GLADSTONE TIN

Appraisal of Mining Options

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Overview

The various attempts to exploit the tin deposits of N.E.Tasmania that have been made in the fifty years since the closure of the Brieses Mine at Derby have been largely unsuccessful.
There are several reasons for this:
The shallower deposits have essentially been worked piecemeal by individuals or small private companies with inadequate funding, poor analysis of available data and have been mainly dependant on a buoyant tin price.
Larger companies like VDM have failed to adequately research available data, target drilling programs to substantiate values in prospective areas of the lease, and block model the resources to be worked. All of these steps need to be undertaken prior to determining the mining and treatment options. Finally a full economic analysis for the mine life must be completed for a range of tin prices to enable sensible decisions on the mining methodology and timing for any future operations.

Scope of Works

In my view the first step should be to undertake a full re-appraisal of the geological information currently available, not only on the Scotia deposit but also on the other leases owned by VDM. In this way short term cash flow options can be considered and/or discounted as well as the longer term options presented by the deeper deposits.
I am informed that this step is currently in hand.

Following the geological re-appraisal a meeting should be convened between those persons responsible for the geological input and those responsible for the mining and the financial control. The purpose would be to discuss the findings of the geological report and determine how best to model and schedule exploitation of the resources. It will be necessary to allocate funding for the modeling which would necessarily require a close working relationship between the geological and mining interests.

Once the resource has been modeled the parties should again convene to discuss the findings of the block modeling exercise, target areas for additional drilling as necessary and put together a realistic scenario for mining the resource. Again the issue of funding will need to be addressed as drilling and analysis is both expensive and time consuming. Once results are to hand the location of the most prospective areas will be clear and planning can proceed for the infrastructure.

The next step will be to detail the mining and treatment methodology, and to prepare an economic analysis incorporating both mining and treatment costs and revenue streams for a range of tin prices. This will enable the preparation of a budget and enable rational decisions to be made on future activity.

SCOTIA DEPOSIT

Trial Mine Area

In Y2008 VDM undertook a limited infill drilling program immediately to the north east of the area last worked in Y1908. This area has already been stripped to RL40m and was intended to comprise the **Trial Mine Area** for the commissioning of the plant and to assess plant and mining recoveries.
The Trial Mine Area contains an estimated 116500m3 of wash at a grade of 542 grm/m3 and cassiterite production is estimated at 61 tonnes. It should be possible with the correct equipment to recover this resource fairly quickly and easily without much further development work. This step will provide valuable information on recovery factors.

North Extension

The Northern Extension refers to the area of the deposit immediately to the North of the Trial Mining Area
Section 5 467 100N is a very low grade section. Section 5 467 200N presents a very narrow valley (38m wide at the mine floor). Wash volumes are low and the strip ratio increases to 3: 1. The North Extension will require the removal of an estimated 350,000m3 of overburden and contains an estimated wash volume of 164,000m3 at a grade of 408 grms/m3. Mining of the North Extension would be uneconomic at current tin process.

Estimated cost of earthmoving removal is $3.00m3.
Estimated cost of mining and treatment is ($2.50 + $1.10) = $3.60.
The strip ratio in the North Extension is 3 : 1, and this increases to 5 : 1 further again to the north. Cost of mining in the North Extension will be ($3.00 x 3) + $3.60 = $12.60. This will increase to ($3.00 x 5) + $3.60 = $18.60 further to the north. These costs do not include reclamation, administration, smelting and other overheads, neither do they include any provision for gold and/or sapphire sales.

No detailed work has been undertaken on the areas beyond the recent VDM drilling,.that is beyond Section 5 467 200 N. There may be areas where the value and volume of the wash will support a large scale earthmoving program but this will not be evident without the evaluation under discussion.

THE MAJOR ISSUES

The strip ratio increases from 3:1 to 5:1 or more as the deposit tracks to the north and whilst on the drill data available the grades appear to increase to the north there is insufficient data on which to provide a definitive economic analysis.
It may be argued that alluvial deposits are difficult to assess due to the braided nature of the deposition, however use of appropriate software can provide a degree of certainty which increases as the spacing between drill lines decreases.
It is absolutely essential that the strip ratio and the grade of wash are accurately defined before any decisions are taken on the mining methodology and the viability of future operations.
It is also certain that because of the narrow cross section of the deposit, the high strip ratio, and the low volume of wash that any mining program will involve a large earthmoving exercise and that the progress across country will be very rapid if consistent tin recoveries are to be

maintained. This will in all likelihood mean a revision to the mining and reclamation plan in order that the government authorities understand the ramifications of the program and do not impede development through restrictive conditions on the lease documents.
Furthermore and because of the Tasmanian weather patterns earthmoving programs will have to be structured to move the bulk of the overburden during the summer months. This in turn will mean that cash flows will involve large up front expenses for earthmoving contracts and the operator must have the resources to enable this to happen.

Because of the narrow nature of the resource and the high strip ratio it follows that there will be economic pressure to keep the amount of overburden removal to a minimum. It will be absolutely essential to address the issue of stable work faces as part of the exercise in determining strip ratios. This will mean the recruitment of specialist engineering services to provide advice as to the correct batters for the mine walls. Batter slopes may vary according to the nature of the ground conditions prevailing for an area.

Much has been made in previous documentation of the possibility of gold and semi precious gemstones reporting with the cassiterite. In the absence of any geological data to support these contentions it would be unwise to speculate on the possible revenue streams from these sources

Summary

The predicament in which VDM found itself in Y2008 was due to a failure to:

- Fully understand the geology of the resource, including the potential or otherwise for the production of associated gold and gemstones.
- Undertake an early program of infill drilling before targeting work areas
- Use appropriate planning techniques as a tool for selecting mine areas and mining methodology
- Select appropriate mining and metallurgical equipment
- Undertake a full evaluation of the economics for a range of tin prices.

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