Gladstone Tin Pty Ltd

Sampling program on remnant perched alluvial gravels on the Scotia ML

Report on program of mining and processing

January – February 2010

(including addendum with analytical results from BRL)

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Introduction

A sampling program has been undertaken to investigate the ancestral Ringarooma River alluvial perched terrace gravels within the Scotia mining lease. The main application of this work is to evaluate the potential for accessory gold and gemstones to be targeted as additional commodity and revenue streams, over the regional scale of the Ringarooma Valley tin province in northeast Tasmania. It has also facilitated a comparison of a placer deposit style in the Gladstone area with the Scotia deep lead style of tin mineralisation, in respect of ore mineralogy and mining characteristics.

The sampling program has been limited to a total of approximately 200 tonnes of material mined and processed through a portable tin sample processing module on site at Scotia. The samples have been derived from four sites accessed via the existing infrastructure at Scotia, limited by the exposure to the Ringarooma terrace gravels as they reside within the ML boundaries.

The tests comprised four discreet sample sets from areas where the Ringarooma gravels were exposed as remnants from early alluvial mining. The first sample of 50 tonnes was taken from an area adjacent to the main dam wall and the access road to the Ringarooma River. The second sample was of 30 tonnes and was retrieved from a site southeast of the first sample area. The third sample of 50 tonnes was retrieved from an area adjacent to sample site No1. The fourth sample of 60 tonnes was taken from the most northerly point along the same bank as samples No 1 and 3 (see the map of the area of interest as Figure 1 below).

A small sampling scale gravity test plant was utilised for the recovery phase of the project. This test plant has a range of shortcomings, such as a limited recovery capacity and no scrubbing capacity for breaking down clay components within the gravel wash. In order to understand the relevance of these shortcomings, a range of tests was undertaken during the processing element of this project to demonstrate the significance of good autogenous scrubbing design, viz a significant increase in heavy mineral recovery.

Sample Mining

A 5 tonne Kubota excavator was dry hired and used in conjunction with the company Isuzu tipping body truck and the CAT 14G IT loader. Some test pits were dug to ascertain the depth, continuity and extent of gravels. Information was then provided to enable the excavation of samples as follows;

- 1 x fifty tonne sample
- 1 x thirty tonne sample
- 1 x fifty tonne sample
- 1 x sixty tonne sample

The mining process included a topsoil component removal averaging 150mm in depth and this was taken to the side of excavations. The basement was identified with a distinct colour change to orange coloured clay and the absence of rounded pebbles in the wash. The four sites after sample mining are shown on Figures 2-5.

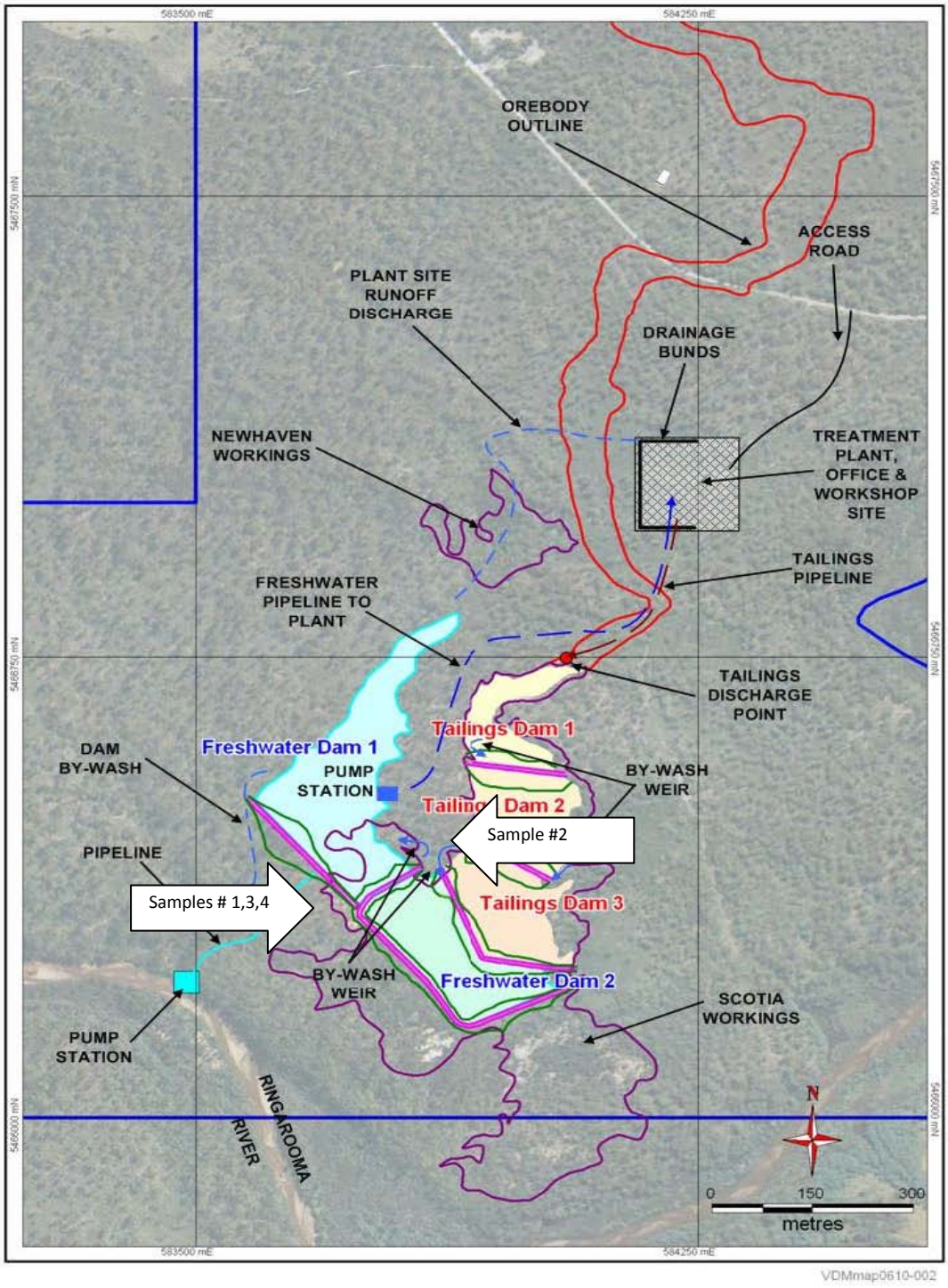


Figure 1 – Map of area

Figure 2 – Sample site No 1

Figure 3 – Sample site No 2

Figure 4 – Sample site No 3

Figure 5 – Sample site No 4

Jig Plant Processing

A 1m^3 per hour mobile alluvial sampling plant was utilised for the work. The unit comprises a small wash box, rotating trommel screen and a 300 x 300 mm 2 cell mineral jig. The jig is set conservatively so that a mass pull to concentrates is in the region of 20% as opposed to a more conventional 10%. This provides a greater recovery of heavy mineral with an attendant increase in host gangue material reporting to concentrates. The plant is shown below on Figure 6.

Given the clay content in some of the surface gravels processed, the losses to the oversize fraction was high due to the lack of scrubbing capacity. This refers to the ability of the machinery to break down the clays so that minerals can be liberated and recovered. In the first sample taken, the recovery of mineral was relatively low. The second sample from opposite the main area of work had no clay and was much easier to process. The third sample from the area closest to the Ringarooma River was processed and then the oversize was reprocessed, providing an additional 2kg greater mineral recovery. On the fourth and final sample the trommel oversize was reprocessed twice and the first reprocessing provided an additional 2 kg mineral recovery. The second time reprocessing yielded an additional 1 kg of heavy mineral.

Frequent pan samples taken during the jig plant processing consistently showed from all four sampling locations a heavy mineral suite comprising; multi coloured cassiterite (locally called ruby tin), abundant coarse black spinel and finer ilmenite, minor but consistent gold and occasional topaz, sapphire and zircon stones up to approximately 1 mm in size. Although very small, several of the gemstones appeared to be of good clarity and colour under the hand lens. The cassiterite grain size appeared slightly coarser than that obtained from the Scotia deep lead and probably averages>300 microns. No sulphides or significant concentration of monazite were observed.

Figure 6 – Test Plant and excavator

Concentrate Dressing

The jig concentrates were sent to the tin processing shed in Gladstone and tabled for recovery of concentrates. The bins were processed twice so that a reasonably high rate of recovery of heavy mineral was caught.

In a conventional gravity process plant, the tin concentrates cut would be made as clean as possible so that a reasonably high grade middlings would be returned to the circuit, providing a closed loop and maintaining a high grade tin recovery off the table. Because we aimed in this exercise to get all the tin from the sample material submitted to the table, the grade of recovered tin as a concentrate is relatively low, bringing with it all the other heavy minerals in the Ringarooma gravels mineral suite.

This is in evidence when viewing the photograph below of the concentrates on the table (Figure 7). In operational mode, a table operator will take a cut well to the right of the dark line to the left of the crimson cassiterite line. This was also be demonstrated by the low assay grade of the samples sent to Burnie Research Labs, confirming the need to complete the concentrate dressing phase of processing in a properly set up metallurgical facility. Table concentrates from Gladstone were also sent to Burnie Research Labs for final dressing at Burnie.

Figure 7 – Concentrates on table

17.1 kg of rough table concentrate combined from the four sample sites and therefore representing approximately 200 tonnes (100bcm) of gravel, was sent to Burnie and assayed with a head grade of 49% Sn. Assuming all the tin was recovered by the portable jig plant (which as discussed is unlikely), the grade of the test material was 120 g 70% Sn concentrate per bcm. This is equivalent to the minimum drill intercept of 119 g/bcm achieved by the 2008 drilling in the basal wash zone of the Scotia deep lead but when the differences in stripping ratios and mining costs between the deep lead and the terrace gravels are considered, the terrace gravels appear to be a more attractive exploration target. The relatively low concentrate head grade put a limit on what BRL could achieve, but with a combination of gravity and magnetic separation they produced 7.5kg of 66.3% Sn concentrate, which also contained 17ppm gold. At the current gold price a tonne of tin concentrate contains about $Aus 690 worth of gold, if the single assay is representative. No significant sulphide (pyrite) or monazite was recorded. The test results are tabulated below.

Burnie RESEARCH LABORATORY

GRAVITY SEPARATIONS

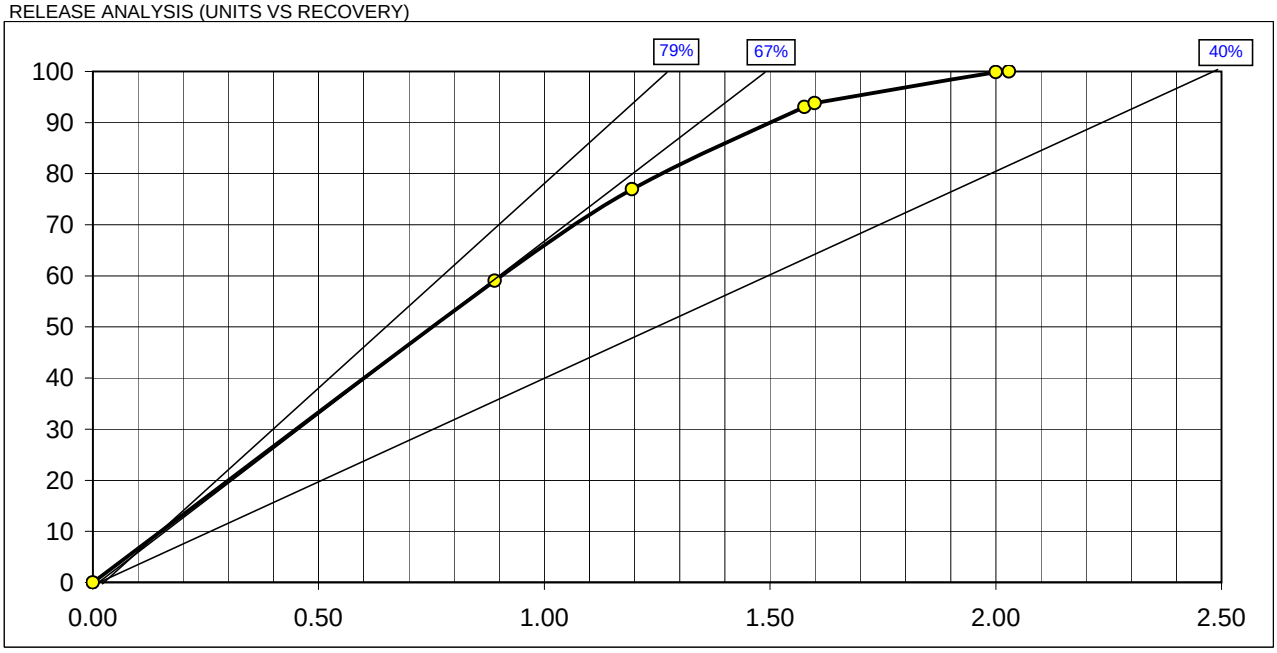
SAMPLE	tin concentrate
METHOD	stage separations to upgrade
NOTES	products arranged in order of tin grade

PROJECT	T0000
TEST NO	2
DATE	9/03/2010
TECHNICIAL	ID

PRODUCT			TIN	
PRODUCT	WT (gm)	WT (%)	Sn(%)	DIST (%)
GT4 Final Conc	7509.5	43.85	66.34	59.0
Mozley Mids 1	2569.2	15.00	58.82	17.9
Mozley Mids 2	3225.7	18.84	42.11	16.1
Mags 2	188.1	1.10	33.72	0.8
Mozley Tail	3383.2	19.76	15.08	6.0
Mags 1	248.7	1.45	5.26	0.2
CALC	17124.4	100.00	49.27	100.0

Wt (%)	WT (%)	Sn (%)	DIST (%)	CUM DIST	UNITS	CUM UNITS
GT4 Final Conc	43.85	66.34	59.0	59.0	0.89	0.9
Mozley Mids 1	15.00	58.82	17.9	76.9	0.30	1.2
Mozley Mids 2	18.84	42.11	16.1	93.0	0.38	1.6
Mags 2	1.10	33.72	0.8	93.8	0.02	1.6
Mozley Tail	19.76	15.08	6.0	99.8	0.40	2.0
Mags 1	1.45	5.26	0.2	100.0	0.03	2.0
	100.0	49.27	100.0			

RELEASE ANALYSIS (UNITS VS RECOVERY)



Date Submitted	5/03/10
Submitted By	ID
No of Samples	1
Type	Solids
Priority	8/03/10
Assays Completed	
Invioice Completed	

Burnie RESEARCH LABORATORY
INTERNAL SAMPLE DISPATCH SHEET

Dispatch		Analysis Results								
Sample Description	Number	Pulv y/n	Sn % Fusion	Au ppm Fire						
GT 4 Final Con	**000813**	y	66.34	17.0						

Results and Conclusions

The bulk sampling exercise demonstrated that the remnants of near surface Ringarooma River terrace gravels on the Scotia mine lease carry significant tin and consistent accessory gold mineralisation. Occasional very small topaz, sapphire and zircon stones were recovered as jig screen oversize. In comparison to the deep lead placer geology these terrace gravels have some important mining and processing advantages. They sit above the water table and have minimal overburden stripping ratios, generally have a lower clay content and due to their near surface exposure to oxygenated ground water percolation, have no authegenic pyrite in the mineral suite. There is nothing special about the remnant occurrences of this deposit style at Scotia. It is typical of a potentially substantial but fragmented resource of this material at several locations along the Ringarooma Valley, upstream and down stream from Gladstone but within a maximum of about 25 km road distance from the Scotia site.

The occurrence of sub economic sapphire and zircon in the test samples demonstrates that gemstones have fed into the ancestral Ringarooma River via tributary streams on basalt country at elevated topography on Blue Tier and therefore exploration specifically targeting sapphire should initially focus on that area. Exploration designed specifically for sapphires on Blue Tier and for placer tin-gold in the Ringarooma River terrace gravels requires a different and less expensive approach to the gridded drilling patterns required to define deep lead resources. A combination of field mapping, manual sampling and excavator bulk sampling, without any drilling, is recommended as the most cost effective way to explore the sapphire and tin-gold potential of the non deep lead sediments in NE Tasmania.