

EPOCH MINING N.L.

A REVIEW OF GEOLOGICAL AND PILOT PLANT INVESTIGATIONS  
M.L.S 20M/74, 32M/81, 64M/85; MATHINNA, N.E. TASMANIA.

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89-2933

MINES	
File Ref.	20M/74, 32M/81, 64M/85
	29 MAR 1989
Doc. Ref.	
Action Officer	Initials
LETTER	
22. 3. 89	
REFERS	
Responsible	Date

20M/74, 32M/81, 64M/85

89-2933R

AMG REFERENCE POINTS ADDED

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March 1989.

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M.L.s 20M/74, 32M/81, 64M/85; Mathinna, N.E. Tasmania.

Introduction.

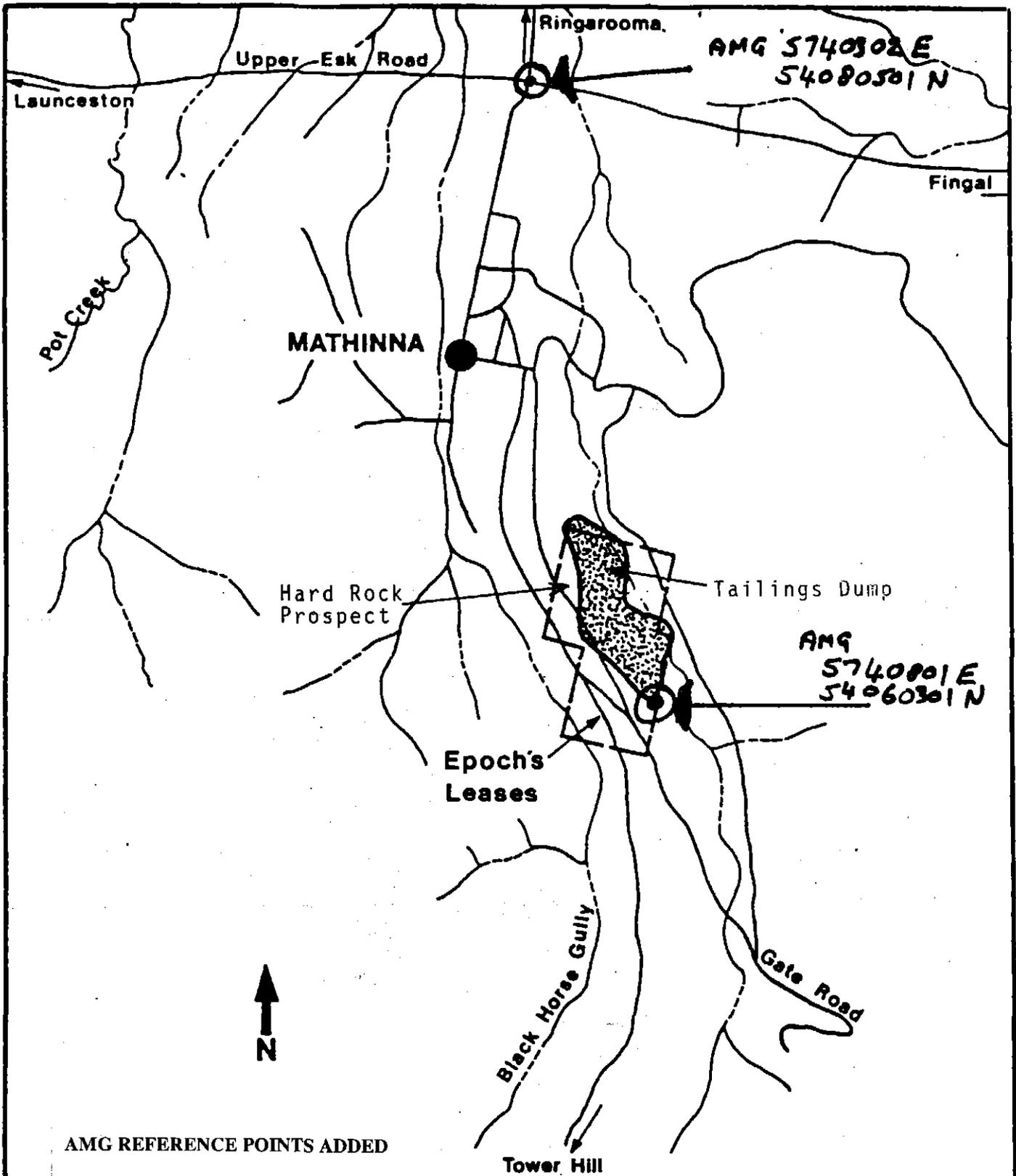
Testing of the gold prospects covered by the three Mineral Leases (Fig. 1) has been conducted by Epoch Mining N.L. since a report on the prospectivity of the area was commissioned by the Company in May 1984, and is continuing at present. The three leases were acquired to enable the Company to determine the feasibility of mining two targets; first the body of tailings sand in Long Gully and secondly the quartz veins and country rock around the old Golden Gate and Tasmanian Consols underground mines. The first target requires cyanide leaching of mainly unconsolidated sands and the second target under evaluation involves an open cut hard rock mining operation.

To date substantial works have been carried out on both targets and this work is summarised below. The current status of the programme is that the tailings are considered to be a sub-economic leaching proposition on their own at current gold prices, with a break even point at approximately \$Aus 600.00 per ounce. The economics could be improved if sufficient hard rock reserves were proven to justify the establishment of a carbon in pulp plant which would treat both crushed rock from the open cut mine and the tailings in Long Gully. A second round of drilling will be conducted on the hard rock target in March-April 1989.

Leaching Trials.

Between January and June 1986 E.L. Bateman Pty. Ltd. of Perth carried out gravity separation and leaching tests on bulk samples of tailings sent to their Perth laboratories. They reported the following conclusions.

1. No significant recovery of gold could be achieved using gravity separation methods alone.



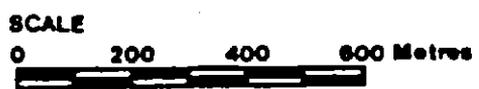
AMG REFERENCE POINTS ADDED

**LEGEND**

-  Boundary of leases
-  Tailings Dump

**MATHINNA, TAS.**

Fig. 1



5 cm

2. Recovery by cyanide leaching was significantly improved at higher pH (pH 11.5 compared to pH 10.5).

3. Column leaching produced more time and cost effective results than agitated leaching, implying that a vat or dam leaching operation was more likely to be viable than C.I.P.

On the basis of the above results the Company prepared a report to accompany an application for an environmental licence in April 1986. This application was to be subject to a successful pilot plant study. The proposed operation involved three plastic lined earthen dams of 50 square metres treating 90,000 tonnes of tailings per year to produce 2,300 ounces of gold per year. This represents a recovery of 60% with a head grade ranging from 1.2 to 1.8 g/tonne. Gold recovery would be by; cyanide leaching - absorption to carbon - electro stripping of carbon to steel wool - acid digestion - sludge smelting. The operation would have a probable three year life.

The pilot plant study was operated on site at Mathinna between January and April 1987.

Two trials were run by Murdoch Geosciences, Maroochydore, Queensland. The first trial ran for 60 days and showed that 97% of the recoverable gold was obtained after 28 days, after which time some gold moved from the carbon back into the leaching solution. A grade of 0.8 g/tonne was achieved, which was 0.1 g/tonne less than laboratory trials conducted previously. The study was stepped up in February 1987 with a 340 tonne batch of tailings treated in a plastic lined earthen dam as per the prognosis. The ore had a head grade of 1.65 g/tonne but assays on the carbon showed only 0.37 g/tonne had been absorbed. The grade of the dam residue was 1.2 g/tonne. When these data were compared with laboratory bottle roll work on ground and unground sands the following gold recoveries were concluded.

C.I.P. with grinding            62%

C.I.P. no grinding            50%

Vat leach            30%

During this period Orway Mineral Consultants, Alfred Cove, W.A., prepared a financial analysis comparing fixed versus reusable vats, assuming a head grade of 1.45 g/tonne and a recovered grade of 0.8 g/tonne. They concluded that reusable vats were clearly more economical and that a reasonably sound project was likely at a gold price of \$Aus 600.00 per ounce.

The recoveries actually achieved during the field trial were lower than those assumed by Orway and the conclusion reached by the company was that at \$600.00 per ounce the project would at best break even. A decision was made to try to boost the economics and total reserves by evaluating the adjacent hard rock resource with the view to establishing a small open cut mine.

#### Drilling.

Eleven percussion drill holes, designed to test the quartz stringers and metasedimentary country rocks around the old underground workings were drilled by H. Stacpoole of Launceston in mid 1987. Composite 2 metre samples were assayed by the Department of Mines, Launceston, with checks sent to Analabs, Burnie. The drill hole locations are shown on the enclosed map. (Fig. 2)

A review of aspects of the geology relevant to the current project and a compilation of the lithological and assay data logs from the 1987 drilling were undertaken by K. Morrison in January 1989.

Analysis of the 1987 drilling results produced two main conclusions.

1) Narrow zones of reasonably rich gold mineralization (3-14 ppm) were intersected by three holes (MPH5, MPH6, MPH9). Correlation of these zones permits either a folded, steeply dipping reef or several en echelon, fault bounded reef fragments.

2) Extensive low grade but significant (0.2-0.5 ppm)

mineralization was encountered in several holes. Given the attitude of the holes relative to both the major quartz reefs and stringers parallel to primary cleavage, the grade distribution encountered suggests three possibilities.

- a) A halo of low grade mineralization in the country rock hosting the quartz veins.
- b) Sample mixing and contamination in the hole, causing the smearing and dilution of narrow high grade sections over much wider intervals.
- c) Inadequate spectrometer discrimination in the laboratory. Most of the drill samples were assayed with a level of detection of 0.1 ppm.

A further drilling programme has been designed to answer the questions raised by the above conclusions. Approximately six 50 metre reverse circulation holes will be drilled in March-April 1989, providing the March 13 Warden's Court decision is in Epoch's favour. Mr. G. Phillips of Ark No. 2 Pty. Ltd., Wynyard, has been contracted to do this work. The drill sites have been selected (see Fig. 2) to test the correlation and extension of the high grade zone and to test the N.W. corner of the prospect, an area not well covered by the previous drilling. The use of reverse circulation rather than down hole hammer drilling will reduce in-hole contamination. Drill cuttings will be collected and sampled at one metre intervals and cross sectional spear samples will be sent to the laboratory from each one metre parent sample. Samples will be assayed by Fire Assay (50 grm. charge) - AAS, using a 0.008 ppm level of detection.

This work should be completed by the end of June 1989 and a report on the results will be submitted as a quarterly report to the Department of Mines.

#### Mapping and Surveying.

A map of the old workings, roads and fences, outcrop geology and 1987 drill hole locations was produced from a tape and

compass survey. A copy of the map was enclosed in a previous report (7/2/1989). This work has been adequate for the analysis and interpretation of the 1987 drilling but because of the ambiguous nature of some of the drill results and the small area involved, a more accurate, surveyed map was considered necessary for the detailed siting of the next set of drill holes and the evaluation work to follow. Cohen and Associates Pty. Ltd. of Launceston have subsequently surveyed the area and produced a map at 1:500 scale (Fig. 2).

A base line grid, trending 330-150 Magnetic (approximately parallel to primary cleavage) has been pegged through the central part of the prospect and the lease boundaries in the N.W. part of 32M/81 have also been pegged. These features are also shown on Fig. 2.

Care and Maintenance, Ongoing Prospecting.

Since November 14 1988 Mr. S. Cross of Mathinna has been on full-time employment, carrying out a range of field jobs in the areas of maintaining and servicing the Company's facilities on site and continuing the work of locating survey pegs, and sampling outcrop, mullock heaps and tailings sands. A set of tailings auger samples has been sent to Canbelego, N.S.W., for metallurgical testing and further tests will be conducted in an attempt to improve the economics of the Long Gully prospect.

The leaching dams and the safety fences around the old workings need continuous monitoring, as does the equipment stored in the shed on site. Since January 1989 Mr. Cross has also been working as a field assistant with contract geologist Mr. K. Morrison and contract surveyor Mr. C. Cohen.

Conclusions.

The above outline of recent and current work shows that Epoch is continuing the assessment of the open cut potential at the Golden Gate hard rock prospect. This follows the pilot plant leaching trials conducted on the tailings sands in Long Gully during 1986-87.

The cost of care and maintenance, pre-drill geology, surveying and tailings metallurgy since November 15, 1988 is approximately \$25,000.00. Estimated cost of the 1989 drilling, assaying and geology is approximately \$20,000.00.

If the results of this drilling are positive, a programme of surface bulk sampling and detailed trench mapping is recommended.

