton (695g/tonne) of Ag.

Note that the Pb present in tetrahedrite and boulangierite has been apportioned as equivalent galena in the above calculation, and similarly for the Zn in tetrahedrite (as equivalent sphalerite).

These figures for equivalent galena and sphalerite imply that all other minerals represent approx. 16 wt% of the ore. Thus these figures quite clearly reflect selective mining, and/or hand sorting of the ore as discussed subsequently.

2/. Mineragraphic studies indicate that pyrite is by far the most abundant mineral in the Comstock ores, and that sphalerite is present in excess of the galena; (ie, reflecting the paragenetic sequence of early, middle and late crystallization of the three minerals).

3/. Limited data on pyrite : galena ratios suggest a range of 1.5 to 10, with an average of approx. 5:1; this would indicate pyrite 45%, galena 9% and therefore sphalerite 46%.

4/. However, probably more reliable data indicates a sphalerite : galena ratio of approx 2:1 and reconciliation of recorded production with the estimated tonnage mined from the available records shows that :

- (a) Recorded production of ore (selective mining etc) approx. 7382 tonnes.
- (b) Estimated ore mined (SG of 5.0) approx. 30 000 tonnes.

These figures imply that the valuable constituents of the ore represent approx. 25% of the total ore, ie., pyrite 75%, sphalerite 17%, galena 8%.

5/. The best compromise with all the available information is therefore considered to be the following: pyrite 60%, sphalerite 30%, galena 10%.

ORE RESOURCES

The status of the available data relating to the nature and distribution of the Ag-Pb-Zn mineralization in the Comstock area is insufficient to allow estimation of ore reserves.

It is therefore considered appropriate to view the Ag-Pb-Zn ore resources of the various lodes as either inferred ore (not a reserve), or as hypothetical ore (not a reserve), and definitions for both categories are provided in the Appendix.

The following review of the three major lodes in the Comstock area has been done in terms of ore resource blocks, which coincide with structural blocks as shown in Figures 3 and 6, which respectively portray the plan and longitudinal projections of the blocks.

The following legend applies to the estimations:

Previous mining - figures shown refer to block strike length x block width x block height x density of ore (= 5). (see shaded areas on Fig. 6).
Ore potential - figures shown refer to block strike length x block width x density of ore (=5) = tonnes/vertical metre, (T/vm).

COMSTOCK MAIN LODECHL - 1A (South Comstock Open Cut) Block.

1/. Previous Mining

- (a) Open Cut = $60 \times 10 \times 10 \times 5$, approx 3000 T
- (b) Floor of open cut to Intermediate Level : $45 \times 4 \times 5 \times 5$ approx. 4590 T. Total approx. 7500 T.

2/. Ore Potential (Inferred Ore)

- (a) Below Intermediate Level to -15m : $50 \times 3 \times 5 = 750$ T/Vm
ie. inferred ore = 15×750 approx 11,000 T.
- (b) From 15m to 25m below Intermediate Level ; $50 \times 2 \times 5$ approx 500 T/Vm
ie. inferred ore = 10×500 approx. 5000 T.

CHL - 1B (Main Lode West) Block

1/. Previous Mining

2/. Ore Potential (Inferred Ore)

From -1 to -25m below surface: $30 \times 5 \times 5 = 750 \text{ T/vm}$

ie., inferred ore approx. $20 \times 750 = 15\,000 \text{ T.}$

CML -2 (Shafts 1 and 2) Block

1/. Previous Mining - from two shafts, ore reported to have been 20m deep, therefore mining assumed to be $25 \times 1.5 \times 15 \times 5$ approx. 2800 T.

2/. Ore Potential (Inferred Ore)

From -20 to -25m below surface (ie. base on Main Adit)

= $25 \times 0.5 \times 5$ approx. 60 T./vm

ie., inferred ore = $5 \times 60 = 300 \text{ T.}$

CML -3 (Shafts 3 and 4) Block

1/. Previous Mining - none recorded, ore reported as "poor" in shallow surface shafts.

2/. Ore Potential - (Inferred Ore)

From surface to - 25m (Main Adit Level)

= $25 \times 0.75 \times 5$ approx. 90 T/vm

ie. inferred ore = 25×90 approx. 2 200 T.

CML -4 Block

1/. Previous Mining - none recorded; ore reported as "poor" in prospecting adit.

2/. Ore potential (Hypothetical ore)

- Low, may be $45 \times 0.10 \times 5$ approx. 25 T/vm for a maximum depth of 25m; note that the lode appears to have lensed out in this block

CML -5 Block

1/. Previous Mining - none recorded, no details available for the block.

2/. Ore Potential (Hypothetical Ore)

The ore potential is untested except for Watsons Adit, which may have commenced both above and to the east of the lode position. It is possible that the lode is "blind" in this block as a result of down faulting. A strike length of 80m combined with a width of 1m (ie., 400 T/vm) would warrant exploration of the block to a shallow depth

CML -6 (Main Shaft) Block

- 1/. Previous Mining - records state that stoping of ore occurred to a depth of approx. 10.5m, which at the southern end of the block would coincide with the 45' level in the old main shaft; ie., $60 \times 1.2 \times 10.5 \times 5$ approx. 3800 T.
- 2/. Ore Potential - although a level was driven at the base of the old Main Shaft at 30m (100'), there is no record of production; accordingly the ore potential is unknown below 45' level.

CML -7 (Shafts 12, 13 and 14) Block

- 1/. Previous Mining - records shows stoping of ore to a depth of 10.5m, ie., $60 \times 10.5 \times 5$ approx. 2300 T.
- 2/. Ore Potential - unknown and untested below - 10.5m.

CML -8 (Whitelaws Shaft) Block

- 1/. Previous Mining - records show stoping of ore from surface to the 40' level, ie., $50 \times 1 \times 12 \times 5$ approx. 3000 T.
- 2/. Ore Potential (Inferred Ore).
Records do not show production from either the 80', 100' or 120' levels. Underground mapping by the EZ Coy in 1949 suggested a block of approx. 4000 T of ore between the 40' and 80' levels, while a cross cut driven from the 100' level cut 4.3m of ore, and a rise to approx. 5m met 1.3m of ore.

Consequently, the inferred ore is as follows:-

40' - 80' Levels : $50 \times 1.3 \times 5 = 325\text{T/vm} \times 12 = 3900 \text{ T.}$

80' - 120' Levels : $50 \times 1.5 \times 5 = 375\text{T/vm} \times 12 = 4500 \text{ T.}$

TOTAL = 8400 T.

CML -9 (Shafts 18 and 19) Block

- 1/. Previous Mining - none recorded. It is believed to be either low grade, or narrow. For both.
- 2/. Ore Potential - hypothetical. It may be $30 \times 1 \times 5$ approx. 150 T/vm; the block requires more mapping, both below the old shafts and to the north along the strike. A maximum strike length of 75m combined with a width of 5m (ie. 375 T/vm) suggests further exploration is justified.

COMSTOCK NO. 2 LODEC2L -1 (Flahertys Lode) Block

- 1/. Previous Mining - none recorded
- 2/. Ore Potential (Inferred Ore)
Costeaming by Minstock has exposed the ore east of the Zeehan-Trial Harbour road;
From surface to - 5m, $50 \times 1 \times 5 = 250$ T/vm
ie., inferred ore approx. 5×250 approx. 1200 T.

C2L -2 (Flahertys Lode) Block

- 1/. Previous Mining - none recorded, but an underlay shaft (2o) was sunk to a vertical depth of approx. 7m, north from which 150m of driving was completed, (including Watsons Drive in the C2L-3 Block). it is likely that approx. 1500 T. of ore was extracted during this development.
- 2/. Ore Potential (Inferred Ore)
From surface to -10m, $50 \times 1 \times 5 = 250$ T/vm
ie., inferred ore = $10 \times 250 = 2500$ T.

C2L - 3 (Watsons Lode) Block

- 1/. Previous Mining - none recorded but probably some ore extracted during development work (see C2L -2 Block).
- 2/. Ore Potential (Inferred Ore).
From surface to - 5m, $50 \times 2 \times 5 = 500$ T/vm.
ie., inferred ore = $5 \times 500 = 2500$ T.
Note that the lode in this block may be 50m in length which combined with a width of 2m (ie., 900 T/vm) suggests further exploration of the block is warranted.

COMSTOCK EAST LODECEL - 1A BlockA. W-E Lode.

- 1/. Previous Mining - this lode appears to have been small and irregular in form, but to have been generally orientated ENE; there appear to be little ore remaining, and production from surface to the 64' level is estimated at approx. 4000 T. (ie. from No. 1 shaft).
- 2/. Ore Potential - unknown, but probably low, with possible untested extensions both to the WSW and S of the No. 1 shaft.

B. N-S Lode

- 1/. Previous Mining - none recorded.
- 2/. Ore Potential (Inferred Ore)
Costeaning has exposed the lode over a strike depth of approx. 50m. with an average width of 2m.
ie., inferred ore = $5 \times 500 = 2500$ T.

CEL - 1B Block (- New East Lode)

- 1/. Previous Mining - none recorded.
- 2/. Ore Potential - unknown and apparently untested. A possible strike length of 50m combined with a width of 2m (ie. 500 T/vm) makes this an attractive target for exploration.

CEL - 2A Block

- 1/. Previous Mining
 - (a) Road Stopes approx. 2500 T.
 - (b) No 3A Shaft, (27' - 49' Levels) approx. $30 \times 2 \times 8 \times 5 = 2400$ T.
Total 4900 T.
- 2/. Ore Potential (Inferred Ore).
 - (a) Below the road stopes to the 27' level, over an average vertical distance of 3m, $30 \times 2 \times 5 = 700$ T/vm
ie. inferred ore approx. $3 \times 700 = 2000$ T.
 - (b) Below 49' Level for a depth of approx. 10m,
 $30 \times 1 \times 5 = 150$ T/vm.

See end of E 13

13/.

CEL-24

ie. inferred ore approx. $10 \times 150 = 1500 \text{ T.}$

(c) Below the 27' level, projected north of 3A Shaft for 15m
 $30 \times 1 \times 5 = 150 \text{ T/vm.}$

ie. inferred ore = 15×150 approx. 2200 T.

(d) North of the road stops over a depth of 10m
 $20 \times 1 \times 5 = 100 \text{ T/vm}$

ie., inferred ore = $10 \times 100 = 1000 \text{ T.}$

CEL - 2B Block (New East Lode)

1/. Previous Mining - none recorded.

2/. Ore Potential (Inferred Ore)

This new lode was tested in 3 diamond drill holes by the E.Z. Coy
(CP 47, 49 and 58), approx. 25m below the surface;

$50 \times 2 \times 5 = 500 \text{ T/vm}$, provided the lode reached the surface
(ie., is not "blind");

ie., inferred ore = $25 \times 500 = 12,500 \text{ T.}$

SUMMARYORE MINED

CML - 1A Block - 7500 T
 CML - 2 " - 2800 T
 CML - 6 " - 3800 T
 CML - 7 " - 2300 T
 CML - 8 " - 3000 T

SUB TOTAL 19 400 T.

C2L - 2 and 3 Blocks 1500 T
 CEL - 1A Block (W-E Lode) 4000 T
 CEL - 2A Block 4900 T

SUB TOTAL 8900 T.

GRAND TOTAL : 29 800 (Approx. 30,000 T). (See shaded portions on Figure 6.)

INFERRED ORE

CML - 1A Block - 16000 T
 CML - 1B " - 15000 T *
 CML - 2 " - 300 T
 CML - 3 " - 2200 T
 CML - 8 " - 8400 T

SUB TOTAL = 41 900 T

C2L - 1 " - 1200 T *
 C2L - 2 " - 2500 T *
 C2L - 3 " - 2500 T *

SUB TOTAL = 6200 T

CEL - 1A " - 2500 T *
 CEL - 2A " - 6700 T (1000 T *)
 CEL - 2B " - 12500 T *

SUB TOTAL = 21 700 T

GRAND TOTAL = 69 800 T. (approx. 70 000 T)

(* TOTAL - 37 200 T).

NB Tonnages shown with an asterisk are those which relate to tonnes vertical metre > 100, and in which the...

CONCLUSIONS

Ag-Pb-Zn mineralization in the Comstock area is expressed as either fissure-fill, or fissure replacement lodes, and the latter category offers the best potential for the discovery of thick veins. Accordingly, exploration should be directed at the location of carbonate host rocks, either along strike, or in shallow down dip positions of the known lodes.

The structural interpretation of the Onah Formation host rocks suggests that these rocks have been tightly folded, and overturned to the west, such that "mirror image" targets may be postulated.

Possible evidence for such targets may occur in the Main and East Lodes. where the Main Lode West and New East Lodes, occur immediately to the west of the previously worked lodes.

Production from the Comstock lodes is estimated to be approximately 30 000 tonnes, from which approximately 7400 tonnes of sphalerite - galena concentrates were produced. Available data indicate an average ore composition of 60% pyrite (+ other sulphides and gangue minerals) 30 % sphalerite, and 10% galena, (all wt %).

Inferred Ag-Pb-Zn ore totals approx. 70 000 tonnes, of which approximately 37 000 tonnes is inferred to occur in near surface resource blocks (most of which is in the "new" lodes discussed above), possibly amenable to open cut extraction. It is emphasised that there is insufficient data available to allow estimation of ore reserves.

Consequently, should the 37 000 tonnes of inferred ore be shown by additional exploration to be substantially correct, the amount of Pb-Zn concentrate potentially available would be approximately 15 000 tonnes.

RECOMMENDATIONS

The tribute area held by Minstock Mining within ML 123m/47 requires additional exploration to that already conducted by Minstock.

It is suggested that the following sequential activities would allow the upgrading of the ore resource status from inferred ore to indicated ore reserves;

- 1/. Marking out of a 100 x 200m grid over the area bounded by the Main and East lodes;
- 2/. Costeaming of the northern and southern extremities of the Main, No. 2 and East lodes, to permit mapping of lithologies, and consequently the distribution of prospective host rocks for further Ag-Pb-Zn mineralization.
- 3/. Drill testing of the down dip positions of both the known (unmined) lodes, and newly discovered lodes. This drilling could be done by either open hole (rotary/percussion) or by cored drill holes.

Logging, sampling and analyses would be essential to supplement the costeaning and drilling phases. In addition, further studies would be required to fully assess the following:

- (i) The distribution of the valuable minerals in the ore, and consequently the anticipated metallurgy;
- (ii) The reliability of the sample points (costean and drill hole intersections) as indicators of both the chemical and physical parameters of the ore;
- (iii) The suitability of the lodes for open pit extraction.

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APPENDIX

Definition of "Ore" (Aus. I.M.M. 1972)

The Committee recommends that for the purposes of the above ore reserve classifications, the term "ore" be defined as follows:-

"Ore is defined as a solid naturally occurring aggregate from which one or more valuable constituents may be recovered, and which is of sufficient economic interest to require estimation of tonnage and grade."

Definition of Resource (USBM/USGS 1976)

"A concentration of naturally occurring solid, liquid or gaseous materials in or on the earth's crust in such a form that economic extraction of a commodity is currently or potentially feasible."

Definition of Reserve

USBM/USQS (1976) define a mineral reserve as "that portion of the identified resource from which a usable mineral or energy commodity can be economically and legally extraction at the time of determination." The Aus I.M.M./AMIC states that a reserve is a mineral occurrence of sufficient economic interest to require the estimation of tonnage and grade.

Measured/Indicated/Inferred Aus.I.M.M.(1972)

The definitions below closely follow those adopted by the U.S. Bureau of Mines in 1943.

Measured ore reserves are those for which tonnage is computed from dimensions revealed in outcrops, trenches, workings and drill holes and for which the grade is computed from the results of detailed sampling. The sites for inspection, sampling and measurement are spaced so closely and the geologic character is so well defined that size shape and mineral content are well established. The computed tonnage and grade are judged to be accurate within close limits.

Indicated ore reserves are those for which tonnage and grade are computed partly from specific measurements, samples or production data and partly by projection for a reasonable distance on geologic evidence. The sites available for inspection, measurements and sampling are too widely or otherwise inappropriately spaced to permit the mineral bodies to be outlined completely.

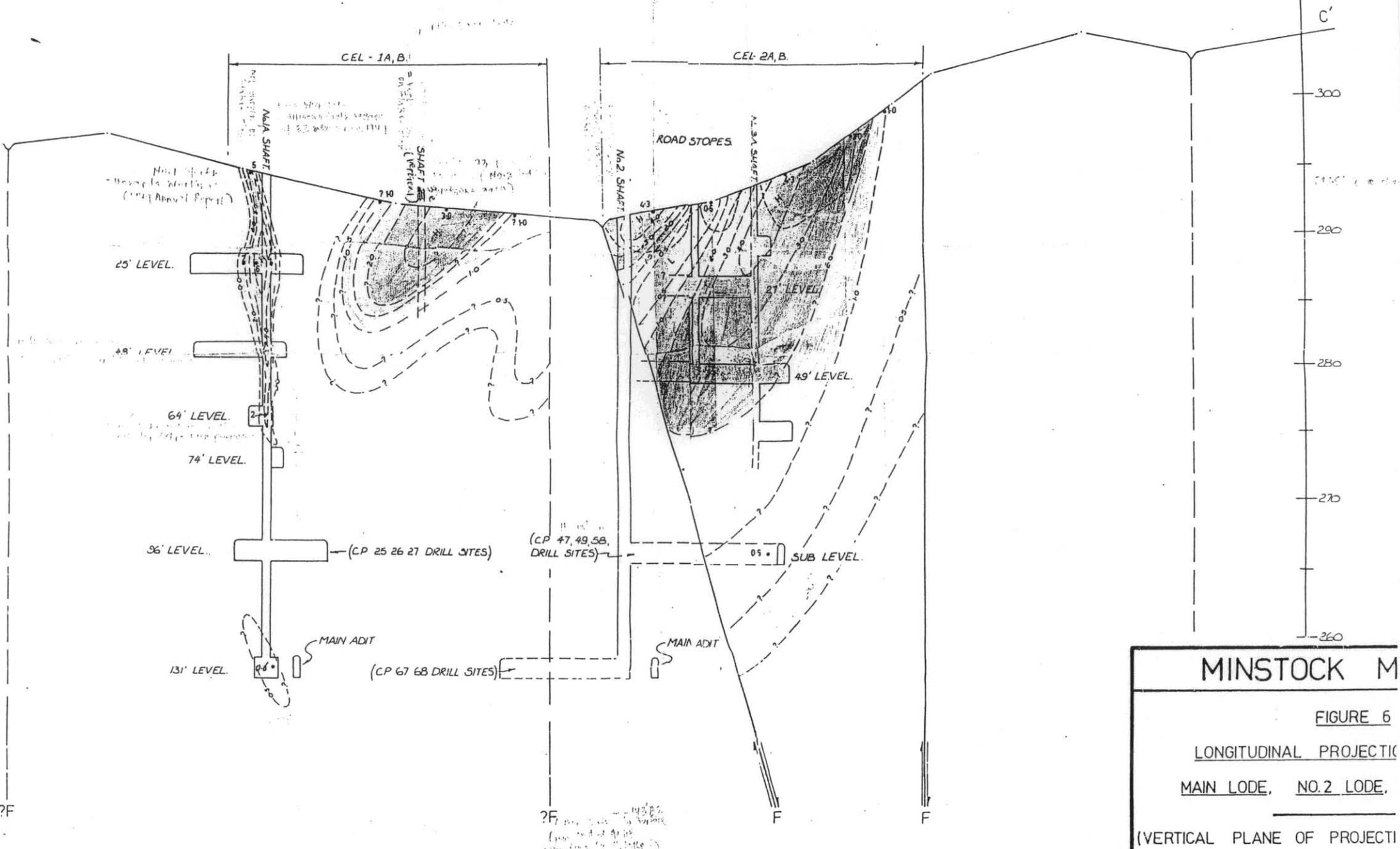
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largely on broad knowledge of the geologic character of the deposit and for which there are few samples or measurements. The estimates are based on an assumed continuity or repetition of which there is geologic evidence; this evidence may include comparison with deposits of similar type

Hypothetical ore is an undiscovered mineral resource predicted to occur in a known mineral district.



LONGITUDINAL PROJECTION C-C' EAST LODE.

5 cm

HORIZONTAL SCALE 0 10 20 30 40

MINSTOCK M

FIGURE 6

LONGITUDINAL PROJECTION

MAIN LODE, NO. 2 LODE.

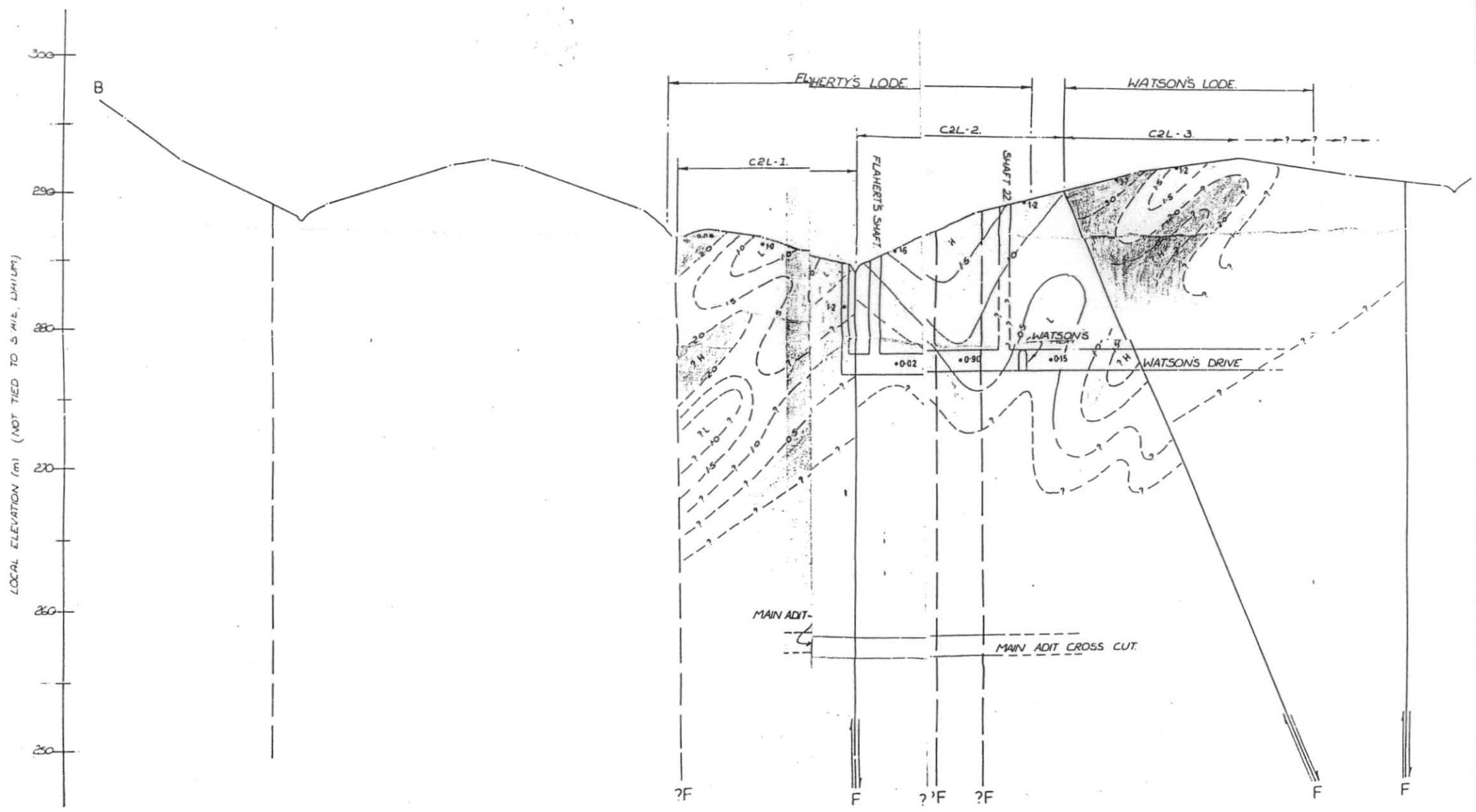
(VERTICAL PLANE OF PROJECTION)

HORIZONTAL SCALE 1:1000.

VERTICAL EXAGGERATION

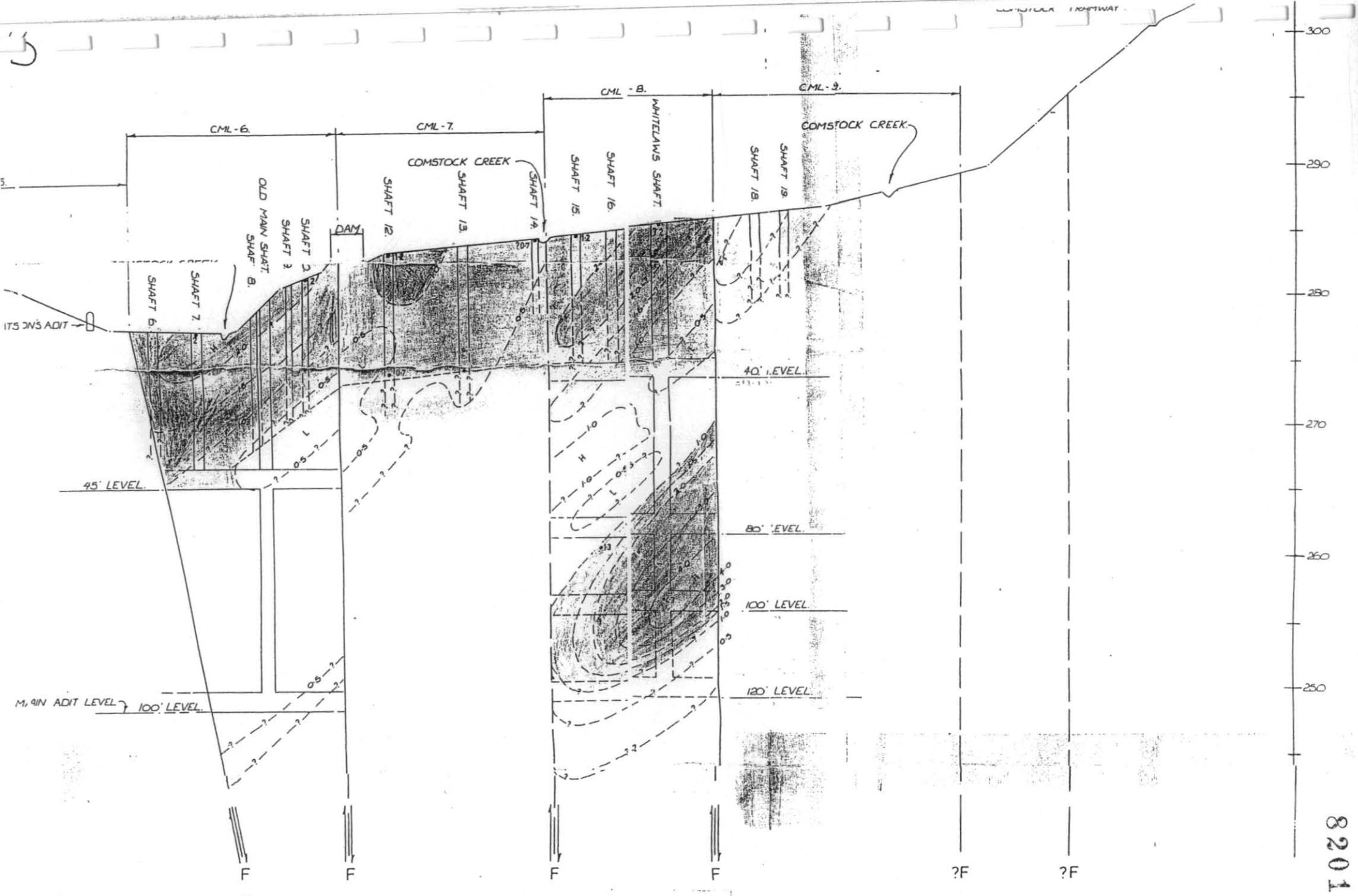
MINED
(OPEN CUT OR STOPE)

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5 cm

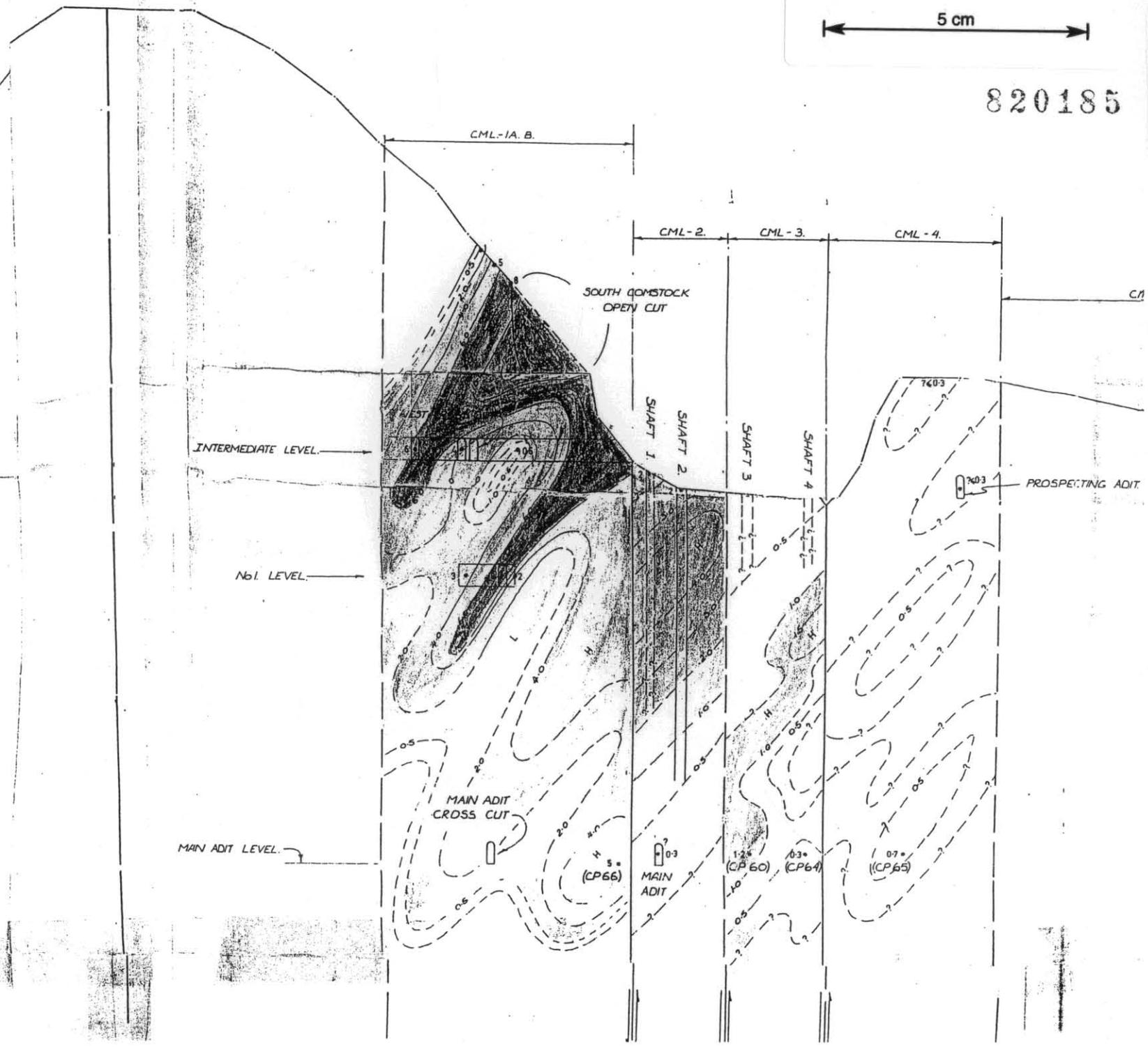
LONGITUDINAL PROJECTION B-B' NO. 2. LOPE.



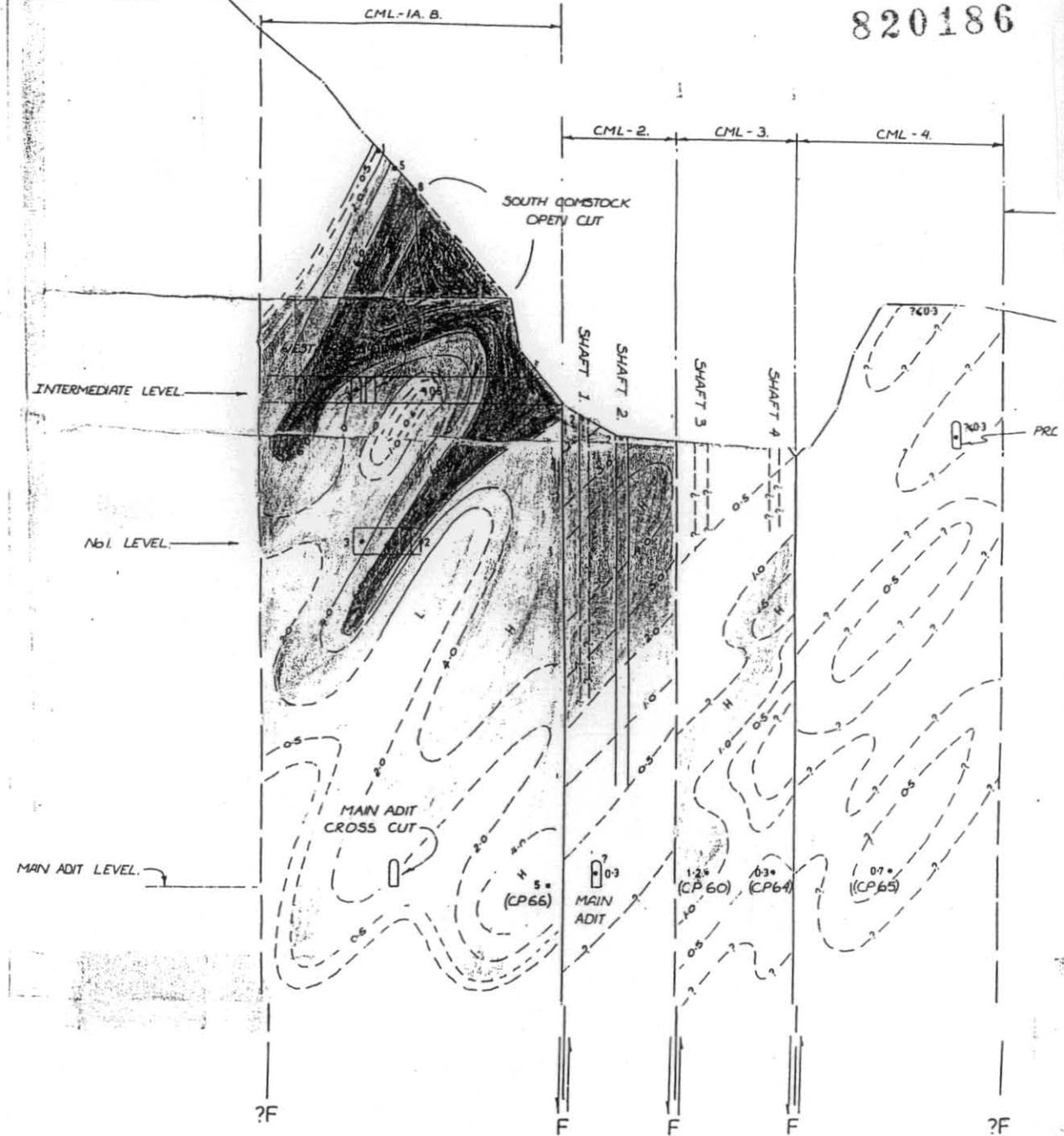
5 cm

820185

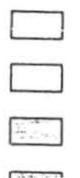
LD TASMANIA TRAM



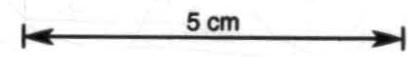
OLD TASMANIA TRAM



LOAD WIDTH (m)



- 0 - 0.5
- 0.5 - 1.0
- 1.0 - 2.0



LONGITUDINAL PROJECT

HORIZONTAL SCALE

Appendix IV
Weighted Average Figures for the
Channel Sampling

Traverse	From	To	Pb	Pb WtAv	Zn	Zn WtAv			
Trav. A	0	1	16600	16600	14700	14700			
Trav. A	1	2	13400	13400	10800	10800			
Trav. A	2	3	15100	15100	15100	15100			
Trav. A	3	4	39200	39200	154000	154000			
Trav. A	4	5	28500	28500	122000	122000			
Trav. A	5	5.6	89300	53580	247000	148200			
Trav. A	5.6	6	25100	10040	7400	2960			
Trav. A	6	7	124000	124000	311000	311000			
Trav. A	7	8	49700	49700	341000	341000			
Trav. A	8	9	43900	43900	300000	300000			
Trav. A	9	10	78600	78600	301000	301000			
Trav. A	10	11	27300	27300	276000	276000			
Trav. A	11	12	3300	3300	1500	1500			
Trav. A	12	13	25400	25400	2400	2400			
Trav. A	13	13.9	16800	15120	17500	15750			
Trav. A	13.9	14.6	17200	12040	199000	139300			
Trav. A	14.6	16	19700	27580	13100	18340	2174050	135878.1	16m
Trav. A	16	17	15900	15900	600	600			
Trav. A	17	18	5600	5600	300	300			
Trav. A	18	19	5000	5000	400	400			
Trav. A	19	20	6900	6900	400	400			
Trav. A	20	21	1100	1100	400	400			
Trav. A	21	22	3400	3400	9500	9500			
Trav. A	22	22.6	123000	73800	182000	109200			
Trav. A	22.6	24	13000	18200	3400	4760			
Trav. A	24	25	5400	5400	4200	4200			
Trav. A	25	26	5400	5400	10300	10300			
Trav. A	26	27	2400	2400	4000	4000			
Trav. A	27	28	900	900	1800	1800			
Trav. A	28	29	1100	1100	1800	1800			
Trav A1	0	1	127000	127000	124000	124000			
Trav A1	1	2	23400	23400	12800	12800			
Trav A1	2	3	78300	78300	401000	401000			
Trav A1	3	4	99400	99400	325000	325000			
Trav A1	4	5	21000	21000	52700	52700			
Trav A1	5	6	10500	10500	5200	5200			
Trav A1	6	7	14100	14100	3500	3500			
Trav A1	7	8	22600	22600	26800	26800			
Trav A1	8	9	14100	14100	8100	8100			
Trav A1	9	10	22200	22200	17400	17400			
Trav A1	10	11	17200	17200	26300	26300			
Trav A1	11	12	27900	27900	14800	14800			
Trav A1	12	13	59100	59100	84800	84800			
Trav A1	13	14	117000	117000	192000	192000			
Trav A1	14	15	30700	30700	11100	11100			
Trav.B	0	1	25000	25000	18000	18000			
Trav.B	1	2	118000	118000	155000	155000			
Trav.B	2	3	21200	21200	134000	134000			
Trav.B	3	4	16300	16300	89300	89300			

Traverse	From	To	Pb	Pb WtAv	Zn	Zn WtAv			
Trav.B	4	5	15000	15000	72000	72000			
Trav.B	5	6	15600	15600	307000	307000			
Trav.B	6	7	13600	13600	323000	323000			
Trav.B	7	8	11500	11500	19500	19500			
Trav.B	8	9	23200	23200	262000	262000			
Trav.B	9	10	142000	142000	27700	27700			
Trav.B	10	11	4800	4800	34200	34200	1441700	131063.6	11m
Trav.C	0	1	14500	14500	185000	185000			
Trav.C	1	2	14600	14600	218000	218000			
Trav.C	2	3	114000	114000	247000	247000			
Trav.C	3	4	128000	128000	74800	74800			
Trav.C	4	5	157000	157000	114000	114000			
Trav.C	5	6	167000	167000	50000	50000			
Trav.C	6	7	72700	72700	154000	154000	1042800	148971.4	7m
Trav.D	0	1	130000	130000	327000	327000			
Trav.D	1	2	26000	26000	270000	270000			
Trav.D	2	3	2600	2600	10000	10000			
Trav.D	3	4	6400	6400	20500	20500			
Trav.D	4	5	2900	2900	5300	5300			
Trav.D	5	6	127000	127000	139000	139000			
Trav.D	6	7	56400	56400	111000	111000			
Trav.D	7	8	54700	54700	236000	236000			
Trav.D	8	9	6300	6300	23300	23300			
Trav.D	9	10	19300	19300	228000	228000			
Trav.D	10	11	24300	24300	44700	44700			
Trav.D	11	12	3400	3400	79700	79700			
Trav.D	12	13	132000	132000	166000	166000			
Trav.D	13	14	8200	8200	327000	327000			
Trav.D	14	15	127000	127000	350000	350000	2337500	155833.3	15m

Appendix V
Other Significant Drill Intercepts

Drillhole	From	To	Pb ppm	Pb WtAv	Zn ppm	Zn WtAv				Lode
									No sample	
									(Dummy inserted)	
							Z%*m	Zinc Grade	Meterage	
SY021	46.9	47.7	166000	132800	264000	211200				Allison's
SY021	47.7	48.6	200	180	100	90				
SY021	48.6	49	2800	1120	9300	3720				
SY021	49	51.5	200	500	100	250				
SY021	51.4	53.2	3500	6300	10500	18900	234160	50904	4.6m	
SY022	57	57.25	50	12.5	50	12.5				Allison's
SY022	60.8	60.98	2500	450	24600	4428				
SY022	60.98	62.75	100	177	100	177				
SY022	62.75	62.91	1900	304	23100	3696				
SY022	62.91	63.15	100	24	100	24				
SY022	63.15	63.38	3500	805	24400	5612				
SY022	63.38	65	100	162	100	162				
SY022	65	65.45	79200	35640	2400	1080				
SY022	65.45	65.61	25900	4144	137000	21920				
SY022	65.61	68.3	100	269	100	269				
SY022	68.3	68.5	75100	15020	24000	4800				
SY022	68.5	69.05	100	55	100	55				
SY022	69.05	69.32	2800	756	24300	6561				
SY022	69.32	69.45	100	13	100	13				
SY022	69.45	69.67	32900	7238	115000	25300	58918	13962	4.22m	
SY022	69.67	69.8	100	13	100	13				
SY022	69.8	70.06	19000	4940	33700	8762				
SY022	70.06	70.65	100	59	100	59				
SY022	70.65	71.09	17500	7700	14800	6512				
SY022	71.09	71.15	100	6	100	6				
SY022	71.15	71.39	3900	936	13800	3312				
SY022	71.39	71.65	100	26	100	26				
SY022	71.65	71.89	9100	2184	8000	1920				
SY022	71.89	72.1	100	21	100	21				
SY022	72.1	72.32	20900	4598	43200	9504				
SY022	72.32	72.7	100	38	100	38				
SY022	72.7	72.9	7100	1420	36400	7280				
SY022	72.9	73.1	2800	1680	15800	9480	121030	9840	12.3m	Allison's
SY022	73.1	73.5	700	280	3900	1560				
SY022	73.5	73.9	3400	1360	4200	1680				
SY022	73.95	74.4	4300	1935	1900	855				
SY022	74.4	75	27900	16740	32500	19500				
SY022	75	75.5	11000	5500	42000	21000	40500	36818	1.1m	Allison's

820191

Drillhole	From	To	Pb ppm	Pb WtAv	Zn ppm	Zn WtAv					Lode
										No sample (Dummy inserted)	
							Z%*m	Zinc Grade	Meterage		
SY022	75.5	75.9	11200	4480	1900	760					
SY022	75.9	76.6	13600	9520	8600	6020					
SY022	80.6	81.1	16800	8400	6800	3400					
SY022	81.1	81.5	52200	20880	23600	9440					
SY022	92.5	92.9	304000	121600	11000	4400					
SY022	92.9	93.2	10000	3000	36000	10800					
SY022	93.2	93.75	18500	10175	44400	24420					
SY022	93.75	94.3	236000	129800	61900	34045	73665	40925	1.8m		?Allison's
SY022	228.9	229.9	114000	114000	28900	28900					
SY022	230	231	61900	61900	31100	31100					
SY022	231	232	39800	39800	18600	18600	78600	25355	3.1m		Watson's
SY003	148	148.7	5400	3780	10500	7350					
SY003	148.7	150	29400	38220	60300	78390					
SY003	150	151	24800	24800	52700	52700					
SY003	151	152	52500	52500	173000	173000					
SY003	152	153	46700	46700	145000	145000					
SY003	153	154	60300	60300	68600	68600					
SY003	154	155	71200	71200	69300	69300					
SY003	155	156	24000	24000	46800	46800	641140	80143	8m		Balstrup
SY003	156	157	5650	5650	5200	5200					
SY003	157	158.2	4500	5400	6350	7620					
SY003	158.2	159	290	232	1900	1520					
SY003	245.4	246	7000	4200	12400	7440					
SY003	246	247	385	385	160	160					
SY003	247	248	275	275	165	165					
SY003	248	249.5	90	135	125	187.5					
SY003	249.5	250	9200	4600	45900	22950					
SY003	250	250.8	4100	3280	16000	12800	35750	27500	1.3m		Boss?
SY003	387.9	389	42800	47080	43400	47740					Bendall's ?
SY003	389	389.7	94800	66360	100300	70210	117950	65528	1.8m		Allison's ? (Offset)
SY003	509.8	510.4	27200	16320	31800	19080					

820192

Drillhole	From	To	Pb ppm	Pb WtAv	Zn ppm	Zn WtAv					Lode
										No sample	
										(Dummy inserted)	
							Z%*m	Zinc Grade	Meterage		
SY018	449.9	450.9	461	461	16600	16600					
SY018	450.9	451.9	223	223	4990	4990					
SY018	451.9	452.9	521	521	3240	3240					
SY018	452.9	453.9	1275	1275	2550	2550					
SY018	453.9	454.9	65100	65100	2610	2610					
SY018	454.9	456.4	11400	17100	21600	32400					
SY018	456.4	456.6	2580	516	188000	37600					Bendall's or
SY018	456.6	456.9	1280	384	15100	4530	74530	37265	2m		Boss or
											Allison's ?
SY019	238.1	238.7	42700	25620	49500	29700					
SY019	238.7	239.7	2300	2300	7600	7600					
SY019	239.7	240.3	26700	16020	43300	25980	63280	31640	2.2m		Allison's ?
SY019	329.9	330.1	41300	8260	54400	10880					
SY006	2.8	6.45	4900	17885	190	693.5					
SY006	9.5	37.9	9450	268380	2100	59640					
SY006	37.9	48.6	5000	53500	700	7490					
SY007	16	19.55	4600	16330	1900	6745					
SY007	19.55	20.1	3650	2007.5	1200	660					
SY007	20.1	20.9	1800	1440	1100	880					
SY007	20.9	22.3	2500	3500	1300	1820					
SY007	22.3	22.75	3150	1417.5	1500	675					
SY007	22.75	23.7	3200	3040	700	665					
SY007	23.7	24.5	4050	3240	700	560					
SY007	24.5	28.4	6200	24180	1400	5460					
SY007	28.4	37.25	9350	82747.5	400	3540					
CP47	42.67	43.28	None		55000	33550					
CP47	43.28	44.81	62000		200000	306000	339550	158668	2.14m		Allison's or
											Watsons

820193

Appendix 5

A summary review of the Zeehan (Sylvester) Project
RGC Exploration Report T/93/22 1-9

D Crossing
RGC Exploration

A SUMMARY REVIEW OF THE
ZEEHAN (SYLVESTER) PROJECT

Compiled by:

D.J.F. CROSSING
Senior Geologist MAusIMM

Endorsed by:

P.J. UTTLEY
Exploration Manager
Eastern Australasia

May 1993

Report No.: T/93/22

Distribution:

o RGC Exploration - Canberra



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INTRODUCTION

EL 42/87 is centred on the old silver -lead mining centre of Zeehan, and completely encloses the Aberfoyle/Gippsland ML's over Queen Hill, where a reported geological resource of 3.6 Mt at 1.2% Sn has been defined (Fig. 1).

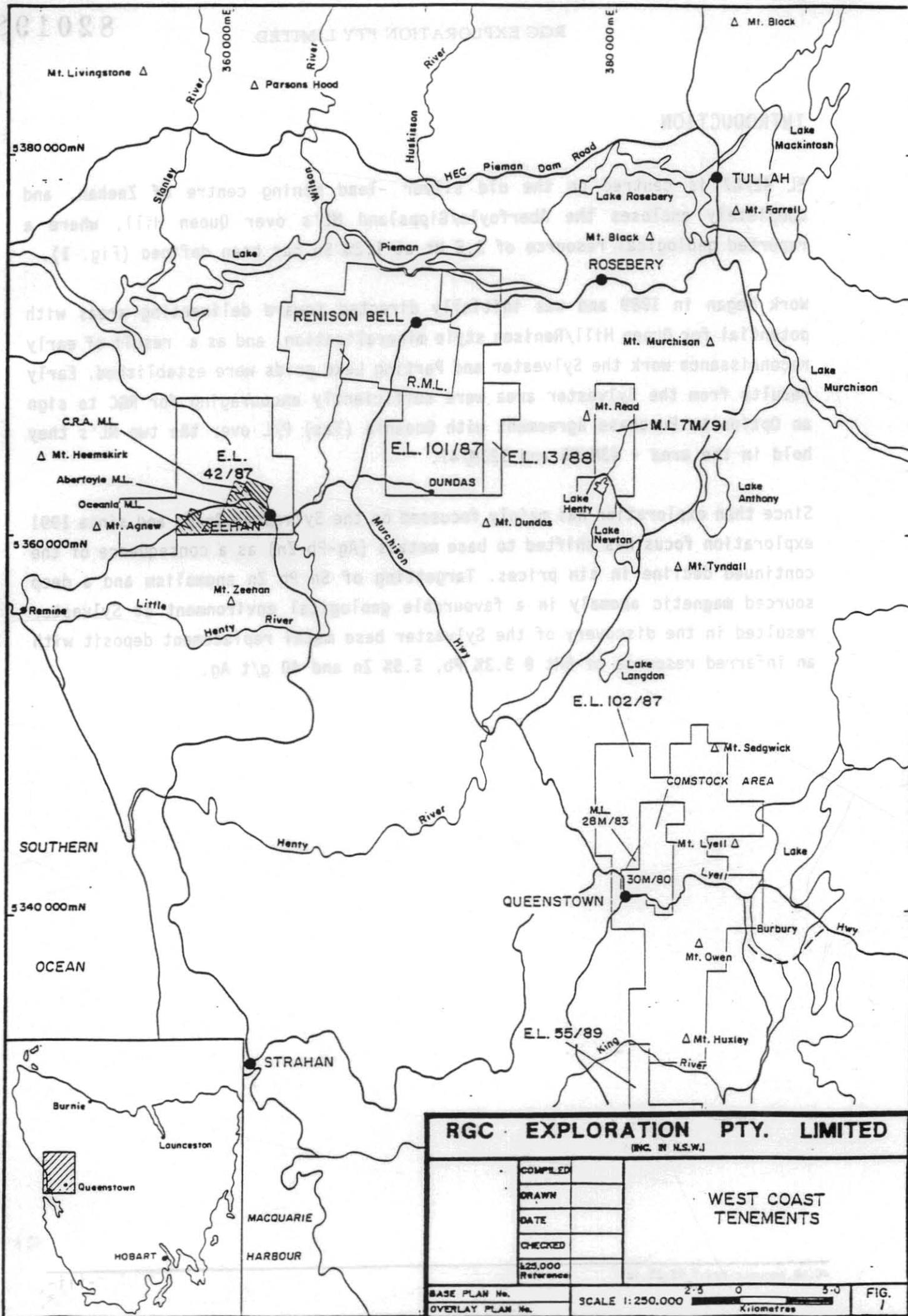
Work began in 1989 and was initially directed toward delineating areas with potential for Queen Hill/Renison style mineralisation, and as a result of early reconnaissance work the Sylvester and Parting Lake grids were established. Early results from the Sylvester area were sufficiently encouraging for RGC to sign an Option to Purchase agreement with Oceania (Tas) P/L over the two ML's they hold in the area - 43M/85 and 123M/47.

Since then exploration has mainly focussed on the Sylvester Grid, and since 1991 exploration focus has shifted to base metals (Ag-Pb-Zn) as a consequence of the continued decline in tin prices. Targetting of Sn Pb Zn anomalism and a deep sourced magnetic anomaly in a favourable geological environment at Sylvester resulted in the discovery of the Sylvester base metal replacement deposit with an inferred resource of 6Mt @ 3.3% Pb, 5.5% Zn and 40 g/t Ag.

RGC EXPLORATION PTY. LIMITED

WEST COAST TERTIARIES

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RGC EXPLORATION PTY. LIMITED
(INC. IN N.S.W.)

COMPLETED	
DRAWN	
DATE	
CHECKED	
1:25,000 Reference	

WEST COAST TENEMENTS

BASE PLAN No. _____
OVERLAY PLAN No. _____

SCALE 1:250,000

2.5 0 5.0
Kilometres

FIG. 1

5 cm

1. REGIONAL GEOLOGY

The oldest rocks in the area are psammo-pelitic sediments of the Proterozoic Oonah Formation (Po), which form the core of the Heemskirk Anticlinorium, northwest of Zeehan (Plan 1). Toward the top of the Oonah Formation, finer grained lithologies become dominant and both carbonates and altered ("spilitic") basic volcanics appear in the sequence. The Upper Oonah Formation (Pou) has been defined to include these distinctive lithologies.

The Upper Oonah Formation lithologies show marked lateral variation. In the Queen Hill area, irregular lenses of spilitic volcanics form a significant proportion of the stratigraphic column whilst on the Sylvester Grid spilites are rare and carbonates are a dominant lithology. A significant feature in the Sylvester area is the presence of broad, irregularly shaped "melanges" consisting of chaotic angular to lenticular fragments of Oonah sandstone in the fine highly strained matrix. Another tectonic feature is the presence of significant isoclinal folding observed mainly in the fine sediments.

A poorly outcropping monotonous sequence of weathered turbidites of the Cambrian Crimson Creek Formation (Cc) occupy the core of an east plunging syncline immediately north of the Balstrup Fault at Sylvester. The turbidites are derived from intermediate to mafic volcanic detritus. Occasional carbonate beds have been recorded. The sequence lacks the structural complexity and isoclinal folding of the Oonah Formation, suggesting the two successions are separated by an unconformity.

To the south of the Sylvester grid, Upper Oonah sediments are thrust over another Cambrian sequence of uncertain affinity along the Tenth Legion Fault. This latter sequence consists primarily of basic volcanics, psammo-pelites, quartzose grits and conglomerates. Although some authors ascribe this sequence to the Crimson Creek Formation, the presence of quartzose sediments implies a very different provenance. Cambrian gabbros of the McIvor Hill mafic-ultramafic complex occur further west. Southeast of the old Comstock Mine the Tenth Legion Fault is shallow dipping, resulting in a meandering Proterozoic/Cambrian contact.

Younger sediments (Permian, Devonian, Silurian and Ordovician) occur elsewhere on the E.L. but have no economic significance.

The D2 deformation of the mid-Devonian Tabberabberan orogeny produced a series of NW trending fold axis and NW to NNW trending faults, including the Balstrup Fault. Devonian granites of the Heemskirk Batholith are thought to have intruded toward the end of this deformational event, and the form of the intrusion appears to have been influenced by the major D2 folds. The intrusion was later dislocated by continued displacement along the Balstrup/Tenth Legion Fault complex in the vicinity of the Tenth Legion Mine.

2. WORK COMPLETED BY RGC

During 1988/89 reconnaissance mapping and rock chip sampling was extended over the EL and suitable base plans were prepared. An aeromagnetic survey was extended over the EL using a Caesium Vapour magnetometer, and the results interpreted.

Subsequently in 1989/90 two 200 x 25m grids were constructed on the more prospective parts of the EL, namely the Parting Lake Grid (17 line-km) and Sylvester Grid (30 line-km). Both grids were mapped and covered by C-Horizon soil geochemistry programmes, and all samples were analysed for Cu Pb Zn (AAS), Sn (XRF) and gold + 26 (NAA - multi-elements). Additionally, a ground magnetics survey was completed over the Sylvester Grid.

This work identified several geochemical and ground magnetic anomalies on the Sylvester Grid in a favourable environment for base metal and/or tin replacement deposits. The Parting Lake Grid did not produce any significant anomalies and no carbonates were identified by mapping.

The two best base metal/tin anomalies on the Sylvester Grid were drilled and the second of these (SY003) intersected the Sylvester Deposit. Subsequently, two further holes were drilled targetted at magnetic anomalies near the Balstrup Fault and the second of these (SY005) again intersected the deposit. Follow-up drilling brought the total number of holes drilled on the grid to

14, totalling 5,165 metres. The principle mineralised intersections encountered by these holes are summarised as Table 1.

While these holes were being drilled, an option to purchase was completed for ML's 43M/85 and 123M/47, and the EL was extended to cover the Tenth Legion area. The Sylvester Grid was extended to the Tenth Legion and covered by soil geochemistry and ground magnetics, and 6 costeans were completed near SY003.

In 1991/92 a single 673m stratigraphic hole (PL001) was completed at Parting Lake. It was unsuccessful in locating carbonates or any signs of base metal mineralisation.

3. GEOLOGY OF THE SYLVESTER DEPOSIT

The Sylvester base metal replacement deposit is hosted by Upper Ononah carbonates in the immediate footwall of the steep northerly dipping Balstrup Fault (Plan 4). It is distal to and genetically related to a skarn complex that extends 3.5km ESE along the footwall of the Balstrup Fault from the margins of the Heemskirk granite to the old Comstock workings. This skarn complex exhibits the following general zonation proceeding ESE from the granite:

- (1) Contact metamorphic aureole (hornfels) characterised by recrystallisation of pure carbonates and formation of Tremolite-Diopside skarns in impure carbonates.
- (2) Prograde skarn assemblage characterised by Diopside-Andradite-Tremolite (\pm Tourmaline, Magnetite, Sphalerite).
- (3) Hydrous, retrograde skarn assemblage characterised by Magnetite-Serpentinite (\pm Brucite, Talc, Actinolite, Chlorite, Epidote, Calcite).
- (4) Replacement massive sulphides characterised by Pyrrhotite-Pyrite-Sphalerite-Galena (\pm Magnetite).

Broad metal zonation is apparent along the skarn complex, including stanniferous magnetite-serpentinite skarns at Tenth Legion, cupriferous

magnetite-serpentinite skarns at Kynance, and the Zn dominant Pb-Zn-Ag deposit at Sylvester. The Pb-Zn-Ag veins mined at Comstock have similar mineralogy to the Sylvester deposit and are probably genetically related. These veins are also zoned, being Zn rich with pyritic gangue near the granite (as at Comstock) and Pb rich with sideritic gangue further away (east of 60,000mE).

The Sylvester Deposit extends along the immediate footwall of the Balstrup Fault for approximately 1,000m (57,000mE-58,000mE) and does not outcrop with the possible exception of a low ironstone hill ESE of the collar of drillhole SY003. The western half forms the core of a magnetite-serpentinite skarn that is up to 100m thick, and appears to replace the serpentinite. The eastern half is enclosed by coarsely crystalline carbonate with minor disseminated magnetite and patchy sphalerite-galena-pyrrhotite mineralisation. This recrystallised zone extended for 98m in SY003 and averaged 0.2% Pb and 0.3% Zn.

The mineralisation is interpreted to have formed as a result of the circulation of hydrothermal fluids of meteoric and/or mixed meteoric/magmatic origin along the Balstrup Fault distal to the magmatic hydrothermal circulation system generated by the intrusion (during the Devonian) of the Heemskirk Granite. As the fluids encountered massive dolomite ± limestone of the Upper Oonah Formation, replacement of the carbonate and/or earlier formed magnetite-serpentinite skarn took place. Because of the extreme thickness of the carbonates, replacement was restricted to within 5-10m of the fault as fluids quickly became neutralised and the impermeability of the carbonates impeded further penetration. The presence of brittle crystalline carbonates may have facilitated penetration by fracturing of these more competent rocks during displacement along the Balstrup Fault.

The characteristic sulphide mineralogy is pyrrhotite-sphalerite-galena in the deeper parts of the deposit, whilst pyrite is the dominant sulphide in the upper levels. Interstitial quartz gangue is common and at the western end of the deposit minor disseminated magnetite is characteristic. In most of the drillhole intersections, a significant portion of the sulphide deposit is essentially barren of base metals (up to 50%). Where this is the case, the base metals are usually located toward the outer ("marble") contact, and

the zones are typically discrete - ie. barren and base metal rich zones are not intermixed.

With the base metal rich portion of the deposit the Pb-Zn-Ag levels remain fairly constant (averaging 3.3% Pb, 5.5% Zn and 40 g/t Ag), and the Pb:Zn ratio averages 1:2. Low levels of Cu, Sn and W occur in the western half, with up to 0.4% Cu, 0.2% Sn and 0.2% W.

Petrographic evidence suggests that pyrrhotite-sphalerite-galena crystallised first, replacing recrystallised carbonate and/or magnetite-serpentine skarn. Some of the pyrrhotite was later replaced by pyrite (\pm magnetite) along fractures during local oxidation. In the upper (more oxidised) levels, the pyrrhotite is completely replaced or remains as a remnant core.

Most of the sphalerite is in coarse masses, and most of the galena occurs as coarse masses and veins. Both should be relatively easily recoverable. The sphalerite contains small inclusions of pyrrhotite and chalcopyrite that will not be liberated during grinding. Additionally, a small proportion of the sphalerite occurs as small inclusions in pyrrhotite and pyrite and may not be liberated readily. A small portion of the galena is present as unrecoverable inclusions in sphalerite and pyrite.

4. INFERRED RESOURCE ESTIMATION - SYLVESTER

The following calculations are based on four definite intersections of replacement massive sulphides (SY003, SY005, SY009, SY012) and one doubtful intersection (SY008). SY008 is considered doubtful because of high core loss in the mineralised zone, resulting in doubt as to the accuracy of grade and thickness calculations, and some doubt as to the style of mineralisation. Exclusion of SY008 would not significantly affect either average grade or average estimated true thickness.

The drillhole intersections are 300-400m apart on average and continuity of grade and thickness between intersections is not guaranteed, although the mineralisation occurs at the same structural/stratigraphic position in all cases and is similar in style in all intersections with the possible

exception of SY008. For this reason the calculated tonnage and grade should only be used as a guide to the maximum possible resource that could be proved up by further drilling within the boundaries defined below (Plan 8).

Two methods of calculations have been used, Method 1 calculates a resource based on the entire sulphide body whilst Method 2 only calculates a resource based on sulphide intersections with average grades in excess of 1% Pb and/or 1% Zn. It is considered valid to subdivide the deposit this way as the base metal rich zones are well defined and there is no interdigitating of base metal rich and barren zones.

Both methods incorporate the following general assumptions:

- (1) Grade and thickness do not decline toward the margins of the body.
- (2) Strike length is 1,000m (57,000mE-58,000mE).
- (3) The body extends 400m downdip (about 50-450m below surface from 236m AMSL to -150m AMSL).
- (4) Sulphide density = 3.8g/cc.
- (5) Structural Dip (SD) = -70 degrees.
- (6) Structural Bearing (SB) = 010 degrees AMG (ie. dip direction).
- (7) Estimated True Thickness (ETT) is given by the formula:

$$ETT = HT [\sin HD \times \cos SD - \cos HD \times \sin SD \times \cos (HB-SB)]$$

where HT = Downhole Thickness

HD = Hole Dip

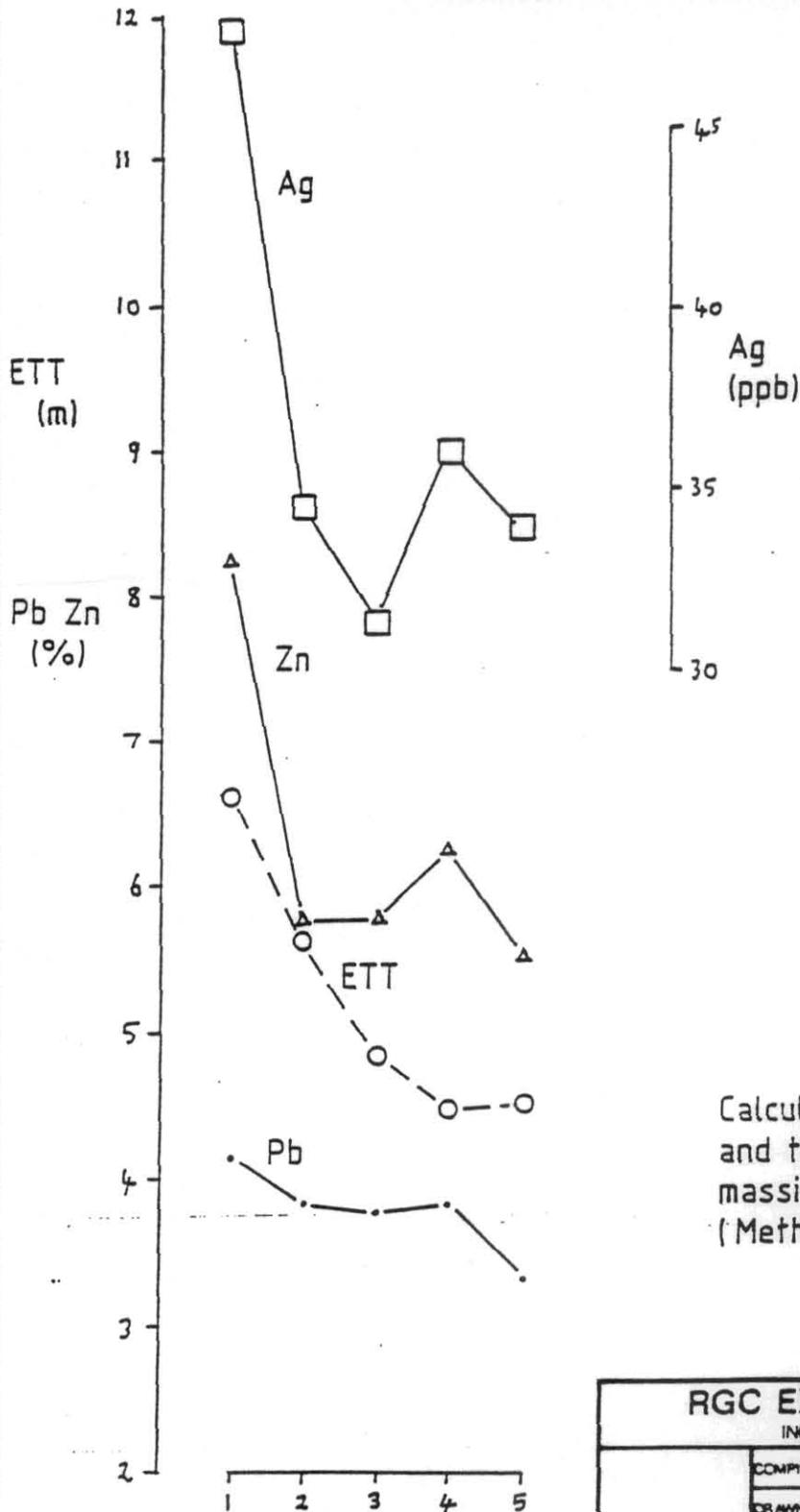
HB = Hole Bearing

5 cm

820206

SYLVESTER PROSPECT

AVERAGE GRADE/THICKNESS



Calculations of average global grade and thickness, excluding barren massive sulphides.
(Method 2)

No. of holes completed.

RGC EXPLORATION PTY. LIMITED		
INCORPORATED IN NEW SOUTH WALES		
	COMPILED	D.J.C.
	DRAWN	D.J.C.
	DATE	8/92
	CHECKED	
	1:250 000 Reference	
ZEEHAN PROJECT SYLVESTER PROSPECT		AVERAGE GRADE/THICKNESS
BASE PLAN No	SCALE	FIG. 2
OVERLAY PLAN No		

TABLE 2

GRADE AND THICKNESS CALCULATIONS, METHOD 1

LOCATION			ETT CALCULATIONS				AVERAGE GRADES			
Hole	From	To	HT	HD	HB	ETT	Cu	Pb	Zn	Ag
SY003	148.0	158.0	10.2	50.8	187.5	8.76		3.26	6.41	40.4
SY005	507.4	535.8	28.4	57.0	353.0	5.75	0.15	1.90	2.97	18.3
SY008	129.0	139.9	10.9	52.0	000.5	3.28		3.68	5.81	25.0
SY009	378.7	397.1	16.4	73.0	197.3	9.83		0.60	1.06	8.5
SY012	443.8	457.0	13.2	63.0	204.5	9.47		0.64	1.31	14.8
OVERALL AVERAGE						7.42		2.02	3.51	21.4

HT = (Down) hole thickness

ETT = Estimated True Thickness

HD = Hole Dip

HB = Hole Bearing

TABLE 3

GRADE AND THICKNESS CALCULATIONS, METHOD 2

LOCATION			ETT CALCULATIONS				AVERAGE GRADES			
Hole	From	To	HT	HD	HB	ETT	Cu	Pb	Zn	Ag
SY003	148.7	156.0	7.7	50.8	187.5	6.61		4.13	8.23	47.7
SY005	507.4 519.0	514.0 535.8	6.0 16.8	57.0 57.0	353.0 353.0	4.62	0.18	3.50	3.34	21.1
SY008	129.0	139.9	10.9	52.0	000.5	3.28		3.68	5.81	25.0
SY009	392.8	395.1	2.3	73.0	197.3	1.35		4.02	7.72	50.7
SY012	450.0	457.0	6.4	63.0	204.5	4.31		1.18	2.42	24.9
OVERALL AVERAGE						4.03		3.30	5.50	33.9

HT = (Down) hole thickness

ETT = Estimated True Thickness

HD = Hole Dip

HB = Hole Bearing

Method 1:

This method further assumes:

(1) Global grade = average grade of ALL sulphide intersections.

(2) Thickness = average of ETT's of ALL sulphide intersections.

Grade and thickness calculations are summarised in Table 2, and the Inferred Resource calculations are completed below:

Tonnage = Average ETT x Length x Depth x Density
 = 7.42m x 1,000 x 400m x 3.8 t/cubic metre
 = 11,278,400 tonnes

Grade = 2.0% Pb, 3.5% Zn, 21 g/t Ag (from Table 2)

Inferred Resource = 11 Mt @ 2.0% Pb, 3.5% Zn, 21 g/t Ag

Method 2:

This method further assumes:

(1) Global grade = average grade of SELECTED sulphide intervals.

(2) Thickness = average of ETT's of SELECTED sulphide intervals.

Grade and thickness calculations are summarised as Table 3, and the Inferred Resource Calculations are completed below:

Tonnage = 4.03m x 1,000m x 400m x 3.8 t/cubic metre
 = 6,125,600 tonnes

Grade = 3.3% Pb, 5.5% Zn, 40 g/t Ag

Inferred Resource = 6 Mt @ 3.3% Pb, 5.5% Zn, 40 g/t Ag

In both cases the mineralisation is considered open at depth along the entire strike length.

5. EXPLORATION POTENTIAL

The Sylvester Deposit is considered open at depth along its entire strike length of 1,000m. Based on the interpreted form of the Heemskirk Granite from gravity data, the depth to granite is about 1,500-2,000m down-dip along the Balstrup Fault which is the main hydrothermal fluid conduit. As there are considerable thicknesses of Upper Oonah Formation carbonate, there is considerable scope for greater tonnages along the Balstrup Fault below 450m. There is also scope for the same metal zonation down the structure as is observed laterally at the surface. Thus there is the possibility of cupriferous and/or stanniferous replacement deposits or skarns at depth.

Additionally, there is some potential for firming up additional reserves laterally, within the 400m gaps between successful and unsuccessful holes at either end of the deposit. In particular, SY010 to the NW intersected 0.5m of massive pyrrhotite-sphalerite in magnetite-serpentinite skarn, and downhole SIROTEM indicated strong off-hole conductivity at that level.

There is also potential for the replacement of thinner carbonate beds within the Upper Oonah formation and the Crimson Creek Formation. It is expected that replacement of thinner beds would result in higher grades due firstly to the circulation of a greater volume of fluid through a given volume of rock and secondly because fluids are able to penetrate greater distances from the fault, as is the case at Renison where carbonates are mostly <20m thick.

Apart from the Balstrup Fault there is some potential for mineralisation associated with other structures, principally in the highly faulted Upper Oonah Formation between the Balstrup and Tenth Legion faults. Some of the sulphide mineralisation observed at the Comstock Mine is replacive, and is associated with talcose alteration of the host limestone.

The Sylvester Fault is another potential mineralising structure, and the line of tin deposits related to the N-S trending Severn Deposit at Queen Hill are

potentially structurally repeated in the NE corner of the Sylvester Grid. An anomalous area on this part of the Sylvester Grid that has not been followed up is centred on 361150mN/358000mE where multi-element soil geochemistry defined anomalously high Cs which is interpreted to be evidence of alteration by magmatic fluids. The area also contains discrete near surface magnetic sources that have yet to be fully explained. These anomalies occur on a buttongrass flat lacking outcrop. The potential is for stanniferous replacement deposits and/or skarns.

The Parting Lake area is no longer considered to have potential as DDH PL001 failed to locate carbonates or alteration in the area.

Appendix 6

Ore Assay Reports and Recent Drill Logs

Paul Heath, 2000

COMSTOCK SILVER LEAD ZINC MINE

**Ore Assay Report and
Recent Drill Logs**

Revised 12th of February, 2001

Prepared by Paul Heath BSc (Hons)

For Zeehan Zinc Pty. Ltd

Qualifications and Disclaimers

This report has been prepared by Paul Heath. Paul currently is employed as a geologist at Comstock Mine for Oceania Tasmania Pty. Ltd, and has a BSc (Hons) in geology that was completed at the end of 1999 from the University of Tasmania.

The information contained in this report was drawn from the authors field observations and geochemical results. All samples were collected by the author and assayed by Analabs Pty. Ltd. Paul accepts no liability to any person for errors or omissions, for losses or damages claimed as a result, directly or indirectly, of opinions or data produced in this report.

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Disclaimer

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Studies from Allison's lode (2000) – Summary

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Report 2 - Samples from Ore Stock Pile (13th of June, 2000)

Report 3 - Channel Sample across Allison's Lode (Trav D)

Report 4 - Channel Samples across Allison's Lode (Trav, A, A1, AA, B, C and D)

Report 5 - Preliminary data from drill holes, SY021 and SY022

Brief field geology associated with the ore

Introduction

Two stratigraphic types are exposed within the current open pit. These are the interbedded graphitic and carbonaceous shales and the carbonate units. The carbonate units host the sphalerite (ZnS) and galena (PbS) sulphides. The Bendall and Balstrup faults run parallel and are approximately 200m apart.

Graphitic Shales

The dark-grey graphitic shales are exposed mainly on the S.E side of the main decline and form the footwall of Bendall's Fault. The rock has a greasy texture that soils the fingers and a reflective sheen due to the high amounts of graphite. Kink folding and faulting is prevalent in this unit.

Carbonaceous Shales

The carbonaceous shales are light-bluestone and lie adjacent to the Bendall's Fault contact containing jagged surfaces and conchoidal fractures.

Carbonate Units

The carbonate units are host to the sphalerite and galena rich ore. These units lie between the Bendall and Balstrup Fault's and strike over 200m with an inclination of 50° from the Bendall Fault. At least three veins are exposed in the current mining operations with a fourth extending approximately south-east into Bendall's fault. This fault zone is also known as the Boss – Britannia Ironstone Trend and contains ore within current operations. All the veins within Allison's approximately strike 020/70° NE. The carbonate unit forms the hanging wall of Bendall Fault zone.

Composition of the carbonate unit comprise dolomite, talc, siliceous limestone, sandstone, silica, veinlets of black bitumen and galena-sphalerite as replacement bodies. Dolomite and talc are identified in the field as being soft (crushes in the hand) and pale skin-pink.

Most obvious indicators in the field of increasing sulphides are colour variations. That is, the talc discolouring to a dark green-brown to brown-grey with increasing pyrite and depth. Darker horizons are to host native silver and display a metallic appearance. Black tar occurs sporadically as discontinuous bands throughout this unit from a few millimetres up to 2 metres wide.

The siliceous limestone is light gray and harder (cannot be crushed the hand) than the dolomite-talc. It commonly overlies the Zn-Pb-Ag veins striking parallel with varying thickness from 1 to 4 metres. The siliceous limestone is often referred in the field as 'capping' of the ore and occasionally enriched in sulphides.

Sphalerite (ZnS)

Sphalerite ranges from light- to dark-brown to coal-black (more rarely yellow or red) in hand specimen and has a light to dark brown (chocolate) streak. It occurs in the isometric crystal system and has a perfect cleavage in six directions. It is usually granular, however, may form tetrahedral crystals in cavities. It has a hardness of 3.5 – 4 (Mohs Hardness Scale) and a medium- heavy specific gravity (3.9 - 4.1) i.e. One cubic metre of pure sphalerite weighs four tonnes. It is often associated with Galena in a ratio of 2:1.

Lead (PbS)

Galena is blue-black to lead-grey in hand specimen and displays a grey-black streak. It occurs in the isometric crystal system and has three cleavages at right angles (this gives it the reflective surface in sunlight). It occurs as cubic crystals and in granular masses and soft (2.5) on Mohs Hardness Scale (can nearly be scratched with your fingers). It has a very high specific gravity of 7.6 i.e. one cubic metre weighs 7.6 tonnes. Silver is associated with the galena.

Studies from Allison's Lode (2000)

This section has been divided into four components (described briefly below) that incorporates four reports. All reports will contain their own tables, figures, plates and appendices.

The author has conducted various investigations whilst working on Allison's Lode. These include:

- Report 1** **Bendall's Fault, Spot Samples and Breccia Zone Channel Samples (24th of May, 2000)**

- Report 2** **Samples from Ore Stock Pile (13th of June, 2000)**

- Report 3** **Channel Sample across Allison's Lode (Trav D) (28th of Nov, 2000)**

- Report 4** **Channel Samples across Allison's Lode (Trav, A, A1, AA, B, C and D)**

- Report 5** **Preliminary data from drill holes, SY021 and SY022**

Report 1:

**Bendall's Fault, Spot Samples
and Breccia Zone Channel Samples**

(24th of May, 2000)

Prepared by Paul Heath BSc (Hons)

For Zeehan Zinc Pty Ltd

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Introduction

The advancement of the decline into and along Bendall's Fault to the east had intersected a six metre wide vein of high grade ore (Zn-Pb-Ag). Approximately 1000 tonnes was taken out and stockpiled. This vein runs parallel to Bendall's Fault and has partly replaced some of the carbonate beds in the hanging wall. This fault may have been one of the main conduits for the mineralising fluids that replaced the carbonate beds. Spot sampling was conducted on representative samples from the ore stock pile.

The second part of this report looks at a brecciated fault zone 20m wide from the Bendall fault carbonate-shale contact. Two channels were taken along two benches apart. Bench A is 5 metres higher than Bench B.

1. Stock Pile Sampling

A total of 41 samples were collected from the stock pile (Table 1). The stock pile comprises 1000 tonnes of ore that came from a six metre zone extending from Allison's. It is postulated that this zone may be part of the Boss-Britannia Ironstone Trend.

A grid at 5m x 5m spacing was pegged over the stock pile by the author using wooden stakes. Representative rocks were then collected around a 2.5m radius from each stake (one sample from every stake), giving a total of 27 samples. Sample numbers on the Analabs Pty. Ltd. Analytical Data Sheet (Appendix 1) relate to the grid squares, not the ore.

The remaining 14 samples were obtained by different methods. This includes:

- 1) Four rocks were collected representing an estimated 100%, 75%, 50%, and 25% Sphalerite (no. 38, 39, 40 and 41 respectively);
- 2) Four rocks were collected at 100%, 75%, 50%, and 25% Galena (no.30, 31, 32, and 33 respectively);
- 3) Two rocks comprised crystalline quartz/siliceous limestone (no. 28 and 29);
- 4) One of each: massive pyrite (no.34); pyritic limestone capping (overlying ore, (no.35); graphitic shale (no.36) and 100% Sphalerite specimen (that had fallen from a truck load from the side of Trial Harbour road from an old batch, no.37).

All samples sent to Analabs, Burnie, for geochemical analysis, tested for the elements B, Ni, Si, Au, Sn, As, Sb, Cu, **Pb, Zn, Ag**, S, Bi, H.

Results

Table 1 - Bendall's Fault ore samples and surrounding rocks i.e shale, quartz, limestone

Samp No.	Grid	Minerals in rock	Ag (ppm)	Pb (%)	Zn (%)
1	1A	sph, py	45	0.5	21.4
2	(1A1)	sph, py, sid	23	0.22	15.7
3	1B	py, sph	20	0.16	36.6
4	1C	lim, sph, gal	427	24.7	11.1
5	1D	sph, py	28	0.62	48.2
6	2A	sph, py, gal	304	16.4	40.1
7	2B	25% gal, fine sph	318	19.8	32.1
8	2C	py, sph	58	2.73	17.8
9	2D	py, minor gal + sph	60	3.13	9.41
10	3A	pyrite, lim, minor sph	4	0.24	0.54
11	3B	sph, py	59	2.53	18.4
12	3C	gal, sph, py	313	17	32
13	3D	lim, sph, gal	39	1.29	4.46
14	3E	gal, sph, py	1155	39.9	24.4
15	3F	sph, py	54	2.36	39.4
16	4A	sph, gal, py	76	6.12	16.8
17	4B	sph, py	61	2.4	27.1
18	4C	sph, gal, py	1425	43	19.1
19	4D	sph, gal, py	383	25.6	15.3
20	4E	sph, gal	1910	47.5	20.9
21	4F	sph, gal	1355	47.4	23.1
22	5A	sph, py	34	1.83	6.25
23	5B	gal, sph, py	195	11.9	25.7
24	5C	py, sph	44	1.29	21.3
25	5D	sph, qtz	23	0.63	17.5
26	5E	sph, gal	749	43.2	12.9
27	6D	limestone	18	1.67	0.97
28	7	qtz vein	16	0.45	12.1
29	8	qtz vein	22	1.25	0.94
30	9	100% gal	3090	19.1	8.34
31	10	75% gal	2830	18.5	12.9
32	11	50% gal	838	25.4	37
33	12	25% gal, sph	125	4.39	43.4
34	17	massive pyrite	26	0.65	0.67
35	18	pyritic limestone cap	11	0.28	0.31
36	19	graphitic shale	8	0.33	0.47
37	20	roadside Sphalerite	327	12.8	48.3
38	21	100% sph	386	25.4	32.6
39	22	75% sph	1360	35.2	26.9
40	23	50% sph	158	8.72	21.4
41	24	25% sph	1280	19.8	19
	Av. of samples 1 to 27		340ppm	13.50%	20.65%

qtz=quartz gal = galena sid = siderite
py = pyrite lim = limestone BF = Bendall fault ore

Samples 1 to 27 were collected as representative samples from around a 2.5m radius from each wooden peg. The highest values were 48.2% Zn, 47.5% Pb, and 1910ppm silver. The lowest values were 0.54% Zn, 0.22% Pb and 4ppm silver. The average of all the samples (sample 1 to 27) is 20.65% Zn, 13.5% Pb, and 340ppm Ag.

Other surrounding country rock and selected ore samples from Bendall's Fault are also tabulated in Table 1. Highest values from samples 28 to 41 are 48.3% Zn, 35.2% Pb and 3090ppm silver. The shale, siliceous limestone, and massive pyrite generally have low values of zinc, lead and silver, however, the vein quartz varied from samples having upto 12.1% Zn in sample.

2. Channel Sampling – Breccia Zone

Bendall's fault currently has an estimated strike length within the pit of 100m and over 2.2 km inferred strike (Boss- Britannia Ironstone Trend?). The fault has an orientation of 120/70 E, however, has been subjected to thrusting 50m to the right (dextral).

Sampling consisted of collecting fifty rocks (Table 3, Appendix 2) along two benches that traverse across a breccia zone adjacent to Bendall's Fault. These benches are described here as Bench A (10m below the true topographic surface) and Bench B, (5m below Bench A). The channel sample traverse strikes 050°.

Bench A traverse is 20 metres wide and channel samples taken at 1m intervals ($n = 20$). Additionally, spot samples were taken every 5m ($n = 5$). Bench B breccia zone has been measured at 25m and channel samples have been taken at a 1m spacing (total = 25). For both benches, zero defines the Bendall's Fault contact. Sample numbers are noted with their bench letter and distance from Bendall's fault i.e. B05, represents a sample taken from Bench B between 5 to 5.99m. The five spot samples were taken from Bench A and labeled with an 'M' after there distance i.e. 10M equals a spot sample taken 10 m away from Bendall's Fault.

Bench A. Traverse – Channel Description

The first 5 m is dark brown pyritic dolomite-talc composition, containing discontinuous lighter bands from 2cm to 30cm in thickness. Subangular fragments of limestone and shale (1-10cm) are caught up in this section, with finer cubic (1-2mm) crystals of galena and pyrite randomly scattered. Tyre black discontinuous veinlets of tar are upto 1cm in thickness and randomly occur throughout.

5-10 metres contains subangular fragments of siliceous limestone, shale, and silica ranging from a <0.5cm to 10cm. The matrix that supports these fragments is composed of chocolate coloured material. Speckles of pyrite and galena are more abundant and rarer discontinuous bands of pyrite (10cm x 0.5cm).

At 10-15 metres, discontinuous bands of lighter material occur within the darker horizons. Bands of pyrite occur upto 1cm wide with rarer massive fragments of conglomerated finer pyrite. Minor veinlets of tar are associated within this zone.

A medium green-brown colour is generally associated with the in the last 5 metres of the breccia zone. It contains larger clasts upto 15cm with speckles of pyrite grains.

Bench B Traverse – Channel Description

0-5m is dominated by the darker brown-green dolomite-talc. However, fragments of shale (few cm) and veinlets of tar occur as discontinuous swirling bands (1cm to 15cm). The shale contact contains random speckles of pyrite.

At 5-10m, the composition is darker in colour containing greater amounts of pyrite and is host to the ore body (1m in width). Tar occurs as veinlets and minor subangular fragments of silica, and shale are caught up in this fine-grained pyritic matrix. The 10 m section is faulted.

At 10-25m, brecciation becomes more abundant, with smaller (0.5 to 1cm) and rarer larger subangular fragments of silica, shale, and siliceous limestone.

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Two benches ('A' and 'B') adjacent to Bendall's Fault were channel sampled at 1 m intervals. These results are recorded in Table 3 and Appendix 2. The benches are 6 m apart in height and results have been plotted in the figures below as sample number against element percentage.

The overall Zn-Pb-Ag values are generally lower than 1%, with several spike trends observed at ~13m and ~18m. The data consistently displays higher values on the lower Bench (B) and although only 6m below Bench A, could be part of a leaching from a further down ore body. Bench 'B' values in Figures 2 and 5 have been raised by 0.2% and 3% respectively so visual trends can be observed.

Sample No.	Bench	Interval (m)	Zn (%)	Pb (%)	Ag (%)
1	A	1	0.08	0.00	0.00
2	A	2	0.08	0.00	0.00
3	A	3	0.08	0.00	0.00
4	A	4	0.08	0.00	0.00
5	A	5	0.08	0.00	0.00
6	A	6	0.08	0.00	0.00
7	A	7	0.08	0.00	0.00
8	A	8	0.08	0.00	0.00
9	A	9	0.08	0.00	0.00
10	A	10	0.08	0.00	0.00
11	A	11	0.08	0.00	0.00
12	A	12	0.08	0.00	0.00
13	A	13	0.08	0.00	0.00
14	A	14	0.08	0.00	0.00
15	A	15	0.08	0.00	0.00
16	A	16	0.08	0.00	0.00
17	A	17	0.08	0.00	0.00
18	A	18	0.08	0.00	0.00
19	A	19	0.08	0.00	0.00
20	A	20	0.08	0.00	0.00
21	A	21	0.08	0.00	0.00
22	A	22	0.08	0.00	0.00
23	A	23	0.08	0.00	0.00
24	A	24	0.08	0.00	0.00
25	A	25	0.08	0.00	0.00
26	A	26	0.08	0.00	0.00
27	A	27	0.08	0.00	0.00
28	A	28	0.08	0.00	0.00
29	A	29	0.08	0.00	0.00
30	A	30	0.08	0.00	0.00
31	A	31	0.08	0.00	0.00
32	A	32	0.08	0.00	0.00
33	A	33	0.08	0.00	0.00
34	A	34	0.08	0.00	0.00
35	A	35	0.08	0.00	0.00
36	A	36	0.08	0.00	0.00
37	A	37	0.08	0.00	0.00
38	A	38	0.08	0.00	0.00
39	A	39	0.08	0.00	0.00
40	A	40	0.08	0.00	0.00
41	A	41	0.08	0.00	0.00
42	A	42	0.08	0.00	0.00
43	A	43	0.08	0.00	0.00
44	A	44	0.08	0.00	0.00
45	A	45	0.08	0.00	0.00
46	A	46	0.08	0.00	0.00
47	A	47	0.08	0.00	0.00
48	A	48	0.08	0.00	0.00
49	A	49	0.08	0.00	0.00
50	A	50	0.08	0.00	0.00
51	A	51	0.08	0.00	0.00
52	A	52	0.08	0.00	0.00
53	A	53	0.08	0.00	0.00
54	A	54	0.08	0.00	0.00
55	A	55	0.08	0.00	0.00
56	A	56	0.08	0.00	0.00
57	A	57	0.08	0.00	0.00
58	A	58	0.08	0.00	0.00
59	A	59	0.08	0.00	0.00
60	A	60	0.08	0.00	0.00
61	A	61	0.08	0.00	0.00
62	A	62	0.08	0.00	0.00
63	A	63	0.08	0.00	0.00
64	A	64	0.08	0.00	0.00
65	A	65	0.08	0.00	0.00
66	A	66	0.08	0.00	0.00
67	A	67	0.08	0.00	0.00
68	A	68	0.08	0.00	0.00
69	A	69	0.08	0.00	0.00
70	A	70	0.08	0.00	0.00
71	A	71	0.08	0.00	0.00
72	A	72	0.08	0.00	0.00
73	A	73	0.08	0.00	0.00
74	A	74	0.08	0.00	0.00
75	A	75	0.08	0.00	0.00
76	A	76	0.08	0.00	0.00
77	A	77	0.08	0.00	0.00
78	A	78	0.08	0.00	0.00
79	A	79	0.08	0.00	0.00
80	A	80	0.08	0.00	0.00
81	A	81	0.08	0.00	0.00
82	A	82	0.08	0.00	0.00
83	A	83	0.08	0.00	0.00
84	A	84	0.08	0.00	0.00
85	A	85	0.08	0.00	0.00
86	A	86	0.08	0.00	0.00
87	A	87	0.08	0.00	0.00
88	A	88	0.08	0.00	0.00
89	A	89	0.08	0.00	0.00
90	A	90	0.08	0.00	0.00
91	A	91	0.08	0.00	0.00
92	A	92	0.08	0.00	0.00
93	A	93	0.08	0.00	0.00
94	A	94	0.08	0.00	0.00
95	A	95	0.08	0.00	0.00
96	A	96	0.08	0.00	0.00
97	A	97	0.08	0.00	0.00
98	A	98	0.08	0.00	0.00
99	A	99	0.08	0.00	0.00
100	A	100	0.08	0.00	0.00
Average			0.08	0.00	0.00

**Table 3 - Data from channel sampling
Benches 'A' and 'B'.**

Bench	A	B	A	B	A	B	A	B
Sample/element	Zn%	Zn%	Pb%	Pb%	Ag (ppm)	Ag (ppm)	Fe	Fe
1	0.09	0.17	0.09	0.1	1	1	1.04	2.25
2	0.06	0.36	0.04	0.49	1	1	0.31	1.26
3	0.07	0.26	0.06	0.83	1	1	0.59	1.23
4	0.25	0.34	0.08	0.39	3	1	0.65	1.39
5	0.3	0.26	0.09	0.27	3	3	1.77	0.87
6	0.31	0.12	0.09	0.25	4	1	3.37	0.37
7	0.33	0.1	0.08	0.33	1	2	3.07	0.28
8	0.27	0.13	0.08	0.4	1	3	1.8	0.69
9	0.28	0.35	0.09	0.36	1	1	3	1.21
10	0.15	0.27	0.06	0.04	3	1	3.87	0.7
11	0.29	0.17	0.14	0.11	3	1	4.48	2.33
12	0.19	0.22	0.23	0.18	4	4	4.11	0.96
13	0.2	1	0.25	0.17	2	8	3.11	10.9
14	0.43	0.21	0.23	0.17	2	3	4.4	0.14
15	0.3	0.36	0.14	0.27	1	3	5.53	0.99
16	0.09	0.46	0.04	0.08	1	2	3.7	0.79
17	0.22	0.16	0.09	0.12	1	1	2.6	1.86
18	0.3	0.07	0.11	0.06	1	1	2.07	2.12
19	0.31	0.69	0.07	2.41	1	38	1.99	6.32
20	0.17	0.97	0.18	2.19	4	35	0.9	5.1
21	n/a	0.28	n/a	0.23	n/a	2	n/a	1.69
22	n/a	0.2	n/a	0.09	n/a	1	n/a	1.42
23	n/a	0.24	n/a	0.07	n/a	1	n/a	1.12
24	n/a	0.12	n/a	0.03	n/a	2	n/a	0.44
25	n/a	0.21	n/a	0.03	n/a	1	n/a	0.72
Average	0.2305	0.3088	0.112	0.3868	1.95	4.72	2.618	1.886
Spot Samples								
Bench A (only)								
0m	0.17		0.02		1		0.58	
5m	0.77		0.22		1		4.56	
10m	0.74		0.17		4		5.25	
15m	0.74		0.17		4		5.25	
20m	0.12		0.18		3		0.89	

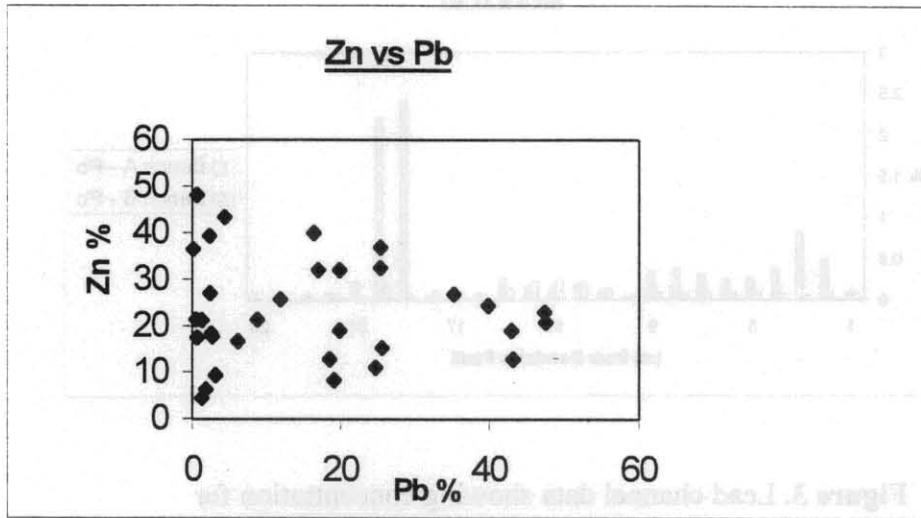
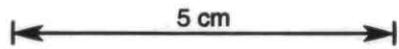


Figure 1. Plot of Zn% vs, Pb% Bendall's Fault ore

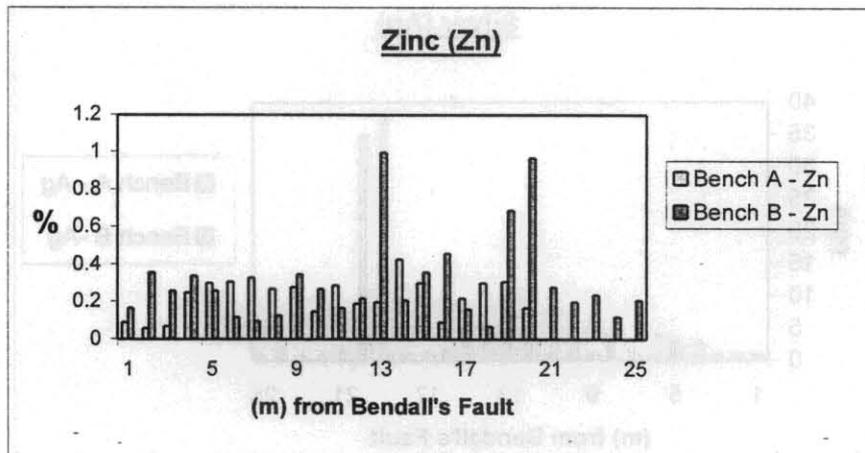


Figure 2. Zinc channel data showing concentration for Benches A and B.

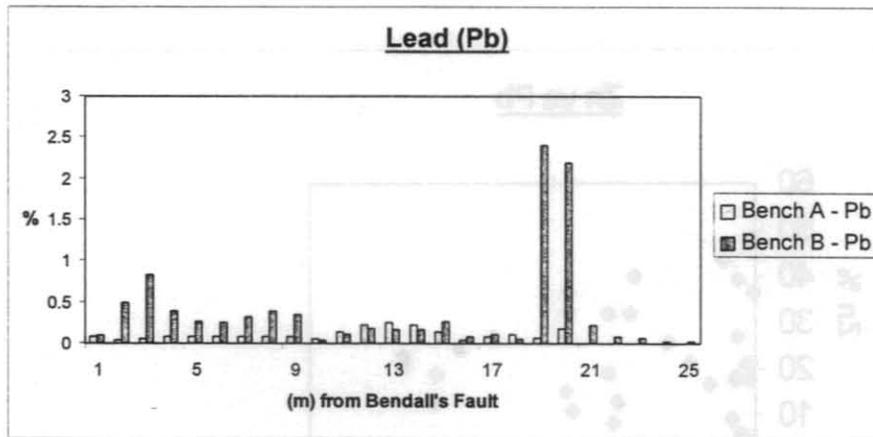
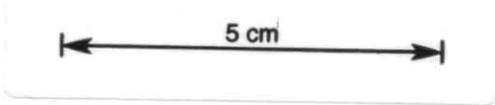


Figure 3. Lead channel data showing concentration for Benches A and B against metres from Bendall's Fault.

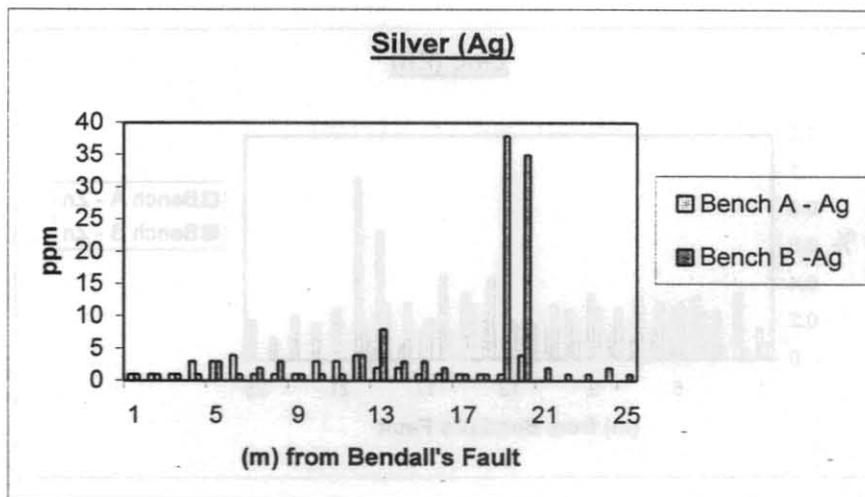


Figure 4. Silver channel data showing concentration for Benches A and B against metres from Bendall's Fault.

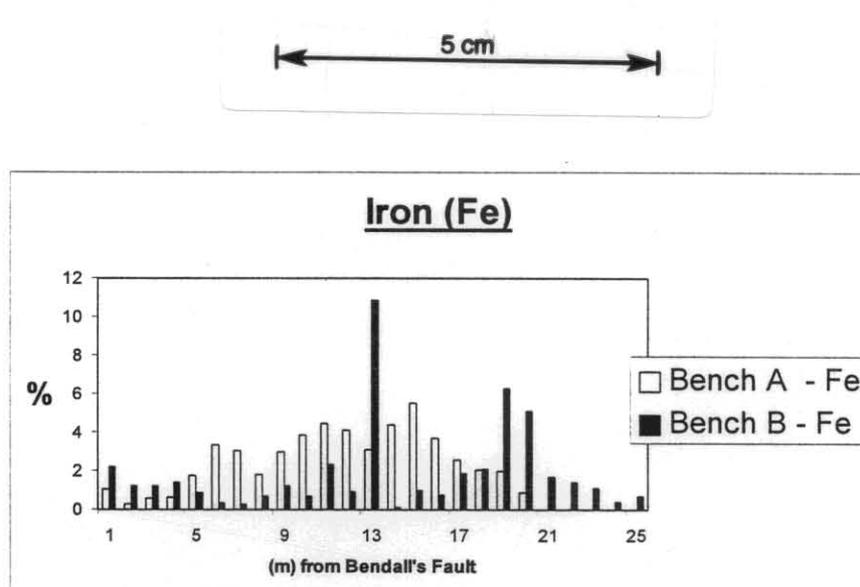


Figure 5. Iron channel data showing concentration for Benches A and B (N.B – Bench B zero position starts at 3%).

Appendix 1

ANALABS



Our reference : BU017859
 Your reference : May 5 Drop Off
 Project code :
 Report date : 08/06/00
 Report status : Final
 Page : 1 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Ag	Pb	Zn	Cu	Au	Au(R)
1A	45	0.50	21.40	0.05	<0.01	--
1AI	23	0.22	15.70	0.04	<0.01	--
1B	20	0.16	36.60	0.11	<0.01	--
1C	427	24.70	11.10	0.05	0.02	--
1D	28	0.62	48.20	0.06	<0.01	--
2A	304	16.40	40.10	0.08	<0.01	--
2B	318	19.80	32.10	0.23	<0.01	--
2C	58	2.73	17.80	0.07	<0.01	--
2D	60	3.13	9.41	0.01	<0.01	--
3A	4	0.24	0.54	0.01	<0.01	<0.01
3B	59	2.53	18.40	0.06	<0.01	--
3C	313	17.00	32.00	0.16	<0.01	--
3D	39	1.29	4.46	0.01	<0.01	--
3E	1155	39.90	24.40	0.05	<0.01	--
3F	54	2.36	39.40	0.09	<0.01	--
4A	76	6.12	16.80	0.02	<0.01	--
4B	61	2.40	27.10	0.02	<0.01	--
4C	1425	43.00	19.10	0.02	<0.01	--
4D	383	25.60	15.30	0.04	<0.01	<0.01
4E	1910	47.50	20.90	0.06	<0.01	--
4F	1355	47.40	23.10	0.07	0.03	--
5A	34	1.83	6.25	0.01	0.09	--
5B	195	11.90	25.70	0.14	0.03	--
5C	44	1.29	21.30	0.03	<0.01	--
5D	23	0.63	17.50	0.02	0.03	--
5E	749	43.20	12.90	0.03	<0.01	--
6D	18	1.67	0.97	0.02	0.05	--
07	16	0.45	12.10	0.03	0.06	--
08	22	1.25	0.94	0.01	0.10	--
09	3090	19.10	8.34	0.05	<0.01	--
10	2830	18.50	12.90	0.05	<0.01	--
11	838	25.40	37.00	0.07	<0.01	--
12	125	4.39	43.40	0.06	<0.01	--
17	26	0.65	0.67	<0.01	<0.01	--
18	11	0.28	0.31	<0.01	<0.01	--
19	8	0.33	0.47	0.01	<0.01	--
20	327	12.80	48.30	0.02	<0.01	--
21	386	25.40	32.60	0.01	<0.01	--
22	1360	35.20	26.90	0.08	<0.01	<0.01
23	158	8.72	21.40	0.06	<0.01	--
24	1280	19.80	19.00	0.03	<0.01	<0.01
Method	A330	A330	A330	A330	F650	F650
Units	ppm	%	%	%	ppm	ppm
Detection Limit	1	0.01	0.01	0.01	0.01	0.01

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

ANALABS



Our reference : BU017859
 Your reference : May 5 Drop Off
 Project code :
 Report date : 08/06/00
 Report status : Final
 Page : 2 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Sb	As	Sn	Bi	Hg	S
1A	124	800	239	<10	0.420	>30.0
1A1	110	1070	190	<10	0.220	>30.0
1B	95	587	249	<10	0.740	>30.0
1C	304	862	136	<10	0.140	18.997
1D	100	171	138	<10	1.40	>30.0
2A	397	1050	253	15	1.20	>30.0
2B	383	303	264	<10	0.460	>30.0
2C	109	356	104	<10	0.220	29.890
2D	364	1230	23	<10	0.100	>30.0
3A	28	479	14	<10	0.020	9.693
3B	495	362	61	<10	0.360	>30.0
3C	390	431	223	<10	0.520	>30.0
3D	83	249	29	<10	0.080	25.103
3E	750	58	310	<10	0.300	21.684
3F	195	307	272	<10	0.420	>30.0
4A	141	1960	76	<10	0.140	>30.0
4B	376	590	77	<10	1.80	>30.0
4C	782	<2	152	<10	0.240	21.531
4D	268	681	136	<10	0.160	19.342
4E	1100	<2	287	<10	0.260	21.562
4F	766	57	254	<10	0.320	22.583
5A	89	1930	15	<10	0.060	>30.0
5B	261	420	231	<10	0.300	>30.0
5C	103	1190	172	<10	0.840	>30.0
5D	280	1535	90	<10	0.680	>30.0
5E	462	397	111	<10	0.180	17.550
6D	55	1530	32	<10	0.080	23.858
07	40	1270	167	<10	0.260	21.667
08	35	2000	17	<10	<0.005	18.810
09	1970	5	147	10	0.100	18.010
10	2100	92	207	<10	0.200	20.032
11	661	138	305	<10	0.780	29.972
12	160	69	537	<10	0.620	26.435
17	240	593	11	<10	<0.005	>30.0
18	49	337	<3	<10	<0.005	>30.0
19	26	87	6	<10	0.020	3.425
20	375	130	74	<10	1.40	>30.0
21	406	284	119	<10	0.460	26.050
22	906	66	418	<10	0.440	21.562
23	282	303	153	<10	0.280	>30.0
24	708	1230	127	<10	0.380	19.075
Method	X401	X401	X401	X401	H114	V821
Units	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	3	2	3	10	0.005	0.005

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

ANALABS



Our reference : BU017859
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 Project code :
 Report date : 08/06/00
 Report status : Final
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Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Nr	B	Si	S	As	Sb
1A	<0.005	<25	7.7	37.26	720	--
1A1	<0.005	<25	13.0	33.45	990	--
1B	<0.005	<25	2.2	37.75	450	--
1C	<0.005	<25	17.8	--	570	--
1D	>5.000	<25	2.8	34.47	140	--
2A	>5.000	<25	0.4	31.07	740	--
2B	<0.005	<25	0.3	33.02	210	--
2C	<0.005	<25	12.4	29.89	250	--
2D	>5.000	<25	4.1	44.94	960	--
3A	<0.005	<25	37.8	--	580	--
3B	>5.000	<25	5.6	39.99	290	--
3C	>5.000	<25	0.5	33.49	320	--
3D	<0.005	38	23.1	--	170	--
3E	>5.000	<25	4.7	--	<100	1610
3F	>5.000	<25	5.4	34.14	270	--
4A	>5.000	30	3.3	38.95	1540	--
4B	>5.000	32	1.6	41.59	490	--
4C	>5.000	<25	3.0	--	<100	2070
4D	>5.000	<25	15.5	--	520	--
4E	>5.000	<25	1.8	--	<100	2550
4F	>5.000	26	1.4	--	<100	2060
5A	>5.000	32	12.6	31.41	1740	--
5B	>5.000	40	4.4	34.62	320	--
5C	>5.000	42	2.1	41.39	970	--
5D	>5.000	40	1.9	45.08	1350	--
5E	>5.000	<25	7.6	--	210	960
6D	>5.000	46	21.6	--	1390	--
07	>5.000	34	21.1	--	1290	--
08	>5.000	36	25.2	--	1950	--
09	>5.000	40	0.4	--	<100	>5000
10	>5.000	34	0.7	--	<100	>5000
11	>5.000	44	1.1	--	<100	1310
12	>5.000	44	8.3	--	<100	--
17	>5.000	66	5.4	45.04	470	--
18	>5.000	54	18.9	30.53	310	--
19	>5.000	250	29.2	--	110	--
20	>5.000	46	0.4	31.51	140	--
21	>5.000	52	2.5	--	200	--
22	>5.000	46	4.2	--	<100	2150
23	>5.000	50	8.4	31.80	200	--
24	>5.000	50	1.7	--	<100	1840
Method	1151	1151	1151	V829	A104	1104
Units	%	ppm	%	%	ppm	ppm
Detection Limit	0.005	25	0.25	0.05	100	10
Upper Method	1151					1105

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

ANALABS



Our reference : BU017859
 Your reference : May 5 Drop Off
 Project code :
 Report date : 08/06/00
 Report status : Final
 Page : 4 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Sb	Sn	Bf	Sb
1A	170.5	310	<0.1	--
1A1	160.5	250	<0.1	--
1B	120.0	320	<0.1	--
1C	575	150.5	0.4	--
1D	137.0	184.5	<0.1	--
2A	849	399	0.2	--
2B	747	380	0.2	--
2C	149.5	100.5	<0.1	--
2D	536	26.2	<0.1	--
3A	39.6	7.5	<0.1	--
3B	780	52.9	<0.1	--
3C	705	325	0.1	--
3D	93.4	34.1	0.2	--
3E	>1000	708	0.1	--
3F	280	338	<0.1	--
4A	191.5	72.4	<0.1	--
4B	602	108.5	<0.1	--
4C	>1000	288	<0.1	--
4D	547	179.0	0.6	--
4E	>1000	536	0.1	--
4F	>1000	463	0.3	--
5A	132.5	17.5	<0.1	--
5B	427	267	<0.1	--
5C	144.0	191.0	0.1	--
5D	387	105.5	<0.1	--
5E	>1000	180.5	0.6	--
6D	89.5	23.9	<0.1	--
07	51.1	212	<0.1	--
08	53.8	20.1	<0.1	--
09	>1000	313	0.3	5520
10	>1000	436	0.3	6130
11	>1000	531	0.2	--
12	227	608	<0.1	--
17	305	7.5	<0.1	--
18	60.8	3.5	<0.1	--
19	38.0	10.7	0.4	--
20	559	77.1	0.2	--
21	698	128.0	<0.1	--
22	>1000	668	<0.1	--
23	390	116.0	<0.1	--
24	>1000	313	<0.1	--
Method	M104	M104	M104	Z100
Units	ppm	ppm	ppm	ppm
Detection Limit	0.1	0.5	0.1	1
Upper Method	1104			

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 2

ANALABS



Our reference : BU017897
 Your reference : 158101
 Project code : Drop Off 22/5
 Report date : 09/06/00
 Report status : Final
 Page : 1 of 3

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Au	Cu	Pb	Zn	Ag	Fe
A01	<0.01	N.A.	0.09	0.09	1	1.04
A02	<0.01	N.A.	0.04	0.06	<1	0.31
A03	<0.01	N.A.	0.06	0.07	1	0.59
A04	<0.01	N.A.	0.08	0.25	3	0.65
A05	<0.01	N.A.	0.09	0.30	3	1.77
A06	<0.01	N.A.	0.09	0.31	4	3.37
A07	<0.01	N.A.	0.08	0.33	1	3.07
A08	<0.01	N.A.	0.08	0.27	1	1.80
A09	<0.01	N.A.	0.09	0.28	1	3.00
A10	<0.01	<0.01	0.06	0.15	3	3.87
A11	<0.01	N.A.	0.14	0.29	3	4.48
A12	<0.01	N.A.	0.23	0.19	4	4.11
A13	<0.01	N.A.	0.25	0.20	2	3.11
A14	<0.01	N.A.	0.23	0.43	2	4.40
A15	<0.01	N.A.	0.14	0.30	<1	5.53
A16	<0.01	N.A.	0.04	0.09	<1	3.70
A17	<0.01	N.A.	0.09	0.22	<1	2.60
A18	<0.01	N.A.	0.11	0.30	<1	2.07
A19	<0.01	N.A.	0.07	0.31	<1	1.99
A20	<0.01	<0.01	0.18	0.17	4	0.90
B01	<0.01	N.A.	0.10	0.17	1	2.25
B02	<0.01	N.A.	0.49	0.36	<1	1.26
B03	<0.01	N.A.	0.83	0.26	<1	1.23
B04	<0.01	N.A.	0.39	0.34	1	1.39
B05	<0.01	N.A.	0.27	0.26	3	0.87
B06	<0.01	N.A.	0.25	0.12	1	0.37
B07	<0.01	N.A.	0.33	0.10	2	0.28
B08	<0.01	N.A.	0.40	0.13	3	0.69
B09	<0.01	N.A.	0.36	0.35	1	1.21
B10	<0.01	<0.01	0.04	0.27	1	0.70
B11	<0.01	N.A.	0.11	0.17	1	2.33
B12	<0.01	N.A.	0.18	0.22	4	0.96
B13	<0.01	N.A.	0.17	1.00	8	10.90
B14	<0.01	N.A.	0.17	0.21	3	0.14
B15	<0.01	N.A.	0.27	0.36	3	0.99
B16	<0.01	N.A.	0.08	0.46	2	0.79
B17	<0.01	N.A.	0.12	0.16	1	1.86
B18	<0.01	N.A.	0.06	0.07	1	2.12
B19	<0.01	N.A.	2.41	0.69	38	6.32
B20	<0.01	<0.01	2.19	0.97	35	5.10
B21	<0.01	N.A.	0.23	0.28	2	1.69
B22	<0.01	N.A.	0.09	0.20	1	1.42
B23	<0.01	N.A.	0.07	0.24	<1	1.12
B24	<0.01	N.A.	0.03	0.12	2	0.44
B25	<0.01	N.A.	0.03	0.21	<1	0.72
00M	<0.01	N.A.	0.02	0.17	<1	0.58
05M	<0.01	N.A.	0.22	0.77	<1	4.56
10M	<0.01	N.A.	0.17	0.74	4	5.25
15M	<0.01	N.A.	0.17	0.74	4	5.25
20M	<0.01	<0.01	0.18	0.12	3	0.89
Method	F650	A330	A330	A330	A330	A330
Units	ppm	%	%	%	ppm	%
Detection Limit	0.01	0.01	0.01	0.01	1	0.01

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

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ANALABS



Our reference : BU017897
 Your reference : 158101
 Project code : Drop Off 22/5
 Report date : 09/06/00
 Report status : Final
 Page : 2 of 3

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Ni	B	Si	S	Hg
A01	N.A.	N.A.	N.A.	N.A.	N.A.
A02	N.A.	N.A.	N.A.	N.A.	N.A.
A03	N.A.	N.A.	N.A.	N.A.	N.A.
A04	N.A.	N.A.	N.A.	N.A.	N.A.
A05	N.A.	N.A.	N.A.	N.A.	N.A.
A06	N.A.	N.A.	N.A.	N.A.	N.A.
A07	N.A.	N.A.	N.A.	N.A.	N.A.
A08	N.A.	N.A.	N.A.	N.A.	N.A.
A09	N.A.	N.A.	N.A.	N.A.	N.A.
A10	<50	42	16.5	4.269	0.063
A11	N.A.	N.A.	N.A.	N.A.	N.A.
A12	N.A.	N.A.	N.A.	N.A.	N.A.
A13	N.A.	N.A.	N.A.	N.A.	N.A.
A14	N.A.	N.A.	N.A.	N.A.	N.A.
A15	N.A.	N.A.	N.A.	N.A.	N.A.
A16	N.A.	N.A.	N.A.	N.A.	N.A.
A17	N.A.	N.A.	N.A.	N.A.	N.A.
A18	N.A.	N.A.	N.A.	N.A.	N.A.
A19	N.A.	N.A.	N.A.	N.A.	N.A.
A20	<50	40	21.9	0.954	0.050
B01	N.A.	N.A.	N.A.	N.A.	N.A.
B02	N.A.	N.A.	N.A.	N.A.	N.A.
B03	N.A.	N.A.	N.A.	N.A.	N.A.
B04	N.A.	N.A.	N.A.	N.A.	N.A.
B05	N.A.	N.A.	N.A.	N.A.	N.A.
B06	N.A.	N.A.	N.A.	N.A.	N.A.
B07	N.A.	N.A.	N.A.	N.A.	N.A.
B08	N.A.	N.A.	N.A.	N.A.	N.A.
B09	N.A.	N.A.	N.A.	N.A.	N.A.
B10	<50	34	20.3	2.620	0.075
B11	N.A.	N.A.	N.A.	N.A.	N.A.
B12	N.A.	N.A.	N.A.	N.A.	N.A.
B13	N.A.	N.A.	N.A.	N.A.	N.A.
B14	N.A.	N.A.	N.A.	N.A.	N.A.
B15	N.A.	N.A.	N.A.	N.A.	N.A.
B16	N.A.	N.A.	N.A.	N.A.	N.A.
B17	N.A.	N.A.	N.A.	N.A.	N.A.
B18	N.A.	N.A.	N.A.	N.A.	N.A.
B19	N.A.	N.A.	N.A.	N.A.	N.A.
B20	<50	28	20.8	6.091	0.163
B21	N.A.	N.A.	N.A.	N.A.	N.A.
B22	N.A.	N.A.	N.A.	N.A.	N.A.
B23	N.A.	N.A.	N.A.	N.A.	N.A.
B24	N.A.	N.A.	N.A.	N.A.	N.A.
B25	N.A.	N.A.	N.A.	N.A.	N.A.
00M	N.A.	N.A.	N.A.	N.A.	N.A.
05M	N.A.	N.A.	N.A.	N.A.	N.A.
10M	N.A.	N.A.	N.A.	N.A.	N.A.
15M	N.A.	N.A.	N.A.	N.A.	N.A.
20M	<50	30	23.8	1.009	0.063
Method	I151	I151	I151	V821	H114
Units	ppm	ppm	%	%	ppm
Detection Limit	50	20	0.2	0.005	0.005

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

A N A L A B S



Our reference : BU017897
 Your reference : 158101
 Project code : Drop Off 22/5
 Report date : 09/06/00
 Report status : Final
 Page : 3 of 3

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Sb	As	Sr	Bi
A01	--	--	--	--
A02	--	--	--	--
A03	--	--	--	--
A04	--	--	--	--
A05	--	--	--	--
A06	--	--	--	--
A07	--	--	--	--
A08	--	--	--	--
A09	--	--	--	--
A10	14.3	273	2.6	0.3
A11	--	--	--	--
A12	--	--	--	--
A13	--	--	--	--
A14	--	--	--	--
A15	--	--	--	--
A16	--	--	--	--
A17	--	--	--	--
A18	--	--	--	--
A19	--	--	--	--
A20	13.3	79	3.0	0.4
B01	--	--	--	--
B02	--	--	--	--
B03	--	--	--	--
B04	--	--	--	--
B05	--	--	--	--
B06	--	--	--	--
B07	--	--	--	--
B08	--	--	--	--
B09	--	--	--	--
B10	15.2	123	9.4	0.4
B11	--	--	--	--
B12	--	--	--	--
B13	--	--	--	--
B14	--	--	--	--
B15	--	--	--	--
B16	--	--	--	--
B17	--	--	--	--
B18	--	--	--	--
B19	--	--	--	--
B20	11.2	74	2.8	0.1
B21	--	--	--	--
B22	--	--	--	--
B23	--	--	--	--
B24	--	--	--	--
B25	--	--	--	--
00M	--	--	--	--
05M	--	--	--	--
10M	--	--	--	--
15M	--	--	--	--
20M	64.1	350	12.3	0.3
Method	M104	M104	M104	M104
Units	ppm	ppm	ppm	ppm
Detection Limit	0.1	1	0.5	0.1

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

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Report 2:

Samples from Ore Stock Pile

(13th of June, 2000)

Prepared by Paul Heath BSc (Hons)

For Zeehan Zinc Pty Ltd

Methods

A total of 17 samples were collected from the stock pile and are tabulated in Appendix 1. The stock pile comprises an additional 1000 tonnes of ore with the majority coming from Allison's lode.

A grid at 5m x 5m spacing was pegged over the stock pile by the author using wooden stakes. Representative rocks were then collected around a 2.5m radius from each stake (several small representative samples from every stake), giving a total of 17 samples. Sample numbers on the Analabs Pty. Ltd. Analytical Data Sheet (Appendix 1) relate to the grid squares. Representative rocks from each 5m square were placed in sample bags.

Table 1 – Zinc-Lead-Silver values from rock taken on stock pile

Sample	Pb%	Zn%	Ag(ppm)
1	3.66	19.10	83
2	15.90	25.40	510
3	10.60	10.70	228
4	3.72	28.40	90
5	2.84	17.50	72
6	1.77	2.04	32
7	3.81	8.37	52
8	5.06	32.80	106
9	18.80	13	440
10	5.19	31.90	112
11	6.18	9.77	100
12	6.97	15.30	103
13	3.51	24.90	57
14	37	17.70	1360
15	10.8	15.8	207
16	6.91	20.30	178
17	19.50	33.30	826
Average	9.54%	19.19%	48.6(ppm)

Report 3:

**Channel Samples
across Allison's Lode (Trav D)**

(28th of November, 2000)

**Prepared by Paul Heath BSc (Hons)
For Zeehan Zinc Pty Ltd**

Contents

1. Introduction
2. Sampling methods
3. Results

Appendix 1

Appendix 2

Reference

} Missing

"Comstock Silver Lead Zinc Mine – Interim Ore Assay Report", May 2000 prepared by P. Heath for Zeehan Zinc Pty Ltd (Report 1).

1. Introduction

This investigation looks at the percentages of zinc (Zn), lead (Pb), silver (Ag), copper (Cu), gold (Au) and iron (Fe) across strike of the Allison's lode currently exposed in McCormacks pit. This comprised collecting chip (C) and rock saw (S) samples across a channel from the footwall to the hangingwall that is approximately 14m wide. N.B - At time of sampling traverse width was only 14m (bottom of pit). Extension of pit uncovered an additional metre (see Report 4). This report documents the results and geology of these samples.

2. Sampling Methods

Sampling comprised collecting a total of 28 samples channeled across the strike of Allison's lode within McCormack's Pit at 1m intervals. Fourteen are labeled with the prefix 'C' that represent chip samples and fourteen by 'S' prefix representing rocks cut by the circular saw. 'D-0' represents the authors channel line 'D' and metre i.e line D sampled between 0- 0.99m, 'D-1' represents line D between 1-1.99m and so on. Samples were taken from west to east.

The cut channels are approximately 3 cm wide by 3 cm deep at 1 m intervals.

Sample D-0 starts at the footwall of the lode to D-13 (the hangingwall). All samples were assayed at Analabs Pty. Ltd. Burnie for Zn, Pb, Ag, Cu, Au and Fe. The elements Hg, B, Mg, Ni, Si, Bi, Sn, As, Sb, and S are currently being analysed.

The channel is located in Appendix 1 (Report 4) and is approximately 10 m below the pink peg located at the back of McCormack's pit.

3. Results

The results in Table 1 are from Analabs (see also Appendix 1 for Au and Cu). Only the rock saw (S) samples will be referred in this section unless otherwise stated, due to uniformity of width and depth of channel.

Table 1 - Data from channel samples across strike of ore body in McCormacks Pit

Line D		C	S	C	S	C	S	C	S
Sample/element		Pb (%)	Pb (%)	Zn (%)	Zn (%)	Ag (ppm)	Ag (ppm)	Fe (%)	Fe (%)
0	gal/sph/py	6.31	13	24.2	32.7	213	199	21.8	11.4
1	gal/sph/py	2.43	2.6	25.6	27	67	41	12.9	11.1
2	talc-lim	0.25	0.26	0.5	1	19	4	5.25	3.36
3	talc-lim	0.1	0.64	0.62	2.05	14	12	3.65	5.49
4	py-talc-lim	1.18	0.29	2.62	0.53	18	4	19.3	9.74
5	py-talc-sph-gal	10.16	12.7	26.9	13.9	161	228	16.8	24.4
6	py-sph/gal	14	5.64	15.8	11.1	265	85	15.8	21.4
7	lim-py-sph-gal	3.09	5.47	11.4	23.6	57	93	18.3	15.8
8	py-lim	0.39	0.63	14.6	2.33	18	10	21	14.8
9	py-sph/gal	1.64	1.93	46.8	22.8	35	34	10.4	18.6
10	py-sph	1.4	2.43	12.5	4.47	26	35	27.8	32.1
11	py-sph	0.45	0.34	12	7.97	11	12	23.4	31.7
12	sph-py-gal	14.6	13.2	23.4	16.6	344	249	12.2	15.1
13	lim-py-sph	5.3	0.82	7.76	32.7	91	41	24	13.5
Average		4.38	4.28	16.05	14.2	95	74	16.61	16.3
C= Chip channel samples S= Circular saw channel samples gal= Galena py= pyrite sph= Sphalerite lim= limestone									

Table 1 shows that the average percent of lead and zinc at 4.28 and 14.2 respectively. The average of the chips (C) are 4.38% for lead and 16.05% for zinc and compare similarly to the to that cut.

Three peaks occur throughout the lead, zinc, copper, silver, gold and iron values. These lie between 0-2m, 4-8m, and 9-13m. Lead reached upto nearly 15% in some cases to as low as 0.1% in sulphide-poor areas. Zinc also varied across the channel reaching a peak at nearly 47% to as low as 0.5%.

Silver values range between 4 to 344 ppm and are lower than those values observed from the Bendall's Fault ore that peaked over 3000ppm (Heath, 2000 – Report 1). These higher silver values within the Bendall's Fault ore may be due to the adjacent graphitic shale.

Gold, copper generally increase in ppm/percent across the channel towards the hangingwall. Iron also follows this trend, however, increases from 11 to over 32 percent.

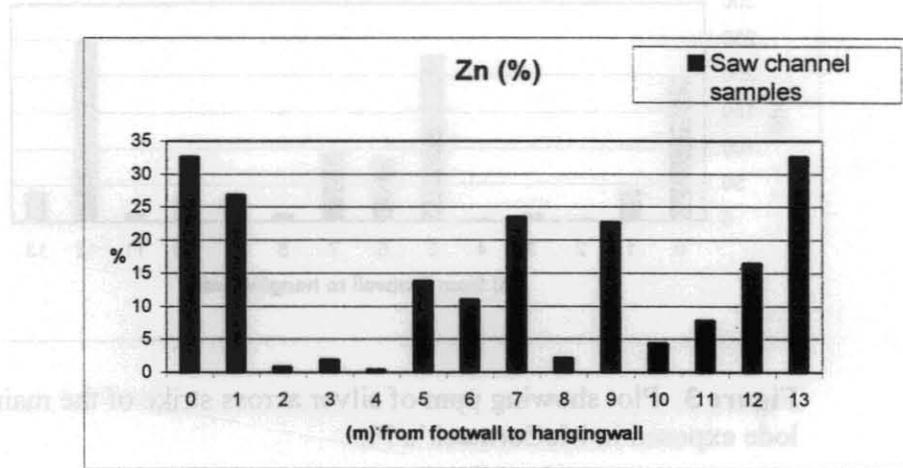


Figure 1. Plot showing percentage of zinc across strike of the main lode exposed in McCormack's Pit.

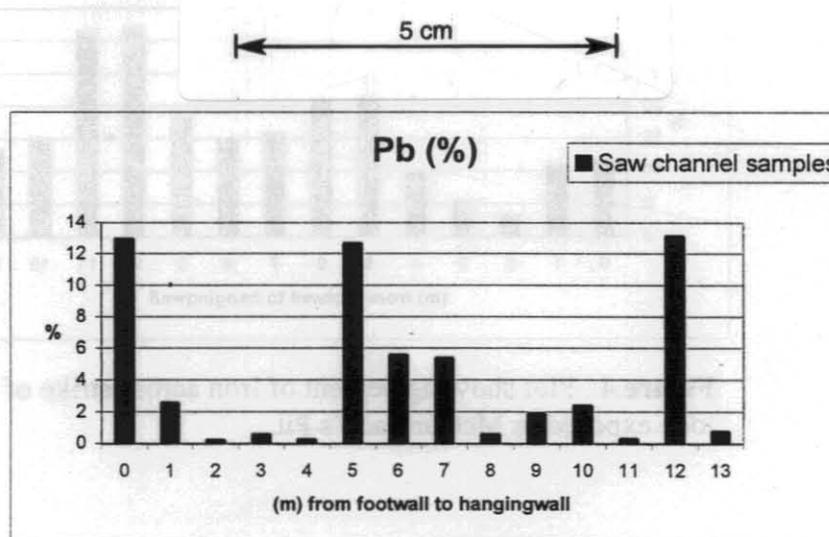


Figure 2. Plot showing percentage of lead across strike of the main lode exposed in McCormack's Pit.

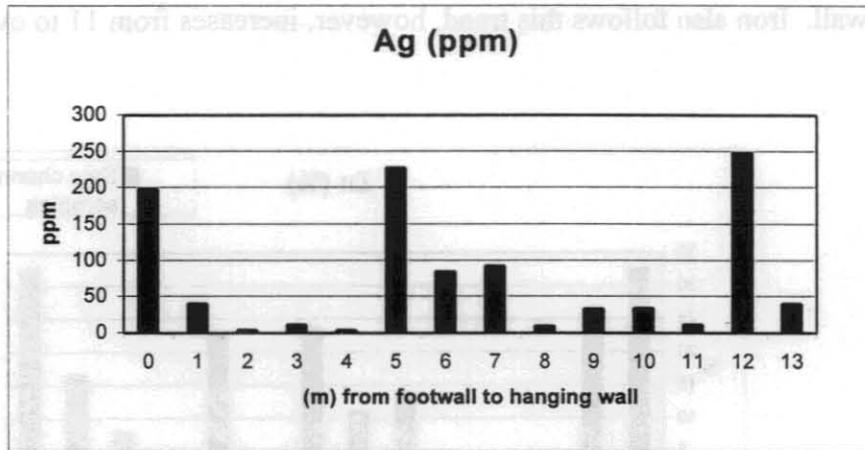


Figure 3. Plot showing ppm of silver across strike of the main lode exposed in McCormack's Pit.

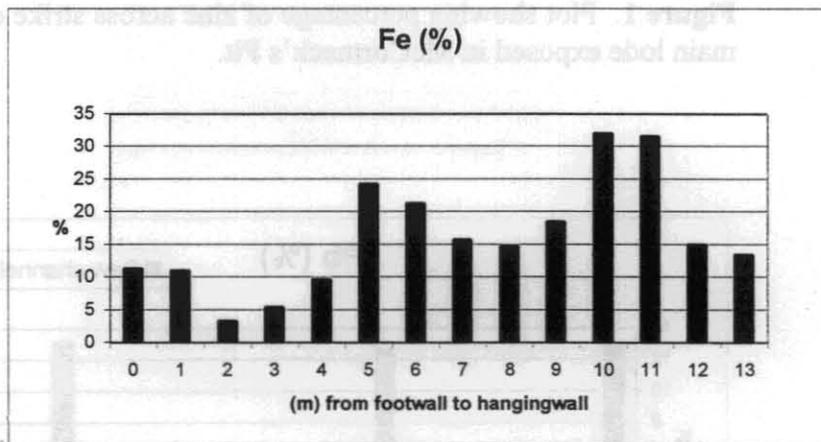
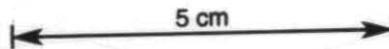


Figure 4. Plot showing percent of Iron across strike of the main lode exposed in McCormack's Pit.



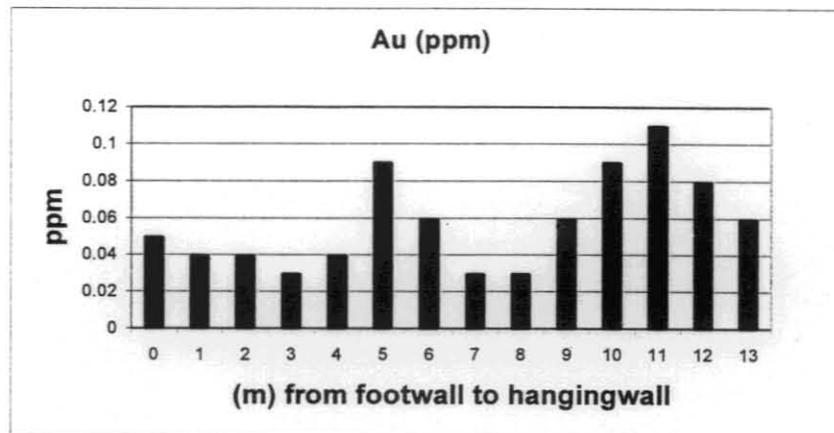


Figure 5. Plot showing ppm of gold across strike of the main lode exposed in McCormack's Pit.

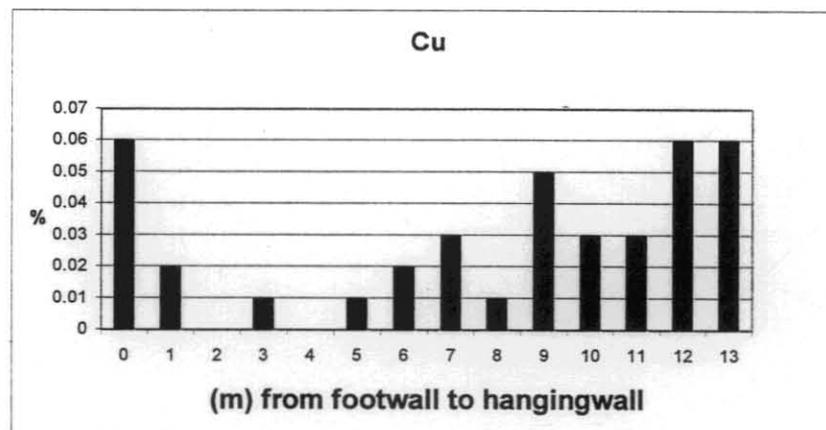


Figure 6. Plot showing percent of copper across strike of the main lode exposed in McCormack's Pit.

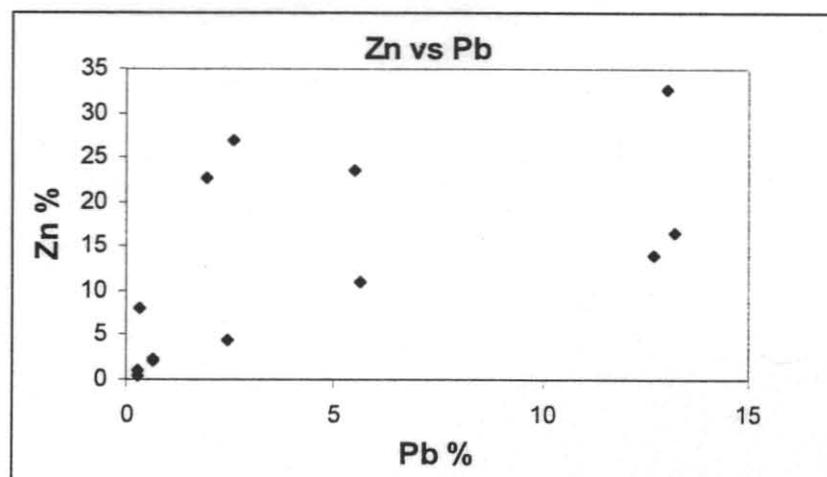


Figure 7. Plot of Zn% vs Pb% across main lode exposed in McCormack's Pit.

5 cm

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 Report status : Final
 Page : 2 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Cu	Pb	Zn	Ag	Fe	Hg
C-D-0	0.04	6.31	24.20	213	21.80	0.315
C-D-1	0.05	2.43	25.60	67	12.90	0.290
C-D-2	< 0.01	0.25	0.50	19	5.25	0.013
C-D-3	< 0.01	0.10	0.62	14	3.65	0.013
C-D-4	0.01	1.18	2.62	18	19.30	0.050
C-D-5	0.05	10.16	26.90	161	16.80	0.290
C-D-6	0.05	14.00	15.80	265	15.80	0.175
C-D-7	0.02	3.09	11.40	57	18.30	0.125
C-D-8	0.03	0.39	14.60	18	21.00	0.150
C-D-9	0.07	1.64	46.80	35	10.40	0.790
C-D-10	0.04	1.40	12.50	26	27.80	0.150
C-D-11	0.02	0.45	12.00	11	23.40	0.325
C-D-12	0.12	14.60	23.40	344	12.20	0.365
C-D-13	0.01	5.30	7.76	91	24.00	0.163
S-D-0	0.06	13.00	32.70	199	11.40	0.365
S-D-1	0.02	2.60	27.00	41	11.10	0.265
S-D-2	< 0.01	0.26	1.00	4	3.36	0.025
S-D-3	0.01	0.64	2.05	12	5.49	0.038
S-D-4	< 0.01	0.29	0.53	4	9.74	0.038
S-D-5	0.01	12.70	13.90	228	24.40	0.138
S-D-6	0.02	5.64	11.10	85	21.40	0.100
S-D-7	0.03	5.47	23.60	93	15.80	0.225
S-D-8	0.01	0.63	2.33	10	14.80	0.038
S-D-9	0.05	1.93	22.80	34	18.60	0.400
S-D-10	0.03	2.43	4.47	35	32.10	< 0.005
S-D-11	0.03	0.34	7.97	12	31.70	0.163
S-D-12	0.06	13.20	16.60	249	15.10	0.240
S-D-13	0.06	0.82	32.70	41	13.50	0.490
Method	A330	A330	A330	A330	A330	H114
Units	%	%	%	ppm	%	ppm
Detection Limit	0.01	0.01	0.01	1	0.01	0.005

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

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Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Sn	As	Sb	Bi	Ag	\$
C D-0	52.7	>1000	495	0.2	2640	>30.000
C D-1	85.2	894	233	<0.1	-	28.781
C D-2	3.8	231	31.1	<0.1	-	5.782
C D-3	1.3	98	16.0	<0.1	-	3.704
C D-4	12.6	>1000	68.8	0.1	1420	25.332
C D-5	103.5	>1000	285	0.1	1250	>30.000
C D-6	85.1	926	431	0.1	-	25.913
C D-7	37.8	592	230	0.1	-	25.973
C D-8	61.2	>1000	93.6	<0.1	1140	>30.000
C D-9	70.3	664	345	<0.1	-	>30.000
C D-10	29.7	>1000	134.0	<0.1	2570	>30.000
C D-11	97.6	>1000	157.0	<0.1	2080	>30.000
C D-12	162.5	854	489	<0.1	-	25.882
C D-13	56.2	>1000	419	0.2	2130	26.014
S D-0	172.5	629	419	<0.1	-	28.125
S D-1	64.5	751	154.5	<0.1	-	25.425
S D-2	4.5	209	36.4	0.1	-	3.758
S D-3	10.6	373	45.9	<0.1	-	6.986
S D-4	4.9	586	43.5	<0.1	-	11.630
S D-5	66.3	>1000	420	<0.1	1910	>30.000
S D-6	37.5	>1000	290	<0.1	1610	28.979
S D-7	75.4	625	218	<0.1	-	29.621
S D-8	13.6	>1000	94.8	<0.1	1030	17.154
S D-9	48.6	>1000	374	<0.1	2180	>30.000
S D-10	23.3	>1000	134.5	<0.1	2620	>30.000
S D-11	47.7	>1000	172.5	<0.1	3030	>30.000
S D-12	137.5	>1000	387	0.3	1520	27.556
S D-13	145.5	688	145.0	<0.1	-	26.823
Method	M104	M104	M104	M104	H04	V821
Units	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.5		0.1	0.1	10	0.005
Upper Method		H04				V821

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

A N A L A B S



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 Page : 4 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	S				
C D-0	36.74				
C D-1	--				
C D-2	--				
C D-3	--				
C D-4	--				
C D-5	33.70				
C D-6	--				
C D-7	--				
C D-8	31.88				
C D-9	32.77				
C D-10	38.35				
C D-11	30.80				
C D-12	--				
C D-13	--				
S D-0	--				
S D-1	--				
S D-2	--				
S D-3	--				
S D-4	--				
S D-5	37.28				
S D-6	--				
S D-7	--				
S D-8	--				
S D-9	31.44				
S D-10	38.88				
S D-11	37.60				
S D-12	--				
S D-13	--				
Method	V829				
Units	%				
Detection Limit	0.05				

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Report 4:

**Channel Samples
across Allison's Lode
(Trav A,A1,AA,B,C and D)**

(28th of November, 2000)

**Prepared by Paul Heath BSc (Hons)
For Zeehan Zinc Pty Ltd**

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Sampling methods

Results

Appendix 1

Appendix 1A

} Missing

Appendix 2

Appendix 3

Appendix 4

Appendix 5

Reference

(Missing)

“Comstock Silver Lead Zinc Mine – Interim Ore Assay Report”, May 2000 prepared by P. Heath for Zeehan Zinc Pty Ltd.

“Comstock Silver Lead Zinc Mine – Interim Channel Assay (McCormacks Pit)”, June 2000 prepared by P. Heath for Zeehan Zinc Pty Ltd.

Introduction

This investigation primarily looks at the percentages/ppm of zinc (Zn), lead (Pb), silver (Ag), copper (Cu), gold (Au), iron (Fe), magnesium (Mg) and silica (Si) across strike of the ore zone and delineates geochemically, the lodes and their dimensions.

Sampling Methods

Four channels were traversed across the width of the ore zone at varying distances and heights noted here as A, A1, B, and D. Additionally, a channel sample was taken parallel to lode 4 and is defined as Trav C. An additional traverse was collected outside the ore zone (Trav AA). All traverses were collected by cutting a channel with a circular saw (approx. 3cm wide x 3cm deep). The channels sampled across the ore zone are each discussed briefly below.

Traverse 'A' consisted of collecting 30 samples over a distance of 30m. The aim of this traverse was to include and go beyond the boundaries of the ore zone. Samples were collected every metre with sphalerite/galena lodes sampled separately. The author has called this Bench 'A' and it is approximately 10m below the present day topography (refer to Appendix 1 for channel location). The width of the ore zone along this traverse is approximately 19m (apparent width). NB. Channel samples outside the ore zone are not counted in the average (refer to Appendix 5- Trav A for ore zone samples). This traverse was surveyed, however, additional samples were collected and surveyed by tape and compass. The channel was sampled from west to east.

Traverse 'A1' was also sampled along Bench A, 5m south of traverse A (see Appendix 1). Due to excavation to the west of this bench and stope fill from old workings, only part of the ore zone was obtained. The total of 15 samples were collected at metre intervals. This line was surveyed by tape and compass. Samples were collected from west to east.

Traverse 'B' was sampled across the width of the ore zone (see Appendix 1 for location), and is approximately 5m below Bench A. Eleven samples were collected at metre intervals. However, the author notes that the western edge of the ore zone may disappear

under the road. An old drive was found between 0 to 1m. Samples were taken from west to east.

Traverse 'C' was sampled along an exposed face parallel to vein 4 (Appendix 1). A total of 7 samples were collected metre intervals. Samples were collected from south to north.

Traverse AA lies outside the ore zone and has been sampled at 1m intervals (n = 11). Samples have been collected from west to east.

Traverse 'D' has been described in detail in Heath (2000 – Report 3). Extracts will be taken from this report to describe the D traverse. However, further excavation since then has revealed an additional 1 metre noted here as D-14 (analytical data in Appendix 2).

“A total of 28 samples were channeled across the strike of Allison's lodes within McCormack's Pit at 1m intervals. Fourteen are labeled with the prefix 'C' that represent chip samples and fourteen by 'S' prefix representing rocks cut by the circular saw. 'D-0' represents the authors channel line 'D' and metre i.e. line D sampled between 0- 0.99m, 'D-1' represents line D between 1-1.99m and so on.”

Sample D-0 starts at the western boundary of the ore zone to D-14 (the eastern edge). The channel is located on Appendix 1 as “D Trav” and is approximately 10m below the pink peg (Bench A) that is located at the back of McCormack's pit.

Results

This section graphs the data for Zn, Pb, Ag, Fe, Au, Cu, Mg, and Si. All samples were analysed by Analabs Pty. Ltd. Burnie. This section will discuss high, low and average percentages.

'A' Traverse

The ore zone across this traverse is 19m wide and comprises at least three veins, possibly four, labeled 1, 2, 3 and 4 (Appendix 1). The highest peaks for Zn, Pb and Ag are 34.1%, 12.4% and 179 ppm over a 1m interval respectively. Refer to Appendix 2 for geochemical data and Table 1 for Zn, Pb, Ag, Au, Cu, Fe averages. Four peaks are observed for zinc and iron in the graphs on Plate 1.

'A1' Traverse

This traverse was sampled 15m along the ore zone, however, intercepted an old drive to the west infilled with stope material. It is assumed by the author that the ore zone extends into this drive. Graphs on Plate 3 define three peaks at 1m, 3-6m and 13-15m. These have been represented on Appendix 1 as veins 2, 3, and 4 respectively. The most significant being Zn (40.1%), Pb (12.7%), and Ag (192ppm). Averages for the traverse are displayed in Table 1. See Appendix 5 for traverse samples and sample length.

'B' Traverse

The area channeled along B traverse is 11m wide. However, additional sampling was obstructed by a road and an old drive to the west and excavation to the east. Three peaks are observed along this traverse (Plate 5, Zn and Fe, Appendix 3), and have been called vein 2, 3, and 4 (see Appendix 1). The most significant values observed along this traverse are 32.3% (Zn), 14.2% (Pb) and 487ppm (Ag). Averages for the traverse are displayed below in Table 1.

'D' Traverse

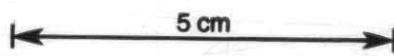
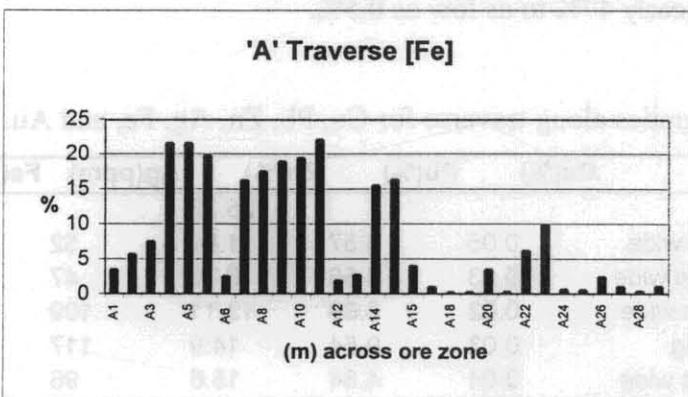
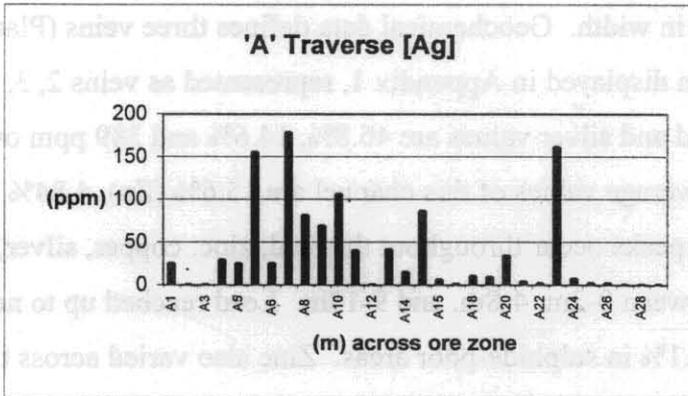
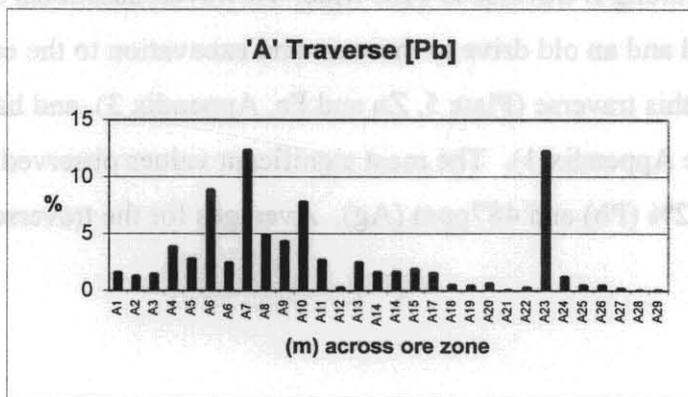
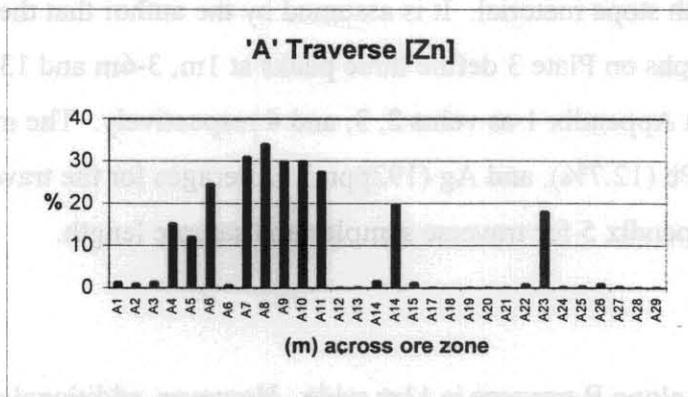
'D' traverse is 15m in width. Geochemical data defines three veins (Plates 8, 9, Appendix 4). These have been displayed in Appendix 1, represented as veins 2, 3, and 4. The most significant zinc, lead and silver values are 46.8%, 14.6% and 389 ppm over a 1m interval respectively. The average values of this channel are 15.6% (Zn), 4.84% (Pb) and 96ppm(Ag). Three peaks occur throughout the lead, zinc, copper, silver, gold and iron values, these lie between 0-2m, 4-8m, and 9-13m. Lead reached up to nearly 15% in some cases to as low as 0.1% in sulphide-poor areas. Zinc also varied across the channel reaching a peak at nearly 47% to as low as 0.5%.

Table 1. Average grades along traverse for Cu, Pb, Zn, Ag, Fe, and Au.

Traverse	Cu(%)	Pb(%)	Zn(%)	Ag(ppm)	Fe(%)	Au(ppm)
Trav A (veins only)			25.33			
Trav A(ore zone)19m wide	0.05	3.57	11.84	52	10.6	0.04
Trav A1(ore zone)15m wide	0.03	4.56	8.70	47	8.16	0.05
Trav B (ore zone)11m wide	0.02	3.69	13.11	109	11.73	0.12
Trav C (vein 4)7m long	0.03	9.54	14.9	117	18.97	0.07
Trav D (ore zone)15m wide	0.04	4.84	15.6	96	15.86	0.06

PLATE 1

Bench A, Traverse A (see Appendix 1 for sample location)



0.04	10.5
0.06	8.18
0.12	11.73
0.07	18.97
0.08	15.88

PLATE 2

Bench A, Traverse A (see Appendix 1 for sample location)

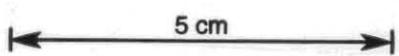
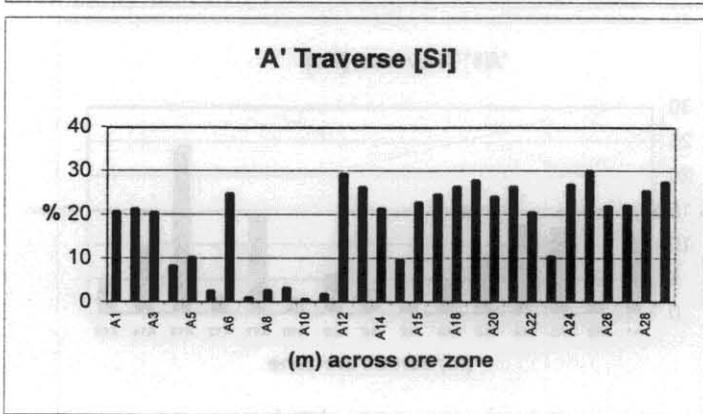
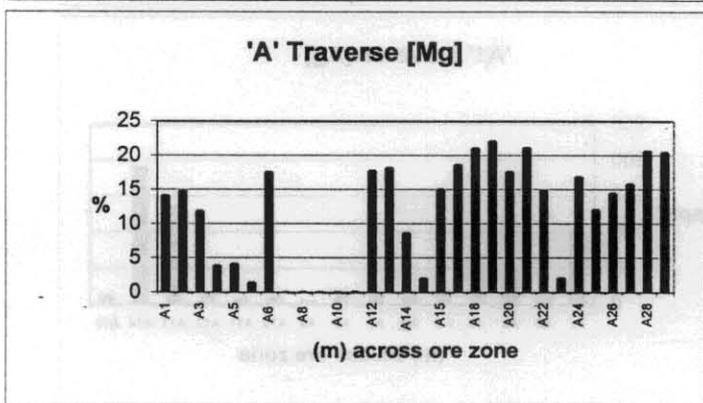
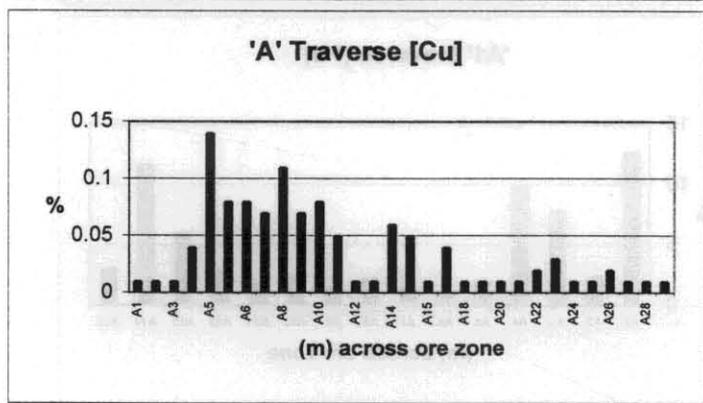
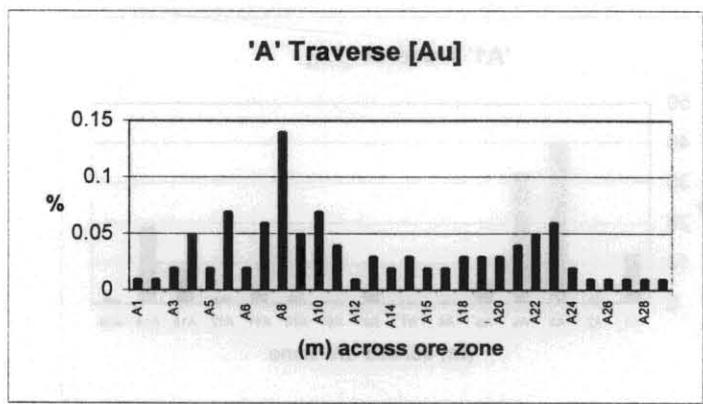


PLATE 3

Bench A, Traverse A1 (see Appendix 1 for sample location)

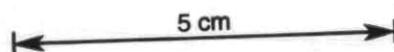
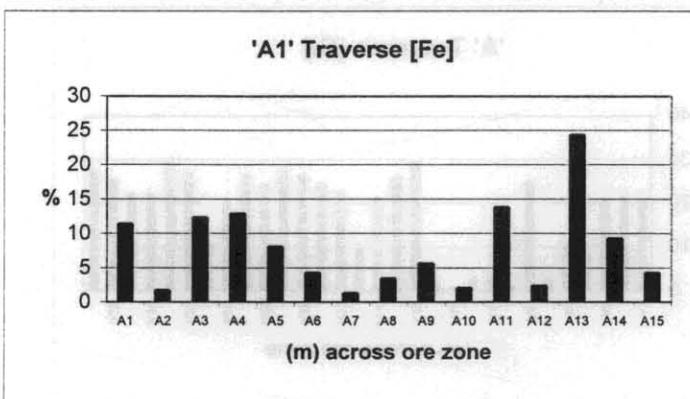
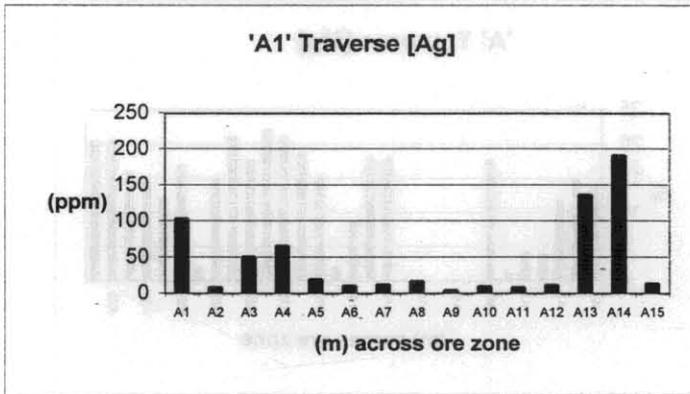
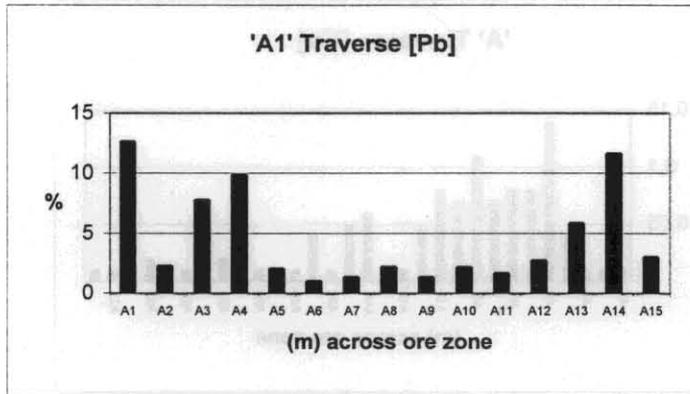
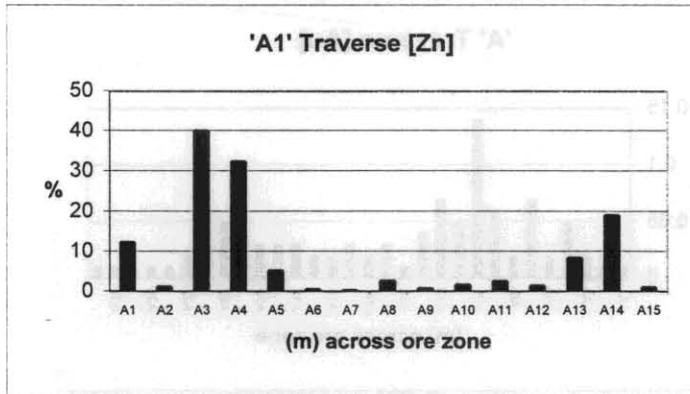


PLATE 4

Bench A, Traverse A1 (see Appendix 1 for sample location)

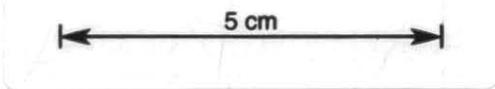
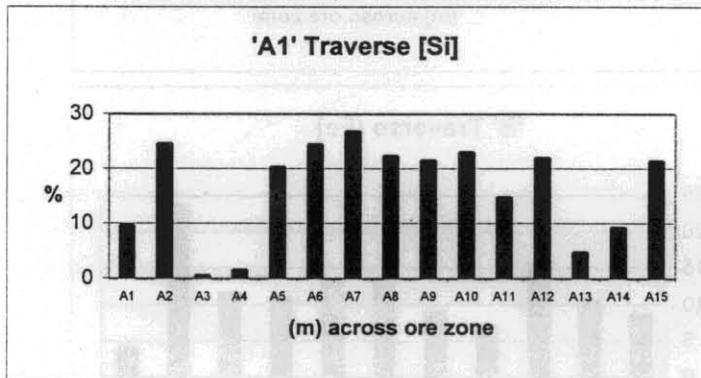
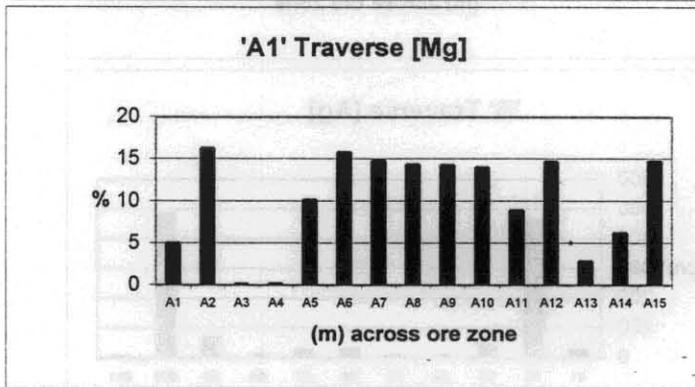
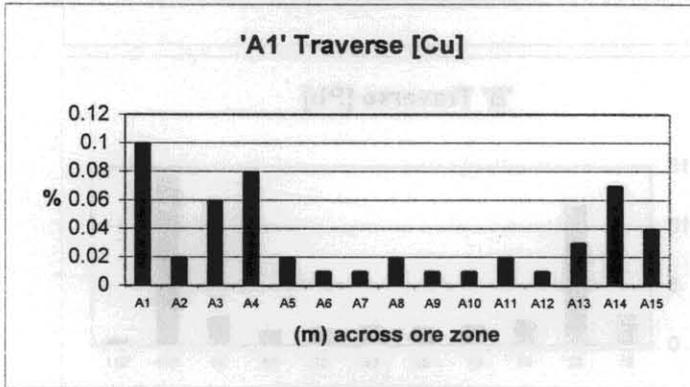
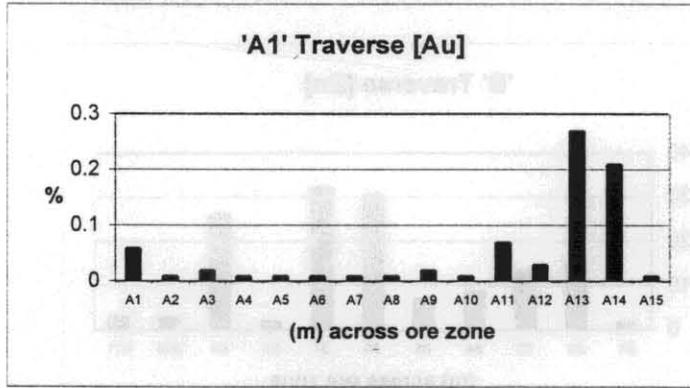


PLATE 5

Bench B Traverse B (see Appendix 1 for sample location)

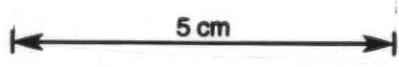
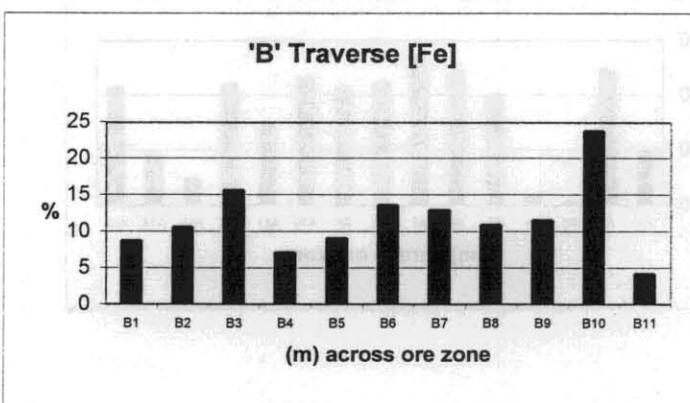
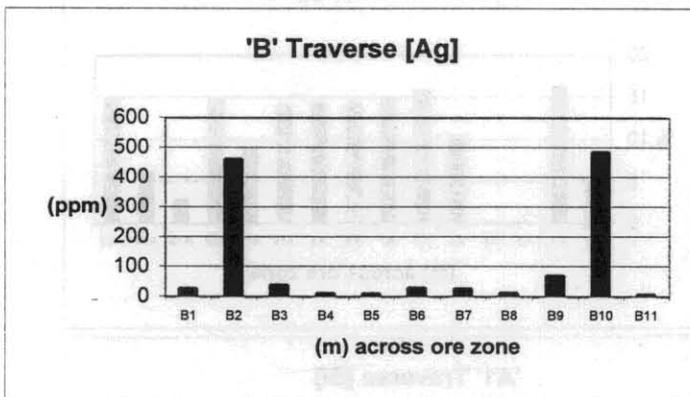
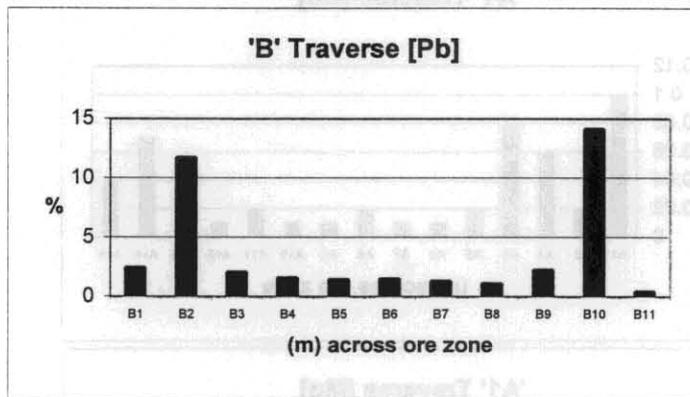
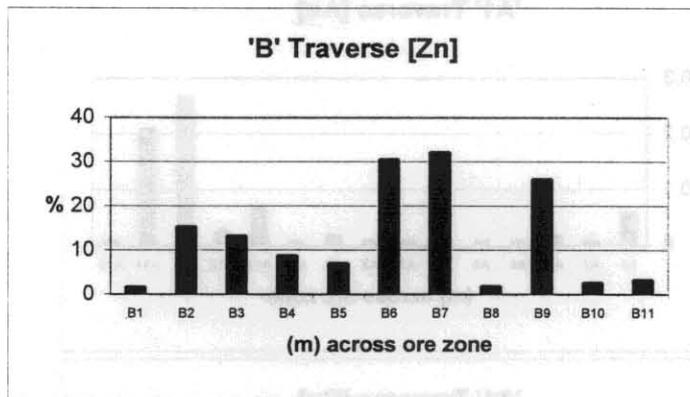


PLATE 6

Bench B, Traverse B (see Appendix 1 for sample location)

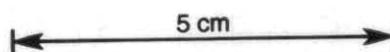
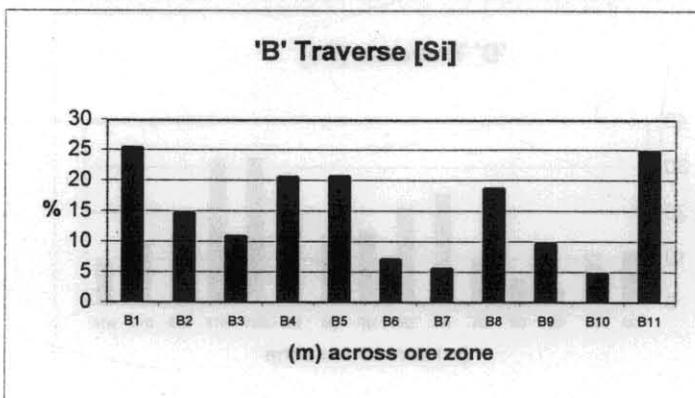
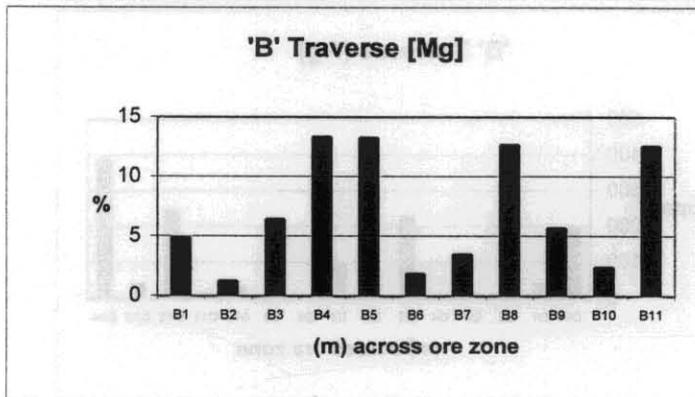
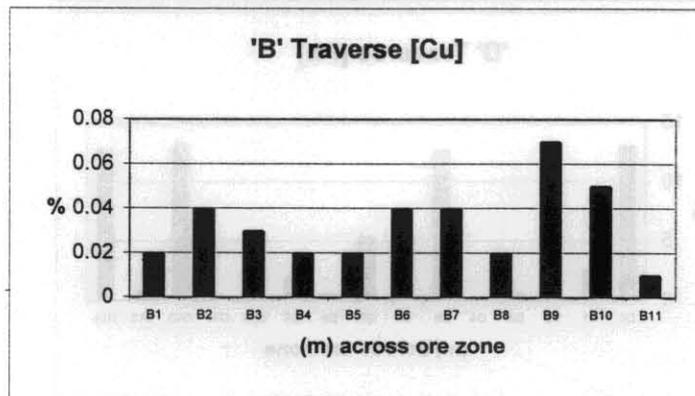
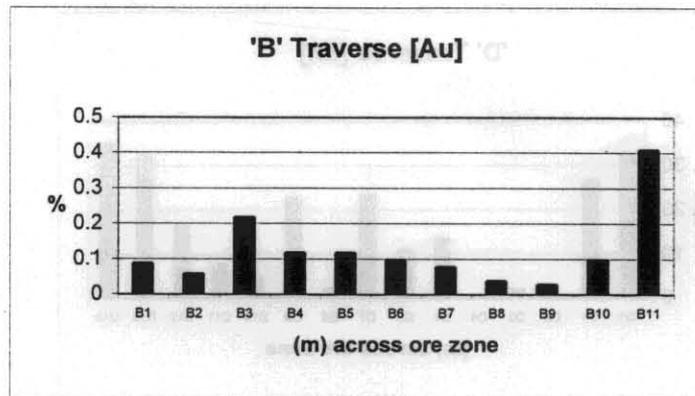


PLATE 7

Bench D, Traverse D (see Appendix 1 for sample location)

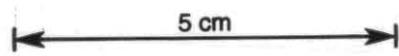
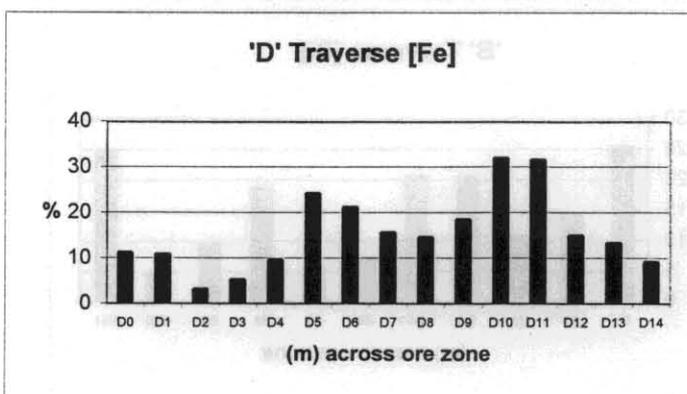
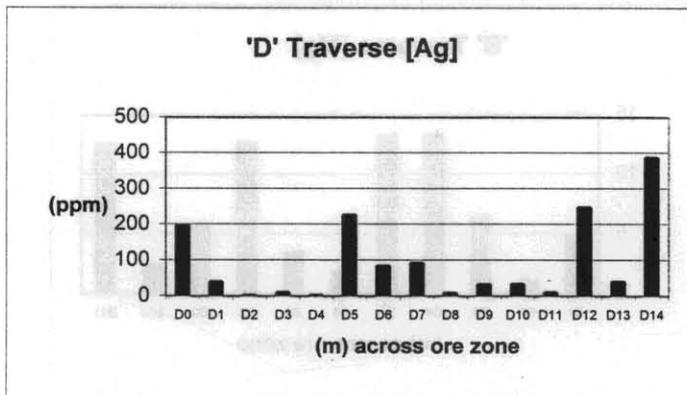
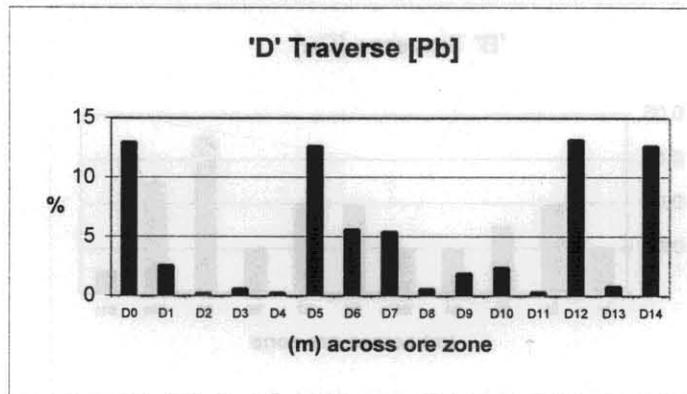
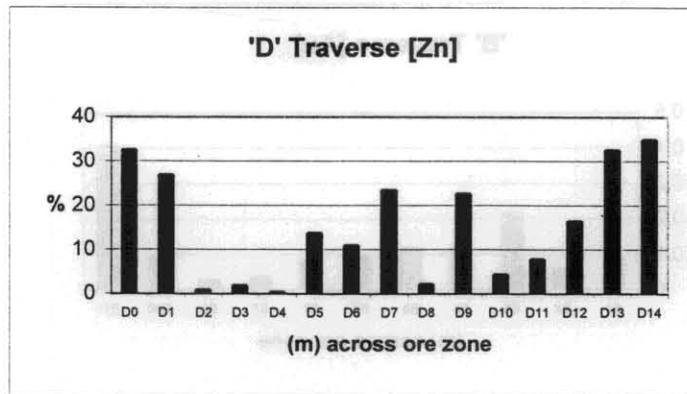
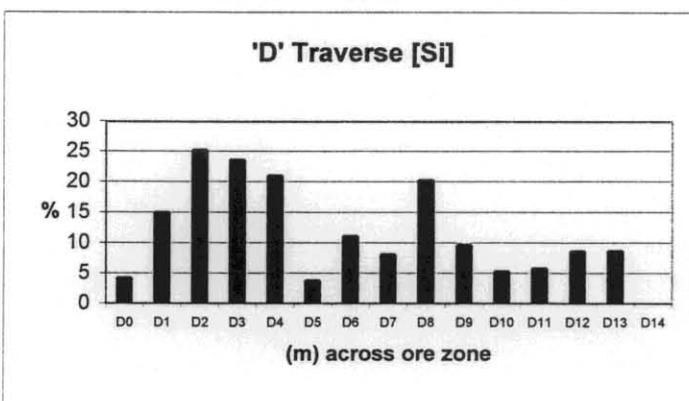
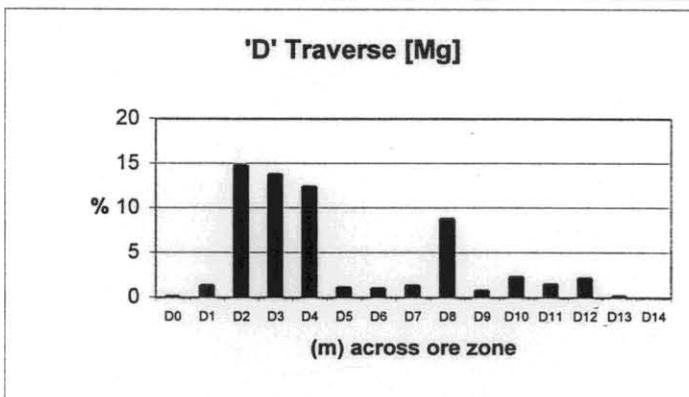
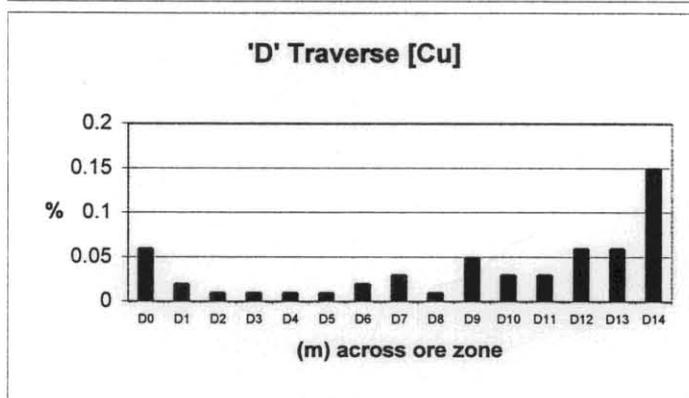
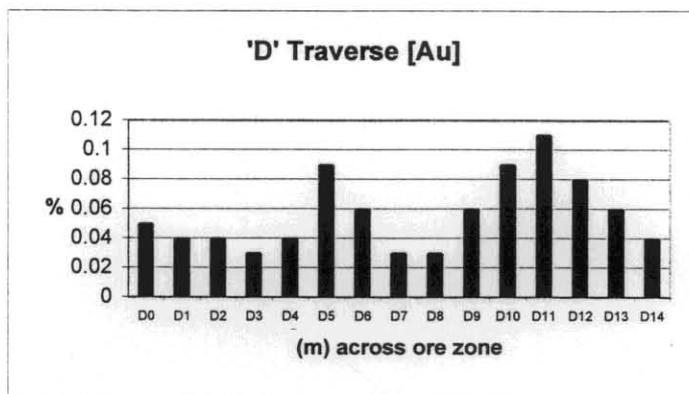


PLATE 8

Bench D, Traverse D (see Appendix 1 for sample location)

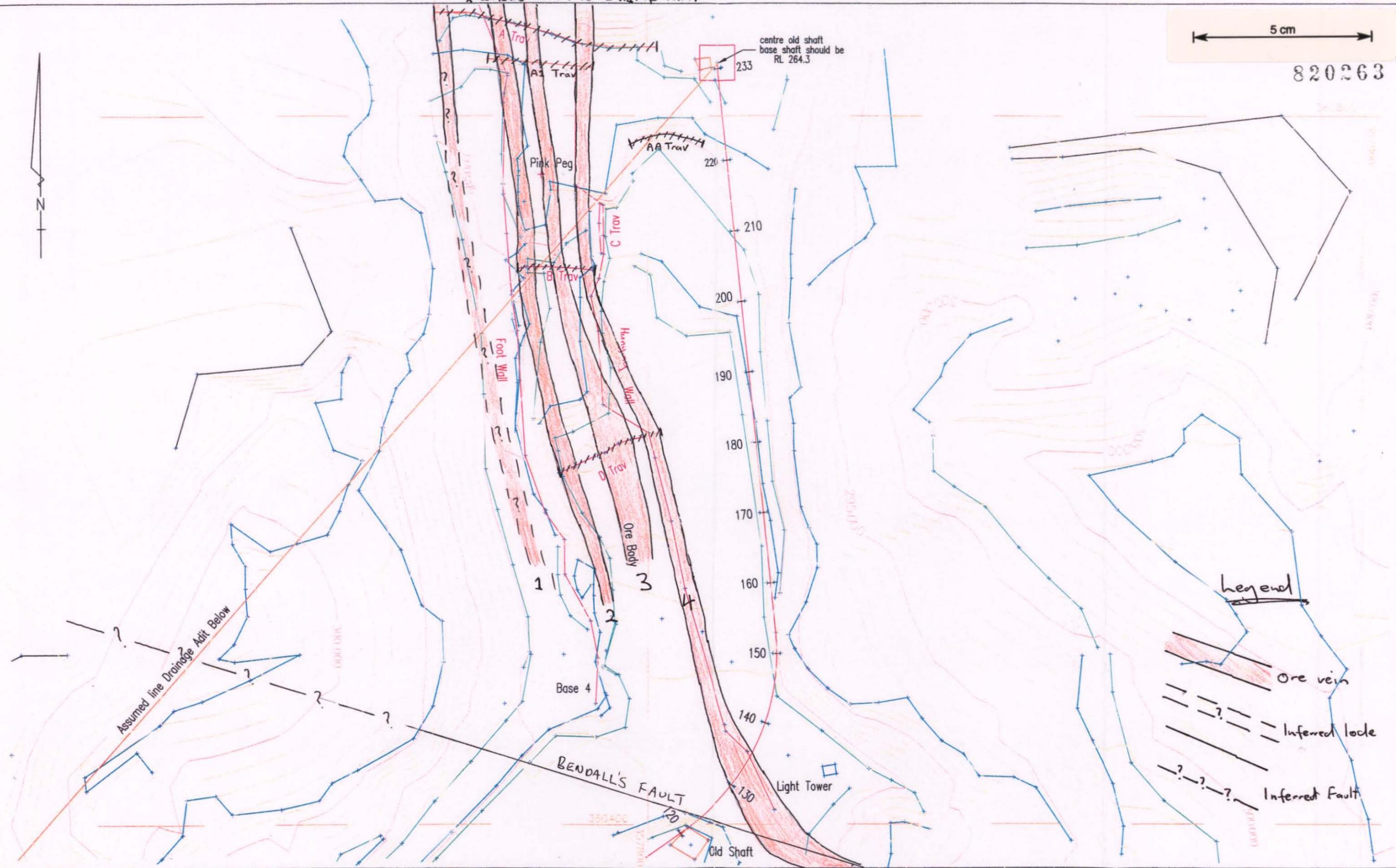


← 5 cm →

* Extends North to Balstrup Fault

5 cm

820263



NOTES :

All measurements are in metres .
Co-ordinates are A.M.G.
Datum for Levels is A.H.D

Northern Surveying Services

495 Melrose Road , Eugenena 7310
Telephone (03) 6427 2765
Fax (03) 6427 3040
Mobile 0418 141 244

*Trial Harbour Road, Zeehan, Tas.
existing northern pit & workings
As built at 30th of June 2000*

Drawing No.
CSTOCK-1(d)

Drawn: JAT scale 1:500 Date 6/7/00

J. Edwards 16.

Appendix 2

ANALABS



Our reference : BU018064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 1 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Cu	Pb	Zn	Ag	Fe	Au
AA01	0.01	0.64	0.42	3	0.94	N.A.
AA02	0.01	0.35	0.14	9	0.72	N.A.
AA03	0.01	0.21	0.17	1	0.71	N.A.
AA04	0.01	0.15	0.35	1	1.28	N.A.
AA05	0.01	0.30	0.89	1	1.67	N.A.
AA06	<0.01	0.49	0.21	3	1.25	N.A.
AA07	<0.01	0.19	0.17	2	0.51	N.A.
AA08	<0.01	0.11	0.06	1	0.34	N.A.
AA09	<0.01	0.15	0.26	1	0.70	N.A.
AA10	<0.01	1.10	0.07	6	0.80	N.A.
AA11	<0.01	0.64	0.05	13	1.29	N.A.
A1	0.01	1.66	1.47	26	3.57	<0.01
A2	0.01	1.34	1.08	<1	5.76	<0.01
A3	0.01	1.51	1.51	1	7.59	0.02
A4	0.04	3.92	15.40	30	21.60	0.05
A5	0.14	2.85	12.20	26	21.60	0.02
A6 6.6	0.08	8.93	24.70	156	19.90	0.07
A6 6.6-7.0	0.08	2.51	0.74	26	2.59	0.02
A7 7.0	0.07	12.40	31.10	179	16.30	0.06
A8 8.0	0.11	4.97	34.10	82	17.60	0.14
A9	0.07	4.39	30.00	70	19.00	0.05
A10	0.08	7.86	30.10	107	19.50	0.07
A11	0.05	2.73	27.60	41	22.10	0.04
A12	0.01	0.33	0.15	<1	1.96	<0.01
A13	0.01	2.54	0.24	42	2.77	0.03
A14 14.0-14.9	0.06	1.68	1.75	16	15.60	0.02
A14 14.9-15.6	0.05	1.72	19.90	87	16.40	0.03
A15 15.6-16.9	0.01	1.97	1.31	7	4.07	0.02
A17	0.04	1.59	0.06	2	1.07	0.02
A18	0.01	0.56	0.03	11	0.29	0.03
A19	0.01	0.50	0.04	10	0.31	0.03
A20	0.01	0.69	0.04	35	3.56	0.03
A21	<0.01	0.11	0.04	5	0.38	0.04
A22	0.02	0.34	0.95	3	6.28	0.05
A23 23.0-23.6	0.03	12.30	18.20	162	9.96	0.06
A24	0.01	1.30	0.34	8	0.73	0.02
A25	0.01	0.54	0.42	3	0.66	<0.01
A26	0.02	0.54	1.03	3	2.51	<0.01
A27	0.01	0.24	0.40	1	1.08	<0.01
A28	<0.01	0.09	0.18	<1	0.45	<0.01
A29	<0.01	0.11	0.18	<1	1.16	<0.01
D14	0.15	12.70	35.00	389	9.40	0.04
SY021 46.9-47.7	0.11	16.60	26.40	561	8.17	0.03
SY021 48.6-49.0	0.02	0.28	0.93	7	5.20	<0.01
SY021 51.4-53.2	0.02	0.35	1.05	3	19.50	0.03
Method Units	A330 %	A330 %	A330 %	A330 ppm	A330 %	F650 ppm
Detection Limit	0.01	0.01	0.01	1	0.01	0.01

Notes: N.A. = not analysed, - = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 2

ANALABS



Our reference : BU018064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 2 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Au(R)	S	S	Hg	B	Mg
AA01	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA02	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA03	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA04	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA05	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA06	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA07	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA08	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA09	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA10	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA11	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A1	--	5.637	N.A.	N.A.	N.A.	14.17
A2	--	8.320	N.A.	N.A.	N.A.	14.92
A3	--	12.277	N.A.	N.A.	N.A.	11.96
A4	--	>30.000	31.47	N.A.	N.A.	3.96
A5	--	27.647	N.A.	N.A.	N.A.	4.20
A6 6-6	--	>30.000	35.92	N.A.	N.A.	1.50
A6 6-7-0	--	4.179	N.A.	N.A.	N.A.	17.62
A7 7-0	--	>30.000	33.52	N.A.	N.A.	0.06
A8 8-0	--	>30.000	35.28	N.A.	N.A.	0.10
A9	--	>30.000	36.96	N.A.	N.A.	0.04
A10	--	>30.000	37.90	N.A.	N.A.	0.05
A11	--	>30.000	35.52	N.A.	N.A.	0.16
A12	<0.01	0.438	N.A.	N.A.	N.A.	17.82
A13	--	1.274	N.A.	N.A.	N.A.	18.21
A14 14-0-14-9	--	14.277	N.A.	N.A.	N.A.	8.68
A14 14-9-15-6	--	26.765	N.A.	N.A.	N.A.	2.07
A15 15-6-16-9	--	6.504	N.A.	N.A.	N.A.	15.12
A17	--	1.386	N.A.	N.A.	N.A.	18.70
A18	--	0.134	N.A.	N.A.	N.A.	21.08
A19	--	0.130	N.A.	N.A.	N.A.	22.11
A20	--	4.018	N.A.	N.A.	N.A.	17.64
A21	--	0.058	N.A.	N.A.	N.A.	21.15
A22	--	8.818	N.A.	N.A.	N.A.	14.92
A23 23-0-23-6	0.07	24.892	N.A.	N.A.	N.A.	2.13
A24	--	0.816	N.A.	N.A.	N.A.	16.91
A25	--	0.579	N.A.	N.A.	N.A.	12.13
A26	--	3.696	N.A.	N.A.	N.A.	14.50
A27	--	1.349	N.A.	N.A.	N.A.	15.91
A28	--	0.468	N.A.	N.A.	N.A.	20.67
A29	--	1.389	N.A.	N.A.	N.A.	20.48
D14	--	N.A.	N.A.	N.A.	N.A.	N.A.
SY021 46-9-47-7	0.04	28.167	N.A.	0.175	50	0.39
SY021 48-6-49-0	--	6.539	N.A.	0.013	92	6.45
SY021 51-4-53-2	--	18.273	N.A.	0.050	64	7.19
Method	F650	V821	V829	H114	H151	H151
Units	ppm	%	%	ppm	ppm	%
Detection Limit	0.01	0.005	0.05	0.005	20	0.01
Upper Method		V821				

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 2

ANALABS



Our reference : BU018064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 3 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Ni	Si	Sn	As	As	Sb
AA01	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA02	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA03	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA04	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA05	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA06	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA07	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA08	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA09	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA10	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
AA11	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
A1	N.A.	20.8	N.A.	N.A.	N.A.	N.A.
A2	N.A.	21.4	N.A.	N.A.	N.A.	N.A.
A3	N.A.	20.6	N.A.	N.A.	N.A.	N.A.
A4	N.A.	8.4	N.A.	N.A.	N.A.	N.A.
A5	N.A.	10.4	N.A.	N.A.	N.A.	N.A.
A6 6.6	N.A.	2.7	N.A.	N.A.	N.A.	N.A.
A6 6.6-7.0	N.A.	24.9	N.A.	N.A.	N.A.	N.A.
A7 7.0	N.A.	1.2	N.A.	N.A.	N.A.	N.A.
A8 8.0	N.A.	2.8	N.A.	N.A.	N.A.	N.A.
A9	N.A.	3.4	N.A.	N.A.	N.A.	N.A.
A10	N.A.	0.8	N.A.	N.A.	N.A.	N.A.
A11	N.A.	2.0	N.A.	N.A.	N.A.	N.A.
A12	N.A.	29.5	N.A.	N.A.	N.A.	N.A.
A13	N.A.	26.4	N.A.	N.A.	N.A.	N.A.
A14 14.0-14.9	N.A.	21.5	N.A.	N.A.	N.A.	N.A.
A14 14.9-15.6	N.A.	9.8	N.A.	N.A.	N.A.	N.A.
A15 15.6-16.9	N.A.	22.9	N.A.	N.A.	N.A.	N.A.
A17	N.A.	24.7	N.A.	N.A.	N.A.	N.A.
A18	N.A.	26.5	N.A.	N.A.	N.A.	N.A.
A19	N.A.	27.9	N.A.	N.A.	N.A.	N.A.
A20	N.A.	24.2	N.A.	N.A.	N.A.	N.A.
A21	N.A.	26.5	N.A.	N.A.	N.A.	N.A.
A22	N.A.	20.6	N.A.	N.A.	N.A.	N.A.
A23 23.0-23.6	N.A.	10.6	N.A.	N.A.	N.A.	N.A.
A24	N.A.	27.0	N.A.	N.A.	N.A.	N.A.
A25	N.A.	30.1	N.A.	N.A.	N.A.	N.A.
A26	N.A.	22.1	N.A.	N.A.	N.A.	N.A.
A27	N.A.	22.2	N.A.	N.A.	N.A.	N.A.
A28	N.A.	25.5	N.A.	N.A.	N.A.	N.A.
A29	N.A.	27.6	N.A.	N.A.	N.A.	N.A.
D14	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
SY021 46.9-47.7	<50	2.2	377	310	N.A.	588
SY021 48.6-49.0	<50	27.5	13.3	222	N.A.	33.2
SY021 51.4-53.2	50	18.4	22.8	>1000	1410	37.4
Method	1151	1151	M104	M104	1104	M104
Units	ppm	%	ppm	ppm	ppm	ppm
Detection Limit	50	0.2	0.5	1	10	0.1

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 2

ANALABS



Our reference : BU018064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 4 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8390

ANALYTICAL DATA

Sample	Br				
AA01	N.A.				
AA02	N.A.				
AA03	N.A.				
AA04	N.A.				
AA05	N.A.				
AA06	N.A.				
AA07	N.A.				
AA08	N.A.				
AA09	N.A.				
AA10	N.A.				
AA11	N.A.				
A1	N.A.				
A2	N.A.				
A3	N.A.				
A4	N.A.				
A5	N.A.				
A6-6.6	N.A.				
A6-6.6-7.0	N.A.				
A7-7.0	N.A.				
A8-8.0	N.A.				
A9	N.A.				
A10	N.A.				
A11	N.A.				
A12	N.A.				
A13	N.A.				
A14-14.0-14.9	N.A.				
A14-14.9-15.6	N.A.				
A15-15.6-16.9	N.A.				
A17	N.A.				
A18	N.A.				
A19	N.A.				
A20	N.A.				
A21	N.A.				
A22	N.A.				
A23-23.0-23.6	N.A.				
A24	N.A.				
A25	N.A.				
A26	N.A.				
A27	N.A.				
A28	N.A.				
A29	N.A.				
D14	N.A.				
SY021-46.9-47.7	1.4				
SY021-48.6-49.0	0.8				
SY021-51.4-53.2	0.8				
Method	M104				
Units	ppm				
Detection Limit	0.1				

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 3

ANALABS



Our reference : BU018043
 Your reference : 158104
 Project code : Zeehan Zinc
 Report date : 30/07/00
 Report status : Final
 Page : 1 of 2

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Au	Au(R)	Mg	Ni	Si	S
A1	0.06	--	5.08	65	9.8	N.A.
A2	<0.01	--	16.35	90	24.7	N.A.
A3	0.02	--	0.20	95	0.7	N.A.
A4	0.01	--	0.23	100	1.7	N.A.
A5	0.01	--	10.22	70	20.4	N.A.
A6	<0.01	--	15.85	65	24.5	N.A.
A7	0.01	--	14.84	65	26.9	N.A.
A8	0.01	--	14.40	85	22.4	N.A.
A9	0.02	--	14.34	85	21.6	N.A.
A10	0.01	0.01	14.05	90	23.1	N.A.
A11	0.07	--	8.95	85	14.9	N.A.
A12	0.03	--	14.76	90	22.1	N.A.
A13	0.27	--	2.93	85	4.9	N.A.
A14	0.21	--	6.26	105	9.4	N.A.
A15	<0.01	--	14.77	120	21.5	N.A.
B1	0.09	--	4.95	80	25.5	N.A.
B2	0.06	--	1.27	95	14.8	N.A.
B3	0.22	--	6.47	105	11.0	N.A.
B4	0.12	--	13.36	105	20.7	N.A.
B5	0.12	0.13	13.29	90	20.8	N.A.
B6	0.10	--	1.90	100	7.2	N.A.
B7	0.08	--	3.49	120	5.7	N.A.
B8	0.04	--	12.70	95	18.8	N.A.
B9	0.03	--	5.70	115	9.8	N.A.
B10	0.10	0.12	2.42	85	4.9	N.A.
B11	0.41	--	12.60	130	24.9	N.A.
C1	0.02	--	5.81	140	9.9	N.A.
C2	0.09	--	2.28	115	4.3	N.A.
C3	0.11	0.12	0.95	110	5.1	N.A.
C4	0.06	--	1.59	105	10.3	N.A.
C5	0.07	--	1.39	115	3.0	N.A.
C6	0.08	--	2.21	110	4.1	N.A.
C7	0.06	0.05	1.77	120	3.5	N.A.
AMD1	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD2	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD3	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD4	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD5	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD6	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD7	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD8	N.A.	N.A.	N.A.	N.A.	N.A.	--
Method	F650	F650	I151	I151	I151	V821
Units	ppm	ppm	%	ppm	%	%
Detection Limit	0.01	0.01	0.01	50	0.2	0.005

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 3

ANALABS



Our reference : BU018043
 Your reference : I58104
 Project code : Zeehan Zinc
 Report date : 30/07/00
 Report status : Final
 Page : 2 of 2

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Cu	Pb	Zn	Ag	Fe	S
A1	0.10	12.70	12.40	104	11.50	--
A2	0.02	2.34	1.28	9	1.81	--
A3	0.06	7.83	40.10	51	12.40	34.06
A4	0.08	9.94	32.50	66	13.00	34.66
A5	0.02	2.10	5.27	20	8.17	--
A6	0.01	1.05	0.52	11	4.36	--
A7	0.01	1.41	0.35	13	1.40	--
A8	0.02	2.26	2.68	17	3.55	--
A9	0.01	1.41	0.81	5	5.73	--
A10	0.01	2.22	1.74	10	2.13	--
A11	0.02	1.72	2.63	9	13.90	--
A12	0.01	2.79	1.48	12	2.46	--
A13	0.03	5.91	8.48	137	24.40	34.97
A14	0.07	11.70	19.20	192	9.38	--
A15	0.04	3.07	1.11	14	4.35	--
B1	0.02	2.50	1.80	29	8.80	--
B2	0.04	11.80	15.50	463	10.70	--
B3	0.03	2.12	13.40	41	15.70	--
B4	0.02	1.63	8.93	13	7.23	--
B5	0.02	1.50	7.20	12	9.16	--
B6	0.04	1.56	30.70	31	13.70	--
B7	0.04	1.36	32.30	28	13.00	--
B8	0.02	1.15	1.95	14	11.00	--
B9	0.07	2.32	26.20	71	11.60	--
B10	0.05	14.20	2.77	487	23.80	32.66
B11	0.01	0.48	3.42	9	4.30	--
C1	0.07	1.45	18.50	18	13.40	--
C2	0.07	1.46	21.80	69	21.50	37.47
C3	0.07	11.40	24.70	150	14.90	31.95
C4	0.05	12.80	7.48	151	19.20	30.02
C5	0.08	15.70	11.40	191	20.70	34.06
C6	0.06	16.70	5.00	170	21.40	32.97
C7	0.06	7.27	15.40	69	21.70	34.98
AMD1	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD2	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD3	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD4	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD5	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD6	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD7	N.A.	N.A.	N.A.	N.A.	N.A.	--
AMD8	N.A.	N.A.	N.A.	N.A.	N.A.	--
Method	A330	A330	A330	A330	A330	V829
Units	%	%	%	ppm	%	%
Detection Limit	0.01	0.01	0.01	1	0.01	0.05

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 4

ANALABS



Our reference : BU017997
 Your reference : 158103
 Project code : rec 17th June
 Report date : 10/07/00
 Report status : Final
 Page : 2 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Cu	Pb	Zn	Ag	Fe	Hg
C D-0	0.04	6.31	24.20	213	21.80	0.315
C D-1	0.05	2.43	25.60	67	12.90	0.290
C D-2	<0.01	0.25	0.50	19	5.25	0.013
C D-3	<0.01	0.10	0.62	14	3.65	0.013
C D-4	0.01	1.18	2.62	18	19.30	0.050
C D-5	0.05	10.16	26.90	161	16.80	0.290
C D-6	0.05	14.00	15.80	265	15.80	0.175
C D-7	0.02	3.09	11.40	57	18.30	0.125
C D-8	0.03	0.39	14.60	18	21.00	0.150
C D-9	0.07	1.64	46.80	35	10.40	0.790
C D-10	0.04	1.40	12.50	26	27.80	0.150
C D-11	0.02	0.45	12.00	11	23.40	0.325
C D-12	0.12	14.60	23.40	344	12.20	0.365
C D-13	0.01	5.30	7.76	91	24.00	0.163
S D-0	0.06	13.00	32.70	199	11.40	0.365
S D-1	0.02	2.60	27.00	41	11.10	0.265
S D-2	<0.01	0.26	1.00	4	3.36	0.025
S D-3	0.01	0.64	2.05	12	5.49	0.038
S D-4	<0.01	0.29	0.53	4	9.74	0.038
S D-5	0.01	12.70	13.90	228	24.40	0.138
'D' Trav S D-6	0.02	5.64	11.10	85	21.40	0.100
S D-7	0.03	5.47	23.60	93	15.80	0.225
S D-8	0.01	0.63	2.33	10	14.80	0.038
S D-9	0.05	1.93	22.80	34	18.60	0.400
S D-10	0.03	2.43	4.47	35	32.10	<0.005
S D-11	0.03	0.34	7.97	12	31.70	0.163
S D-12	0.06	13.20	16.60	249	15.10	0.240
S D-13	0.06	0.82	32.70	41	13.50	0.490
D-14						
See Appendix 2						
Method	A330	A330	A330	A330	A330	H114
Units	%	%	%	ppm	%	ppm
Detection Limit	0.01	0.01	0.01	1	0.01	0.005

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 4

A N A L A B S



Our reference : BU017997
 Your reference : L58103
 Project code : rec 17th June
 Report date : 10/07/00
 Report status : Final
 Page : 3 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Sn	As	Sb	Bi	As	S
C.D-0	52.7	>1000	495	0.2	2640	>30.000
C.D-1	85.2	894	233	<0.1	--	28.781
C.D-2	3.8	231	31.1	<0.1	--	5.782
C.D-3	1.3	98	16.0	<0.1	--	3.704
C.D-4	12.6	>1000	68.8	0.1	1420	25.832
C.D-5	103.5	>1000	285	0.1	1250	>30.000
C.D-6	85.1	926	431	0.1	--	25.913
C.D-7	37.8	592	230	0.1	--	25.973
C.D-8	61.2	>1000	93.6	<0.1	1140	>30.000
C.D-9	70.3	664	345	<0.1	--	>30.000
C.D-10	29.7	>1000	134.0	<0.1	2570	>30.000
C.D-11	97.6	>1000	157.0	<0.1	2080	>30.000
C.D-12	162.5	854	489	<0.1	--	25.882
C.D-13	56.2	>1000	419	0.2	2130	26.014
S.D-0	172.5	629	419	<0.1	--	28.125
S.D-1	64.5	751	154.5	<0.1	--	25.425
S.D-2	4.5	209	36.4	0.1	--	3.758
S.D-3	10.6	373	45.9	<0.1	--	6.986
S.D-4	4.9	586	43.5	<0.1	--	11.650
S.D-5	66.3	>1000	420	<0.1	1910	>30.000
D Trav S.D-6	37.5	>1000	290	<0.1	1610	28.979
S.D-7	75.4	625	218	<0.1	--	29.621
S.D-8	13.6	>1000	94.8	<0.1	1030	17.154
S.D-9	48.6	>1000	374	<0.1	2180	>30.000
S.D-10	23.3	>1000	134.5	<0.1	2620	>30.000
S.D-11	47.7	>1000	172.5	<0.1	3030	>30.000
S.D-12	137.5	>1000	387	0.3	1520	27.556
S.D-13	145.5	688	145.0	<0.1	--	26.823
D-14						
See Appendix 2						
Method	M104	M104	M104	M104	H04	V821
Units	ppm	ppm	ppm	ppm	ppm	%
Detection Limit	0.5		0.1	0.1	10	0.005
Upper Method		H04				V821

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 4

A N A L A B S



Our reference : BU017997
 Your reference : 158103
 Project code : rec 17th June
 Report date : 10/07/00
 Report status : Final
 Page : 4 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample					
C D-0	36.74				
C D-1	--				
C D-2	--				
C D-3	--				
C D-4	--				
C D-5	33.70				
C D-6	--				
C D-7	--				
C D-8	31.88				
C D-9	32.77				
C D-10	38.35				
C D-11	30.80				
C D-12	--				
C D-13	--				
S D-0	--				
S D-1	--				
S D-2	--				
S D-3	--				
S D-4	--				
S D-5	37.28				
S D-6	--				
S D-7	--				
S D-8	--				
S D-9	31.44				
S D-10	38.88				
S D-11	37.60				
S D-12	--				
S D-13	--				
0-14					
		see Appendix 2			
Method	V829				
Units	%				
Detection Limit	0.05				

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Appendix 5**Channel 'A' Traverse**

A1	0-0.99m
A2	1.0 to 1.99m
A3	2.0 to 2.99m
<hr/>	
A4	3.0 to 3.99m
A5	4.0 to 4.99m
A6	5.0 to 5.59m
A6	5.60 to 5.99m
A7	6.0 to 6.99m
A8	7.0 to 7.99m
A9	8.0 to 8.99m
A10	9.0 to 9.99m
A11	10.0 to 10.99m
A12	11.0 to 11.99m
A13	12.0 to 12.99m
A14	13.0 to 13.89m
A14	13.90 to 14.59m
A15	14.6 to 15.99m
A17	16.0 to 16.99m
A18	17.0 to 17.99m
A19	18.0 to 18.99m
A20	19.0 to 19.99m
A21	20.0 to 20.99m
A22	21.0 to 21.99m
A23	22.0 to 22.59m
<hr/>	
A24	22.6 to 23.99m
A25	24.0 to 24.99m
A26	25.0 to 25.99m
A27	26.0 to 26.99m
A28	27.0 to 27.99m
A29	28.0 to 29.0m

'Ore Zone'

Channel 'AA' Traverse

AA01 0 to 1m
AA02 1 to 2m
AA03 2 to 3m
AA04 3 to 4m
AA05 4 to 5m
AA06 5 to 6m
AA07 6 to 7m
AA08 7 to 8m
AA09 8 to 9m
AA10 9 to 10m
AA11 10 to 11m

Channel 'A1' Traverse

A1 0 to 1m
A2 1 to 2m
A3 2 to 3m
A4 3 to 4m
A5 4 to 5m
A6 5 to 6m
A7 6 to 7m
A8 7 to 8m
A9 8 to 9m
A10 9 to 10m
A11 10 to 11m
A12 11 to 12m
A13 12 to 13m
A14 13 to 14m
A15 14 to 15m

Channel 'B' Traverse

B1 0 to 1m
B2 1 to 2m
B3 2 to 3m
B4 3 to 4m
B5 4 to 5m
B6 5 to 6m
B7 6 to 7m
B8 7 to 8m
B9 8 to 9m
B10 9 to 10m
B11 10 to 11m

Channel 'C' Traverse

C1 0 to 1m
C2 1 to 2m
C3 2 to 3m
C4 3 to 4m
C5 4 to 5m
C6 5 to 6m
C7 6 to 7m

Channel D Traverse

D0	0 to 1m
D1	1 to 2m
D2	2 to 3m
D3	3 to 4m
D4	4 to 5m
D5	5 to 6m
D6	6 to 7m
D7	7 to 8m
D8	8 to 9m
D9	9 to 10m
D10	10 to 11m
D11	11 to 12m
D12	12 to 13m
D13	13 to 14m
D14	14 to 15m

Report 5:
Preliminary Data From
SY021 and SY022
Diamond Drill Holes

(15th of November, 2000)

Prepared by Paul Heath BSc (Hons)
For Zeehan Zinc Pty Ltd

Drill Hole:

SY021

SY021 (Brief Interim description of SY021)

- This drill hole is yet to be logged in detail, however, shows and intersections at 46.9-47.7m at 26.40%Zn, 16.6%Pb and 561ppm Ag.
- Preliminary investigations show mainly carbonaceous and graphitic siltstones from 0m to approx 43m. The carbonate (dolomite) lithology occurs from 43m to end of drill hole (113.28m).
- Preliminary observations indicate no major quantities of talc in drill core for SY021. Detailed investigations will verify this.
- Spot samples have been analysed, however, will be re-sampled over 1m lengths to determine grade. Sporadic veins of sphalerite and galena have been observed from 46m to 113m. This will be described in the detailed drill log.

Geochemical Data

A N A L A B S



Our reference : BU018064
Your reference : 160351a
Project code : Core / Soils
Date received : 20/07/00
Date reported : 10/08/00

Analabs Pty. Ltd.
ACN 004 591 664
14 Thirkell St, Burnie
Tasmania 7320
Telephone : (03) 6431 6837
Facsimile : (03) 6431 8890

Paul Heath
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

10 AUG 2000

Number of pages of results : 4
Number of Samples : 45
First Sample : AA01
Last Sample : SY021 51.4-53.2

Invoice to:
Paul Heath
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

Electronic Data Transmission :
Modem //
Facsimile //
Disk Report //

Preliminary Reports :
26/07/00 Report
27/07/00 Report

Results to:

Results to:

Remarks:

Authorised by
On behalf of:

Rob Chapman
Laboratory Manager

The results in the following analytical report pertain to the samples provided to this laboratory for preparation and/or analysis as requested by the client.
A subsidiary of Scientific Services Limited

ANALABS



Our reference : BU018064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 1 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Cu	Pb	Zn	Ag	Fe	Au
--------	----	----	----	----	----	----

* SY021 46.9-47.7	0.11	16.60	26.40	561	8.17	0.03
SY021 48.0-49.0	0.02	0.28	0.93	7	5.20	<0.01
SY021 51.4-53.2	0.02	0.35	1.05	3	19.50	0.03
Method	A330	A330	A330	A330	A330	F650
Units	%	%	%	ppm	%	ppm
Detection Limit	0.01	0.01	0.01	1	0.01	0.01

SY021

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

820283

ANALABS



Our reference : BU018064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 2 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 3890

ANALYTICAL DATA

Sample	Au(R)	S	S	Hg	B	Mg
--------	-------	---	---	----	---	----

* [SY021-46.9-47.7	0.04	28.167	N.A.	0.175	50	0.39
	SY021-48.6-49.0	--	6.539	N.A.	0.013	92	6.45
	SY021-51.4-53.2	--	18.275	N.A.	0.050	64	7.19
Method	E650	V821	V829	E114	I151	I151	
Units	ppm	%	%	ppm	ppm	%	
Detection Limit	0.01	0.065	0.05	0.005	20	0.01	
Upper Method		V821					

SY021

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

820284

ANALABS



Our reference : BU018064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 3 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Ni	Se	Sn	As	As	Sb
--------	----	----	----	----	----	----

* SY021-46.9-47	<50	2.2	377	310	N.A.	588
SY021-48.6-49.0	<50	27.5	13.3	222	N.A.	33.2
SY021-51.4-53.2	50	18.4	22.8	>1000	1410	37.4
Method	1151	1151	M104	M104	1104	M104
Units	ppm	%	ppm	ppm	ppm	ppm
Detection Limit	50	0.2	0.5	1	10	0.1

} SY021

Notes: N.A. = not analysed, - = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

A N A L A B S



Our reference : BU013064
 Your reference : 160351a
 Project code : Core / Soils
 Report date : 10/08/00
 Report status : Final
 Page : 4 of 4

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkeil St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

	Sample	Br				
--	--------	----	--	--	--	--

SY021	SY021-46.9-47.7	1.4				
	SY021-48.6-49.0	0.8				
	SY021-51.4-53.2	0.8				
	Method	M104				
	Units	ppm				
	Detection Limit	0.1				

SY021

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received



Your reference : BU018102
 Your reference : 158105
 Project code : ZeehanZinc
 Report date : 15/09/00
 Report status : Final
 Page : 1 of 6

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Density	Au	Au(R)	Mg	Si	Net Acid
SY021 18.5-18.57	N.A.	0.02	--	2.20	30.9	N.A.
SY021 32.90-33.10	N.A.	<0.01	--	0.65	28.4	N.A.
SY021 57.20-57.35	N.A.	<0.01	--	11.26	2.0	N.A.
SY021 57.40-57.48	N.A.	0.04	--	7.43	3.4	N.A.
SY021 58.30-58.53	2.88	0.03	--	11.32	2.1	N.A.
SY021 61.50-61.60	N.A.	0.01	--	12.26	4.2	N.A.
SY021 62.00-62.15	N.A.	0.04	--	12.75	6.3	N.A.
SY021 64.00-64.17	N.A.	0.01	--	12.65	15.7	N.A.
SY021 64.90-65.10	2.88	0.01	--	10.32	6.4	N.A.
SY021 68.20-68.44	N.A.	<0.01	<0.01	10.73	1.8	N.A.
SY021 71.00-71.07	N.A.	0.08	--	5.32	6.5	N.A.
SY021 73.30-73.50	N.A.	0.06	--	12.10	0.7	N.A.
SY021 78.50-78.75	3.00	<0.01	--	12.50	0.5	N.A.
SY021 86.60-86.73	N.A.	0.01	--	12.17	0.4	N.A.
SY021 87.40-87.50	N.A.	0.02	--	11.93	<0.25	N.A.
SY021 88.60-88.78	N.A.	0.01	--	12.12	<0.25	N.A.
SY021 92.90-93.08	N.A.	0.03	--	12.12	<0.25	N.A.
SY021 93.30-93.37	N.A.	<0.01	--	12.30	0.3	N.A.
SY021 93.40-93.61	N.A.	0.02	--	11.97	0.5	N.A.
SY021 97.00-97.20	N.A.	<0.01	--	11.95	3.1	N.A.
SY021 104.50-104.73	N.A.	0.03	--	11.75	0.8	N.A.
SY021 110.90-111.12	N.A.	0.01	--	11.07	2.9	N.A.
SY021 113.10-113.28	N.A.	0.01	--	11.76	2.4	N.A.

Method	V959	F650	F650	I151	I151	V906
Units	g/ml	ppm	ppm	%	%	
Detection Limit	0.01	0.01	0.01	0.01	0.25	0.01

N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Your reference : BU018102
 Project code : 158105
 Report date : ZeehanZinc
 Report status : 15/09/00
 Final
 Page : 3 of 6

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Cu	Pb	Zn	Ag	Fe	S
SY021 18.5-18.57	0.89	1.10	0.22	119	6.49	N.A.
SY021 32.90-33.10	<0.01	0.03	<0.01	1	5.94	N.A.
SY021 57.20-57.35	<0.01	0.03	<0.01	1	1.93	N.A.
SY021 57.40-57.48	0.02	10.50	11.60	117	5.78	N.A.
SY021 58.30-58.53	<0.01	0.30	0.18	5	2.93	N.A.
SY021 61.50-61.60	<0.01	0.03	0.04	1	2.11	N.A.
SY021 62.00-62.15	<0.01	0.02	0.02	<1	4.23	N.A.
SY021 64.00-64.17	<0.01	0.02	<0.01	<1	4.65	N.A.
SY021 64.90-65.10	<0.01	0.02	0.02	<1	6.74	N.A.
SY021 68.20-68.44	<0.01	0.02	0.01	<1	5.57	N.A.
SY021 71.00-71.07	<0.01	0.10	0.04	1	16.10	N.A.
SY021 73.30-73.50	<0.01	0.02	0.01	<1	5.28	N.A.
SY021 78.50-78.75	<0.01	0.02	0.01	<1	7.16	N.A.
SY021 86.60-86.73	<0.01	0.03	<0.01	<1	1.89	N.A.
SY021 87.40-87.50	<0.01	0.02	0.01	<1	3.46	N.A.
SY021 88.60-88.78	<0.01	0.19	0.60	2	3.53	N.A.
SY021 92.90-93.08	<0.01	0.02	<0.01	<1	3.56	N.A.
SY021 93.30-93.37	<0.01	0.04	<0.01	<1	3.76	N.A.
SY021 93.40-93.61	<0.01	0.03	<0.01	<1	2.97	N.A.
SY021 97.00-97.20	<0.01	0.01	0.05	<1	1.81	N.A.
SY021 104.50-104.73	<0.01	0.15	0.15	2	3.13	N.A.
SY021 110.90-111.12	<0.01	0.01	0.04	<1	1.76	N.A.
SY021 113.10-113.28	<0.01	0.01	0.05	<1	1.76	N.A.

Method	A330	A330	A330	A330	A330	V821
Units	%	%	%	ppm	%	%
Detection Limit	0.01	0.01	0.01	1	0.01	0.005

N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received



Your reference : BU018102
 Your reference : 158105
 Project code : ZeehanZinc
 Report date : 15/09/00
 Report status : Final
 Page : 5 of 6

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	C				
SY021 18.5-18.57	N.A.				
SY021 32.90-33.10	N.A.				
SY021 57.20-57.35	N.A.				
SY021 57.40-57.48	N.A.				
SY021 58.30-58.53	N.A.				
SY021 61.50-61.60	N.A.				
SY021 62.00-62.15	N.A.				
SY021 64.00-64.17	N.A.				
SY021 64.90-65.10	N.A.				
SY021 68.20-68.44	N.A.				
SY021 71.00-71.07	N.A.				
SY021 73.30-73.50	N.A.				
SY021 78.50-78.75	N.A.				
SY021 86.60-86.73	N.A.				
SY021 87.40-87.50	N.A.				
SY021 88.60-88.78	N.A.				
SY021 92.90-93.08	N.A.				
SY021 93.30-93.37	N.A.				
SY021 93.40-93.61	N.A.				
SY021 97.00-97.20	N.A.				
SY021 104.50-104.73	N.A.				
SY021 110.90-111.12	N.A.				
SY021 113.10-113.28	N.A.				

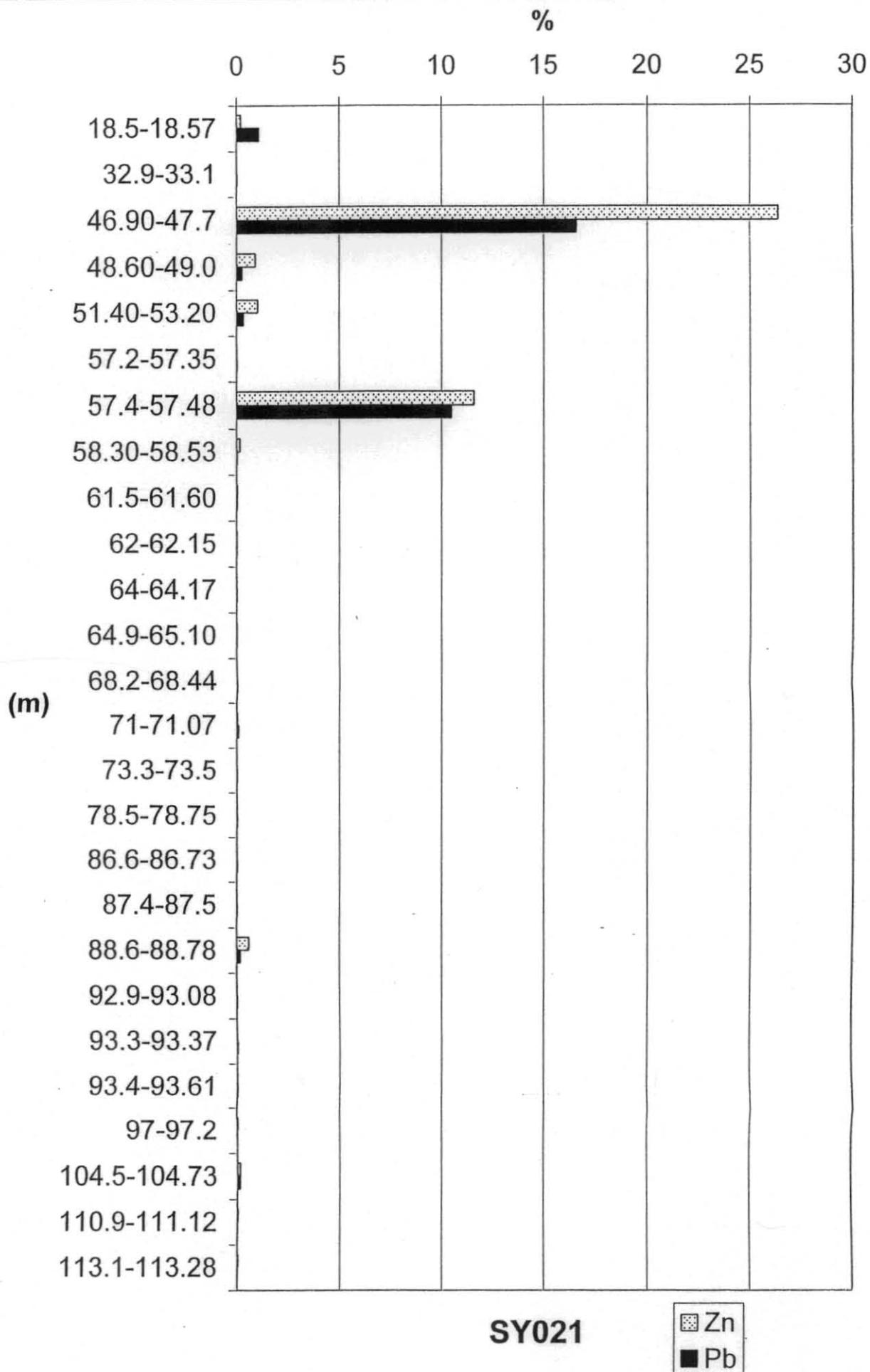
Method	V825				
Units	%				
Detection Limit	0.005				

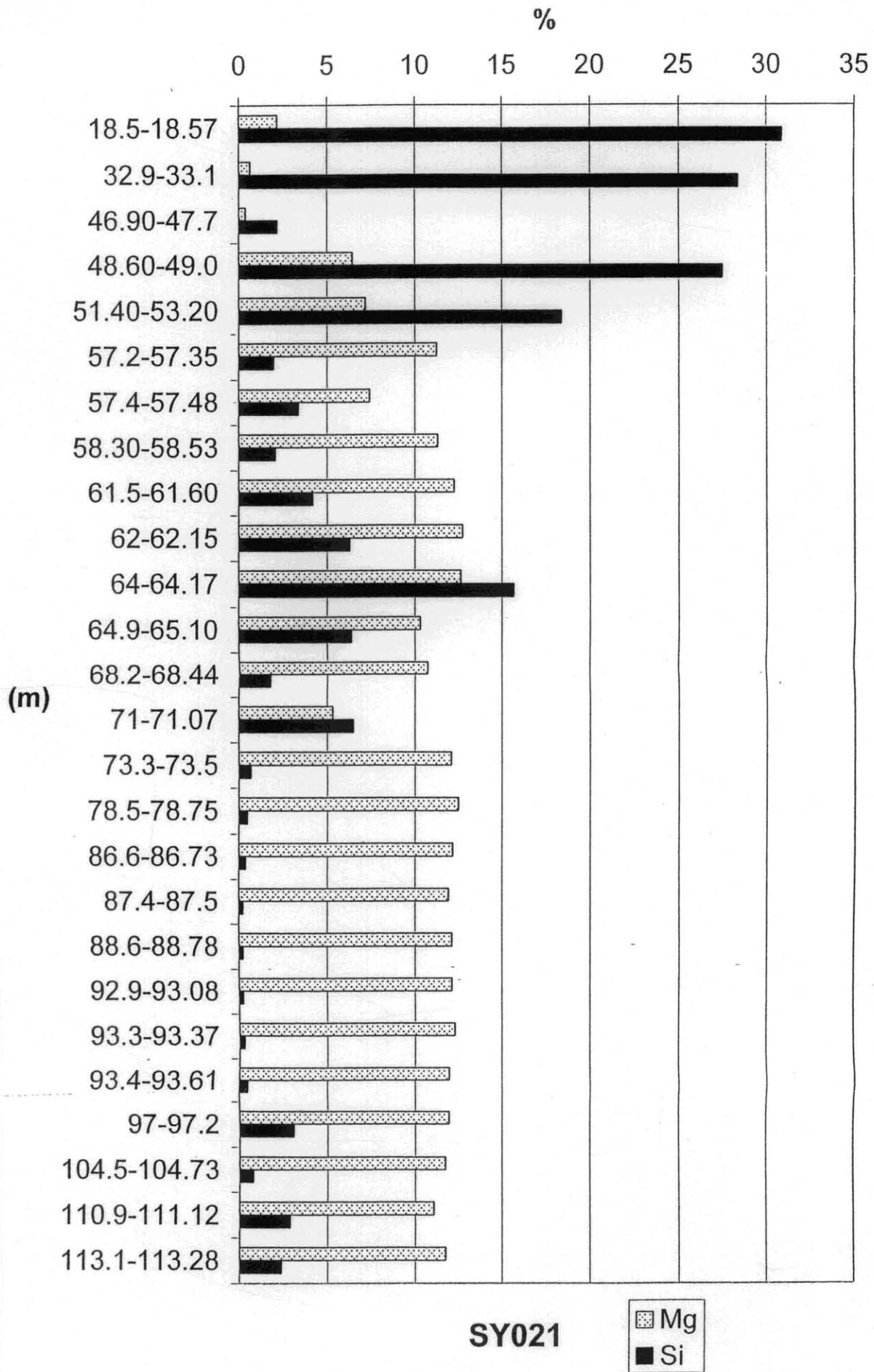
N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Maps & Graphs

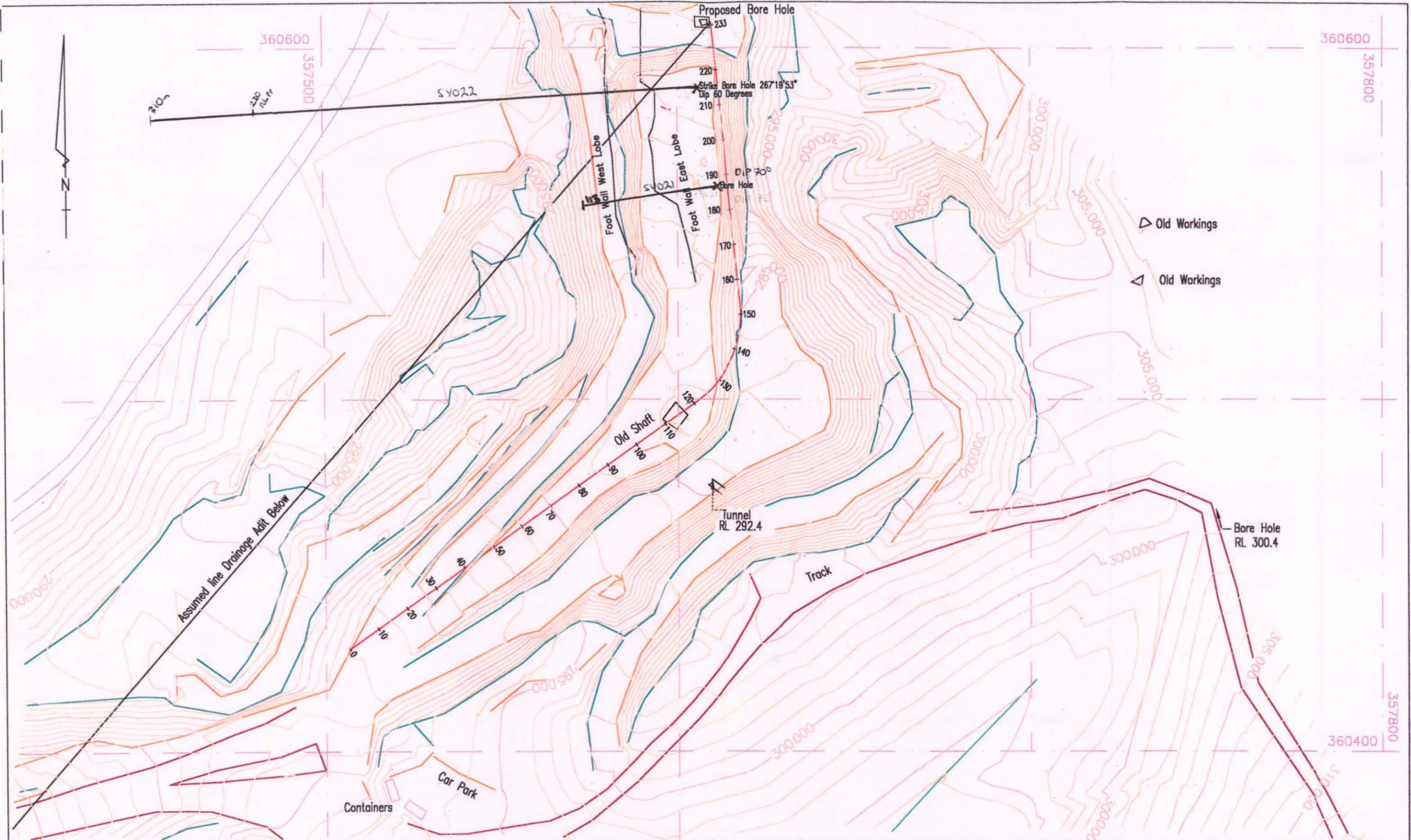
5 cm

820290





5 cm



NOTES :

All measurements are in metres .
 Co-ordinates are A.M.G.
 Datum for Levels is A.H.D

Northern Surveying Services

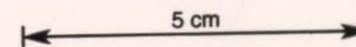
495 Melrose Road , Eugenena 7310
 Telephone (03) 6427 2765
 Fax (03) 6427 3040
 Mobile 0418 141 244

Trial Harbour Road, Zeehan, Tas.
existing northern pit & workings

Drawing No.
CSTOCK-1(e)

Drawn : J.A.T | Scale : 1:1000 | Date :16/8/00

J. Edwards



Drill Hole:

SY022

Drill Hole SY022

Geologists: Dr Mohammad Adabi
Paul Heath

Logged: August/September, 2000

Date:	10/08/2000	21/08/2000	25/08/2000
Survey Depth:	150.00m	261.00m	311.00m
Azimuth:	244	246	249
Dip:	64 ⁰	65.50 ⁰	64.50 ⁰
Easting:	357609.288		
Northing:	360587.551		

1m-6.8m	Light to dark brown, highly weathered, highly broken, finely laminated medium grained sandstone interbedded with slightly carbonaceous mudstone .
6.80m-12.70m	Light- to dark-gray, pervasive silicified slightly calcareous units, hard, broken, massive, clay rich in parts.
12.70m-14m	Medium gray- to dark-brown, hard, broken, massive, slightly calcareous shale-mudstone , slightly disseminated pyrite, sharp contact between this unit and the one above.
14m-50.40m	Black, finely laminated, hard, broken, irregular deformed quartz veins and patches, broken along cleavages, slightly graphitic and highly disseminated pyrite, cross cutting quartz veins. From 38.70m to 39.70m, large scale contorted quartz and calcite veins, Shalely siltstone .
50.40m-51.30m	Light green-gray, hard, finely laminated irregular to layered quartz veins, slightly broken, Mudstone .
51.30m-53.50m	Black, hard, slightly broken, small to large scale irregular quartz patches, finely laminated, slightly graphitic, particularly at 53.50m. Slightly calcareous.
53.50m-54.50m	Cavity
54.50m-60.70m	Dolomitic units , very hard, massive to light to dark gray, disseminated pyrite, galena, possibly sphalerite, slightly broken, patches of pyrite.

- 60.70m-63.50m Light gray, hard **dolomite unit**, partly to heavily disseminated (mottled) pyrite and veinlets of sphalerite, irregular-subangular, intraclastic brecciated units towards the top. Sphalerite and pyrite along dissolution seams. Micro-faults present.
- 63.50m-66m Dark gray, slightly to pervasive mineralised unit. Highly altered **dolomite unit**. Hard, massive, broken disseminated pyrite, sphalerite, galena. Sphalerite occurs as patches and along fractures. Magnetite at the top (66m).
- 66m-68.30m Cavity
- 68.30m-72.50m **Massive sulphide**, golden-medium cream, hard, massive, moderately broken, highly altered, highly mineralized, galena, pyrite, sphalerite. Sphalerite occurs as patches, along bedding fractures and veinlets. Pyritic crystals are conglomeritic.
- 72.50m-74.40m Dark-green, brecciated subangular clasts (possibly small to large scale siltstone), highly altered, **dirty carbonate units**, microfractures.
- 74.40m-74.50m **Massive sulphide**, broken, pyritic, galena, minor sphalerite, massive, hard.
- 74.50m-75.50m Dark green, broken, massive sulphide, pyrite, galena, minor sphalerite, massive, hard, Sphalerite occurs along several veins and veinlets, minor galena as patches, minor disseminated pyrite, weakly magnetic. Mottled highly altered **carbonate units**.
- 75.50m-76.60m Dark green, finely laminated **siltstone unit**, patches of galena, carbonate clasts and minor sphalerite veinlets, quartz veins, hard, partly broken.
- 76.60m-78.85m Dark brown, unconsolidated soft sediments that are medium to coarse, well sorted, with sporadic dark gray, broken, **shaley siltstone**, slightly disseminated pyrite, quartz veinlets.
- 78.85m-81.90m Golden- to light-green, soft to hard, massive, slightly broken, highly altered, weathered, several veinlets, magnetite, minor disseminated pyrite, broken fragments of **graphitic shale**, veinlets of sphalerite and galena replacing **dolomite units**.
- 81.90m-84.30m Cavity

- 84.30m-84.70m Medium- brown-green, highly altered, with heavily disseminated euhedral pyrite that occur up to 0.5cm, mixed **carbonate (dolomite) and minor siltstone** layers.
- 84.70m-92.60m White bluff- to dark gray to green, finely laminated to massive, soft to hard, partly broken along cleavage, slightly **contorted siltstone to graphitic shales intermixed with fine grained sandstone**, cross cutting veins, deformed laminae, broken disseminated euhedral pyrite in parts.
- 92.60m-94.40m Golden green- to dark brown. Massive sulphide includes, hard sphalerite, galena, pyrite: as disseminated euhedral crystals up to 1 cm, sphalerite occurs as disseminated patches to veinlets, with minor patches of galena, hosted with heavily altered carbonates.
- 94.40m-97m Black, hard, broken, finely laminated, **graphitic-shalely calcareous siltstone**, irregular quartz veins, disturbed laminae, disseminated pyrite associated with the veins.
- 97m-107m Cavity
- 107m-111.40m Golden-brown, heavily broken, soft to hard, weathered with **massive sulphide** that is mainly pyritic disseminated patches, intermixed with 10cm of siltstone at the top.
- 111.40m-116.50m Light-bluff- to light-gray, hard, slightly broken, vein filling fractures, minor disseminated pyrite, cross cutting veins. Altered **dolomitic unit**, brecciated, subangular clasts, mottled dark magnetite fragments. Pinkish mineral (Rhodocrocite?)
- 116.50m-117.50m Cavity
- 117.50m-121.70m Light-gray- to yellow-brown, hard, broken, massive, brecciated clasts, cross cutting veins, highly altered, disseminated pyrite, rhodocrocite (pinkish/red mineral). **Dolomite units**.
- 121.70m-126.20m Dark-gray- to light-gray, hard, moderately broken, massive, highly disseminated pyrite, partially silicified, disseminated patches of sphalerite and galena, dolomite unit.
- [123.10m-125.65m] Cavity
- 126.20m-127.80m Dark- to light-gray altered soft- to cemented clayey-mudstone, slightly brecciated.

- 127.80m-130.70m Light gray, hard, massive, moderately broken, medium to massive bedding, some disseminated pyrite, fine- to coarsely crystalline **carbonate (dolomite) unit**.
- 130.70m-153.90m Medium gray, hard, slightly to moderately broken, massive bedding, fine to coarsely crystalline intraclastic, brecciated **carbonate (dolomite) units**. Disseminated pyrite, slightly altered.
- [131.40m-138.80m] Cavity, soft powdered, highly porous, altered fine- to coarse **limey mudstone**.
- 153.90m-157.10m Dark- to light-brown, soft, moderately weathered, broken, pervasive disseminated pyrite. Cross cutting bands, brecciated, **Altered carbonate (dolomite) unit**.
- 157.10m-160.40m Green- to dark-gray, soft, massive, heavily disseminated pyrite. Bands of pyrite concentrated as fine laminations. Sharp contact between pyrite **limestone and siltstone**.
- 160.40m-167.40m Light gray, moderately hard, partly broken, intraclasts, minor patches of pyrite, slightly fizzes. **Dolomitic limestone**.
- 167.40-176m Light gray- to green, hard, heavily altered, fine to coarse pyrite crystals, partially to heavily pyritic. Pyrite occurs as disseminated, patches and veins that is hosted by carbonates. No Sphalerite or Galena. **Carbonate (dolomite) unit**.
- 176m-178.60m Light- to medium-gray, hard, brecciated, intraclastic carbonate unit, massive, cross cutting veinlets, soft. As you go through the top of the unit, it becomes more altered i.e serpentine. Minor stylolites (dissolution seams), partially to highly altered. **Carbonate (dolomite) unit**.
- 178.60m-179.10m Light green, soft, **Serpentinite Skarn**.
- 179.10m-185.60m Light- to dark-gray, hard, moderately broken, massive, serpentinite contact, cross cutting veins, quartz veins, slightly porous carbonate unit. **Carbonate (dolomite) unit**.
- 185.60m-187m Light green, soft, and massive. **Serpentinite skarn**.
- 187m-195.50m Light- to dark gray, hard, moderately broken, massive, brecciated to mottled, quartz veins, stylolites. **Carbonate (dolomite) unit**.

- 195.50m-197.10m Green- to medium-gray, serpentinite patches occur through this unit. Soft, massive, highly altered, cross cutting veins. **Serpentinite skarn.**
- 197.10m-228.95m Light gray, moderately hard, massive, slightly brecciated, disseminated pyrite that occurs also as patches, moderately broken, fine to relatively coarse grain, slightly altered, partly serpentinitic, stylolitic, pyrite along stylolites and veinlets. **Carbonate (dolomite) unit.**
- 228.95m-231.85m Golden gray, hard, **massive sulphide**, patches of galena, sphalerite, quartz, and magnetite, pyrite is abundant.
- 231.85m-244.50m Medium- to light gray, hard, massive, sharp contact with massive sulphide and gradual contact toward mélange. Patches of pyrrhotite? Cross cutting mineralised veins (pyrrhotite, pyrite?), slightly brecciated, stylolites common, slightly altered, patches of serpentinite. **Carbonate (dolomite) unit.**
- 244.50m-248.80m Black, finely laminated, **shaley siltstone**, patches of pyrite and quartz.
- 248.80m-270.50m Black- to dark-gray, hard, massive to finely contorted laminae, large scale quartz patches and veins, clast size range from 0.1 cm to >5cm, patches of pyrite and pyritic veinlets. Slightly altered (serpentine, chlorite). **Mélange (diamictite).**
- 270.50m-291.50m Medium green- to light-gray, hard to soft, massive to finely laminated, non-altered to highly altered (serpentine), large scale quartz veins, **alternating sequence of skarn, contorted siltstone and carbonate units.** Siltstone and also carbonate units altered by serpentine. Large- to small scale quartz clasts are distributed through contorted siltstone units. Skarn is slightly calcareous.
- 291.50m-312.50m Dark- to light-medium green, mixed sequence of **mélange**, slightly to highly **altered skarn**, partly contorted. Large to small scale quartz patches and veins, soft to hard, massive to finely (contorted) laminae, many cross cutting veins, slightly brecciated. Skarn is slightly to highly calcareous (308.50m- 312.50m).

Geochemical Data



Our reference : BU018102
Your reference : 158105
Project code : ZeehanZinc
Date received : 15/08/00
Date reported : 15/09/00

Analabs Pty. Ltd.
ACN 004 591 664
14 Thirkell St, Burnie
Tasmania 7320
Telephone : (03) 6431 6837
Facsimile : (03) 6431 8890

Paul Heath
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

Number of pages of results : 6
Number of Samples : 62
First Sample : SY021 18.5-18.57
Last Sample : SWD 2

Invoice to:
Paul Heath
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

Electronic Data Transmission :
Modem //
Facsimile //
Disk Report //

Preliminary Reports :
23/08/00 Report
24/08/00 Report
24/08/00 Report
24/08/00 Report
24/08/00 Report
15/09/00 Report

Results to:

Results to:

Remarks :

Authorised by
On behalf of:

Rob Chapman
Laboratory Manager

The results in the following analytical report pertain to the samples provided to this laboratory for preparation and/or analysis as requested by the client.



Our reference : BU018102
 Your reference : 158105
 Project code : ZeehanZinc
 Report date : 15/09/00
 Report status : Final
 Page : 1 of 6

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Density	Au	Au(R)	Mg	Si	Net Acid
SY022 9:30-9:48	2.78	<0.01	--	13.17	25.4	N.A.
SY022 11:20-11:41	N.A.	<0.01	--	1.14	45.4	N.A.
SY022 26:40-26:55	N.A.	0.02	--	1.14	27.4	N.A.
SY022 30:40-30:55	N.A.	<0.01	--	1.23	31.1	N.A.
SY022 48:80-48:95	N.A.	0.02	--	0.95	30.8	N.A.
SY022 51:00-51:20	N.A.	<0.01	--	1.66	30.4	N.A.
SY022 57:00-57:25	N.A.	0.02	--	12.36	1.0	N.A.
SY022 60:80-60:98	N.A.	0.04	--	6.30	2.2	N.A.
SY022 62:75-62:91	N.A.	<0.01	--	10.15	0.7	N.A.
SY022 63:15-63:38	2.96	<0.01	--	8.88	0.7	N.A.
SY022 65:00-65:45	N.A.	0.01	--	4.83	1.5	N.A.
SY022 65:45-65:61	N.A.	0.01	0.05	2.32	0.6	N.A.
SY022 68:30-68:50	N.A.	0.01	--	5.89	6.0	N.A.
SY022 69:05-69:32	N.A.	0.02	0.01	4.42	7.7	N.A.
SY022 69:45-69:67	N.A.	0.03	--	3.14	1.3	N.A.
SY022 69:80-70:06	N.A.	0.01	--	4.02	1.8	N.A.
SY022 70:65-71:09	N.A.	0.01	--	3.99	2.8	N.A.
SY022 71:15-71:39	N.A.	0.01	--	2.81	2.7	N.A.
SY022 71:65-71:89	3.08	0.01	--	6.00	3.7	N.A.
SY022 72:10-72:32	N.A.	0.01	0.03	3.49	4.1	N.A.
SY022 72:70-72:90	N.A.	<0.01	--	5.81	5.2	N.A.
SY022 72:50-73:10	N.A.	0.01	--	4.88	4.3	N.A.
SY022 73:10-73:50	N.A.	<0.01	--	4.11	3.1	N.A.
SY022 73:50-73:90	N.A.	<0.01	--	4.77	2.4	N.A.
SY022 73:95-74:40	N.A.	<0.01	--	5.01	2.4	N.A.
SY022 74:40-75:00	N.A.	0.01	--	4.85	3.7	N.A.
SY022 75:00-75:50	N.A.	0.01	--	3.34	1.5	N.A.
Method	V959	F650	F650	I151	I151	V906
Units	g/ml	ppm	ppm	%	%	
Detection Limit	0.01	0.01	0.01	0.01	0.25	0.01

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received



our reference : BU018102
our reference : 158105
Project code : ZeehanZinc
Report date : 15/09/00
Report status : Final
Page : 3 of 6

Analabs Pty. Ltd.
ACN 004 591 664
14 Thirkell St, Burnie
Tasmania 7320
Telephone : (03) 6431 6837
Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	Cu	Pb	Zn	Ag	Fe	S
SY022 9:30-9:48	<0.01	<0.01	0.06	<1	0.96	N.A.
SY022 11:20-11:41	<0.01	0.01	<0.01	<1	1.02	N.A.
SY022 26:40-26:65	0.01	0.02	0.05	2	3.63	N.A.
SY022 30:40-30:55	0.01	0.01	<0.01	1	3.05	N.A.
SY022 48:80-48:95	0.01	0.01	<0.01	1	3.58	N.A.
SY022 51:00-51:20	<0.01	0.01	<0.01	<1	3.63	N.A.
SY022 57:00-57:25	0.01	<0.01	<0.01	<1	9.18	N.A.
SY022 60:80-60:98	0.02	0.25	2.46	6	13.50	N.A.
SY022 62:75-62:91	0.01	0.19	2.31	5	6.02	N.A.
SY022 63:15-63:38	0.02	0.35	2.44	6	5.81	N.A.
SY022 65:00-65:45	0.02	7.92	0.24	61	14.60	N.A.
SY022 65:45-65:61	0.04	2.59	13.70	38	20.00	N.A.
SY022 68:30-68:50	0.03	7.51	2.40	65	15.50	N.A.
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SY022 71:15-71:39	0.05	0.39	1.38	18	26.00	N.A.
SY022 71:65-71:89	0.02	0.91	0.80	18	19.10	N.A.
SY022 72:10-72:32	0.08	2.09	4.32	43	20.50	N.A.
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SY022 73:50-73:90	<0.01	0.34	0.42	19	19.40	N.A.
SY022 73:95-74:40	<0.01	0.43	0.19	17	19.00	N.A.
SY022 74:40-75:00	0.01	2.79	3.25	59	16.60	N.A.
SY022 75:00-75:50	0.04	1.10	4.20	27	23.80	N.A.
Method	A330	A330	A330	A330	A330	V821
Units	%	%	%	ppm	%	%
Detection Limit	0.01	0.01	0.01	1	0.01	0.005

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received



Your reference : BU018102
 Your reference : 158105
 Project code : ZeehanZinc
 Report date : 15/09/00
 Report status : Final
 Page : 5 of 6

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

Sample	C				
SY022 9:30-9:48	N.A.				
SY022 11:20-11:41	N.A.				
SY022 26:40-26:65	N.A.				
SY022 30:40-30:55	N.A.				
SY022 48:80-48:95	N.A.				
SY022 51:00-51:20	N.A.				
SY022 57:00-57:25	N.A.				
SY022 60:80-60:98	N.A.				
SY022 62:75-62:91	N.A.				
SY022 63:15-63:38	N.A.				
SY022 65:00-65:45	N.A.				
SY022 65:45-65:61	N.A.				
SY022 68:30-68:50	N.A.				
SY022 69:05-69:32	N.A.				
SY022 69:45-69:67	N.A.				
SY022 69:80-70:06	N.A.				
SY022 70:65-71:09	N.A.				
SY022 71:15-71:39	N.A.				
SY022 71:65-71:89	N.A.				
SY022 72:10-72:32	N.A.				
SY022 72:70-72:90	N.A.				
SY022 72:50-73:10	N.A.				
SY022 73:10-73:50	N.A.				
SY022 73:50-73:90	N.A.				
SY022 73:95-74:40	N.A.				
SY022 74:40-75:00	N.A.				
SY022 75:00-75:50	N.A.				
Method	V825				
Units	%				
Detection Limit	0.005				

N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

820307

ANALABS



Our reference : BU018107
Your reference : 158105A
Project code : ZeehanZinc
Date received : 15/08/00
Date reported : 31/08/00

Analabs Pty. Ltd.
ACN 004 591 664
14 Thirkell St, Burnie
Tasmania 7320
Telephone : (03) 6431 6837
Facsimile : (03) 6431 8890

Mohammad H. Adabi
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

31 AUG 2000

Number of pages of results : 2
Number of Samples : 15
First Sample : SY022 75.90-76.60
Last Sample : SY022 162.00-163.10

Invoice to:
Paul Heath
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

Electronic Data Transmission :
Modem //
Facsimile //
Disk Report //

Preliminary Reports :
24/08/00 Report
24/08/00 Report
24/08/00 Report
24/08/00 Report

Results to:

Results to:

Remarks :

Authorized by
On behalf of:

Rob Chapman
Laboratory Manager

The results in the following analytical report pertain to the samples provided to this laboratory for preparation and/or analysis as requested by the client.

820310

A N A L A B S



Our reference : BU018123
 Your reference : 158105A
 Project code : ZeehanZinc
 Date received : 22/08/00
 Date reported : 31/08/00

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St. Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

Mohammad H. Adabi
 Geologist

Oceania Tasmania Pty Ltd
 Level 3
 65 Murray St
 Hobart
 TAS 7000
 Australia

Number of pages of results : 2
 Number of Samples : 7
 First Sample : SY022 167.40-168.35
 Last Sample : SY022 230.00-231.00

Invoice to:
 Paul Heath
 Geologist

Oceania Tasmania Pty Ltd
 Level 3
 65 Murray St
 Hobart
 TAS 7000
 Australia

Electronic Data Transmission :
 Modem //
 Facsimile //
 Disk Report //

Preliminary Reports :
 24/08/00 Report
 24/08/00 Report
 24/08/00 Report
 24/08/00 Report
 25/08/00 Report

Results to:

Results to:

Remarks:

Authorised by
 On behalf of:

Rob Chapman
 Laboratory Manager

The results in the following analytical report pertain to the samples provided to this laboratory for preparation and/or analysis as requested by the client.

820313

A N A L A B S



Our reference : BU018134
Your reference : 158106
Project code : ZeehanZinc
Date received : 24/08/00
Date reported : 31/08/00

Analabs Pty. Ltd.
ACN 004 591 664
14 Thirkell St, Burnie
Tasmania 7320
Telephone : (03) 6431 6837
Facsimile : (03) 6431 8890

Paul Heath
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

Number of pages of results : 2
Number of Samples : 1
First Sample : SY022 231.00-232.00
Last Sample : SY022 231.00-232.00

Invoice to:
Paul Heath
Geologist

Oceania Tasmania Pty Ltd
Level 3
65 Murray St
Hobart
TAS 7000
Australia

Electronic Data Transmission :
Modem //
Facsimile //
Disk Report //

Preliminary Reports :
25/08/00 Report

Results to:

Results to:

Remarks :

Authorised by
On behalf of:

Rob Chapman
Laboratory Manager

The results in the following analytical report pertain to the samples provided to this laboratory for preparation and/or analysis as requested by the client.

820315

A N A L A B S



Our reference : BU018134
 Your reference : 158106
 Project code : ZeehanZinc
 Report date : 31/08/00
 Report status : Final
 Page : 2 of 2

Analabs Pty. Ltd.
 ACN 004 591 664
 14 Thirkell St, Burnie
 Tasmania 7320
 Telephone : (03) 6431 6837
 Facsimile : (03) 6431 8890

ANALYTICAL DATA

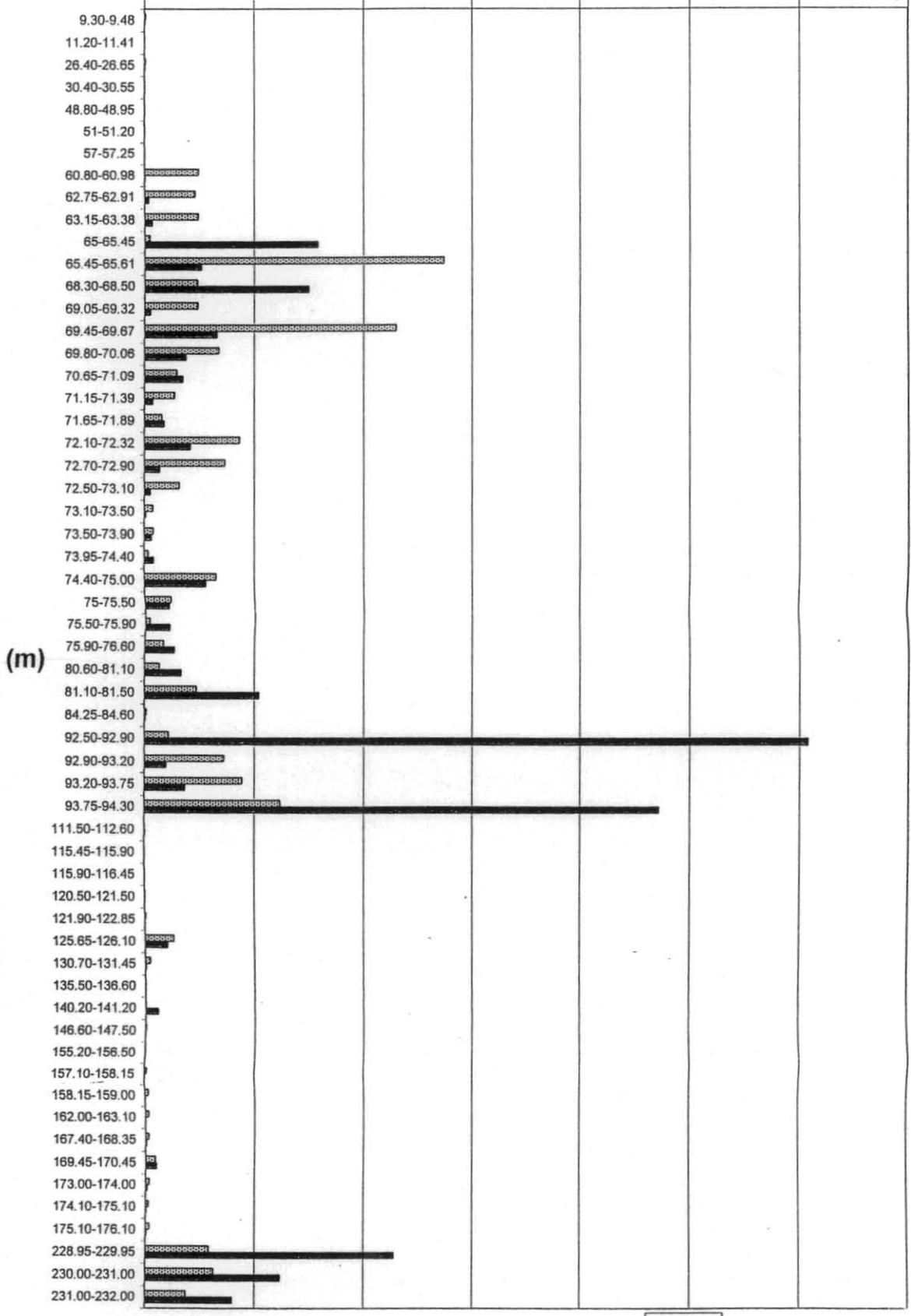
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SY022 231.00-232.00	0.03	3.98	1.86	41	32.80
Method	A330	A330	A330	A330	A330
Units	ppm	ppm	ppm	ppm	ppm
Detection Limit	0.01	0.01	0.01	0.01	0.01

Notes: N.A. = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Maps & Graphs

%

0 5 10 15 20 25 30 35

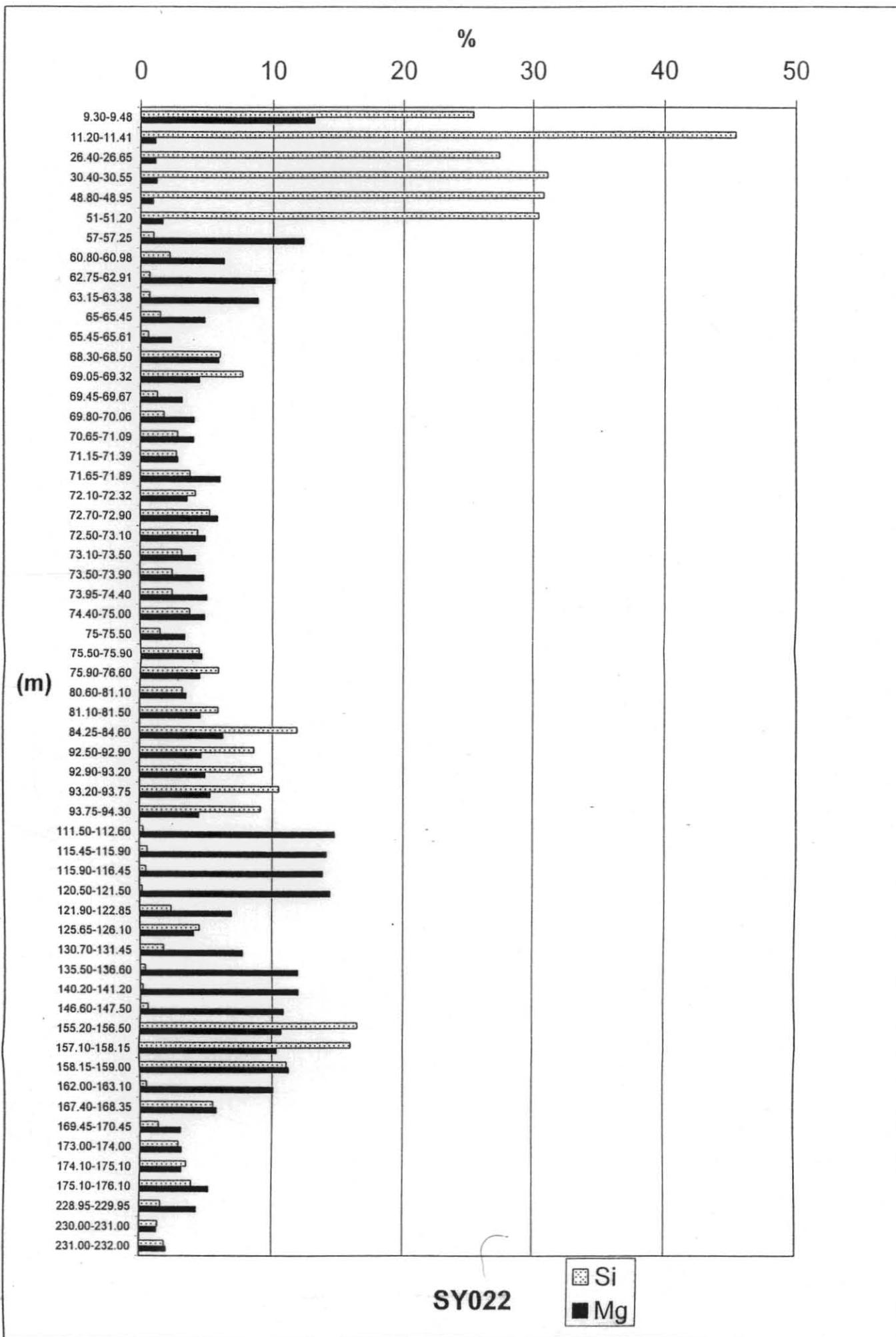
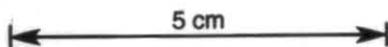


(m)

SY022

Zn
Pb

5 cm



Appendix 7

Comstock Conceptual Mine Plan
Zeehan, Tasmania

Coffey Geosciences Pty Ltd, 2000

OCEANIA PTY LTD
Comstock Conceptual Mine Plan
Zeehan, West Coast, Tasmania

Z13050/1.AE
January 2000



Z13050/1.AE Wayne Trenning

January 2000
Oceania Pty Ltd
Level 3 65 Murray St
HOBART TASMANIA 7000

Attention: Mr David Tanner

Dear Sir,

RE: Comstock Conceptual Mine Plan

This letter presents our report on a draft Conceptual Mine Plan proposed for the Comstock Mine at Zeehan, on the West Coast of Tasmania.

If you have any questions related to this report or we can be of further assistance, please do not hesitate to contact the undersigned.

For and on behalf of

COFFEY GEOSCIENCES PTY LTD


DAN O'TOOLE

ASSOCIATE ENGINEER

WAYNE TRENNING

SENIOR ENGINEER



Coffey

Z13050/1.AE
Publication Date

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1. INTRODUCTION

At the request of Mr Dave Tanner of Oceania Pty Ltd (Oceania) Coffey Geosciences Pty Ltd (Coffey) were asked to provide a Conceptual Mine Plan (CMP) for the Comstock Mine site near Zeehan on the West Coast of Tasmania. The CMP is an addition to the Development Proposal and Environmental Management Plan (DPEMP) produced by SEMF Holdings Pty Ltd (SEMF).

The aim of this CMP is to be a valuable addition to the SEMF DPEMP and to help facilitate environmental approval for the proposed expanded mining operation and processing plant at Comstock. The level of engineering within the CMP is limited to that required to prepare the DPEMP at a conceptual level. That is, a level whereby notional or indicative assessments may be made, and used as inputs to any risk assessment or management planning that may take place. The CMP does not provide assessments or recommendations at the definitive feasibility level.

The scope of the CMP as outlined in Coffey's proposal Z13050/1.AA dated 8-11-2000 contained the following:

- Comprehensive data review and collation of historical data to identify useful information
- Identification of potential areas of mining
- An estimate of waste volumes generated by implementation of the mine plan
- Conceptual mine location and design
- Conceptual waste dump location and design
- Assessment of pit backfill options

2. DATA REVIEW AND COLLATION

Coffey considered that this task was important for the overall completion of the CMP. Significant time was spent both at Coffey's Hobart office and the Oceania Hobart office by staff of both companies in an attempt to collect and collate as much data as possible. The objectives of this exercise were:

- To create a well understood data resource for current and future reference
- To minimise risk by ensuring that any recommendations and conclusions were based on documented results and/or assumptions

A list of the documents collected as a base for the CMP is shown below in Table 1. In addition to this list was an electronic database of drill-holes supplied by Western Metals. Summary details of the database are shown in Appendix 1.

Table 1 – Data Collated and Collected for CMP by Coffey from Oceania

AUTHOR	MEDIA	TITLE
Western Metals	Report	Comstock Project Final Report, January 2000, Volume 1 of 2
Western Metals	Report	Comstock Ground EM/Downhole EM Interpretation Report
Western Metals	Report	Comstock Project Final Report, January 2000, Volume 2 of 2
Western Metals	CD	Comstock (Zeehan) Project Final Report
TG Summons	Report	Ag-Pb-Zn Mineralisation, The Comstock Group of Veins
JM Knight	Report	Comstock Silver-Lead-Zinc Prospect November 1997
AH Blissett	Report	Geological Survey Explanatory Report 1962
Parry Kostoglou	Report	A Selective Archaeological Survey of the Comstock Mine Lease
Paul Heath	Report	Comstock Silver Lead Zinc Mine, Ore Assay Report, Allison's Lode
Findlay & Brown	Report	The 10th Legion Thrust, Zeehan District: Distribution, Interpretation and Regional and Economic Significance
Simon Tear	Report	Aspects of the Mineral Lodes on the Comstock Prospect, Zeehan. Zeehan Zinc Drill Holes SY021 & SY022
RGC Exploration	Report	A Summary Review of the Zeehan (Sylvester) Project
Western Metals	Map	Property Evaluation Comstock Project, Bass Resources & Western Metals, Drill Holes
RGC Exploration	Map	Sylvester Grid EL 42/87, Geological Interpretation
RGC Exploration	Map	Zeehan Project EL 42/87, Mineralisation in the Comstock -Tenth Legion Area
Zeehan Zinc	Diagram	Comstock Mine, Allison's Decline, Typical Section, Scale 1:200

3. GEOLOGICAL MODELS AND POTENTIAL AREAS OF MINING

3.1 Allison's Lode

Coffey had previously constructed a conceptual model for the potential down dip mineralisation envelope in the Allison's Lode Decline. This was the basis of the model constructed for the Allison's Lode portion of the CMP, and in particular the inferred continuation of the Allison's Lode mineralisation north to the Balstrup Fault.

Coffey constructed an extended mineralised envelope truncated by the Balstrup Fault in the north, and truncated at depth at 264 RL. These constraints were based on a geological assessment provided by Behre Dolbear (Ref.1). The volume of the mineralised envelope contained within an extended pit and constrained as above is approximately 33,000 m³. Assuming an SG of 3.81 (Ref.2) the tonnage available in the Allison's Lode mineralised envelope, excluding tonnage already excavated, is approximately 125,000t. This figure assumes that the decline/pit geometry parameters remain constant as outlined (Ref. 2) as mining progresses north. Plans and diagrams showing this assumed mineralised extent are included as Figures 2 - 3.

3.2 Balstrup Fault

3.2.1 Surface Model

Coffey have developed a conceptual model for possible Balstrup Fault mineralisation that may be accessible using surface mining techniques as shown in Figures 4. The model assumes that mineralisation along the Balstrup Faults will be present for the extent of the fault at a nominal width 1-15m. Coffey have assumed this to be the case, but make no judgement as to the real continuity, or depth or width extent, of available mineralisation. Assuming that mineralisation is available to 264mRL, Coffey have developed a conceptual model of the Comstock Lode with the characteristics shown in Table 2.

Table 2 –Parameters for Conceptual Balstrup Fault Surface Model

Strike Length	Dip	Dip Direction	Width	Depth
370m	70°	010°	1-15m	264mRL

3.2.2 Underground Model

The underground geological model for the Balstrup fault was developed after interrogation of the database provided. The database contained data for 20 diamond drill holes, most of which had as their target some portion of the Balstrup Fault. Interrogation of the data showed that holes drilled at a later date than others, and designed to test continuity of mineralisation along the fault, had in some cases shown that the mineralisation was not continuous along strike. Coffey's conceptual model chose that area of the inferred mineralised zones that was continuous along strike and bounded and intersected by zinc intersections downhole.

A plan view of the diamond drill holes is shown in Figure 5. The underground geological model for the Balstrup Fault has a strike length of approximately 600m, from 357200E to 357800, and a dip and dip direction of 70°/015°. The model is interpreted to extend from approximately 200m RL to -100m RL. This describes mineralisation that begins approximately 100m below ground surface. The drill holes that delineate the extent of the modelled volume are shown in Fig 6.

The surface representing the mineralised fault zone is interpreted to be approximately 3m wide (true width) and has a planar surface area of approximately 195,000m². The volume of the mineralised zone for the geological model is therefore approximately 585,000m³. Assuming an SG of 3.81, the Balstrup Fault underground conceptual model represents some 2,220,000 tonnes of mineralised material. Coffey base the above figures on data and assumptions supplied by Oceania and other third parties. The estimates above do not represent a Resource or a Reserve as defined by the Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (The JORC Code).

3.3 Comstock Lode

The Comstock Lode is undefined by the drill-hole data supplied by Oceania. However historical and anecdotal evidence indicates that there may be mineralisation available for surface mining along the strike of this lode. Coffey have assumed this to be the case, but make no judgement as to the real continuity, or depth or width extent, of available mineralisation. Assuming that mineralisation is available to 264 RL, Coffey have developed a geological model of the Comstock Lode with the characteristics shown in Table 3.

Table 3 –Parameters for Comstock Lode Conceptual Surface Model

Strike Length	Dip	Dip Direction	Width	Depth
350m	70°	010°	1-15m	264RL

4. SURFACE WASTE VOLUME ESTIMATES

4.1 Allison's Lode

The surface and spatial data available for the Allison's Lode mining area is detailed enough to allow for nominal estimates of waste to be calculated, based on the following assumptions:

- Mineralisation is continuous as modelled to the Balstrup fault in the north
- Overall pit slope is 50 degrees
- The natural surface is as provided by Northern Survey Services (16-11-2000)

Using these assumptions the volume of waste excavated to access Allison's Lode mineralisation can be calculated by subtracting the volume of the mineralisation envelope in the pit model from the volume of the planned pit as constrained by the current mining surface. Waste and mineralised volume estimates are shown in Tables 4-5.

4.2 Balstrup Fault

4.2.1 Surface Model

The geological model adopted for mineralisation calculations for the Balstrup Fault assumes that

- the fault is continuously mineralised along its lateral extent and to a depth of 264RL
- the fault has a constant thickness of unknown dimension
- the lode thickness is 15m as asserted by Oceania

4.2.2 Underground Model

Mining the underground mineralisation on the Balstrup Fault would generate a volume of waste approximately equal to the volume of the mineralised envelope plus swell and some mining dilution minus a figure accounting for mining recovery. A nominal volume can be calculated using the parameters below:

- Mining Recovery is 80%
- Mining Dilution is 20%
- Swell is 30%

(Volume of Mineralisation * Recovery + Mining Dilution) * Swell

= (585000*0.8+585000*0.2)*1.3 = 760,500 m³

4.3 Comstock Lode

The geological model adopted for mineralisation calculations for the Comstock Lode assumes that

- the lode is continuously mineralised along its lateral extent and to a depth of 264mRL
- the lode has a constant thickness of unknown dimension
- the lode thickness is 15m as asserted by Oceania

Table 4 – Estimates of Waste Volumes for Surface Excavations (m³)

Excavation Volumes	Stage 1	Stage 2	Stage 3	Stage 4	Total
	244763	597875	216777	379495	1438910

Table 5 – Estimates of Mineralised Volumes for Surface Excavations (Tonnes)

Mineralised Width	Stage 1	Stage 2	Stage 3	Stage 4	Total
15.0	126991	855478	469544	694087	2146101

33w 222w 122w 180w 557w = 10.7 years

Table 6 – Estimated Stripping Ratios for Surface Excavations (m³/t)

Mineralised Width	Stage 1	Stage 2	Stage 3	Stage 4	Total
15.0	1.66	0.70	0.46	0.55	0.67

5. CONCEPTUAL MINE LOCATION AND DESIGN

Coffey have developed a conceptual mine plan based on the parameters above. The plan calls for mining

- Allison's Lode (surface),
- Balstrup Fault (surface),
- Comstock Lode (surface)
- and the Balstrup Fault (underground) if necessary.

Figures 7-10 show the overall mine plan developed using the mining geometry parameters already quoted. Table 7 shows the conceptual design parameters used in the pit designs.

Table 7 – Conceptual Pit Design Parameters

Overall Slope Angle	50°
Pit Depth	To 264RL
Road Width	6 m

The overall slope angle approximates the value used in the Allison's Lode Decline, as does the road width. The pit depth was taken as 264RL as it is consistent with previously used values for the depth extent of Allison's Lode mineralisation.

6. CONCEPTUAL WASTE DUMP LOCATION AND DESIGN

Coffey understand that a waste dump is planned near the tailings dam in the south of the lease. Figure 11 shows a conceptual location and design for a waste dump that contains approximately 150,000m³ of waste. The crest of the dump is at 260mRL and it has a 1:3 slope.

The design of the dump is constrained by the placement of the tailings dam and settling ponds south of the dump toe. Further waste placement is unlikely to take place to the west of the current design without creek diversion. Waste placement east of the design shown is constrained by the lease boundary and access issues for the tailings and settling dams. The design maximises available waste volumes while avoiding diversion of the Comstock Creek and adit drainage.

A second conceptual waste dump has been designed north of the Stage 2 excavation (Figure 11). This dump contains approximately 95,000m³ and is constrained in the west by road diversion issues, in the east and north by the lease boundary and in the south by the pit. The crest of the dump is at 320RL and it has a 1:3 slope.

7. PIT BACKFILL OPTIONS

The conceptual mine design is outlined above and shown in Figure 7-10. Given the geometry of the mineralisation and the pit excavation sequence it seems possible that a modified form of "strip-mining" may be appropriate for the mineralisation to be exploited. This would allow overburden to be stripped and emplaced beside the advancing mine crest on sterilised ground. This approach has advantages in terms of material handling costs.

There is the option to place overburden in the current South Comstock pit if not used for initial tailings storage. The volume available in this location is minimal. A further possible alternative is to sequence pit extraction such that waste may be backfilled into previously mined pits as mining proceeds.

8. CONCLUSIONS AND RECOMMENDATIONS

Coffey recommend the following actions be taken by Oceania in regard to the Comstock Project in an attempt to minimise risk and increase the certainty of their mineralisation:

Z13050/1.AE
January 2000/1

7

- Conduct in-fill drilling on the Allison's Lode to confirm the northern and depth extents of the mineralisation
- Conduct costeaning on the Balstrup Faults in an attempt to identify potential mineralised zones amenable to surface mining
- Conduct in-fill drilling on the Comstock Lode to confirm the lateral and depth extents of the mineralisation

In providing this Conceptual Mine Plan, Coffey make no judgement as to the existence or otherwise of mineralisation at the Comstock site. Tonnages and volumes have been calculated on a purely notional basis, assuming continuity of sparsely located data over large areas. These areas may not in fact be zones of continuous mineralisation, and are represented here as such for the purpose of conceptualising possible approaches to mining at the site.

We trust that this report fulfils your current requirements. Should you have any queries regarding the information contained in this report, please do not hesitate to contact the undersigned.

For and on behalf of

COFFEY GEOSCIENCES PTY LTD


DAN O'TOOLE
ASSOCIATE ENGINEER

WAYNE TRENNING
SENIOR ENGINEER

ENC: IMPORTANT INFORMATION ABOUT YOUR COFFEY REPORT.

REFERENCES

1

Simon Tear, Aspects of the Mineral Lodes on the Comstock Prospect, Zeehan, West Tasmania, June 2000

2

Coffey Geosciences, Allison's Pit Decline, June 2000

Information

Important information about your **Coffey** Report

As a client of Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of the subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project.

Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by

earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, owners should retain the services of Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

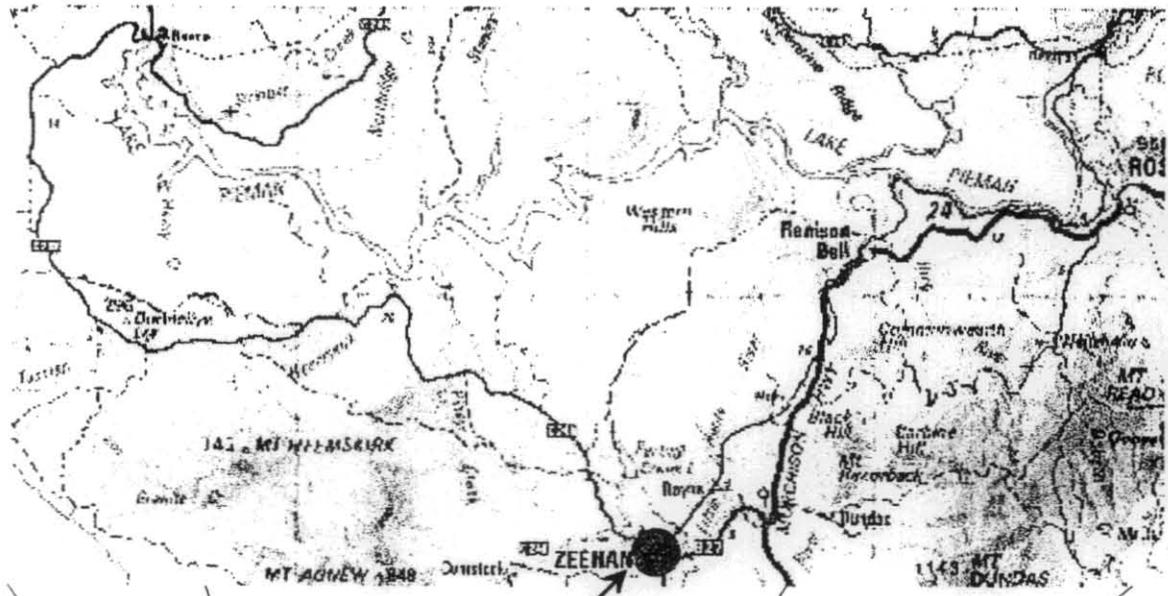
Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.





Zeehan

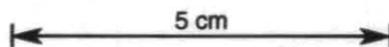


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Drawn	WRT
Approved	WRT
Date	DEC 00
Scale	NTS

LOCATION PLAN
Zeehan Township
West Coast, Tasmania

FIGURE 1
 job no: Z13050/1



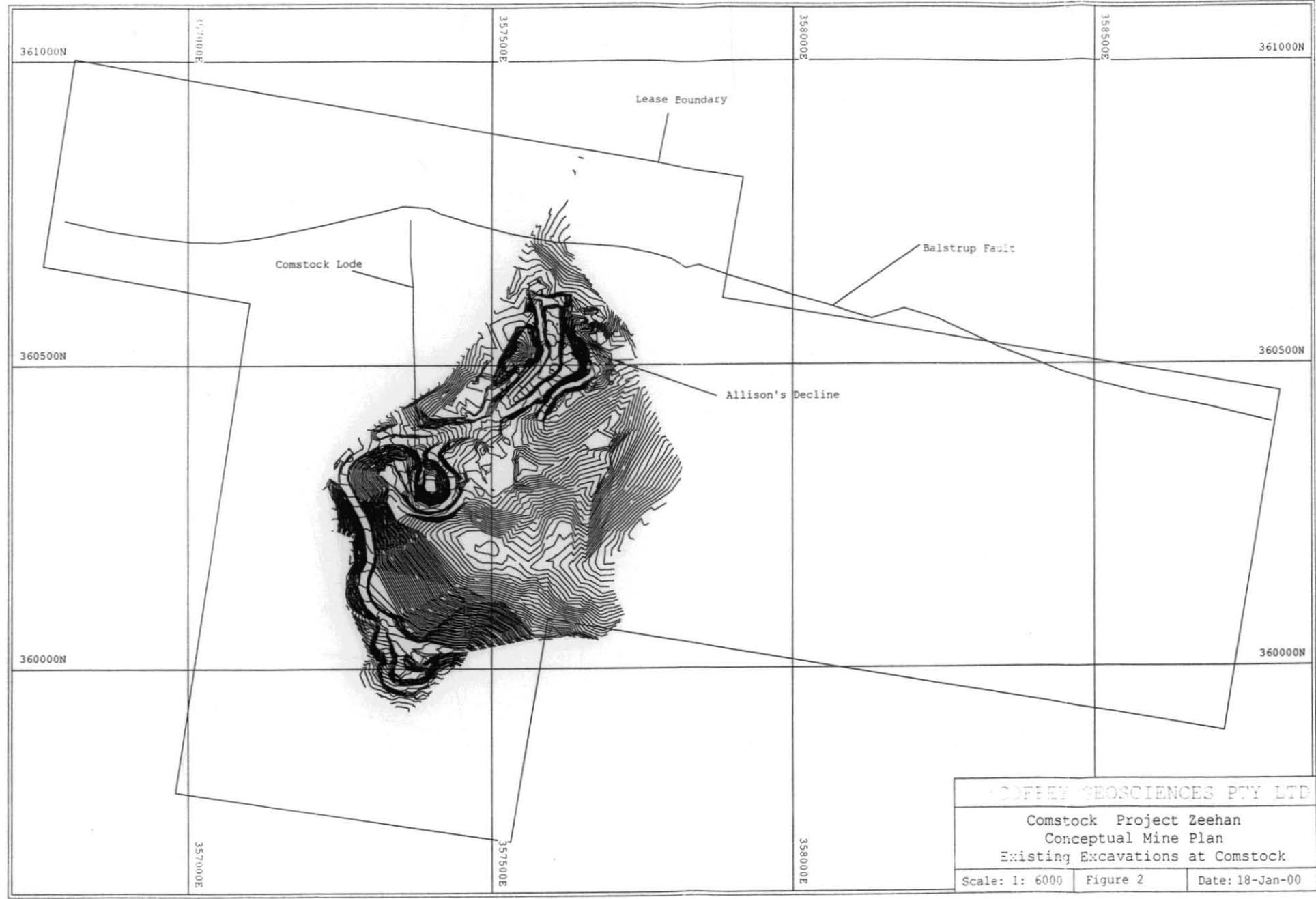


figure2a.pl

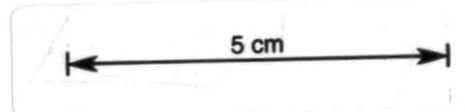
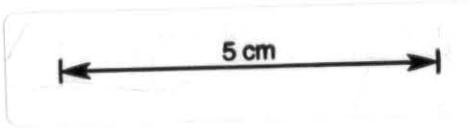
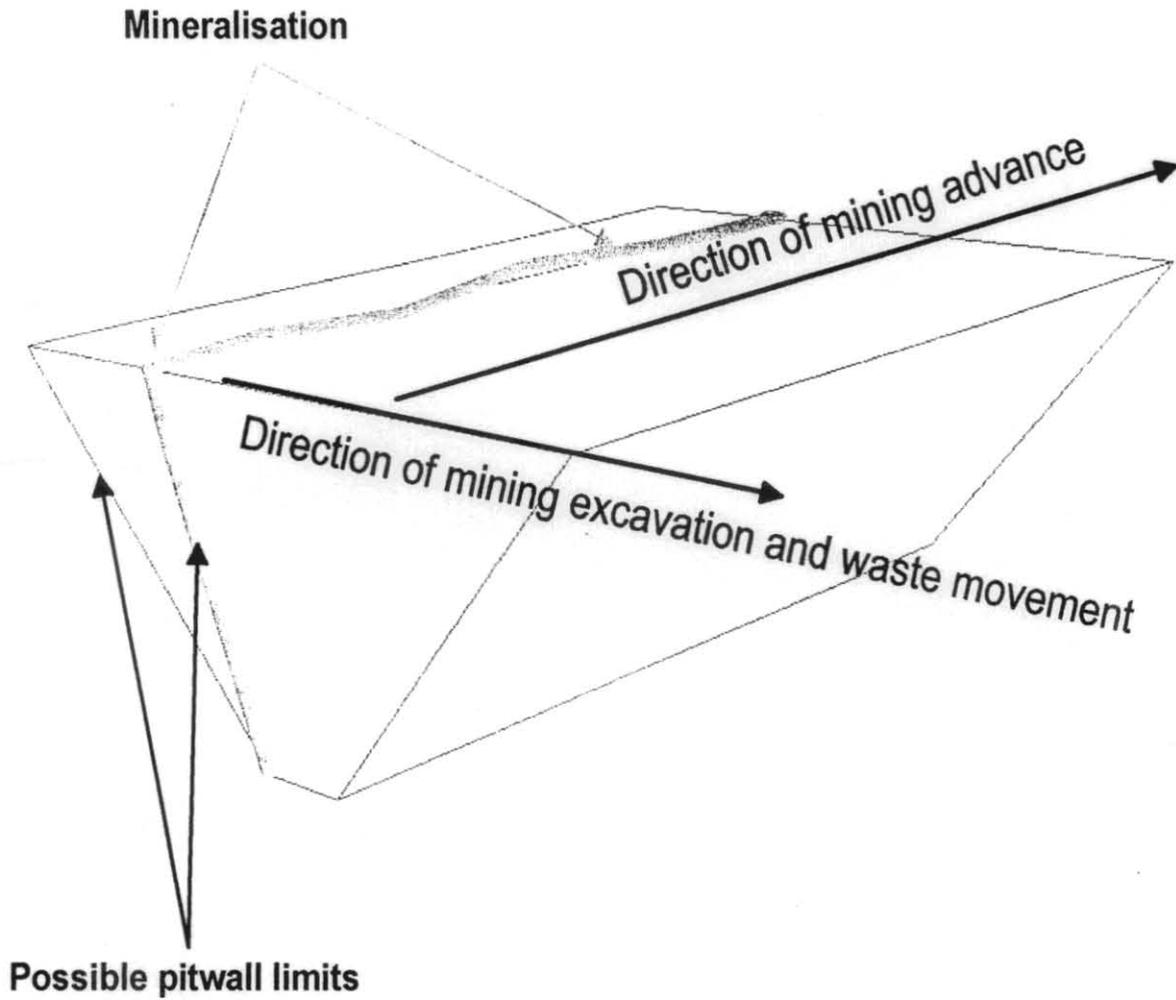




figure3b.pf





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Drawn	WRT	Comstock Conceptual Mine Plan Mining Method	FIGURE 4
Approved	WRT		
Date	DEC 00		job no: Z13050/1
Scale	NTS		

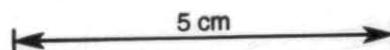
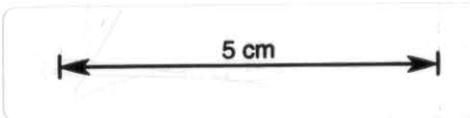
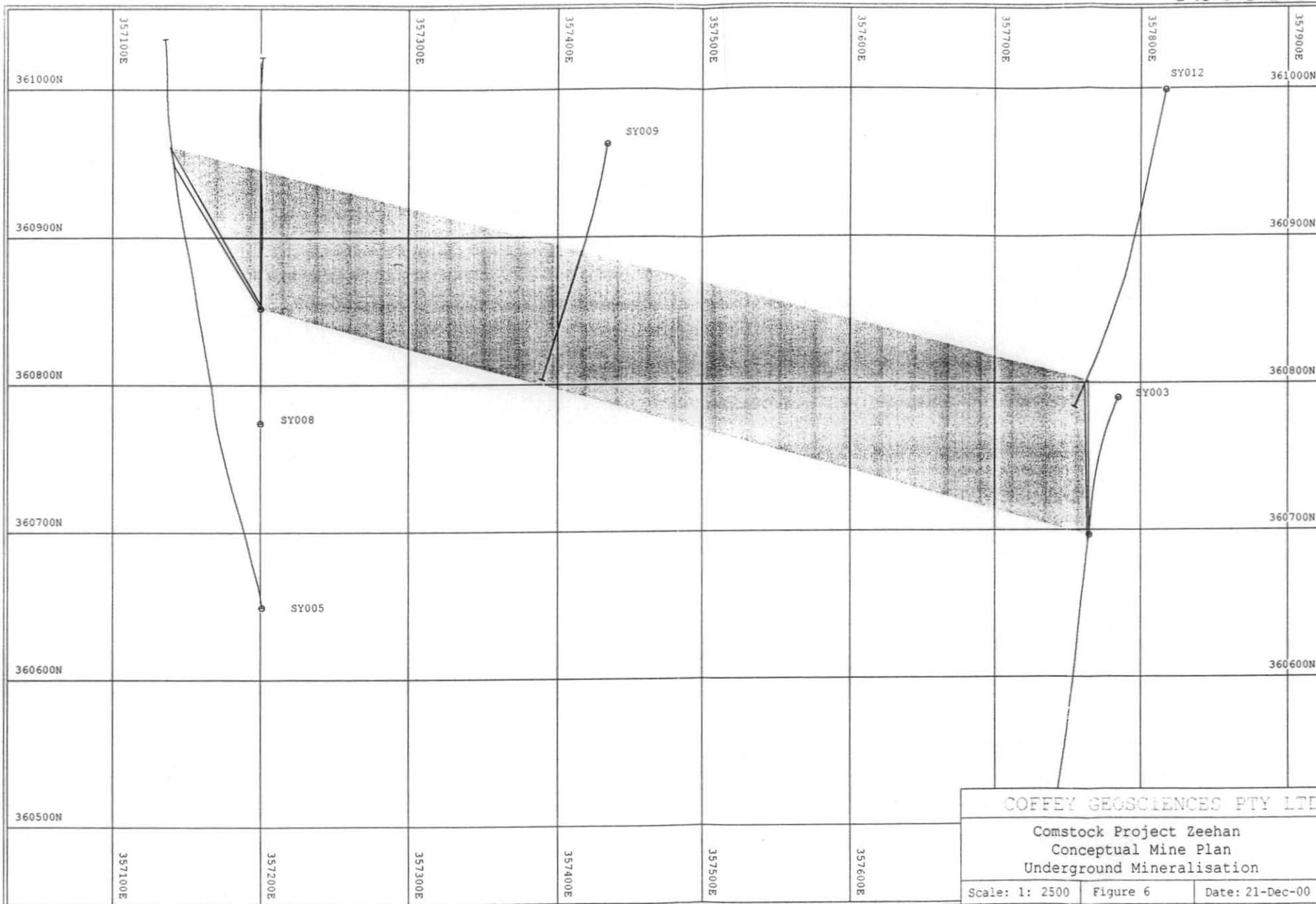




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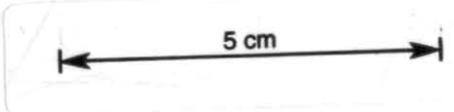


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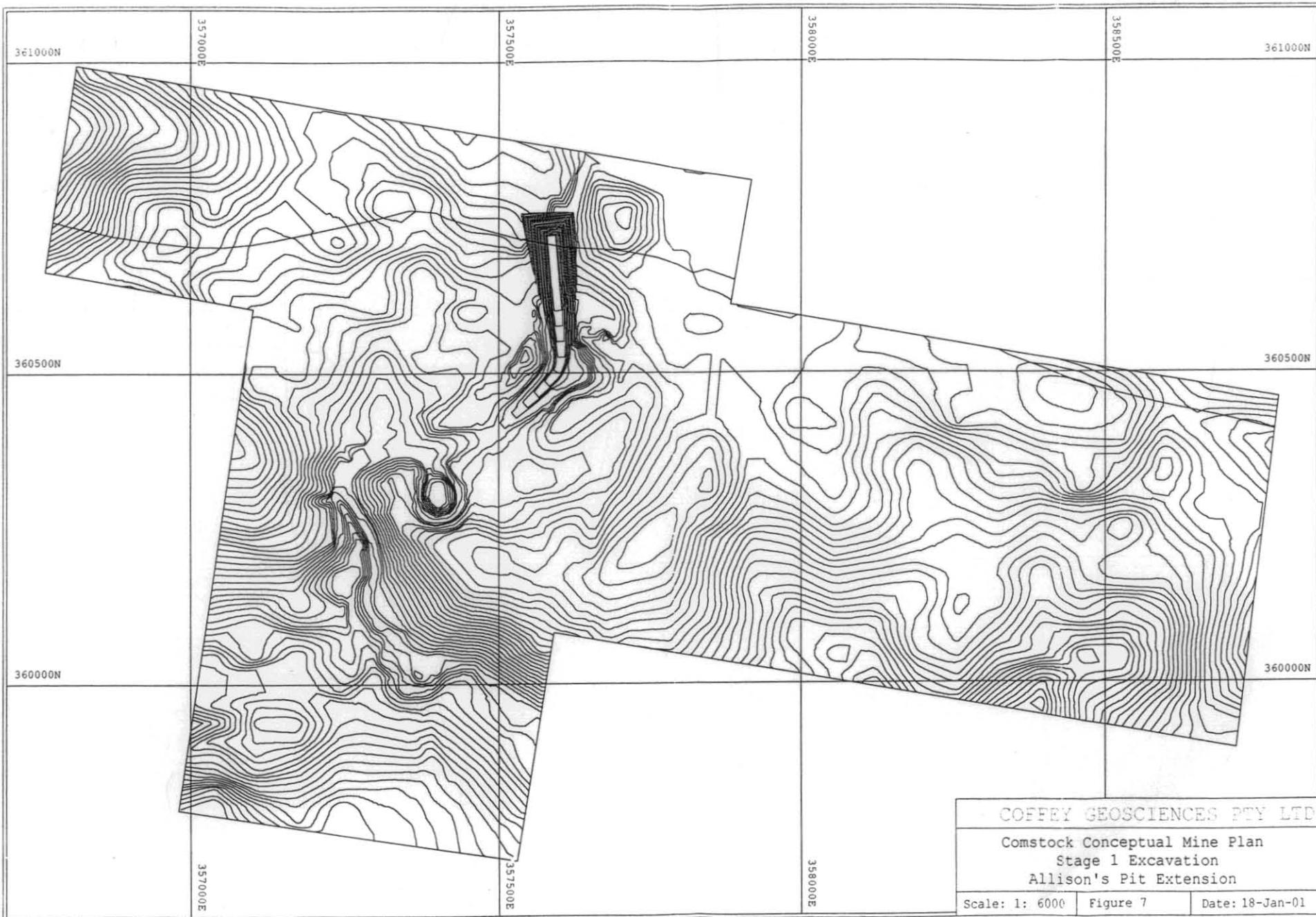


COFFEY GEOSCIENCES PTY LTD		
Comstock Project Zeehan Conceptual Mine Plan Underground Mineralisation		
Scale: 1: 2500	Figure 6	Date: 21-Dec-00

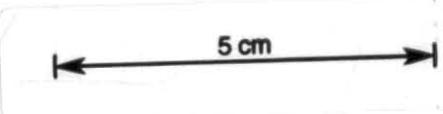
figure5d.pdf



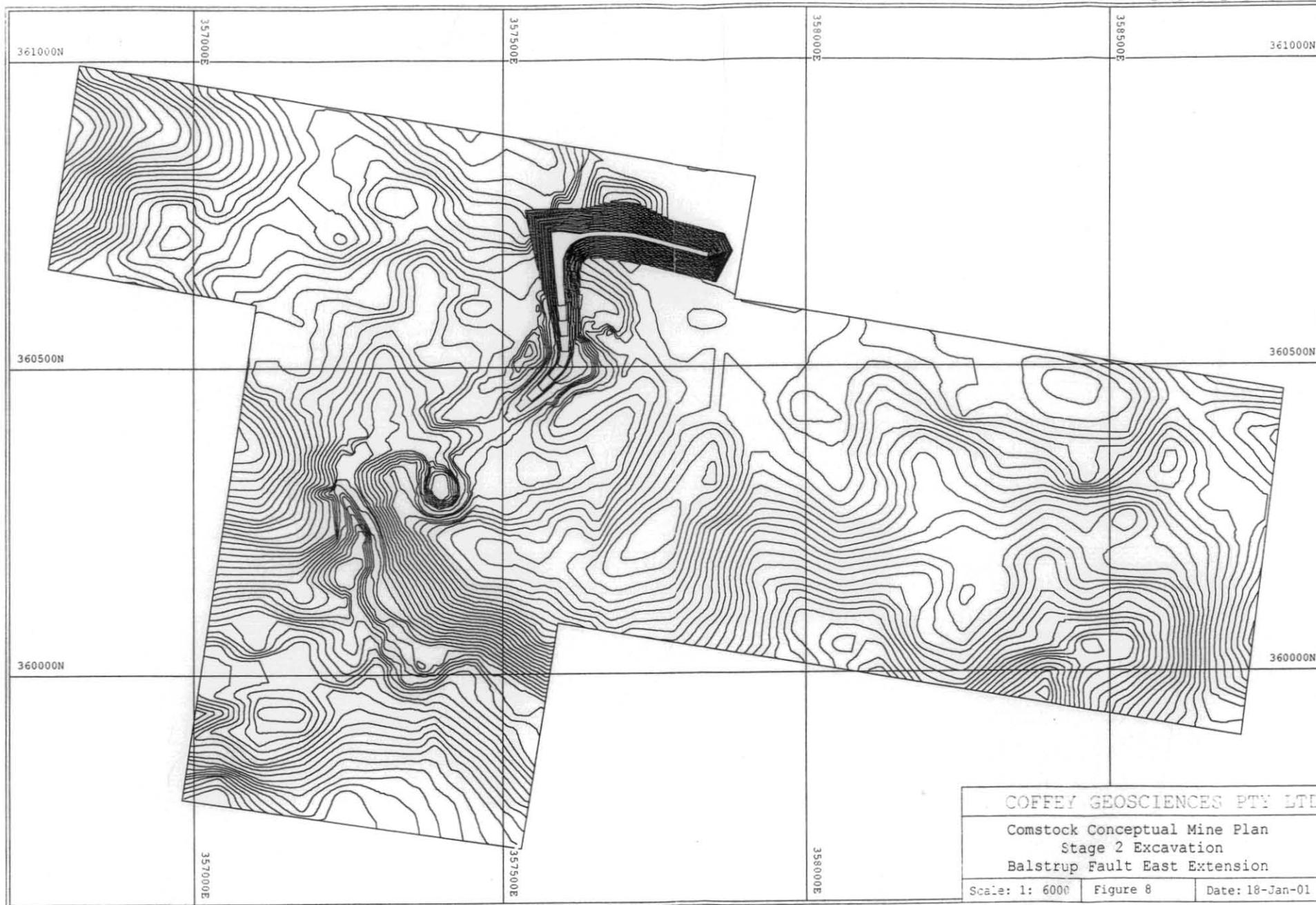
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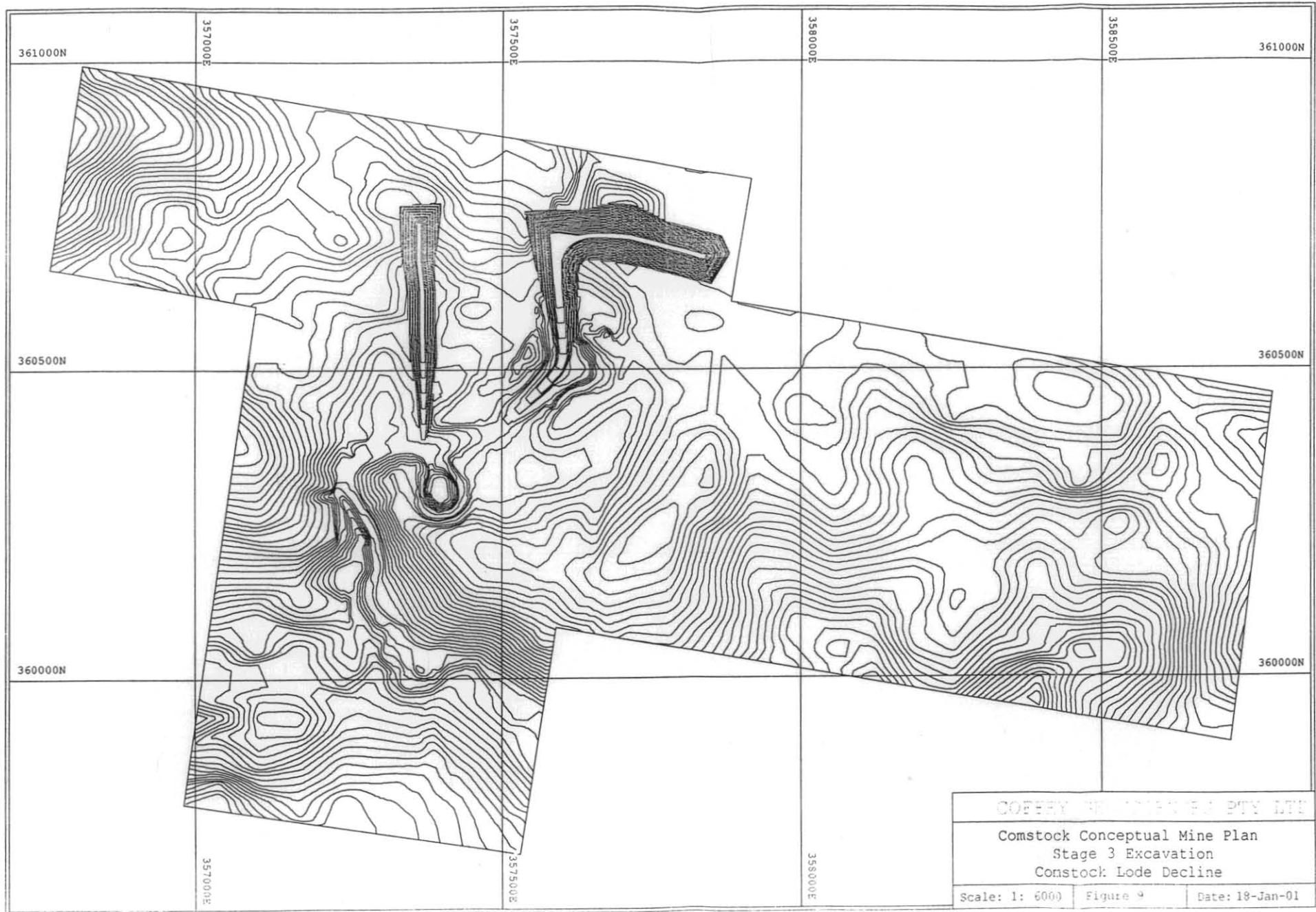


stage2a.pl

COFFEY GEOSCIENCES PTY LTD		
Comstock Conceptual Mine Plan Stage 2 Excavation Balstrup Fault East Extension		
Scale: 1: 6000	Figure 8	Date: 18-Jan-01

5 cm

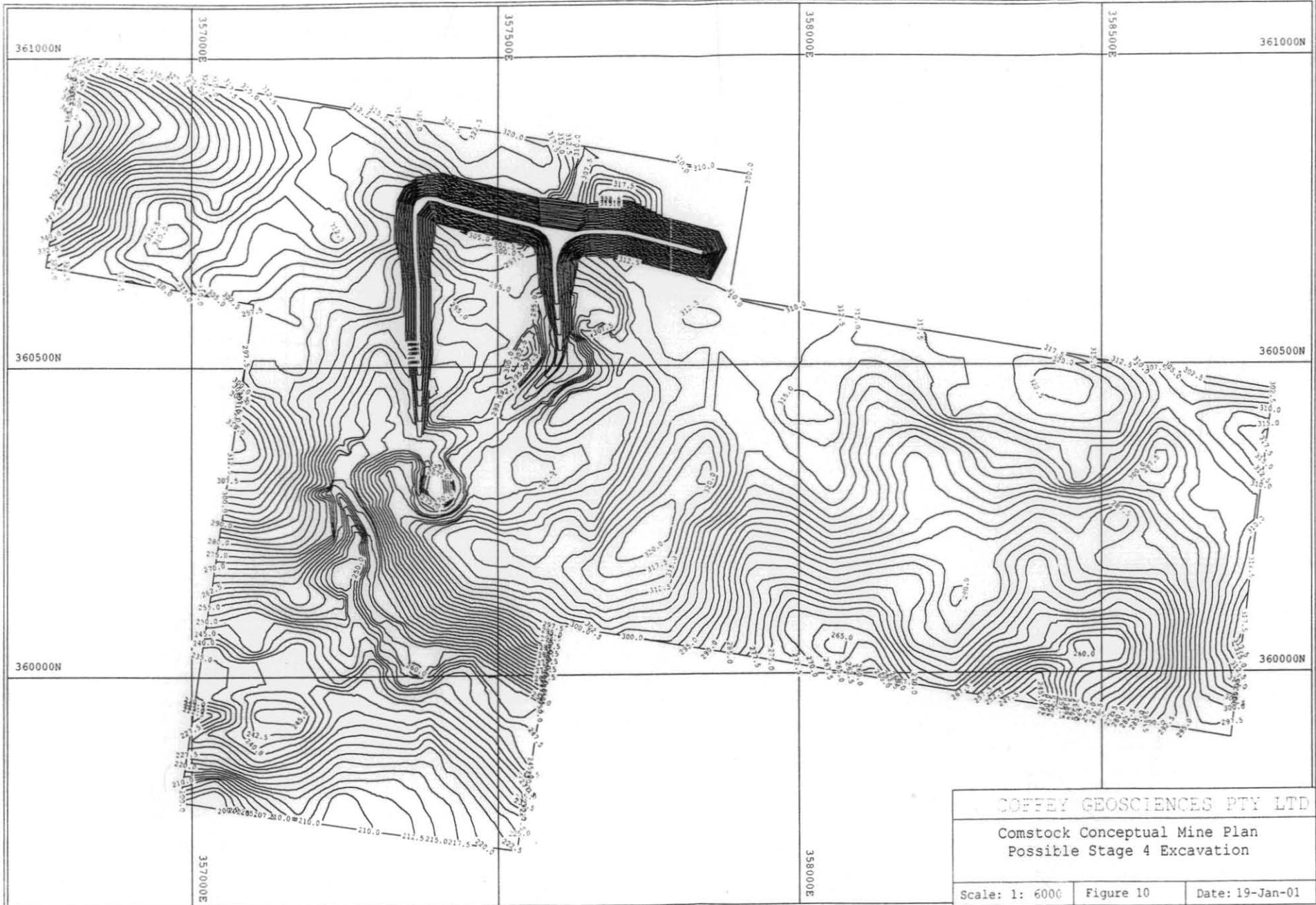
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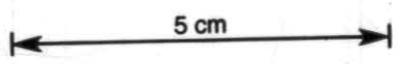
stage3a.pf

COFFEY GEOSCIENCES PTY LTD		
Comstock Conceptual Mine Plan Stage 3 Excavation Constock Lode Decline		
Scale: 1: 6000	Figure 9	Date: 18-Jan-01

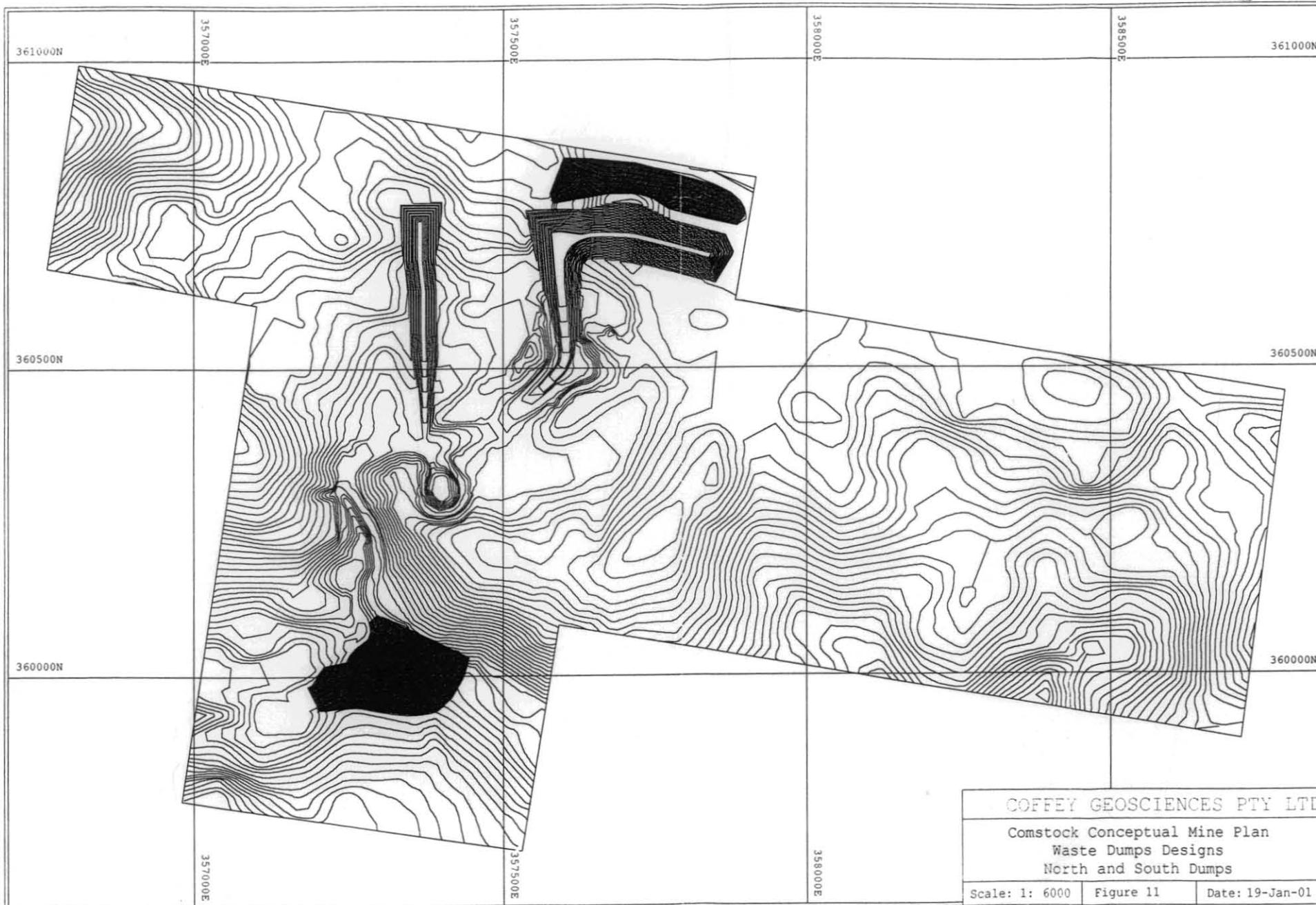
5 cm



stage4b.pf



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COFFEY GEOSCIENCES PTY LTD		
Comstock Conceptual Mine Plan Waste Dumps Designs North and South Dumps		
Scale: 1: 6000	Figure 11	Date: 19-Jan-01

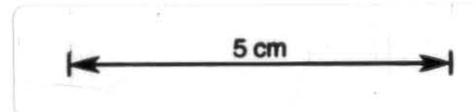


figure1b.pf

Appendix 8

Assessment of the Alternative Processing Routes for
the Comstock Ore

Esker Milling and Processing Pty Ltd, 2001

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ESKER

Assessment of the Alternative
Processing Routes
for
the Comstock Ore

ESKER Milling and Processing Pty Ltd

(A.C.N. No.009 566 750) (A.B.N. 13 009 566 750)

5 Wentworth Street
SOUTH HOBART
Tasmania
Australia, 7004

Telephone & Facsimile:03-62-233502
e-mail:moony@netspace.net.au
Direct facsimile: 03-62-244434

Report to: Mr David Tanner
Director
Zeehan Zinc Pty. Ltd.
65 Murray Street
Hobart
Tasmania 7000

Date: 2nd February 2001

Subject: Assessment of the Alternative Processing
Routes for the Comstock Ore body in Zeehan
Tasmania

Authorisation: Verbal instructions by Mr M. Bendill and
Mr D. Tanner on or about the 15th January 2001

Report by: N.Moony

Officers Involved: B. Lightfoot - Fuming Technology

SUMMARY

If an indicated resource of about two million tonnes of ore, assaying over four per cent zinc, can be established at the Comstock several profitable routes can be pursued such as:

- * Produce and sell zinc and lead concentrates.
- * Produce a bulk gravity concentrate at $\approx 17\%$ Zn and fume it with the Zeehan lead slags which assays $\approx 14\%$ Zn.
- * Produce a 17% Zn concentrate and sell it to Western Metals Ltd.
- * Produce a 17% Zn concentrate and sell it to Pasminco Rosebery.
- * There are also several options which combine elements of each of the above in part or total that have not yet been pursued.

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Introduction

Flotation Route

An economic base case for the Comstock lead/zinc deposit shows that, at a feed grade of 5.0% Zn, this deposit yields a reasonable operating surplus of \$27.0 million. The assumptions used in the model for 5.0% Zn are summarised in Table 1 below and detailed in Table 4 page 12. Details for other models are Tables 8 to 10 in Appendix One. The flowsheet used for flotation is given in Figure 1 on page 2.

Bulk Concentrate

A gravity concentrate can be produced at Comstock which assays $\approx 17\%$ Zn and should be talc free. If a satisfactory purchaser can be found for this product it will become profitable at around 4% Zn. The flowsheet is given in Figure 2 on page 4.

Fumer Route

A fumer complex producing zinc metal and using proven technology by treating Comstock ore combined with the Zeehan lead slag which assays $\approx 14\%$ Zn, yields at least twice the operating surplus of a flotation circuit. In the models used some \$63.0 million are spent on capital, which is paid back in two years. The only impediment to this exceptionally strong case is the lack of resources. A zinc deposit has come on the market in F.N.Q which would assist with the long term shortage of fumer feed stock as shown below:

* ≈ 1.35 m tonnes of zinc ore, classified an indicated resource,
at 13.2%Zn (marmitite), 3.1% Cu, 3.0% Pb, 70 g/t Ag & 1.10 g/t Au

This ore body will fill the gap and give the project a ten year life. It will produce 480,000 tonnes of bulk Zn concentrate which could be shipped to Zeehan. The conceptual fumer flowsheet is shown in Figure 3. Details for different grade ores are given in Tables 11 to 16 and in Appendix Two, and the particulars for treating a Comstock bulk concentrate of 5.0 %Zn combined with the Zeehan lead slag is given in Table 7.

TABLE ONE

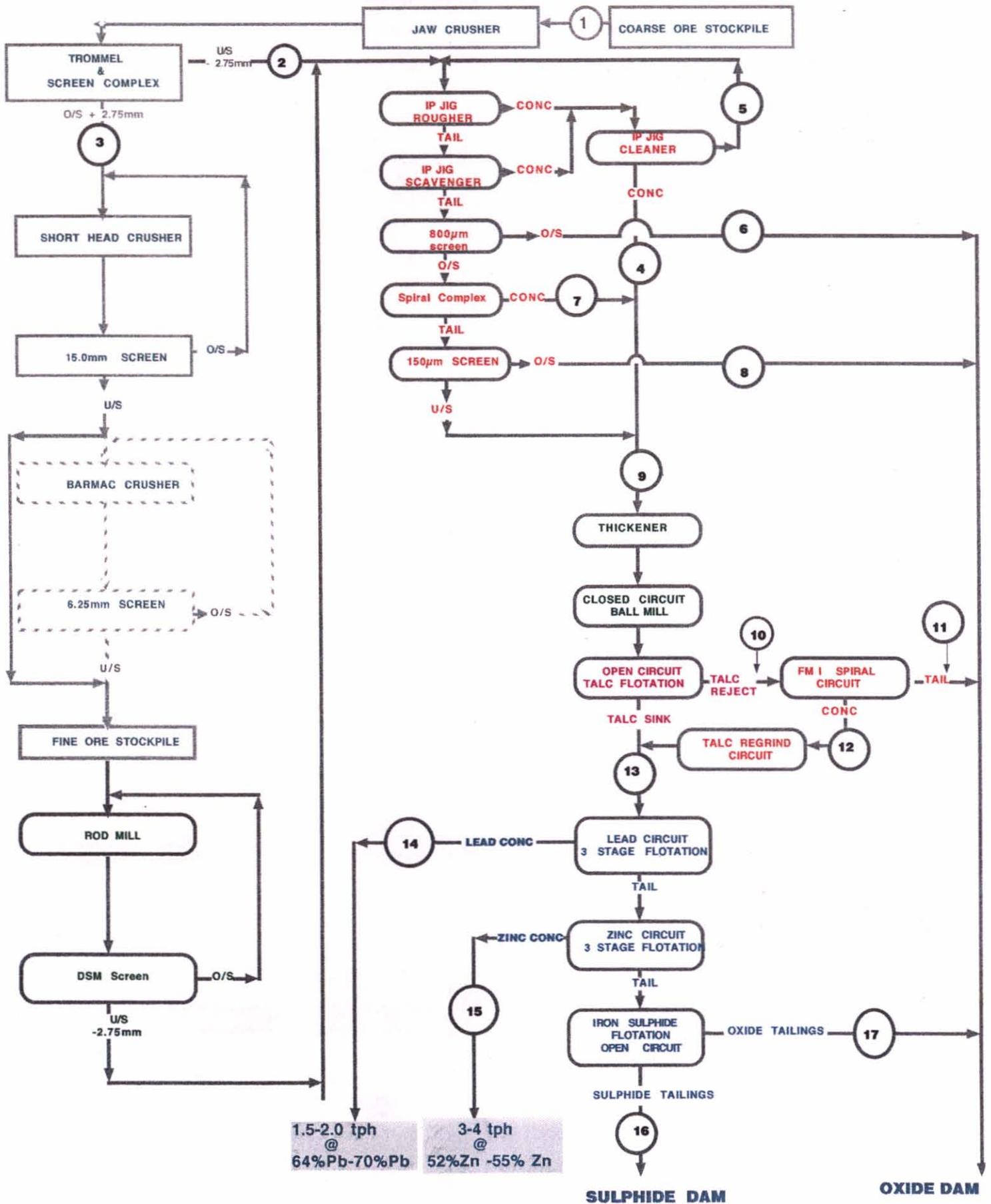
FLOTATION - SUMMARY @ 5.0% Zn MILL FEED

	<u>Zn%</u>	<u>Pb%</u>	<u>Ag g/t</u>	<u>TOTALS</u>
Resource $\approx 2,200,000$ tonnes	5.00	2.85	37.5	
Contained Tonnes Metal	110,000	62,700	82.50	
Metal Recovery to saleable products	78.80%	73.50%	69.0%	
Concentrate assay	52.50	65.00	1,365.00	
Tonnes of Recovered Metal	86,680	46,085	56.92	
Metal Prices per tonne \$A	2,150	850.00	\$A0.29p/g	
Gross Value in \$A millions	186.362	39.172	16.506	242.04
Realisation Cost \$ pt of Metal	1,200	338.00	0.050	
Realisation Costs \$A millions	104.016	15.577	2.846	122.439
CASH FLOW TOTALS				
Realised Value in \$A millions	82.346	23.599	13.660	119.605
Z.Z. All Costs*				89.474
Overall Surplus				30.131
Yearly Surplus(5 years)				6.026

*\$7,000,000 capital included. These costs are incorporated as a charge by the contractors.

FIGURE ONE COMSTOCK FLOWSHEET

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Discussion of Processing Proposals

Production of saleable lead and zinc concentrates (Z & L Circuit)

Ore Preparation Crushing and Pre-Concentration

Within the upper reaches of the Comstock ore body there is a considerable quantity of talc rich oxidised material. To handle this soft, difficult, sticky and wet ore an autogenous trommel with a two stage screening circuit has been installed. It is hoped to split at 2.75 mm. It is estimated that between 25% and 35% of the ore will by-pass the crushing circuit and report directly to the InLine jigs. It is very likely that while oxidised ore is being processed, the crushing circuit will have to operate 24 hours per day. The +2.75 mm oversize (\approx 30tph-40tph) is reduced to \approx 90% passing 15.0 mm by a shot head crusher in closed circuit. The -15 mm undersize is deposited on a \approx 2,000 tonne stockpile. The stockpile discharge is processed through a rod mill operating 24 hours per day, again in closed circuit with a 2.75 mm screen. The flowsheet for the Z & L Circuit is shown opposite in Figure 1 and the mass balance is given in Appendix Four.

Pre-Concentration Circuit

A pre-concentration circuit is included for all cases and models where ore assaying less than \approx 9% Zn with \approx 10% Fe (\approx < 30 % heavy minerals) is processed. This route treats a trommel U/S and rod mill screen U/S combined. The circuit uses InLine jigs and spirals followed by talc flotation in cases where saleable lead and zinc concentrates are produced. (Z & L) In models where only a gravity bulk concentrate (G.C) is produced on site, shown in figure 2 page 13, a Kelsey jig is employed to recover the -150 μ m fines. This ensures that no chemicals are used in this flowsheet.

Talc Removal

It is assumed that the talc is ultra fine grained and when trommeled will report to the -75 μ m fraction. This means that little talc will be rejected in the jig/spiral circuit. In the Z & L circuit this means that a \approx 25tph open circuit talc flotation circuit will be required. In the G.C operation a Kelsey jig will replace the talc flotation.

Selective Flotation (Z & L Circuit)

It is known that some of the Comstock sphalerite is marmatitic. It is, therefore, estimated at this time that a 51% Zn to 53% Zn conc. will be produced which will assay between 7% Fe and 9.0% Fe in a 3 stage closed circuit. The lead circuit should produce a conc. assaying 63% Pb to 67% Pb as the galena is coarse grained and free, again using a 3 stage closed circuit.. With the pre-concentration circuit in operation lower overall recoveries are used for all three economic metals. Lead and silver recovery is lower than zinc because the galena is very soft and breaks down preferentially and can be readily lost.

Zn recovery 78.8% to a 52.5% Zn concentrate.

Pb recovery 73.5% to a 65.0% Pb concentrate

Ag recovery 69.0% @ 1,365 p/t Ag in the Pb concentrate.

Pyrite Flotation

It will cost \$1.20pt to float the pyrite in the Z & L circuit. The pyrite can then be stored in its own little dam. The oxide dam should then be very low in iron sulphides at <0.25%S. This is not difficult to carry out and could have other long term benefits.

Bulk Concentrate Circuits(B.C.C)

Producing a bulk gravity concentrate shown in Figure 2 opposite has potential at Comstock. It is environmentally safe and is profitable. Finding a satisfactory buyer is the concern. Western Metals would purchase a bulk concentrate if their hydro-met. process (W.M.H-M) proves economic and the supply of a Comstock concentrate over 5 years would greatly benefit their project. Lead is lost in the W.M. H-M circuit, and would this route be in Z.Z's interest??.

Pasminco would also purchase the bulk concentrate and, using the costs in Table 2 below, this route is profitable at 4% Zn. Supplying Pasminco with 80,000 to 90,000 tonnes of "ore" assaying 15% Zn to 19 % Zn over a 5 year would also require, as a minimum, the terms suggested.

In the Fumer models a gravity concentrate is produced at the mine and this is then differentially separated at the fumer. This would allow the smelter operator to use the pyrite if required.

Table Two**ROSEBERY OPTION - PROCESSING GRAVITY BULK CONC @ 4.0% Zn.**

	Tonnes	Zn%	Pb %	Ag g/t	Yearly Tonnes
Resource	2.200m	4.00	2.50	33.0	
Contained tonnes Metal		88,000	55,000	73	
Recovery into a bulk conc.		85.0%	84.0%	84.0%	
Tonnes of Bulk Conc	434,820				86,965
Bulk Conc. Metal Grade		17.00	9.99	125	
Tonnes Metal to bulk conc.		74,800	46,200	61.32	
Metal Prices per tonne \$A		2,150	850.00	0.29	
All Values Below Expressed in \$A as millions				Surplus	Surplus Yearly
Gross Value of Metal		160.82	39.27	17.78	217.87
Pasminco Realisation Charge		85.00	12.75	4.50	102.25
Pasminco mill charge		9.10			9.1
Transport		3.65			3.65
Pasminco Loss(≈12%) - Charge		18.00	3.95	2.95	24.90
Net Value of Metal Sold		45.07	22.57	10.33	77.97
Zeehan Zinc Costs @ \$27.5pt					60.50
Zeehan Zinc Gross return:					17.47
Operating Costs					
At this time only budget type costs can be estimated					
Strip Ratio ≈ 3:1					
Overburden ≈ 6,600,000					
Cost to dispose of on waste stockpile @ \$ 2.50 per tonne					
Cost to mine 2,200,000 of ore @ 4.0% Zn ≈\$ 4.50 per tonne					
Total Mining Costs					12.00
Crushing: Shaws contract. No capital spent by Z.Z.					
Contractor to supply 10,000 t.p.w.. 52 weeks p.y					
& 24 hpd @ 80% passing 15mm- 5 year contract					
Milling Cost					3.50
				3.00	
				2.00	
				0.25	
				1.00	
				0.25	
				1.00	
Mill -Total					7.50
Zeehan Administration					1.50
Exploration					2.00
Off Site Costs					1.00
Total Costs					27.50

COSTING PROCESSING PROPOSALS**Capital****Z & L Circuit**

At present a contractor is taking up the mill capital. In this report a charge of \$2.2million per year is used on a 5 year contract. This equates to \$5.0pt. It is estimated overall capital expenditure for a 60tph mill will be as follows:

<u>Equipment</u>	<u>Installed Cost</u>
Mill Site Preparation	\$750,000
Rod Mill (≈40tph)	\$250,000
InLine jig Circuit (60tph)	\$400,000
Ball mill (40tph)	\$250,000
Spiral circuit (40tph)	\$350,000
Talc Flotation (25tph)	\$100,000
FM1 spirals (12tph)	\$100,000
Lead Flotation (12tph)	\$350,000
Zinc Flotation (12tph)	\$350,000
Pyrite Flotation (10tph)	\$120,000
Lead Filter	\$80,000
Zinc Filter	\$80,000
Mill Building	\$150,000
Mill Electrics	\$400,000
Maintenance Building	\$250,000
Assay Office	\$200,000
OSA	\$400,000
Admin. Building	\$120,000
Sulphide Dam	\$150,000
Oxide Dam	\$250,000
<u>Sub Total</u>	\$5,150,000
Contingency @ 16.5%	\$850,000
Total	\$6,000,000

By what ever means the mill is built, capital in the order of the above estimate will be spent one way or the other. It is estimated that another \$1.0million will be spent in mine development. In the Z & L Circuits all \$7,000,000 spent as capital is absorbed into the \$5.0 per tonne equipment hire cost.

Bulk Concentrate Route

<u>Equipment</u>	<u>Installed Cost</u>
Mill Site Preparation	\$440,000
Rod Mill	\$250,000(≈40tph)
InLine jig Circuit;	\$500,000(60tph)
Ball mill	\$100,000(40tph)
Spiral circuit	\$350,000(40tph)
Kelsey Jig	\$350,000
Lead Flotation	-
Zinc Flotation	-
Pyrite Flotation	-
Lead Filter	-
Zinc Filter	-
Mill Building	\$100,000
Mill Electrics	\$200,000
Maintenance Building	\$100,000
Assay Office	\$100,000
OSA	-
Admin Building	\$100,000
Sulphide Dam	-
Oxide Dam	<u>\$250,000</u>
<u>Sub Total</u>	<u>\$2,840,000</u>
Contingency @ 14.5%	<u>\$ 410,000</u>
Total	\$ 3,250,000

The Gravity Bulk conc. route will spend about \$750,000 on mine mine development. Say \$4,000,000 million in total. This equates to about \$2.0pt..

Operating Costs - Processing Circuits**Z & L Circuit****Mining**

Very basic mining assumptions are used in the models used in this report. The costs are detailed in Table 2. Others have been working in this area and can supply more detailed figures.

Crushing

In the first two years of operation oxidized ore will be processed. In that period the crusher will operate on the same basis as the mill, ie 24 hours per day. The crushing has been reduced to a two stage operation because of the long operating hours. It is hoped to hold a 2,000 tonne fine ore stockpile. This will be used up during crusher maintenance. It is estimated that a two stage crusher with trommel will cost \approx \$2.75 per tonne to operate on a 5 year contract. If the mine contractor supplies the capital equipment an equipment charge of \$0.75 pt is used. This values the contractor's capital outlay at \$750,000 at 15% interest.

Labour**Employed by the mill contractor**

It is proposed to use 3 shifts each of 12 hours .

Four operators per shift = 12 Operators

3 Maintenance workers (major works)

1 Electrical contractor

3 Day shift operators

1 store person

2 Assayers

1 Contract. Supervisor

About \$1,100,000 is allocated to contract labour at \$2.50pt.

Reagents /Consumables

Reagents and consumables are charged dir to Z..Z:

Rods/Balls	\$200,000 per year
Lime	\$120,000per year
Flotation Reagents	\$250,000 per year
Flocculent	\$100,000 per year
<u>Fuel</u>	<u>\$100,000 per year</u>
Total	\$770,000 per year

This is equal to about \$1.75 pt.

Power

It is estimated that installed motor power will be about 2500KW.

It is estimated that power will cost Z.Z. about \$100,000 per year or \$2.25 per tonne of ore.

Services

Mine services include training , safety, etc. One person will be employed as training officer and will cost \approx \$220,000 p y to operate or \$0.50p/t.

Engineering and Stores

Major replacement items such as liners, pump parts, piping are included in this department. In the type of operation Z.Z envisage most of this cost will be taken up by the mill contractor. The following allowances are allowed:

<u>Section</u>	<u>\$ Value</u>
Crushing section	250,00.0
Grinding Section	350,00.0
Gravity Circuit	65,000.0
talc Flotation	25,000.0
Lead Flotation	125,000.0
Zinc Flotation	125,000.0
Filters	25,000.0
Tailings Dams	<u>250,000.0</u>
<u>Sub Total</u>	1,215,000.0
Contingency@ 15%	<u>182,250.0</u>
Total	1,397,250.0.

At 440,000 tpy this comes to \$3.17pt

Administration

Because Z.Z. is operating with contractors a lot of costs are taken up in administration. The following costs have been allocated to administration:

<u>Section</u>	<u>\$ Value</u>
Office expenses	\$250,000
Insurance	\$150,000
Charges, fees, rates etc.	\$250,000
Zeehan expenses	\$100,000
Travel	\$250,000
Light vehicles	\$100,000
Light vehicle fuel	\$50,000
Mine sundries	\$50,000
Manager	\$190,000
Superintendents - 4 off	\$600,000
Geologists - 2 off	\$140,000
Field staff - 2 off	\$80,000
Metallurgist - 1 off	\$80,000
Surveyor - 1 off	\$80,000
Chain man - 1 off	\$50,000
Engineer - 1 off	\$80,000
Accountant - 1 off	\$90,000
<u>Met.</u>	<u>\$50,000</u>
Total	\$2,640,000

Administration costs are high because all staff are allocated to this department and work out at \$6.0pt.

Outside Exploration

Exploration will be very important in this project. An estimated budget of \$880,000 per year or \$2.0 per tonne is allowed for in these models.

Realisation Costs (Z & L Circuit)

Reasonable realisation costs are used for lead and zinc in the Z & L cases. These costs are preliminary but satisfactory for this type of study and include all off site costs.

Realisation costs for zinc: \$1,200 per tonne of Zn metal produced

Realisation costs for lead: \$ 338 per tonne of Pb metal produced

Realisation costs for silver: \$ 0.05 per gram of silver.

Realisation Costs Bulk Concentrate - Pasminco Rosebery (B.C.C)

All Values Below Expressed
in \$A as millions

<u>Charges</u>	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	<u>Total</u>
Gross Value of Metal	<u>160.82</u>	<u>39.27</u>	<u>17.78</u>	<u>217.87</u>
Pasminco Realisation	85.00	12.75	4.50	102.25
Pasminco mill cost	9.10			9.10
Transport	3.65			3.65
Pasminco.Loss ($\approx 12\%$) - Charge	<u>18.00</u>	<u>3.95</u>	<u>2.95</u>	<u>24.90</u>
<u>24.90</u> Total Cost	115.75	16.70	7.45	139.90
As a % of gross metal value	72.00	42.50	41.90	64.20

The operating details can be seen in Table 2 on page 5. This gives details when treating 5% Zn

Processing Details Z & L Circuit

MINERALOGY

Mineralogical examination (H.W.Fander) and flotation testwork (Optimet) indicate that the Comstock ore is coarse grained, interstitial composites are not abundant, and the sulphides float satisfactorily. Talc can be plentiful in the upper levels. This type of talc will float but can be readily suppressed also. The sphalerite at times has been observed as marmititic. Pyrite content is variable and dependent on the type of ore mined. Some assay details are still required. At present a limited amount of metallurgical work (sink-float tests) is required to determine how well pre-concentration will work.

METALLURGY

Optimet have carried out a series of flotation testwork on Comstock ore. Most of this work was strongly orientated towards co-treating Comstock ore in the Rosebery concentrator. A very serious problem arose when the Optimet reagent regime used on both Rosebery and Comstock ores produced better results than those reagents Pasminco are now using. Pasminco would not accept that adding zinc oxide gave any benefit even though it reduced the zinc floating in the lead circuit by 60%. Comstock ore requires zinc oxide and a small amount of sodium cyanide to suppress zinc in the lead circuit as does Rosebery ore.

Results strongly suggest that with the correct reagent addition Comstock ore should produce saleable concentrates. It is probable that because some of the sphalerite is marmititic only a moderate grade zinc concentrate will be produced.

It is estimated that on average a 52.5% Zn concentrate will be recovered assaying $\approx 8.5\%$ Fe. This is one area where some XRD analysis of the sphalerite within all the Comstock lens is required in conjunction with mineralogical examination, which can be called sphalerite characterisation. This work will need to be carried out fairly soon. It is therefore estimated that the range will be from 51% Zn to 53% Zn for the zinc conc. which will assay between 7% Fe and 9% Fe in a 3 stage closed circuit. The lead circuit should produce a conc. assaying 63% Pb to 67% Pb as the galena is coarse grained and free, again using a 3 stage closed circuit. With the pre-concentration circuit in operation, lower overall recoveries are used for all three economic metals. Lead and silver recovery are lower than zinc because the galena is very soft and breaks down preferably and, therefore, can be readily lost.

Zn recovery 78.8% to a 52.5% Zn concentrate.

Pb recovery 73.5% to a 65.0% Pb concentrate

Ag recovery 69.0% @ 1,365 g/t in the lead conc.

The flowsheet (Figure 1 page 2) is the optimum for his type of circuit at present. A pre-concentration circuit is included for all cases where the ore assays less than $\approx 7\%$ Zn and $\approx 10\%$ Fe ($\approx < 30\%$ heavy minerals). This route treats the trommel U/S and rod mill screen U/S combined. The circuit uses InLine jigs and spirals followed by talc flotation in cases where saleable lead and zinc concentrates are produced. It is assumed that the talc is ultra fine

grained and when trommeled will report to the - 75 μ m fraction. This means that little talc will be rejected in the jig/spiral circuit. In this circuit it means that a \approx 25 tph open circuit talc flotation circuit will be required. Centrifugal separators are not used to recover heavies from the talc reject because of the high capital.

The estimates used in this report show that at 4% Zn the Z & L Circuit breaks even and at 7.0% Zn it makes a substantial operating surplus. Details of the model treating 5.0 % Zn are given opposite in Table 3 and summaries of all cases are given in Table 4 below. Each case details are given in Tables 8 to 10 refer Appendix One.

Previous information and data is given in Appendix Three.

Table 4

<u>Feed Grade</u> <u>% Zn</u>	<u>Z & L Circuit</u> <u>Operating Surplus</u> <u>\$A million</u>			
	<u>Gross value</u> <u>Production</u>	<u>Total</u> <u>Costs</u>	<u>Overall</u> <u>Operating</u> <u>Surplus</u>	<u>Yearly</u> <u>Surplus</u>
4.0	98.6	89.5	9.1	1.8
5.0	119.6	89.5	30.1	6.0
6.0	141.1	89.5	51.7	10.3
7.0	163.1	89.5	73.6	14.7

Bulk Concentrate

It is likely that a talc free gravity concentrate can be produced at Comstock which assays \approx 17% Zn. If a satisfactory purchaser can be found for this product, it will be profitable at around 4% Zn. Recovery should be reasonably high if a Kelsey jig is used to recover the -40 μ m fraction. It is predicted that zinc recovery will be 85% and both lead and silver should achieve 84% recovery on a \approx 800 μ m final grind. The reasons for taking this path are the:

- * forgiving circuit,
- * low capital,
- * moderate operating costs,
- * a simple operation to manage,
- * and above all environmentally friendly.

The flowsheet is shown in Figure 2 page 5. To verify the assumptions made for this case it is important that some sink float tests be carried out.

In Table 2 page 4 and the realisation calculations on page 10 it can be seen that even if Z.Z only get paid \approx 36% of the gross value of the metals in the bulk concentrate by Pasminco in the Rosebery option, Z.Z. still make an operating surplus. It also needs to be remembered that Western Metals would readily purchase a bulk concentrate from Z.Z. valued at \approx \$35.0 million per year for 5 years as it would greatly boost their project. Z.Z. needs to consider this alternative carefully; lead is not recovered in the W.M.H-M process, and lead makes up \approx 18% of the bulk concentrate gross value, but Z.Z. would get far better terms for zinc and silver than Pasminco can offer. If Z.Z. were to pursue the fumer option discussed below then selling to Western Metals would not be considered.

Table Three**Z & L FLOTATION - CASH FLOW SUMMARY @ 5.0% Zn**

Assumptions	Zn%	Pb %	Ag g/t	<u>TOTALS</u>
Resource ≈2,200,000 tonnes	5.00	2.85	37.5	
Contained Tonnes Metal	110,000	62,700	82.50	
Metal Recovery to saleable products	78.80%	73.50%	69.0%	
Recovered Metal	86,680	46,085	56.92	
Metal Prices per tonne \$A	2,150	850.00	\$A0.29p/g	
Gross Value in \$A millions	186.362	39.172	16.506	242.04
Realisation Cost \$ pt of Metal	1,200	338.00	0.050	
Realisation Costs \$A millions	104.016	15.577	2.846	122.439
Realised Value in \$A millions	82.346	23.599	13.660	119.605
	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	
<u>Concentrate Value in \$'s per tonne for Metal</u>				
Zn Value per tonne of ore	37.4			
Pb Value per tonne of ore		10.7		
Cu value per tonne of ore				
Ag per tonne of ore to Cu Conc			6.2	
Ag per tonne of ore to Pb Conc				
Total				54.3
<u>Operating Costs in \$per tonne</u>				
<u>At this time only budget type costs can be estimated</u>				Cost in \$pt
Strip Ratio ≈ 3:1				
Overburden ≈ 6,600,000				
Cost to dispose of on waste to stockpile @\$2.50 per tonne				
Cost to mine 2,200,000 of ore @ 4.0% Zn ≈\$4.50 per tonne				
Total Mining Costs				12.00
Crushing: Shaws contract. No capital spent by Z.Z.				
Contractor to supply 10,000 t.p.w.. 48 weeks p.y				
@ 80% passing 15mm- 5 year contract				3.50
Milling Cost - Equipment hire			5.00	
- Labour Contract			2.50	
- Reagents/ Consumables			1.75	
- Power			2.25	
- Services			0.50	
- Engineering/ Stores			<u>3.17</u>	
Mill -Total				15.17
Zeehan Administration				5.00
Zeehan Exploration				2
Off Site Costs				<u>2.00</u>
Total Costs				40.67
<u>CASH FLOW TOTALS</u>				
Net Value of Production (before tax & royalty etc.)				\$119.605m
All Costs				<u>89.474</u>
Operating Surplus				30.13
Average Yearly Operating Surplus				6.026

Fumer Route - Economics

In reviewing the bulk concentrate route, and the difficulties in selling that type of product, an interesting alternative for treating it arises. In Zeehan there is a slag dump containing 470,000 tonnes assaying 14.0% Zn, 1.7% Pb, 70 g/t Ag. Studies carried out by Encore Metals show that this resource will pay back the capital investment for a \approx 14 tph fumer but the project is not a big enough resource in its own right to initiate a robust project. If the Comstock bulk concentrate is added to the slag, a project can be undertaken that will pay back \$63.0 million capital in 2 years, and yield an excellent operating surplus for a further 3 years operating at 18 to 21 tph. If a bulk concentrate was shipped from F.N.Q. then the fumer has resources for another 4 to 5 years life. The Zeehan fuming project starts to look very vibrant. In Table 5 is a summary of these resources.

Table 5

Fumer Feed Sources

<u>Resource</u>	<u>Tonnes</u> <u>Conc.</u>	<u>Zn</u> <u>%</u>	<u>Tonnes</u>	<u>Pb</u> <u>%</u>	<u>Tonnes</u>	<u>Ag</u> <u>g/t</u>	<u>Cu</u> <u>%</u>	<u>Tonnes</u>
Comstock Bulk Conc	671,650	17.0	114,180	10.4	69,850	129	87	0.10
Zeehan Slag	484,000	13.8	66,800	1.7	8,230	70	34	0.2
F. N. Q. Bulk Conc*	485,000	35.0	170,000	7.5	37,000	185	90	0.80
Total	1,640,650	21.4	350,980	7.0	115,080	129	211	24

These figures show that the feed stock present an excellent case for zinc fuming/electro winning on the west coast of Tasmania. Shown in Figure 3 page 13 is the conceptual flowsheet for the fumer. Using the feed stock shown in Table 5 a fumer/Zn electro plating complex, treating 18-20 tph, would yield about a \$200 million \pm 10% operating surplus over ten years. The case for treating a Comstock conc. combined with the Zeehan slag over a 5 year period is given below.

Table 6

Fumer Circuit Operating Surplus \$A million

<u>Feed Grade</u> <u>% Zn</u>	<u>Gross value</u> <u>Production</u>	<u>Capital</u> <u>Costs</u>	<u>Operating</u> <u>Costs</u>	<u>Overall</u> <u>Operating</u> <u>Surplus</u>	<u>Yearly</u> <u>Surplus</u>
4.0	365.50	63.0	284.75	16.30	3.26
5.0	410.90	63.0	284.75	63.50	12.71
6.0	459.37	63.0	284.75	112.00	22.40
7.0	531.17	63.0	284.75	178.8	35.76

In the Table 6 above it can be seen that when Comstock ore assays above 5.0% Zn the fumer complex gives an excellent operating surplus. The details for the model where Comstock a mill feed assaying 5.0% Zn is given opposite in Table 7. Full details and costs are given in Tables 11 to 16 Appendix Two
*This deposit also contains 1.1g/t Au as mostly free gold. A bulk conc would assay about 2.80g/t Au. total value will be \$17.0 million. This should yield another \$15.0 million operating surplus over 5 years \approx \$3.0 million per year.

TABLE SEVEN**FUMER OPTION - CASE TWO @ 5.0% Zn****Assumptions**

Life ~ 5 Years

RESOURCES

					SURPLUS	
	Tonnes	Zn%	Pb %	Cu%	Ag g/t	Total Yearly
Comstock Resource	≈ 2.20M	5.00	2.85	0.10	34.00	
Contained tonnes Metal		110,000	62,700		74.8	
Recovery into a bulk conc		86%	85%		85%	
Tonnes of Bulk Conc	556,471					
Bulk Conc. Metal Grade		17.00	9.58		114.00	
Metal to bulk conc		94,600	53,295		63.58	
Metal Prices per tonne \$A		2,150	850		0.29	
VALUE IN \$A(millions)		203.39	45.30		18.44	
Lead Smelter Slag	484,000	13.80	1.70	0.10	55.00	
Slag - Metal Content		66,792	8,228	484	26.62	
VALUE IN \$A(millions)		143.58	6.99		7.72	
FUMER		Zn%	Pb %	Cu%	Ag g/t	
Smelter Flot. Conc(SFC)		40.00	22.12		265.0	
Recovery into the SFC		95%	93%		93.5%	
Tonnes of SFC	224,080					
Metal to SFC		89,870	49,564		59.45	
Fumer Feed	708,080	19.56	7.23		113.00	
Value of Metal to Fumer		156,662	57,792		86.07	

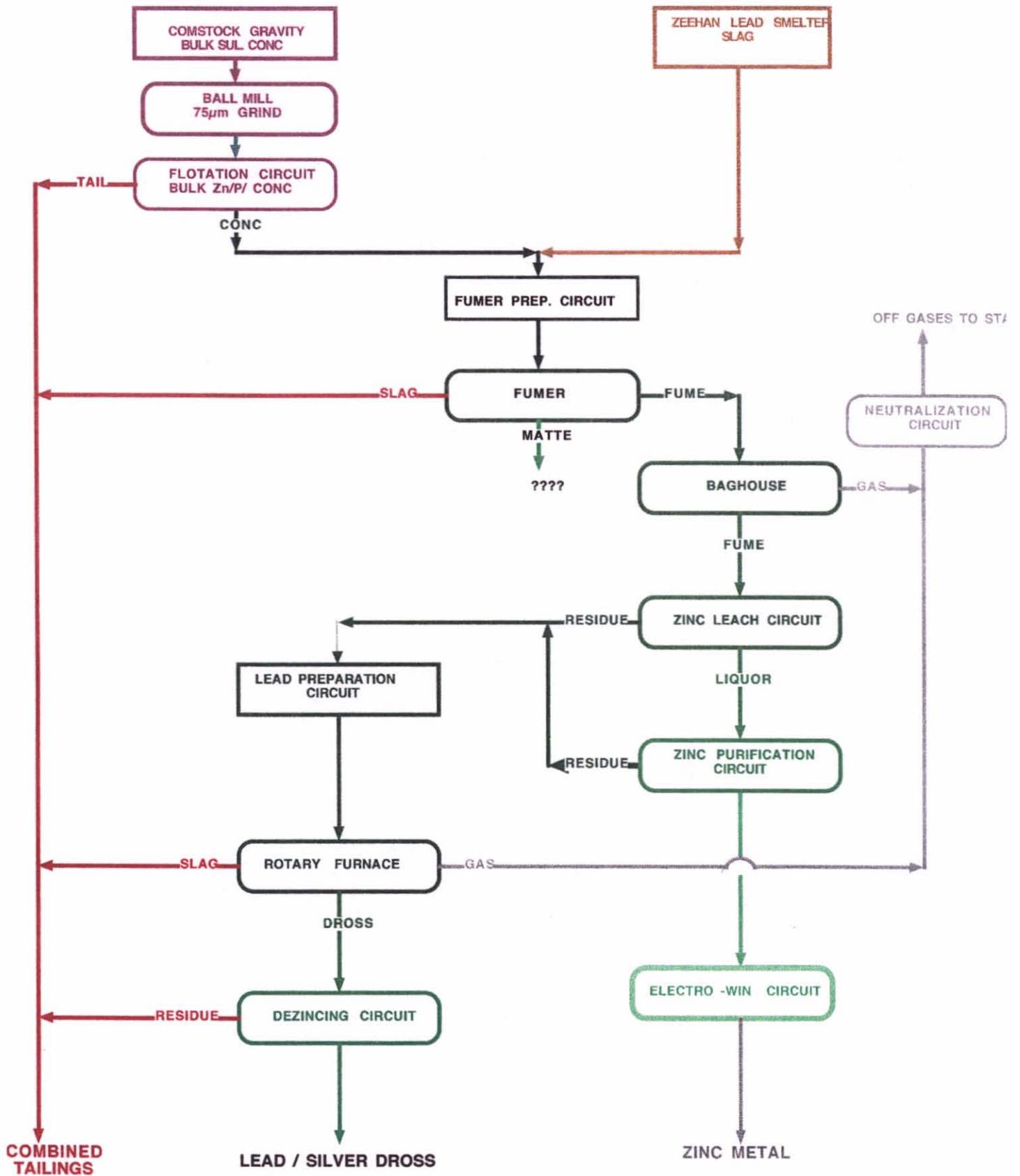
**All Values Below Expressed
in \$A as millions**

Value of Metal Fumed	336.82	49.12		24.96	410.90	82.18
Zeehan Zinc Operating Costs	55.00					
Slag Preparation Costs	3.00					
Fuming Cost*	85.00					
Metal Separation Cost	4.00					
Zinc Metal Production Cost*	100.00					
Lead/Silver Sludge		3.00				
Copper Matte						
Fumer complex Losses	10.00	2.50			1.25	
Realisation / Marketing / Shipping	2.00	3.00			1.00	
Zeehan Zinc Capital	3.00					
Fumer	25.00					
Electro Win Circuit	25.00					
Blast Furnace	10.00	15.00				
Fumer Complex Surplus	14.82	26.00		22.71	63.5	12.71

* The fuming complex will use 35-45MW @ ≈18.5tph fumer feed @ 89% availability

FIGURE THREE
ZEEHAN FUMER COMPLEX

820362



Fumer Process Circuit

General

The philosophy in building a fumer with electro winning zinc by producing LME High Grade Metal and using a rotary furnace to treat the lead silver residue is conceptual at this stage and is shown in Figure 3 opposite. Each of the different technologies has been used commercially and will be dealt with here in only the briefest way.

Concentrate Preparation - Comstock Concentrate

It is envisaged that the coarse gravity concentrate will be reground and differentially refloated to produce a high grade bulk concentrate as shown in Table 7. The pyrite tail will be retained by the fumer for use as fuel when required.

Fumer Feed Preparation

The lead slag will be crushed in a hammer mill, blended with the high grade Comstock bulk Concentrate, pelletised and fed into the fumer.

Fumer Operation

Zinc fuming is very common. In this operation the circuit is a little more complex than normal slag fuming for Zn, in that both the Pb and Ag will also fume. Also, metals like Sb, Bi, Cd, As and of course S will fume. The metals will have to be then removed in the Zn leach circuit. The fume will be collected in a bag-house and the S will be neutralised with lime.

Zinc Leaching Circuit

The fume will be collected and then attacked with dilute HCl to bring only the Zn into solution.

Matte

When Cu and Au are present in the fumer feed a matte will be produced. This will be sold as produced.

Zinc Purification Circuit

It is very important to ensure that the Zn product to be electro won is pure, ie all the Cd, Nb, Bi, Ge, Ga, Sn, Sb, Cu etc. are removed. It is not known yet which of the following will be used: precipitation by pH adjustment.; precipitation by reagent addition; absorption (removal of minor impurities on precipitates); valency change by chemical oxidation or reduction; crystallisation; solvent extraction; liquid /solid ion exchange etc..

Lead & Silver

A rotary furnace is included in this conceptual flowsheet. Alternatively a hydro metallurgical process may be used to produce high grade lead and silver. The rotary furnace allows for maximum flexibility and the treatment of high grade lead concentrates etc. This type of operation must include a de-zincing circuit as maximum zinc recovery is essential. This means that any "dross" would be dezincing before sale.

Fumer Capital

It is very difficult to estimate capital (Table 6 and 7) for a very complex plant such as is proposed in this report. The estimates used are derived from past installations and discussions with Brian Lightfoot formally technical director of Ausmelt Ltd.

Conclusions

- * It has been shown that most of the cases presented in this report are profitable if the assumptions on the size and metal content of the Comstock ore body are correct.
- * At present a little metallurgical work is required:
 - It is advisable to conduct sink float tests on representative samples of ore to quantify the the metal recovery and split size when pre-concentrating low grade material.
 - The sulphide content of the tailings needs to be quantified.
 - The iron content within the sphalerite crystals in each of the Comstock lens needs to be determined.

APPENDIX ONE
Zinc & Lead Flotation Data
Tables Eight to Ten
Cash Flow Summaries

FIGURE 8
FLOTATION - SUMMARY @ 4.0% Zn

Assumptions	Zn%	Pb %	Ag g/t	<u>TOTALS</u>
Resource ≈2,200,000 tonnes	4.00	2.50	33.0	
Contained Tonnes Metal	88,000	55,000	72.60	
Metal Recovery to saleable products	78.80%	73.50%	69.0%	
Concentrate Grade	52.5	65.00	1,365	
Tonnes - Recovered Metal	69,344	40,425	50.09	
Metal Prices per tonne \$A	2,150	850.00	\$A0.29p/g	
Gross Value in \$A millions	149.089	34.361	14.526	197.976
Realisation Cost \$ pt of Metal	1,200	338.00	0.050	
Realisation Costs	83.213	13.664	2.505	99.382
Realised Value in \$A millions	65.877	20.697	12.021	98.595
	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	
<u>Operating Costs in \$per tonne for Metals</u>				
Zn Value per tonne of ore	29.9			
Pb Value per tonne of ore		9.4	p	
Cu value per tonne of ore				
Ag per tonne of ore to Cu Conc			5.5	
Ag per tonne of ore to Pb Conc				
Total				44.8
<u>Operating Costs in \$per tonne</u>				
<i>At this time only budget type costs can be estimated</i>				
Strip Ratio ≈ 3:1				<u>Cost</u>
Overburden ≈ 6,600,000				In \$pt
Cost to dispose of on waste to stockpile @\$2.50 per tonne				
Cost to mine 2,200,000 of ore @ 4.0% Zn ≈\$4.50 per tonne				
Total Mining Costs				12.00
Crushing: Shaws contract. No capital spent by Z.Z.				
Contractor to supply 10,000 t.p.w.. 48 weeks p.y				
@ 80% passing 15mm- 5 year contract				3.50
Milling Cost - Equipment hire			5.00	
- Labour Contract			2.50	
- Reagents/ Consumables			1.75	
- Power			2.25	
- Services			0.50	
- Engineering/ Stores			<u>3.17</u>	
Mill -Total				15.17
Zeehan Administration				5.00
Zeehan Exploration				2.00
Off Site Costs				<u>2.00</u>
Total Costs in \$per tonne				40.67
<u>CASH FLOW TOTALS</u>				
Net Value of Production (before tax & royalty etc.)				\$98 595m
All Costs				<u>89.474</u>
Operating Surplus				9.121
Average Yearly Operating Surplus				1.824

FIGURE NINE**FLOTATION - SUMMARY @ 6.0% Zn**

Assumptions	<u>Zn%</u>	<u>Pb %</u>	<u>Ag g/t</u>	<u>TOTALS</u>
Resource ≈2,200,000 tonnes	6.00	3.28	41.6	
Contained Tonnes Metal	132,000	72,160	91.55	
Metal Recovery to saleable products	78.80%	73.50%	69.0%	
Recovered Metal	104,016	53,038	63.17	
Metal Prices per tonne \$A	2,150	850.00	\$A0.29p/g	
Gross Value in \$A millions	223.634	45.082	18.319	287.035
Realisation Cost \$ pt of Metal	1,200	338.00	0.050	
Realisation Costs \$A millions	124.819	17.927	3.159	145.905
Realised Value in \$A millions	98.815	27.155	15.160	141.130
	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	
Zn Value per tonne of ore	44.9			
Pb Value per tonne of ore		12.3		
Cu value per tonne of ore				
Ag per tonne of ore to Cu Conc			6.9	
Ag per tonne of ore to Pb Conc				
Total				64.1
<u>Operating Costs in \$per tonne</u>				
<i>At this time only budget type costs can be estimated</i>				<u>Cost</u>
Strip Ratio ≈ 3:1				
Overburden ≈ 6,600,000				
Cost to dispose of on waste to stockpile @\$2.50 per tonne				
Cost to mine 2,200,000 of ore @ 6.0% Zn ≈\$4.50 per tonne				
Total Mining Costs				12.00
Crushing: Shaws contract. No capital spent by Z.Z.				
Contractor to supply 10,000 t.p.w.. 48 weeks p.y				
@ 80% passing 15mm- 5 year contract				3.50
Milling Cost - Equipment hire			5.00	
- Labour Contract			2.50	
- Reagents/ Consumables			1.75	
- Power			2.25	
- Services			0.50	
- Engineering/ Stores			<u>3.17</u>	
Mill -Total				15.17
Zeehan Administration				5.00
Zeehan Exploration				2
Off Site Costs				<u>2.00</u>
Total Costs in \$ p.t				40.67
<u>CASH FLOW TOTALS</u>				
Net Value of Production (before tax & royalty etc.)				\$141.130m
All Costs				<u>89.474</u>
Operating Surplus				51.656
Average Yearly Operating Surplus				10.331

FIGURE TEN**FLOTATION - SUMMARY @ 7.0% Zn**

Assumptions	<u>Zn%</u>	<u>Pb %</u>	<u>Ag g/t</u>	
Resource ≈2,200,000 tonnes	7.00	3.75	46.2	
Contained Tonnes Metal	154,000	82,500	101.64	
Metal Recovery to saleable products	78.80%	73.50%	69.0%	
Recovered Metal	121,352	60,637	70.14	
Metal Prices per tonne \$A	2,150	850.00	\$A0.29p/g	
Gross Value in \$A millions	260.907	51.541	20.306	332.754
Realisation Cost \$ pt of Metal	1,200	338.00	0.050	
Realisation Costs \$A millions	145.662	20.495	3.507	169.664
Realised Value in \$A millions	115.245	31.046	16.799	163.090
<u>Operating Costs in \$per tonne for Metals</u>	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	
Zn Value per tonne of ore	52.4			
Pb Value per tonne of ore		14.1		
Cu value per tonne of ore				
Ag per tonne of ore to Cu Conc			7.7	
Ag per tonne of ore to Pb Conc				
Total				74.2

Operating Costs in \$per tonneAt this time only budget type costs can be estimated

	<u>Cost</u> In \$pt
Strip Ratio ≈ 3:1	
Overburden ≈ 6,600,000	
Cost to dispose of on waste to stockpile @\$2.50 per tonne	
Cost to mine 2,200,000 of ore @ 7.0% Zn ≈\$4.50 per tonne	
Total Mining Costs	12.00
Crushing: Shaws contract. No capital spent by Z.Z.	
Contractor to supply 10,000 t.p.w.. 52 weeks p.y	
& 24 hpd @ 80% passing 15mm- 5 year contract	3.50
Milling Cost - Equipment hire	5.00
- Labour Contract	2.50
- Reagents/ Consumables	1.75
- Power	2.25
- Services	0.50
- Engineering/ Stores	<u>3.17</u>
Mill -Total	15.17
Zeehan Administration	6.00
Exploration	2.00
Off Site Costs	<u>2.00</u>
Total Costs	40.67
<u>CASH FLOW TOTALS</u>	
Net Value of Production (before tax & royalty etc.)	\$163.090m
All Costs	<u>89.474</u>
Operating Surplus	73.616
Average Yearly Operating Surplus	\$14.723m

APPENDIX TWO
Fumer Data
Tables Eleven to Sixteen
Cash Flow Summaries
&
Cost Sheets

TABLE ELEVEN**FUMER OPTION - CASE ONE@ 4.0% Zn****Assumptions**

Life ≈ 5 Years

RESOURCES

				SURPLUS	
	Tonnes	Zn%	Pb %	Ag g/t	TOTAL YEAR
Comstock Resource	≈2.20M	4.00	2.50	31.00	
Contained tonnes Metal		88,000	55,000	68.2	
Recovery into a bulk conc		85%	84%	84%	
Tonnes of Bulk Conc	444,000				
Bulk Conc. Metal Grade		17.00	10.40	129.0	
Metal to bulk conc		75,480	46,176	57.28	
Metal Prices per tonne \$A		2,150	850	0.29	
VALUE IN \$A(millions)		162.28	39.25	16.61	
Lead Smelter Slag	484,000	13.80	1.70	55.00	
Slag Dump Metal Content		66,792	8,228	26.62	
VALUE IN \$A(millions)		143.58	6.99	7.72	
FUMER		Zn%	Pb %	Ag g/t	
Smelter Flotation Conc(SFC) -Grade		32.00	19.16	239.0	
Recovery into the SFC		95%	93%	93.5%	
Tonnes of SFC	224,080	71,706	42,945	53.55	
Metal to SFC					
Fumer Feed	708,080	19.56	7.23	113.0	
Tonnes of Metal to Fumer		137,852	51,194	80.17	

**All Values Below Expressed
in \$A as millions**

Value of Metal Fumed	296.38	43.50	23.25	365.5	73.1
Zeehan Zinc Operating Costs	55.00				
Slag Preparation Costs	3.00				
Fuming Cost*	85.00				
Metal Separation Cost	4.00				
Zinc Metal Production Cost*	100.00				
Lead/Silver Sludge		3.00			
Copper Matte					
Fumer complex Losses	10.00	2.50	1.25		
Realisation / Marketing / Shipping	2.00	3.00	1.00		
Zeehan Zinc Capital	3.00				
Fumer	25.00				
Electro Win Circuit	25.00				
Blast Furnace	10.00	15.00			
Fumer Complex Surplus	(25.62)	20.00	21.00	16.3	3.26

TABLE TWELVE

FUMER OPTION - CASE THREE @ 6.0% Zn

Assumptions

Life ≈ 5 Years

RESOURCES

				SURPLUS	
	Tonnes	Zn%	Pb %	Ag g/t	<u>Total Yearly</u>
<u>Comstock Resource</u>	≈2.20M	6.00	3.28	37.40	
Contained tonnes Metal	132,000	72,160		82.3	
Recovery into a bulk conc		86.5%	85.5%	85.5%	
Tonnes of Bulk Conc	671,650				
Bulk Conc. Metal Grade		17.00	10.40	129.00	
Metal to bulk conc		114,180	61,697	70.31	
Metal Prices per tonne \$A		2,150	850	0.29	
VALUE IN \$A(millions)		245.49	45.30	20.39	
<u>Lead Smelter Slag</u>	484,000	13.80	1.70	55.00	
Slag - Metal Content		66,792	8,228	26.62	
VALUE IN \$A(millions)		143.58	6.99	7.72	
<u>FUMER</u>		<u>Zn%</u>	<u>Pb %</u>	<u>Ag g/t</u>	
<u>Smelter Float. Conc(SFC)</u>		40.00	21.15	242.0	
Recovery into the SFC		95%	93%	93.5%	
Tonnes of SFC	271,178				
Metal to SFC		108,471	57,378	65.74	
Fumer Feed	755,178	23.21	8.69	122.00	
Value of Metal to Fumer		175,263	65,606	92.36	

All Values Below Expressed in \$A as millions

				SURPLUS	
				<u>Total Yearly</u>	
Value of Metal Fumed	376.82	55.77	26.78	459.37	91.87
Zeehan Zinc Operating Costs	55.00				
Slag Preparation Costs	3.00				
Fuming Cost*	85.00				
Metal Separation Cost	4.00				
Zinc Metal Production Cost*	100.00				
Lead/Silver Sludge		3.00			
Copper Matte					
Fumer complex Losses	10.00	2.50	1.25		
Realisation / Marketing / Shipping	2.00	3.00	1.00		
Zeehan Zinc Capital	3.00				
Fumer	25.00				
Electro Win Circuit	25.00				
Blast Furnace	10.00	15.00			
Fumer Complex Surplus	54.82	32.65	24.53	112.0	22.40

* The fuming complex will use 35-45MW @ ≈18.5tph fumer feed @ 89% availability

TABLE THIRTEEN**FUMER OPTION - CASE FOUR @ 7.5% Zn****Assumptions****Life ~ 5 Years****RESOURCES**

						SURPLUS	
	Tonnes	Zn%	Pb %	Cu%	Ag g/t	Total	Yearly
<u>Comstock Resource</u>	≈2.20M	7.50	3.85	0.10	43.00		
Contained tonnes Metal	165,000	84,700			94.6		
Recovery into a bulk conc		87.0%	86.0%		86.0%		
Tonnes of Bulk Conc	844,410						
Bulk Conc. Metal Gade		17.00	8.62		96.35		
Metal to bulk conc		143,550	72,842		81.36		
Metal Prices per tonne \$A		2,150	850		0.29		
VALUE IN \$A(millions)		308.64	61.92		23.59	394.15	

<u>Lead Smelter Slag</u>	484,000	13.80	1.70	0.10	55.00		
Slag - Metal Tonnes		66,792	8,228	484	26.62		
VALUE IN \$A(millions)		143.58	6.99		7.72	158.29	

<u>FUMER</u>		<u>Zn%</u>	<u>Pb %</u>	<u>Cu%</u>	<u>Ag g/t</u>		
<u>Smelter Flot. Conc(SFC)</u>		40.00	19.87		223.0		
Recovery into the SFC		95%	93%		93.5%		
Tonnes of SFC	340,930						
Metal Tonnes to SFC		136,373	67,743		76.10		
Fumer Feed	824,930	24.63	9.21		124.52		
Tonnes of Metal to Fumer		203,165	75,971		102.72		

All Values Below Expressed in \$A as millions

Value of Metal Fumed	436.81	64.57		29.79	531.17	106.23
Zeehan Zinc Operating Costs	55.00					
Slag Preparation Costs	3.00					
Fuming Cost*	85.00					
Metal Separation Cost	4.00					
Zinc Metal Production Cost*	100.00					
Lead/Silver Sludge		3.00				
Copper Matte						
Fumer complex Losses	10.00	2.50		1.25		
Realisation / Marketing / Shipping	2.00	3.00		1.00		
Zeehan Zinc Capital	3.00					
Fumer	25.00					
Electro Win Circuit	25.00					
Blast Furnace	10.00	15.00				
Fumer Complex Surplus	114.81	41.45		27.54	183.8	36.76

* The fuming complex will use 35-45MW @ ≈18.5tph fumer feed @ 89% availability

TABLE FOURTEEN

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FUMER COMPLEX COSTS - CASE ONE

**All Values Below Expressed
in \$A as millions**

	<u>Zinc</u>	<u>Lead</u>	<u>Silver</u>
Value of Metal Fumed in \$A	296.38	43.50	23.25
<u>COST CENTER</u>			
Fuming Cost*	85.00		
Metal Separation Cost	4.00		
Zinc Metal Production Cost*	100.00		
Lead/Silver Sludge		3.00	
Copper Matte			
Fumer complex Losses	10.00	2.50	1.25
Realisation / Marketing / Shipping	2.00	3.00	1.00
Blast Furnace			
Zeehan Zinc Capital	3.00		
Fumer	25.00		
Electro Win Circuit	25.00		
Blast Furnace	10.00	15.00	
Fumer Complex Surplus	33.77	35.00	21.00

**All Values Below Expressed
in \$A per tonne of metal recovered**

	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>
Tonnes metal Recovered	137,852	51,194	80.17
Metal Price per tonne \$A	2,150	850	0.29p.g
<u>COST CENTER</u>			
Fuming Cost	617.00		
Metal Separation Cost	29.00		
Zinc Production Cost	725.00		
Lead/Silver Sludge		58.60	
Copper Matte			
Fumer complex Losses ?!	72.50	48.83	0.015
Realisation Etc	14.50	58.60	0.013
Blast Furnace		300.00	
Zeehan Zinc Capital	21.70		
Fumer	181.00		
Electro Win Circuit	181.00		
Blast Furnace	72.50		
Fumer Complex Surplus	235.80	384.27	0.262
Surplus as a % of price	10.96	45.21	90.34

TABLE FIFTEEN

CASE ONE Zn @ 4.0%

All Values Below Expressed
in \$A per tonne of metal recovered

	Zn	Pb	Ag
Tonnes metal Recovered	137,852	51,194	80.17
			\$AG/g
Metal Price per tonne \$A	2,150	850	0.29p.g
COST CENTER			
Fuming Cost	617.00		
Metal Separation Cost	29.00		
Zinc Production Cost	725.00		
Lead/Silver Sludge		58.60	
Copper Matte			
Fumer complex Losses ??	72.50	48.83	0.015
Realisation Etc	14.50	58.60	0.013
Blast Furnace		300.00	
Zeehan Zinc Capital	21.70		
Fumer	181.00		
Electro Win Circuit	181.00		
Blast Furnace	72.50		
Fumer Complex Surplus	235.80	384.27	0.262
Surplus as a % of price	10.96	45.21	90.34

CASE TWO Zn @ 5.0%

All Values Below Expressed
in \$A per tonne of metal recovered

	Zn	Pb	Ag
Tonnes metal Recovered	156,662	57,792	86.07
			\$AG/g
Metal Price per tonne \$A	2,150	850	0.29
COST CENTER			
Fuming Cost	543.00		
Metal Separation Cost	25.53		
Zinc Production Cost	638.32		
Lead/Silver Sludge		51.91	
Copper Matte			
Fumer complex Losses ??	63.83	43.26	0.015
Realisation Etc	12.77	51.91	0.013
Blast Furnace		259.55	
Zeehan Zinc Capital	19.15		
Fumer	159.58		
Electro Win Circuit	159.58		
Blast Furnace	51.91		
Fumer Complex Surplus	476.33	413.37	0.262
Surplus as a % of price	22.15	48.63	90.34

CASE THREE Zn @ 6.0%

All Values Below Expressed
in \$A per tonne of metal recovered

	Zn	Pb	Ag
Tonnes metal Recovered	175,263	65,606	92.36
			\$AG/g
Metal Price \$A	2,150	850	0.29
Fuming Cost	489.99		
Metal Separation Cost	22.82		
Zinc Production Cost	570.57		
Lead/Silver Sludge		45.73	
Copper Matte			
Fumer complex Losses ??	57.06	38.11	0.013
Realisation Etc	11.41	45.73	0.011
Blast Furnace		228.64	
Zeehan Zinc Capital			
Fumer	142.64		
Electro Win Circuit	142.64		
Blast Furnace	57.06		
Fumer Complex Surplus	655.81	491.79	0.266
Surplus as a % of price	30.50	57.85	91.72

CASE FOUR Zn @ 7.50%

All Values Below Expressed
in \$A per tonne of metal recovered

	Zn	Pb	Ag
Tonnes metal Recovered	203,165	75,971	102.72
			\$AG/g
Metal Price \$A	2,150	850	0.29
Fuming Cost	418.38		
Metal Separation Cost	14.77		
Zinc Production Cost	492.21		
Lead/Silver Sludge		39.49	
Copper Matte			
Fumer complex Losses ??	49.22	32.91	0.012
Realisation Etc	9.84	39.49	0.010
Blast Furnace		197.44	
Zeehan Zinc Capital			
Fumer	147.66		
Electro Win Circuit	123.05		
Blast Furnace	49.22		
Fumer Complex Surplus	845.65	540.67	0.268
Surplus as a % of price	39.33	63.61	92.41

TABLE SIXTEEN

FUMER OPTION - PROCESSING COSTS ONLY.
SUMMARY

Assumptions	<u>Tonnes</u>	<u>Zn%</u>	<u>Pb %</u>	<u>Ag g/t</u>
Resource	2.20m	4.00	2.50	33.0
Contained tonnes Metal		88,000	55,000	73
Recovery into a bulk conc.		85.0%	84.0%	84.0%
Tonnes of Bulk Conc	434,820			
Bulk Conc. Metal Grade		17.00	9.99	125
Tonnes Metal to bulk conc.		74,800	46,200	61.32
Metal Prices per tonne \$A		2,150	850.00	0.29

At this time only budget type costs can be estimated

Strip Ratio \approx 3:1

Overburden \approx 6,600,000

Cost to dispose of on waste stockpile @\$2.50 per tonne

\$ p.t

Cost to mine 2,200,000 of ore @ +5.0% Zn \approx \$4.50 per tonne

Total Mining Costs

12.00

Crushing: Shaws contract. No capital spent by Z.Z.

Contractor to supply 10,000 t.p.w.. 52 weeks p.y

& 24 hpd @ 80% passing 15mm- 5 year contract

3.50

	<u>\$ p.t</u>
Milling Cost - Equipment hire	3.00
- Labour Contract	2.00
- Reagents/ Consumables	0.25
- Power	1.00
- Services	0.25
- Engineering/ Stores	1.00
- Transport	2.50

Mill -Total

10.00

Zeehan Administration(site only - mostly transferred to fumer)

0.50

Exploration

2.00

Off Site Costs(mostly transferred to fumer)

0.50

Total Costs

25.00

GROSS VALUE \approx \$55.0 Million

APPENDIX THREE
Previous Reports

ESKER Milling and Processing Pty Ltd

(A.C.N. 009 566 750)

5 Wentworth Street
SOUTH HOBART
Tasmania
Australia, 7004

Telephone & Facsimile: 03-62-233502
email: moony@netspace.net.au
Direct Facsimile: 03-62-244434

MEMORANDUM

DATE:22/01/01
TO:.....ZEEHAN ZINC Pty Ltd.. ATTENTION:D. Tanner
FROM:..N. Moony
SUBJECT:.....ZEEHAN ZINC - Alternative Options For Comstock Ore.

A brief appraisal (base case) has been made for treating Comstock ore on site by producing high grade concentrates from low grade ore.

There are at least two other economic options for treating this ore provided that the resource can yield between 50,000 and 80,000 tonnes of zinc. These alternatives are discussed below

ROSEBERY OPTION

It is feasible to sell a bulk sulphide concentrate to Pasminco Rosebery. This would mean shipping \approx 95,000 tpy of gravity concentrate assaying \approx 17% Zn and containing $>$ 90% of the sulphides. Alternative the bulk concentrate can be reground, the iron sulphides depressed, stockpiled separately and a \approx 32% Zn concentrate shipped to Rosebery. At current metal prices this option should yield an operating surplus of between \$5.0million and \$10.0million per year for a small capital outlay.

FUMER OPTION

There exists in Tasmania the potential for one world class base metal operation using a fumer and combing some or all of the many disparate resources that now exist. Some of these resources are:

WEST COAST BASE METAL RESOURCES

<u>RESOURCE</u>	<u>TONNES</u> Millions	<u>Zn%</u>	<u>Treatment Routes</u>		
			<u>Flotation</u>	<u>Fuming</u>	<u>Hydro met</u>
Hellyer Tailings	12.5-14.0	2.5 - 3.5	Poor	Good	Excellent*
Lead Slag Dump	0.40-0.50	14.0 -16.0	N.A	Excellent	Fair
Comstock	0.50-2.20	4.0 -13.0	Good	Excellent	Excellent
Oceania	0.35-0.70	5.0 - 9.0	Poor	Excellent	Excellent
Queensbury	0.15-0.25	10.0 -12.0	Good	Excellent	Excellent
Small West Coast Deposits	?				

* The new "hydro -met" process now been examined by Western Metals is a very elegant process and has great potential. The difficulty for W.M. is the low in ground value of Hellyer tailings. It very likely that "hydro - met" route will have a capital cost of \$125.0-\$150.0 million and as yet a unknown operating cost. If W.M. were looking at the original Hellyer ore body rather than the tailings they could well afford the risk in developing this process. But treating the tailings even combined with some Risdon by products it looks a risky venture.

FUMING OPTION

Fuming technology is well known and it very flexable, in contrast to the hydro-met route which is not flexable. Capital and operating costs can be defined and the risks specified. In the attached table it can be seen that a very good case can be made for co - treating Comstock and the lead slag dump. Using the given figures the combined resource has a 5 year life while it is shown that this is profitable route it is not a satisfactory for a complex plant producing zinc metal. Add Hellyer and the project has a 10 year life for very little more capital outlay as shown below:

WEST COAST FUMER FEED
TEN YEAR LIFE

<u>RESOURCE</u>	<u>TONNES</u> <u>(treated per year)</u>	<u>Zn%</u>	<u>TONNES of ZINC</u>
Hellyer	72,395	21.3	15,420
Comstock	24,235	32.0	7,755
Lead slag	<u>48,480</u>	<u>16.0</u>	<u>7,755</u>
Fumer Feed	145,110	21.3	31,930

In the attached table a capital cost of \$67.0million has been allowed for a complex treating ≈18.5 tph that produces zinc, lead, copper,silver and gold as refined metals or enhanced /enriched products.

ZEEHAN ZINC
BASE METAL DISTRIBUTION

Zeehan Zinc - Base Metal Distribution

<u>PRODUCT</u>	<u>tph</u>	<u>Wt%</u>	<u>ASSAYS</u>				<u>DISTRIBUTION</u>			
			<u>Zn%</u>	<u>Pb%</u>	<u>Cu%</u>	<u>Ag/t</u>	<u>Zn</u>	<u>Pb</u>	<u>Cu</u>	<u>Ag</u>
Kelsey Jig Tail	24.00	40.00	0.60	0.53	0.04	10.0	6.0	8.3	8.3	7.8
Final Cu Conc.	0.25	0.42	7.20	8.80	26.00	3,040	0.8	1.5	54.2	24.7
Final Pb Conc	1.47	2.45	3.00	72.00	0.30	976.0	1.8	70.0	2.5	46.9
Final Zn Conc.	3.79	6.32	53.00	1.00	0.40	50.0	83.8	2.5	12.6	6.2
<u>B. M. Tailings</u>	<u>30.49</u>	<u>50.81</u>	<u>0.30</u>	<u>0.44</u>	<u>0.04</u>	<u>14.50</u>	<u>7.60</u>	<u>17.70</u>	<u>22.40</u>	<u>14.40</u>
Mill Feed	60.00	100.00	4.00	2.50	0.20	50.0	100.0	100.0	100.0	100.0

ZEEHAN ZINC
BASIC ECONOMICS

BASIC ECONOMICS

* In the summarised cost table released returns for each metal have been estimated.

* costs have been estimated using contract mining, crushing & milling

* Operating costs for ZZ to manage each section themselves will be cheaper but involve a capital cost that SEMF will estimate

* Costs are in \$A per tonne

* The fully released value for a tonne of ore is estimated	@	\$68.29	\$68.29
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* All costs for operation using contractors only is estimated @		\$61.00	
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* Operating Surplus in \$ per tonne		\$7.29	
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* Operating costs with ZZ operating all sections			\$46.75
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* Operating Surplus in \$ per tonne			\$21.54
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• SEMF will estimate a capital cost which will be deducted from this figure

ZEEHAN ZINC
OPERATING ASSUMPTIONS

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Operating Assumptions

Mining: Open cut, using contract mining

Crushing:

- 1) Contact, with the contractor supplying the prescribed production at the given sizes

The flowsheet for this section is only a suggestion

- * Crushing Rate \approx 200tph
- * 10 hours per day
- * Five days per week
- * \approx 10,000 tonnes per week

Crushing Circuit, as shown in flowsheet

- a) 200mm Grizzly, O/S broken with rock breaker
- b) Open circuit jaw crushing
- c) Closed circuit short head crusher with \approx 20mm screen
- d) Closed circuit Barmac with 6.25mm screen
- e) 5,000 fine ore stockpile (fos)

Milling

- * Contract milling for base metals is rare, but used here because it reduces capital
- * Grinding is in two stages. SAG milling cannot be considered because not enough about the grinding characteristics of the ore is known at present

A standard rod mill & ball mill circuit is proposed

- a) Rod milling - Open Circuit: Feed \approx 80% 6.25 mm. Product \approx 80% passing 1.0mm. Estimated $W_i \approx$ 13.5
- b) Ball milling - Closed circuit: Feed \approx 80% passing 1,000 μ m. Product \approx 80% passing 75 μ m. Estimated $W_i \approx$ 13.5
- c) Open circuit regrinding of all cleaner tails in each flotation circuit is included

Flotation: Four stage of flotation

- a) Talc flotation: This is a mandatory stage because @ \approx 10% MgO the ore will contain \approx 40% talc. This will be hard to depress Using a Kelsey jig to remove heavies from the talc conc, with regrinding will improve recovery of all metals by 5% to 10%
- b) Copper flotation is included as an option. It will become necessary when the Cu content in the feed approaches 0.30% Cu
- c) Lead flotation & zinc flotation are mandatory & a normal Rosebery flow is used
- d) Reagents consumption, type, phm, etc will follow
- e) Flotation times, cell sizes etc can be found in the mass balance sheet

APPENDIX FOUR
Mass Balance
for
Z & L Circuit

<u>LINE</u>		<u>Dry</u>	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	<u>Tonnes</u>					<u>Kg. % Distribution</u>	<u>FLOTATION</u>
<u>No.</u>	<u>Product(or flow)</u>	<u>tph</u>	<u>%</u>	<u>%</u>	<u>g/t</u>	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	<u>Zn</u>	<u>Pb</u>	<u>Ag</u>	<u>MINUTES</u>
1	Jaw Crusher Feed	60.00	4.00	2.50	50.00	2.40	1.50	1.98	100.0	100.0	100.0	
2	Trommel U/S	17.70	5.91	3.91								
3	Rrommel O/S	42.30										
	Short Head Discharge											
	≈ 15 mm screen O/S											
	≈ 15 mm Screen U/S											
	Rod Mill Feed	42.30										
	DSM O/S	21.15										
	IPJ New Feed Feed	60.00										
	IPJ Rougher Feed	80.00										
	IPJ Rougher Conc.											
	IPJ Rougher Tail											
	IPJ Scav. Conc											
	IPJ Scav Tail											
4	IPJ Cleaner Conc	5.04	12.60	7.81								
5	IPJ Cleaner Tail	20.00										
6	800mm Screen O/S	20.30	0.60	0.35	5	0.12	0.07	0.10	5.0	4.7	5.1	
7	Spiral Complex Conc	2.52	20.57	11.62								
8	150µm Screen O/S	14.58	0.55	0.40	5	0.08	0.06	0.07	3.3	3.9	3.7	
9	Combined Thickener Feed	25.26	8.71	5.42								
10	Talc Reject	13.00										
11	F. M.1 Spiral Tail	11.50	0.70	1.24	13	0.08	0.14	0.15	3.3	9.5	7.8	
12	F. M. 1 Spiral Conc	1.50	4.67	3.60	72							
13	Lead Rougher Feed	13.62	15.57	9.01	121							
14	FINAL Pb. CONC	1.69	5.00	65.20	808	0.09	1.10	1.36	3.8	73.5	69.0	
15	FINAL Zn. CONC	3.61	52.50	2.00	30	1.89	0.07	0.11	78.8	4.7	5.4	
16	PYRITE CONC	5.00	2.60	1.18	32	0.13	0.05	0.16	5.4	3.3	8.1	
17	OXIDE TAILING	3.32	0.30	0.18	5	0.01	0.01	0.02	0.4	0.4	0.9	

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Appendix 9

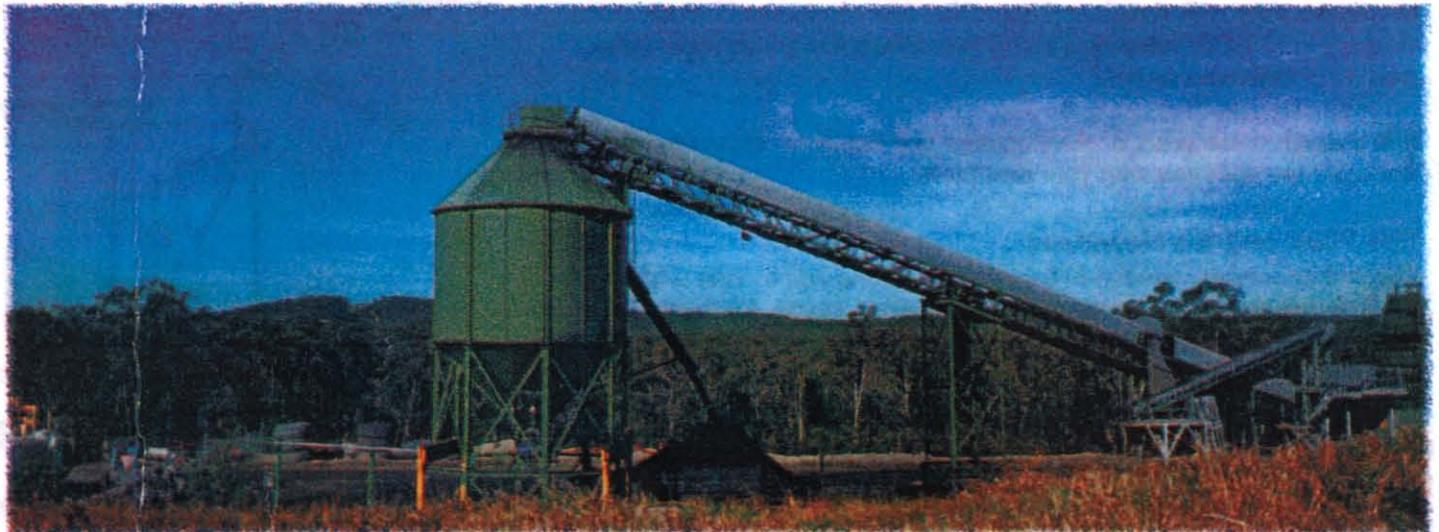
Contract Processing Solutions

Ironwork Pty Ltd



Ironwork

Contract Processing Solutions



IRONWORK PTY LTD

Ironwork is a privately owned Australian Company, which is focused upon the provision of quality and affordable contract mineral processing services to the mining industry throughout Australia and the Asian Pacific regions.

Ironwork can provide answers and alternative solutions to many of your processing requirements whether you require a screening/crushing plant or a complete coal preparation facility all delivered and operational on a pure cost per tonne contract basis. **No** up front capital costs to you.

Ironwork could have the cost effective processing solution to ensure: "you only pay on the performance of your next processing plant".

JUST SOME OF IRONWORK'S SERVICES AVAILABLE TO YOU!

Crushing/Screening Plants

Ironwork has a comprehensive background in the supply and operation of crushing/screening plants.

Ironwork can provide and operate **mobile** or **large static crushing plants** to suit your needs, Ironwork will completely process your material to your specifications with tonnage throughputs from **100 tonnes per hour (TPH)** to in excess of **1200 TPH**.

By using Ironwork as your next crushing contractor, you the client, gain a very efficient plant completing the job required to your specification at a cost which could be lower than what you are paying now. Whether it's Hard Rock, Coal or Ironore, IRONWORK can provide your next crushing/screening facility and from just **\$1** per tonne. You get the plant NOW, without the operating problems.

Mobile Coal Preparation Plants

The History

Ironwork's principals developed Australia's first commercial mobile coal washery in 1989. Developing a 200 TPH coal washery consisting of dense media cyclones and spirals.

It is through these years of development and hands on experience that Ironwork provides you with your next plant.

The Plant and it's Flowsheet

The mobile washery consists of two modules sitting side by side, with one module processing the coarse coal via Dense Media Cyclones with classifying cyclones/spirals and/or froth flotation processing the fines. The modules are approx. 12 metres long x 3 metres wide, with each module consisting of three levels.

Each level can be easily transported by semi-trailers with the plant's reassembled and operational in just a few days, and yet constructed for a 20 year life.

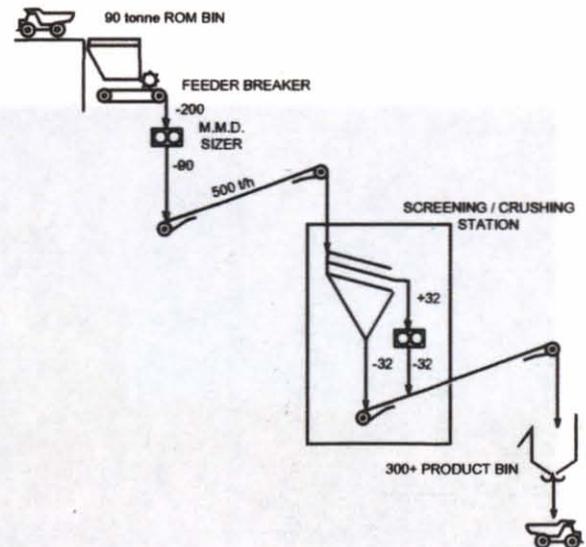


Mobile Crushing Screening Plant.
(Newcastle - Australia).



Dense Media Cyclones with Classifying Cyclone, Spirals & Flotation for the Fines.

Complete with Belt-Press Filters for the Tailings ensuring a "Closed Circuit" arrangement.



Westside 500 TPH Crushing Plant Flow Sheet.

The plant is modular for 3 reasons:-

1. **Construction** - it is easier and more cost efficient to manufacture the plants in Ironwork's specially designed "modular" format with a **much faster** construction timetable.
2. **Mobility** - the plants have a huge amount of operational flexibility because they are very mobile.
3. **Flow-Sheet Flexibility** - the flexibility Ironwork and it's clients have with being able to change and modify the washery's flow-sheet to suit your requirements is amazing. We give the client a "Tailor" made customised plant flow-sheet to suit your exacting needs:

You can, for example, utilise:

- Dense Media Drum/Baths
- Dense Media Cyclones
- Classifying Cyclones
- A "jig" plant
- Froth-Flotation
- Spirals/Tables

In any combination to suit **your** requirements.

Just How Mobile?

Ironwork can disassemble the average mobile processing plant and reassemble it on another part of your lease in approx 7 days.

How Quickly Can I Get One?

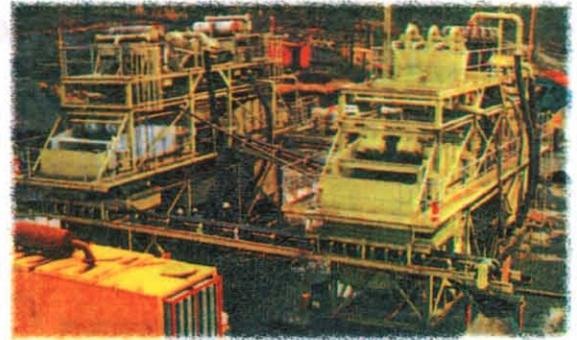
Ironwork can supply a 200 TPH mobile processing plant in just 8 – 10 weeks.

What Size Plant Can I Get?

Plant sizes available are 100 TPH, 200 TPH, 300 TPH to 400 TPH and now 'STOP PRESS' a **1200 TPH** Modular processing plant.

The Performance

Ironwork's plants and it's contract operations generally perform the same if not better than similar designed static processing plants we compete against. In fact, Ironwork Guarantees to meet your specifications. So you only ever pay for performance!



**Mobile 300 TPH Coal Prep Plant. (QLD).
(Dense Media Cyclones & Spirals).**



**250 TPH DM Drum Plant.
Dartbrook Mine. (NSW).**



Westside 500 TPH Crushing Plant. (Newcastle. NSW).

Metalliferous (Mineral) Processing

Whether it be:

- Ironore
- Lead/Zinc
- Copper
- Tin
- Diamonds
- Mineral Sands
- Antimony
- Gold

Ironwork can have a full

- Crushing Circuit
- Mill Circuit
- Flotation Circuit
- Cyclones
- Filters
- Tailings Treatment
- Spirals/Tables
- Jigs

To suit your needs, on site processing your ore in just weeks.

- Ironwork will work with you, refining the flow-sheet and the scope of work.
- Size Plants range from 50,000 tonne per annum to 1 million tonne per annum.

Then completely construct, deliver, site setup, commission and then operate the process plant at a fixed rate per tonne. There's **no capital** outlay by you, and you gain the plant you require, **"operated the way you require it"**.

"YOU NOW ONLY PAY FOR PERFORMANCE"

The Cost

Ironwork can provide several cost efficient options.

1) The Contract Option

Ironwork can supply the complete plant, man, manage and maintain it, providing all consumables, including our own front-end loader/s to feed the plant. All you do is mine and dump the "ore" next to the process facility. Ironwork will then feed it, crush it, process it, and stockpile it! Ready to sell – all on a fixed contract agreed rate per tonne and no, or minimal, up front costings.

2) The Supply Only Contract Option

With this option Ironwork supplies and sets up the process plant **only**. You the client then completely man, maintain and operate the plant. You **THEN** pay a fixed rate for each feed tonne processed, a great alternative to outright purchase, (no up front capital cost, but you get the plant you need).

3) The Process Now and Own Option

This is a unique option where Ironwork supplies and sets up the plant, and totally contract operates the facility, for a fixed rate per tonne. With you the customer owning the plant outright at the end of the contract period, (giving you the best of both worlds).

Conclusion

Ironwork's mobile coal preparation and mineral processing plants are the answer to your processing needs - at a cost from just **\$3** per tonne for a complete contract operated coal washery - a call to Ironwork could save or **earn you millions of dollars this year!**

CALL US NOW

Contact: Mr. Peter Bond
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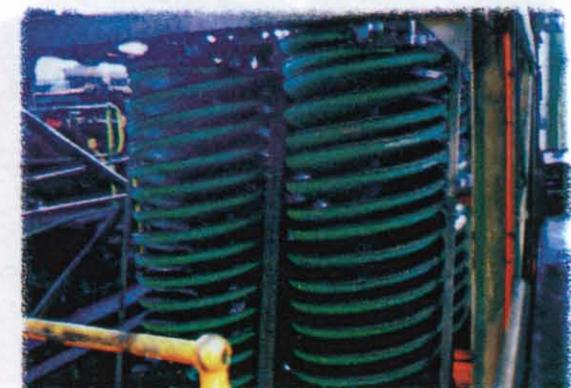
Woodlawn Lead/Zinc Mine. (NSW).



Mobile 100 TPH Cyclone & Spirals Plant.



Flotation Circuit.



Spirals Circuit.

Appendix 10

Financial Models

Prepared by Oceania Tasmania Pty Ltd

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DATA											
Head Grade											
Zinc	12.94%										
Lead	5.26%										
Silver	0.084	kg/tonne									
		Debt Interest Rate			10%						
		Bank Interest Rate			7%						
		Period of Loan			5			Years			
		Dividend Policy - % of Profit			80%						
		Working Capital - \$M			\$1.0			M			
Year	1	2	3	4	5	6	7	8	9	10	
	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	
PRODUCTION - ktonnes											
Opencut	50.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Underground		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Operations Manning Levels	3	3	3	3	3	3	3	3	3	3	
CAPITAL SPENDING - \$M											
Plant establishment & Power Supply	1.2										
Tailings Dam	0.3	0.5									
Fall of Capital - \$M	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Smelter Multiplier (NSR)	60%										
REVENUE (ex:mine)- \$M											
	Price/tonne										
Zinc Concentrate	1,850	7.2	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	
Lead Concentrate	860	1.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	
Silver	270,000	0.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	
Total Revenue - \$M		9.2	36.9	36.9	36.9	36.9	36.9	36.9	36.9	36.9	
COSTS - \$M											
	\$/tonne										
Debt Payments		0.4	0.5	0.5	0.5	0.5	0.1				
Opencut Mining	14.32	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
Underground Mining	35.00	0.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Transport to Mill	0.50	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Contract Milling	20.00	1.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Operations Manning	50.00	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Maintenance	0.5	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Contingencies and Overheads	10.0%	0.2	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
Total Costs - \$M		2.5	10.8	10.8	10.8	10.8	10.4	10.2	10.2	10.2	
OPERATING CASH FLOW - \$M		6.7	26.1	26.1	26.1	26.1	26.5	26.6	26.6	26.6	
FINANCIALS - \$M											
Depreciation at 20%/year		0.3	0.4	0.4	0.4	0.4					
Earnings before Interest and Tax		6.4	25.7	25.7	25.7	25.7	26.5	26.6	26.6	26.6	
Barmingo EBIT share	50%	0.0	6.4	6.4	6.4	6.4	6.6	6.7	6.7	6.7	
Interest		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Tax	NPV Equity	2.1	6.4	6.4	6.4	6.4	6.6	6.6	6.6	6.6	
PROFIT - \$M	-\$2.78	4.3	12.9	12.9	12.9	12.9	13.3	13.4	13.4	13.4	
	IRR ₍₁₀₎	244.4%									
Less: Dividends		3.4	10.3	10.3	10.3	10.3	10.7	10.7	10.7	10.7	
Retained Earnings		0.9	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	
Cash at Start		1.0	1.9	4.4	7.0	9.6	12.2	14.9	17.5	20.2	
Cash at End	1.0	1.9	4.4	7.0	9.6	12.2	14.9	17.5	20.2	22.9	

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DATA											
Head Grade											
Zinc	8.6%										
Lead	4.6%										
Silver	0.059 kg/tonne										
		Debt Interest Rate			10%						
		Bank Interest Rate			7%						
		Period of Loan			5 Years						
		Dividend Policy - % of Profit			80%						
		Working Capital - \$M			\$1.0 M						
Year	1	2	3	4	5	6	7	8	9	10	
	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	
PRODUCTION - ktonnes											
Opencut	50.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Underground		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
Operations Manning Levels	3	3	3	3	3	3	3	3	3	3	
CAPITAL SPENDING - \$M											
Plant establishment & Power Supply	1.2										
Tailings Dam	0.3	0.5									
Fall of Capital - \$M	0.0	1.5	0.5	0.0							
Smelter Multiplier (NSR) 60%											
REVENUE (ex:mine)- \$M											
Price/tonne											
Zinc Concentrate	1,850	4.8	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	
Lead Concentrate	860	1.2	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	
Silver	270,000	0.5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	
Total Revenue - \$M	6.4	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	25.8	
COSTS - \$M											
\$/tonne											
Debt Payments	0.4	0.5	0.5	0.5	0.5	0.1					
Opencut Mining	14.32	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	
Underground Mining	35.00	0.0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Transport to Mill	0.50	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Contract Milling	20.00	1.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Operations Manning	50.00	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
Maintenance	0.5	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
Contingencies and Overheads	10.0%	0.2	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	
Total Costs - \$M	2.5	10.8	10.8	10.8	10.8	10.4	10.2	10.2	10.2	10.2	
OPERATING CASH FLOW - \$M	3.9	15.0	15.0	15.0	15.0	15.4	15.5	15.5	15.5	15.5	
FINANCIALS - \$M											
Depreciation at 20%/year	0.3	0.4	0.4	0.4	0.4						
Earnings before Interest and Tax	3.6	14.6	14.6	14.6	14.6	15.4	15.5	15.5	15.5	15.5	
Barrinco EBIT share	50%	0.0	3.6	3.6	3.6	3.8	3.9	3.9	3.9	3.9	
Interest	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Tax	NPV Equity	1.2	3.6	3.6	3.6	3.6	3.8	3.8	3.8	3.8	
PROFIT - \$M	-\$2.78	2.4	7.3	7.3	7.3	7.7	7.8	7.8	7.8	7.8	
IRR₍₁₀₎ 156.1%											
Less: Dividends		1.9	5.9	5.9	5.9	6.2	6.2	6.2	6.2	6.2	
Retained Earnings		0.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	
Cash at Start		1.0	1.5	2.9	4.4	5.9	7.3	8.9	10.4	12.0	
Cash at End	1.0	1.5	2.9	4.4	5.9	7.3	8.9	10.4	12.0	13.6	

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DATA										
Head Grade										
Zinc	5.5%									
Lead	3.3%									
Silver	0.040 kg/tonne									
		Debt Interest Rate					10%			
		Bank Interest Rate					7%			
		Period of Loan					5 Years			
		Dividend Policy - % of Profit					80%			
		Working Capital - \$M					\$1.0 M			
Year	1	2	3	4	5	6	7	8	9	10
	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
PRODUCTION - ktonnes										
Opencut	50.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Underground		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Operations Manning Levels	3	3	3	3	3	3	3	3	3	3
CAPITAL SPENDING - \$M										
Plant establishment & Power Supply	1.2									
Tailings Dam	0.3	0.5								
Fall of Capital - \$M	0.0	1.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smelter Multiplier (NSR) 60%										
REVENUE (ex:mine)- \$M										
Price/tonne										
Zinc Concentrate	1,850	3.1	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
Lead Concentrate	860	0.9	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Silver	270,000	0.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Total Revenue - \$M	4.2	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9
COSTS - \$M										
\$/tonne										
Debt Payments		0.4	0.5	0.5	0.5	0.5	0.1			
Opencut Mining	14.32	0.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Underground Mining	25.00	0.0	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Transport to Mill	0.50	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Contract Milling	20.00	1.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Operations Manning	30.00	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Maintenance	0.5	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Contingencies and Overheads	10.0%	0.2	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Total Costs - \$M	2.5	9.7	9.7	9.7	9.7	9.3	9.1	9.1	9.1	9.1
OPERATING CASH FLOW - \$M										
	1.7	7.2	7.2	7.2	7.2	7.6	7.8	7.8	7.8	7.8
FINANCIALS - \$M										
Depreciation at 20%/year		0.3	0.4	0.4	0.4	0.4				
Earnings before Interest and Tax		1.4	6.8	6.8	6.8	6.8	7.6	7.8	7.8	7.8
Barrinco EBIT share	50%	0.0	1.7	1.7	1.7	1.7	1.9	1.9	1.9	1.9
Interest		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tax	NPV Equity	0.5	1.7	1.7	1.7	1.7	1.9	1.9	1.9	1.9
PROFIT - \$M	-\$2.78	0.9	3.4	3.4	3.4	3.4	3.8	3.9	3.9	3.9
IRR ₍₁₀₎ 83.2%										
Less: Dividends		0.7	2.8	2.8	2.8	2.8	3.1	3.1	3.1	3.1
Retained Earnings		0.2	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Cash at Start		1.0	1.2	1.9	2.6	3.2	3.9	4.7	5.5	6.3
Cash at End	1.0	1.2	1.9	2.6	3.2	3.9	4.7	5.5	6.3	7.0

Appendix 11

Boron Production

Andrew Firek, 2000

Boron Production

1 Introduction

AEF (Andrew Firek) have approached Mintek with a view to participate in a boron-magnesium project for Bass Resources NL. A boron containing deposit consisting of mainly szaibelite (also known as ascherite), $Mg_2(OH)B_2O_4(OH)$ or $2Mg \cdot B_2O_3 \cdot H_2O$, is to be developed in Tasmania for the recovery of boron and magnesium. Mintek would be required to provide technical input about magnesium and boron technologies. The aim of this report is to give an overview of the possible methods for the production of boron from szaibelyite.

2 Boron minerals

Of the common boron minerals, only 10 have been used commercially. Boron forms relatively few compounds because of the stability of the boron-oxygen bond. The common borates are:

Borax (tincal)	$Na_2B_4O_7 \cdot 10H_2O$
Kernite	$Na_2B_4O_7 \cdot 5H_2O$
Colemanite	$Ca_2B_6O_{11} \cdot 1.5H_2O$
Priceite	$Ca_3B_{12}O_{23} \cdot 9H_2O$
Ulexite	$NaCaB_5O_9 \cdot 8H_2O$
Howlite	$4CaO \cdot 2SiO_2 \cdot 5B_2O_3 \cdot 5H_2O$
Szaibelyite	$MgBO_2(OH)$
Sossocolite	Boric acid H_3BO_3
	Anhydrous boric acid B_2O_3 or Boron oxide

3 Physical properties of Boron

The physical properties of boron of interest are the following:

Melting point	2050+/-50°C
Sublimation point	2550 °C
Density	2.3g/cm ³
Standard enthalpy of formation of B_2O_3	1269kJ/mol

4 Production of Boron

The alternatives being considered for the Tasmanian project are:

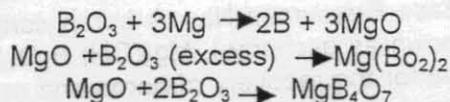
- Production of szaibelyite concentrate, hydrometallurgical separation of magnesium and boron as two separate chemical compounds, followed up by plasma or carbothermic production of magnesium, which could be used for the magnesiothermic [production of boron.
- Direct plasma or carbothermic reduction of szaibelyite, after its calcination, resulting in boron or magnesium /boron products.
- Electrowinning boron from a molten salt electrolyte.

Literature surveyed indicates that the usual methods for commercial production of boron are:

- Reduction of boric acid with magnesium.
- Reduction of boron halides or fluoroborates with sodium or another metal.
- Reduction of boron halides with hydrogen.
- Thermal decomposition of boron compounds, especially boron halides and hydrides.
- Electrolysis of molten borates or fluoroborates.

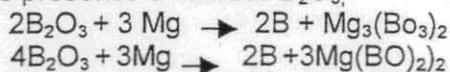
4.1 Magnesium reduction

The usual method for commercial production of large quantities of boron is the reduction of boron trioxide with magnesium in a thermite like reaction- the Henri Moissan magnesium process.



Reduction is very quick and highly exothermic; finely divided material reacting explosively.

Reaction is smoother in the presence of excess B_2O_3 ,



The optimum ratio of $\text{B}_2\text{O}_3:\text{MgO}$ is 1.8:3.

The reaction is carried out in a vertical steel retort shielded from oxygen by argon gas. It is initiated by an electric spark and the igniter mixture or by external heating.

After cooling the reaction mass is crushed to 1mm particles and leached twice with hydrochloric acid. Crude amorphous boron of 86 to 88 per cent purity is obtained. This material can be treated with B_2O_3 or KHF_2 and KBF_4 , subsequent leaching with acid and finally and final heating in a vacuum removes boron suboxides and metals. The boron content is then 90 to 92 or 95 to 97 per cent, adequate for the use of pyrotechnics and fluxes.

A common problem of the metallothermic reaction is the incomplete reaction and formation of non-removable borides.

4.2 Electrolysis

Electrolysis of molten borates or KBF_4 is not an important method for commercial production of boron.

Boron can be refined by zone melting or volatilization of impurities in a high vacuum or in Hydrogen at 2000°C .

4.3 Carbothermic Reduction

Reference is not made to the direct production of boron carbothermically, but ferroboron is produced by this method. The reduction of boric acid by carbon requires high temperatures and the process is carried out in electric arc furnaces of capacities up to 1500 kVA - small units, as the world demand for FeB is low. The compositions are typically 16 to 18 per cent boron; 0.5 per cent carbon; < 1.15Al, with power consumption of the order of 4550 kWh/ton FeB.

5 Conclusion

In order to recommend a preferred route of producing boron from the Tasmanian szaibelyite, the composition of the ore is required. With the information provided it would appear that the ore would indeed have to be treated hydrometallurgically to produce the magnesium compound suitable for the production of magnesium, and a boron compound which could be magnesiothermally treated in a plasma furnace for boron production,

The direct treatment of the ore with magnesium is also plausible, but in all probability the MgO could be lost or rendered too expensive for recovery as a compound suitable for magnesium production.

The carbothermic reduction of the ore to produce ferroboration is a possibility and the magnesium could perhaps be recovered from the slag component of the reaction. Should a pure form of boron be required from the carbothermic reaction, then the ore would need to be low in iron to avoid ferroboration formation. The formation of boron carbides would also be a factor to be considered.

There could be case made for magnesium, boron and ferroboration production. The analysis of the ore would indicate the route to be followed.

The electrolytic route was not studied in any detail as the references indicated that this was to date a less preferred route for commercial production of boron.

Further literature research is needed for a better insight into the Moissan reaction.

6 References

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The BORON MINERAL PROCESSING R&D project will undertake the development of an efficient szaibelyite processing technology, which, if successful, could lead to the production of value added boron chemicals and advanced materials.

PROJECT CASE SUMMARY

Zeehan Zinc (Bass Resources NL) is a Tasmanian company involved in magnesium project development activities and exploration and mining of base metals.

It has recently commenced mining of base metals at the Comstock Mine. During the exploration of the Comstock Mine area substantial presence of boron bearing mineral szaibelyite was discovered. Its existence was confirmed during the current mining operation. Szaibelyite (ascharite) $MgBO_2(OH)$, contains not only boron (41.4% B_2O_3), but also magnesium. There are significant synergies between magnesium and boron, which could be of substantial strategic and economic significance for the Company.

It is the first significant occurrence of a boron mineral in Australia that warrants further investigations.

The Company has already done preliminary studies of boron minerals processing technologies as well as of the potential value added materials that could be produced from boron minerals.

Szaibelyite with its high boron oxide content can be classified as a valuable boron metal and boron chemicals feedstock. The Company has carried out preliminary technology and market surveys and found that szaibelyite could be used to produce boron chemicals, however the technology details are scarce.

These findings justify the need for a project that would focus on the processing of szaibelyite (ascharite), including preparation of szaibelyite concentrate followed by separation of its magnesium and boron components. The concentrate preparation and its composition, most likely its contamination with base metals, will require development of a new beneficiation technology. This will have to address previously unknown aspects of boron minerals processing, which normally are present together with various alkaline salts.

Quality assessment of the concentrate and potential impact of the impurities will have to be investigated.

In the next stage, the project will focus on the development of a hydrometallurgical technology to produce boric acid or oxide, which are two most important boron chemicals having a wide variety of applications in both industrial and consumer products. It could be expected, that the technology would separate the szaibelyite magnesium component in the form of a magnesium salt, possibly as sulphate, carbonate or chloride salt. Effort will be made to convert it into a useful product, or ideally to use it for further processing of boric acid or oxide, if feasible.

The project could take advantage of the fact that in the Moissan process boric oxide can be further processed into boron using magnesium as a reductant.

The magnesium source could be either the separated magnesium component of szaibelyite, depending on its form and purity, or magnesium from magnesite to which Zeehan Zinc (Bass Resources NL) will have access. A possibility of using magnesium salts separated from szaibelyite as a source of magnesium would be investigated. This could potentially lead to the development of a novel complex technology utilising both magnesium and boron components of szaibelyite.

There will be a need to identify and test a suitable technology of magnesium production.

There are other products that could be produced from boric acid or oxide such as ferroboration, boron carbide or nitride, various metal borides and these opportunities would be investigated as well.

The main project activities would include literature and market studies, laboratory and small-scale tests and preliminary feasibility assessment of the developed processes and their products.

During the literature and technology review stage, the project would also look at other technology alternatives such as: plasma or carbothermic reduction of szaibelyite or its treatment with magnesium.

Market studies will survey the boron chemicals supply and applications to identify products on which the project should concentrate.

Laboratory scale mineral processing tests will be carried out to develop a beneficiation process capable of producing szaibelyite concentrate suitable for further hydrometallurgical processing.

This will include szaibelyite dissolution experiments under controlled conditions aimed at producing boric acid and its separation from magnesium. Exploratory tests to convert boric acid into boric oxide would also be included.

If possible, attempts will be made to separate magnesium as a product useful for extraction of magnesium. If that would be impossible, magnesite could be used to produce magnesium using already patented plasma technology.

Depending on the quality of the produced szaibelyite concentrate, boric acid and oxide, further process development work would be done involving magnesiothermic boron production and/or ferroboron, boron carbide and nitride production tests. Some of the tests will require construction of dedicated equipment.

The project will be concluded with preliminary feasibility assessment of the processes and products and recommendations for further strategy.

This project can open new opportunities for Australia, which relies exclusively on importing of boron products. They would include not only potential supply of boron chemicals, but could initiate new possibilities in the new materials technologies such as ferroboron, boron carbide or nitride and various metal borides.

The project is innovative because such an integrated process does not exist.

Additional strong argument in favour of the Government supporting this project is the intention of Zeehan Zinc (Bass Resources NL) to develop its own magnesium project. As already indicated magnesium is the best reagent used in the production of boron metal. In addition, some of the boron compounds have potential applications in processing of magnesium such as the protection of molten magnesium against oxidation or as magnesium fires extinguishing agent.

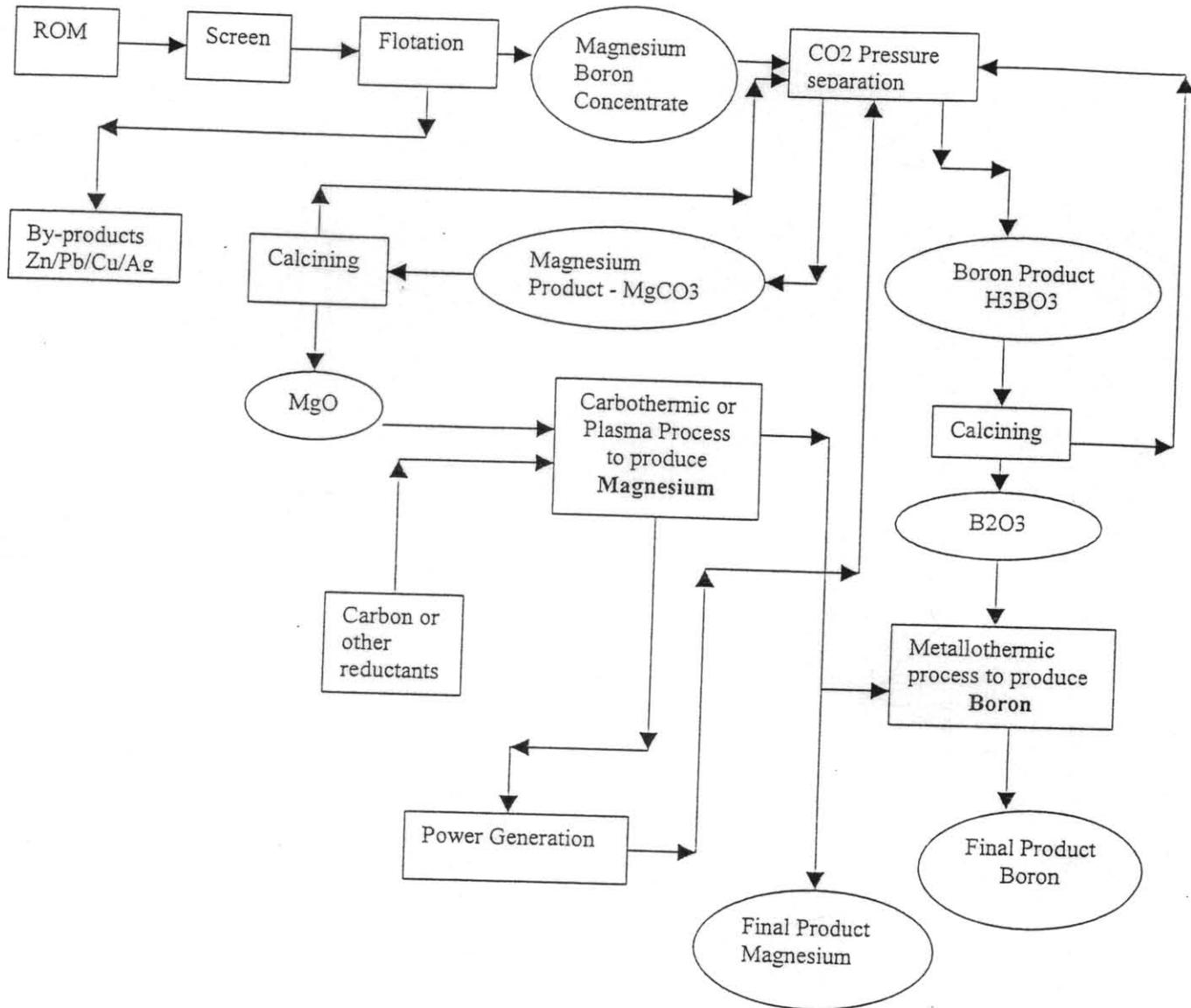
It is envisaged that the project duration will be 2.5 to 3.0 years.

Senior executives of Zeehan Zinc (Bass Resources NL) would manage the project in cooperation with University of New South Wales, University of Tasmania, Wollongong University and Orestest and Metcon, two well known mineral processing consulting companies. These Companies would make their experienced hydrometallurgical, pyrometallurgical, mineral processing researchers as well as their equipment and laboratory facilities available for the project. In addition individual consultants would be adopted to the project when needed.

The success of the project would provide the ability for Zeehan Zinc (Bass Resources NL) to initiate production of valuable specialised products, and lay foundation in Australia for new technical and commercial activities based on boron products. This could be done once the technologies were commercialised.

Zeehan Zinc (Bass Resources NL) is unable to fund such a major commitment to research and development from its own cash flow and determined that the R&D START SCHEME would provide the most cost-effective solution to finance the program.

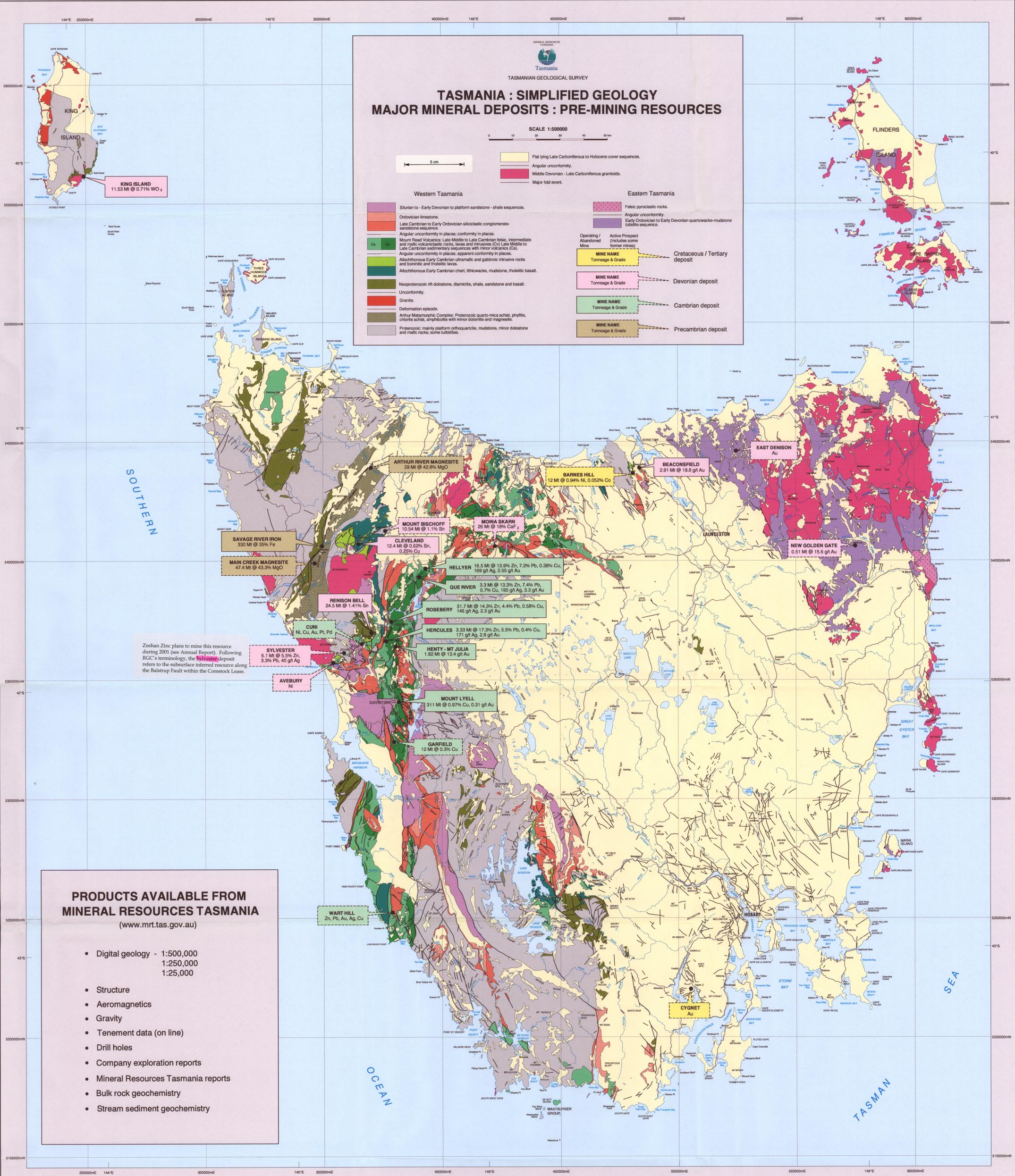
Boron Magnesium Process Flowsheet



Appendix 12

Major Mineral Deposits of Tasmania

Map - Mineral Resources Tasmania



MINERAL RESOURCES TASMANIA
TASMANIAN GEOLOGICAL SURVEY

TASMANIA : SIMPLIFIED GEOLOGY

MAJOR MINERAL DEPOSITS : PRE-MINING RESOURCES

SCALE 1:500000

0 10 20 30 40 50 km

5 cm

<p>Western Tasmania</p> <ul style="list-style-type: none"> Silurian - Early Devonian to platform sandstone - shale sequences. Ordovician limestone. Late Cambrian to Early Ordovician siliciclastic conglomerate-sandstone sequence. Angular unconformity in places; conformity in places. Mount Read Volcanics: Late Middle to Late Cambrian felsic, intermediate and mafic volcanoclastic rocks, lavas and intrusives (Cv) Late Middle to Late Cambrian sedimentary sequences with minor volcanics (Ca). Angular unconformity in places; apparent conformity in places. Allochthonous Early Cambrian ultramafic and gabbroic intrusive rocks and boninitic and tholeiitic lavas. Allochthonous Early Cambrian chert, lithicwacke, mudstone, tholeiitic basalt. Neoproterozoic rift dolomite, diamictite, shale, sandstone and basalt. Unconformity. Granite. Deformation episode. Arthur Metamorphic Complex: Proterozoic quartz-mica schist, phyllite, chlorite schist, amphibolite with minor dolomite and magnesite. Proterozoic: mainly platform orthoquartzite, mudstone, minor dolomite and mafic rocks; some turbidites. 	<p>Eastern Tasmania</p> <ul style="list-style-type: none"> Felsic pyroclastic rocks. Angular unconformity. Early Ordovician to Early Devonian quartzwacke-mudstone turbidite sequence. <p>Mineral Deposits Legend:</p> <ul style="list-style-type: none"> Operating / Abandoned Mine Active Prospect (includes some former mines) Cretaceous / Tertiary deposit Devonian deposit Cambrian deposit Precambrian deposit
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SOUTHERN OCEAN

SEA

TASMANIAN

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- Tenement data (on line)
- Drill holes
- Company exploration reports
- Mineral Resources Tasmania reports
- Bulk rock geochemistry
- Stream sediment geochemistry

Zeehan Zinc plans to mine this resource during 2001 (see Annual Report). Following RGC's terminology, the Sylvester deposit refers to the subsurface inferred resource along the Balstrup Fault within the Comstock Lease.

Appendix 13

Overview of Comstock Mine Operations

CD-Video produced by Zeehan Zinc Pty Ltd, 2001