

Tin : Good grades, good widths, good geography, and shallow

Recommendation

Speculative BUY

Price

3.5c

Commodity

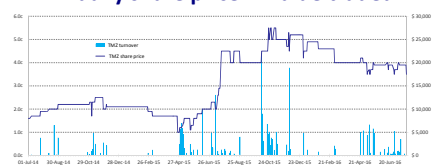
Tin

- **TMZ announced the acquisition of the area surrounding the Ardlethan tin mine in April 2015, near Wagga Wagga.**
- **Ardlethan has produced over 31kt of contained tin, the highest of any mainland Australia tin mine.**
- **TMZ has executed 3 drill campaigns, totalling 23 holes for 2,586m. This has uncovered some very significant tin intercepts, including 35m at 2.1% from 44m.**
- **TMZ has an Exploration Target of 0.9 to 1.4Mt grading 0.8% to 1.4% Sn. The structure is open along strike and down-dip. The next drill campaign is to lead to a JORC Resource, with a feasibility study to follow.**

Snapshot

Market Cap	\$3.1m
Cash on hand (31 March 2016)	\$178k
Options near money : 6.15m, at 5.0c, Dec 2017	
1.5m at 6.0c, Nov 2018	
Shares on Issue	95.3m
52 Week High	6.0c
52 Week Low	2.8c
1 month / 6 month VWAP	3.7c / 3.8c

TMZ : daily share price v. value traded



TMZ listed in December 2010, as an explorer focussed on the Thomson Fold Belt in NSW.

TMZ announced the acquisition of the Ardlethan tenements, for scrip, in April 2015. Ardlethan is the most prolific tin producing region in mainland Australian, producing over 31,500t of tin from 1912 to 1986, the last 25 years of which by Aberfoyle (ABF.ASX).

TMZ has reported many significant, shallow intercepts with good tin grades since it began drilling.

The drilling supports TMZ's geological model, with high grade tin mineralisation in greisens on the contact with a granite intrusive.

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TMZ : Focus on Ardlethan, NSW

All of TMZ's operations are in NSW, where it manages 932km² in tenement area, covering 11 projects, across tin, tin-tungsten, copper, gold, copper-gold and lead-zinc.

TMZ acquired its Bygoo project tin project in April 2015, comprising an area surrounding the Ardlethan mine and a further area, at Bygoo North, 7km to the north.

It has been estimated that over 31kt of tin has been produced from these tenements, making it the largest tin mine on the Australian mainland.

Geology

TMZ has now conducted 3 drill campaigns, covering 23 holes for about 2,586m in drilling. This has determined that tin mineralisation is located on the contact with the Ardlethan granite, with 3 identified greisens.

TMZ has reported much higher tin grades than those mined at the Ardlethan mine. This may be because the mine is about 400m off the granite contact and exploited brecciated pipes.

From the work done to date, TMZ is able to determine an Exploration Target of 0.9Mt to 1.4Mt, grading 0.8% to 1.4% tin.

Interpretation

The intercepts reported by TMZ are

- Significant in width; up to 35m, while many tin mines have narrow veins;
- High grades, with most tin mines being less than 1.0%; and
- Shallow.

More work needs to be done to increase the volume, and there are very good prospects to do this.

Beer & Co conclusions

TMZ has many, good tin prospect. Beer & Co is very positive on prospective tin prices.

Beer & Co rates TMZ as a Speculative BUY.

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Thomson Resources

Introduction

Figure 1 shows that TMZ has 9 projects, all in NSW, of which

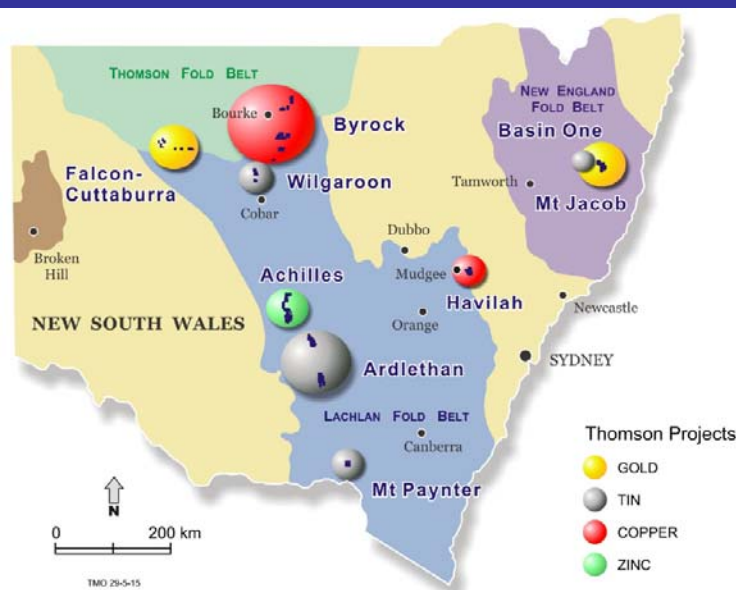
- Byrock, or Wilga Downs, in the Thomson Fold Belt, and Havilah, in the Lachlan Fold Belt, are VMS style copper deposits;
- Mt Jacob in the New England Fold Belt and Cuttaburra in the Lachlan Fold Belt are intrusive related gold deposits;
- Achilles, in the Lachlan Fold Belt, is a lead-zinc deposit, which is being farmed out.

Figure 1 : TMZ's projects, all in NSW

TMZ has 9 projects areas all in NSW

Prospective for

- Gold
- Copper
- Zinc; and
- Tin



Source : TMZ Presentation, November 2015

Figure 1 also shows that most of TMZ's projects are related to tin :

- As shown in Figure 2, TMZ has 5 projects of which 4 are in the Wagga Tin Belt :
 - (i) Bygoo, which surrounds the Ardlethan tin mine;
 - (ii) Bygoo North, 7km north of Bygoo, which
 - (iii) Wilgaroon, which is defined geologically as analogous to Ardlethan; and
 - (iv) Mt Paynter, which is a tin-tungsten prospect, which has a small JORC 2004 Resource of 245kt grading 0.45% W and 0.27% Sn; and.
- Basin One is a tin project in the New England Fold Belt

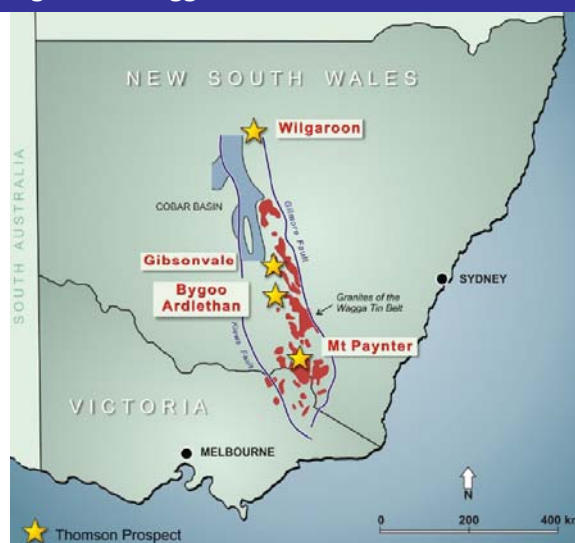
Figure 2 shows the Wagga Tin Belt, which contains 4 of TMZ's 8 projects.

In addition to those marked, TMZ has other tin projects :

- Gibsonvale, in the Wagga Tin Belt, as shown in Figure 2, which is an alluvial tin prospect; and
- Thomson, at Cuttaburra, in the Thomson Fold Belt which intersected up to 0.8% tin and 0.66% tungsten in a large intrusion related hydrothermal system.

TMZ has 4 different project areas in the Wagga Tin Belt

Figure 2 : Wagga Tin Belt



Source : TMZ Presentation, May 2016

Tin : a good commodity to explore for

TMZ is focussed on tin

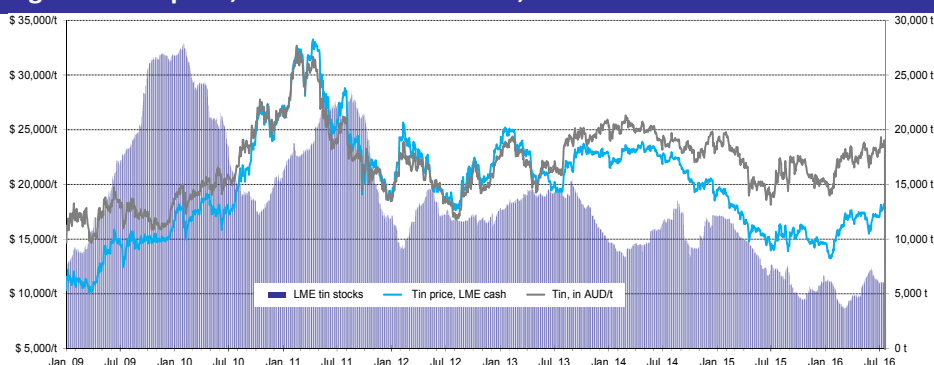
TMZ has geared its exploration towards tin. Beer & Co notes that the tin has been moving positively, and also note that the fundamentals for tin are very positive.

In Beer & Co's view, tin is a good focus

Figure 3 shows that the tin price has been rising through most of 2016, after its fall from late in 2015.

Figure 3 also shows that, in AUD terms, the current price is reasonable, and it also shows that LME stocks are trending down.

Figure 3 : Tin price, in USD and AUD terms, v. LME tin stocks



Source : IRESS, Beer & Co

Tin prices fell to low levels in by mid 2015, and has since recovered

Figure 3 also shows that previous bullish expectations have been thwarted. The most recent unexpected event was a significant increase in exports of tin concentrate from Myanmar, as shown in Figure 4, which shows much higher exports in 2015 than in previous years, and then a significant spike late in 2015 / early 2016.

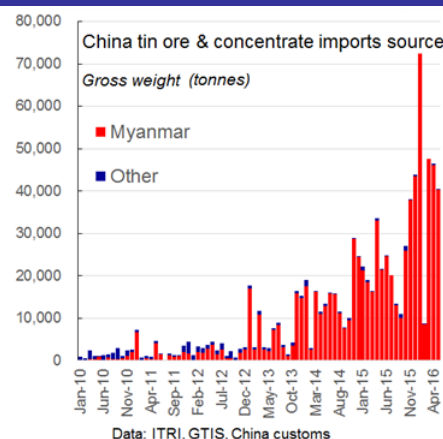
In AUD terms, tin prices have recovered.

Figure 5 shows the global supply – demand balance for refined tin, as estimated by ITRI. It shows a significant surplus in 2009, as indicated by the significant rise in LME stocks during 2009 shown in Figure 3.

ITRI estimates that this surplus increased global inventories to nearly 11 weeks of demand.

There was an unexpected surge in tin supply from Myanmar from mid 2015

ITRI estimates 2015 was in deficit and 2016 in a larger deficit

Figure 4 : Myanmar exports


Source : ITRI, China Customs

This compares with 4 weeks generally being regarded as the level where supplies begin to be tight.

Figure 5 also shows the damage done to subsequent demand by the significant price spike in 2010, such that while supply was constrained, at least until 2014, the market remained adequately supplied.

Figure 5 shows that ITRI estimates that in 2015 the refined tin market was in deficit, despite the increase in supply from Myanmar.

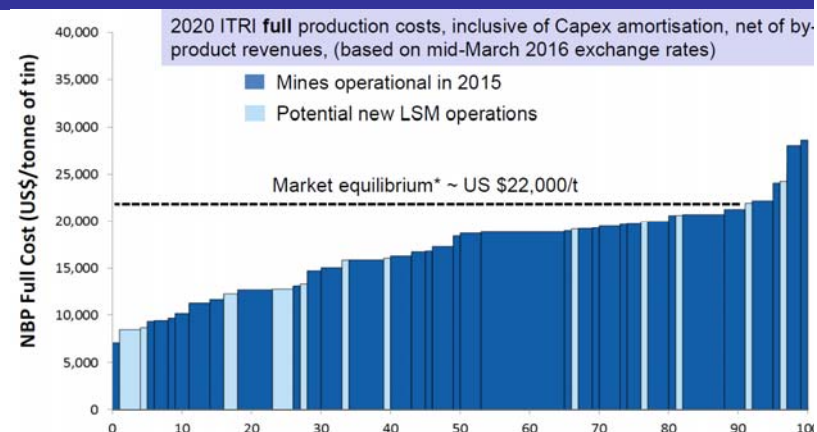
Figure 5 : Expected global refined tin demand – supply balance

World Supply/Demand Balances in Refined Tin									
('000 tonnes)	2008	2009	2010	2011	2012	2013	2014	2015	2016
World									
World Refined Production	339.5	339.7	354.6	354.3	334.7	340.1	369.1	335.0	330.3
DLA Sales	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
World Refined Consumption	350.7	322.3	362.2	359.4	339.4	349.1	358.5	344.0	341.2
Global Market Balance	-7.5	17.4	-7.6	-5.1	-4.7	-9.0	10.6	-9.0	-10.9

Source : ITRI Presentation, May 2016

Figure 6 also shows ITRI's estimated cost curve, showing that a price of US\$22,000 is required for market equilibrium. Note that this is down from about \$25,000 two years ago, with the fall related to lower oil prices and also a stronger USD.

ITRI expect that an equilibrium price is still about 20% higher than current price levels

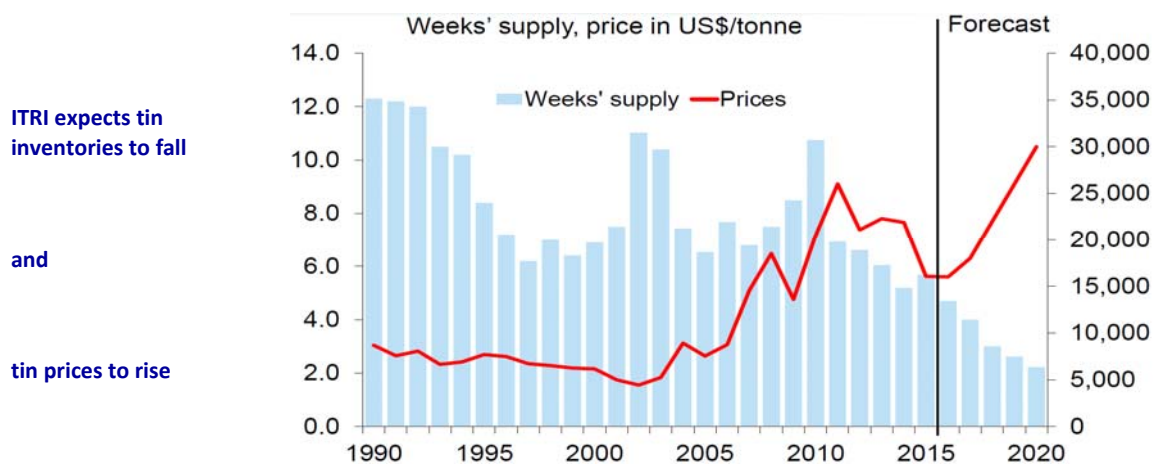
Figure 6 : ITRI's projected global costs


Source : ITRI Presentation, May 2016

At the current AUD-USD rate, US\$ 22,000 is about \$A 29,000, or a premium of about 22% to current prices.

Figure 7 shows that ITRI projects falling inventories to lead to rising tin prices, with falling supply a significant contributor to this.

All this shows why Beer & Co believes that TMZ's focus on tin should be good for investors.

Figure 7 : Historical and projects refined tin inventory and price

Source : ITRI Presentation, May 2016

TMZ's Bygoo project

As shown earlier, TMZ has a number of tin projects. However, TMZ is focussed on its Bygoo project.

As shown in Figure 8, the Bygoo project

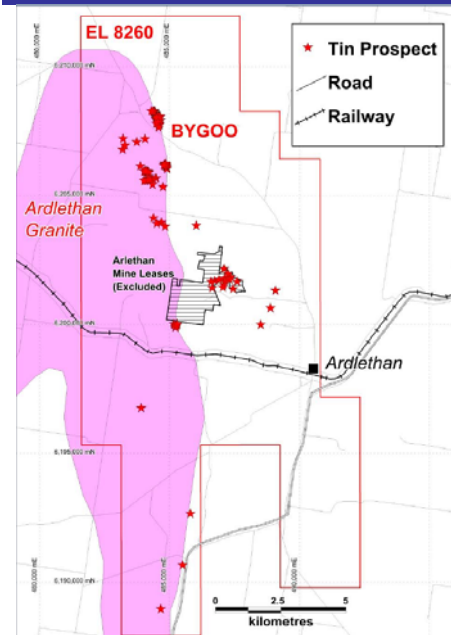
- Is on the boundary of the Ardlethan granite; and
- Has many historical occurrences of tin mining.

Figure 8 also shows :

- There are many occurrences of tin mineralisation around the boundary of the Ardlethan granite;
- TMZ's tenement covers nearly all of the eastern boundary of the Ardlethan granite;
- The Ardlethan Mining Lease is excised from the TMZ tenement area; and
- The historic Ardlethan mine is NOT itself on the boundary of the granite intrusive.

TMZ's Bygoo project surrounds the Mining Lease for the Ardlethan mine and covers the eastern boundary of the Ardlethan granite

There are many reported tin occurrences within TMZ's tenement area

Figure 8 : TMZ's Bygoo project

Source : TMZ Presentation, May 2016

The boundary of a granitic intrusive is often a fertile geological source for economic tin mineralisation.

Tin has been mined from Ardlethan since 1912

Ardlethan Mine

The earliest records of tin being mined at Ardlethan date back to 1912. Tin ore was extracted in most of the years from then to 1960, though it has been estimated that the total quantity of tin extracted over that period was about 5,100t.

Aberfoyle acquired the Mining lease in 1961

The Mining Lease was acquired by Aberfoyle (ABF) in 1961, which embarked on a “modern” mining project, leading to mine production from 1964 to 1986.

And began mining at the rate of 1,000t/day of ore

The mine began as an open cut, treating 1,000t/day of ore. In 1971, the processing rate was increased to 1,500t/day, or about 500kt/yr.

The rate was increased to 1,500t/day in 1971

In 1978, an under-ground operation was developed. Operations ceased in 1986 with the fall in the tin price, following the collapse of the International Tin Council cartel.

Over 23 years, ABF mined 8.9Mt to produce 24,475t of tin

Over the 23 years of mine life, ABF extracted nearly 8.9Mt of ore, grading about 0.47% tin to produce 25,475t of tin in concentrate, at an average recovery of about 61% from the gravity circuit.

Figure 9 shows the boundary between the Mining Lease (ML) and TMZ’s tenement area. It shows that three are reported historical tin occurrences at Godfrey South, Blackreef and Champion with TMZ’s tenement area.

TMZ’s tenement area includes known tin occurrences from the Ardlethan tin mine

Figure 9 : Ardlethan Mining Lease area



Source : TMZ November 2015 AGM presentation

TMZ has not undertaken any work on this tin mineralisation near the Ardlethan ML.

Bygoo

Figure 8 showed a significant number of tin occurrences clustered around Bygoo.

It also showed many tin occurrences on the boundary of the granite intrusive, which is a prospective geological setting for tin.

TMZ has many tin occurrences near Bygoo, about 6km north of the Ardlethan min

Part of the work undertaken by TMZ to date has been to determine the geological setting. Old workings at Bygoo reflect mining from 1912 to 1947 with an estimate of 26,000 tonnes of ore at an average grade of 1.0% tin from a shallow 10m pit and limited underground operations.

From 1912 to 1947, it is estimated that 15,000t of ore, grading 1.0% tin was extracted from an open pit at Bygoo South

Figure 10 shows the remnants of this open pit mining at Bygoo South. TMZ estimated that about 15,000t of ore grading about 1.0% tin was extracted from this pit.

On 21 April 2016, TMZ reported that a single drill hole reported an intercept of 8m grading 1.3% tin from a depth of 57m, which is

- A wide intercept, at 8m;
- At a very good grade of 1.3% Sn; and
- Shallow, at only 57m below surface (and less below the base of the pit).

As it is below an historic open pit mining operation, the drill result suggests that a significant width of high grade mineralisation continues further at depth.

There is good reason to expect that the tin mineralisation continues at depth

Figure 10 : Historic Open Pit mining



Source : TMZ November 2015 AGM presentation

To date, TMZ has drilled 23 holes, over 3 drill campaigns, for about 2,586m in drilling. Significant results from this drilling include :

TMZ has drilled 23 holes over 3 drill campaigns , reporting many significant intercepts

- wide
- near surface; and
- good grades

- 35m at 2.1% Sn, from 44m depth;
- 11m at 2.1% Sn from 75m depth;
- 6m at 0.8% Sn, from 67m depth; plus in the same hole (BNRC013)
 - 6m at 1.7% Sn from 88m depth; and
 - 3m at 1.7% Sn from 97m depth; and
 - 10m at 2.0% Sn from 124m depth
- 4m at 2.4% Sn from 97m depth
- 8m at 1.7% Sn from 57m depth
- 8m at 1.7% Sn from 121m depth;
- 5m at 1.3% Sn, from 130m depth;
- 2m at 1.8% Sn from 113m depth; and
- 18m at 0.8% Sn, from 118m depth.

In addition, of the 23 holes drilled, only one has failed to intersect tin mineralisation.

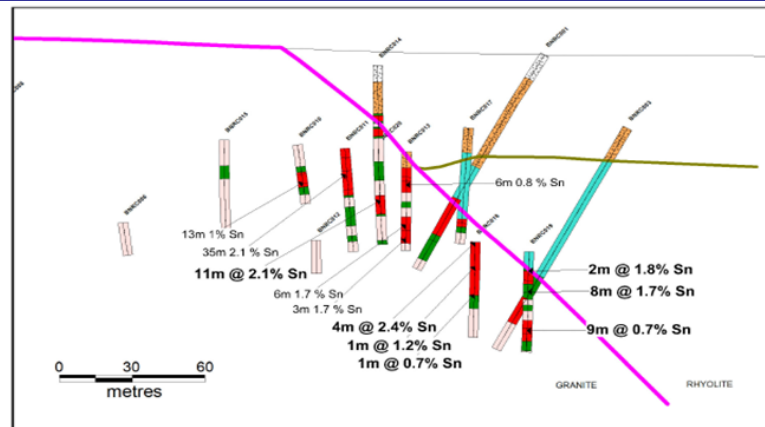
Bygoo - Geological Interpretation

The drill results show a consistent pattern of mineralisation, which is shown in Figure 11, which shows TMZ's interpretation of the drill logs.

It shows that the granite intrusive dips to the east and that the tin mineralisation is on the contact with this intrusive.

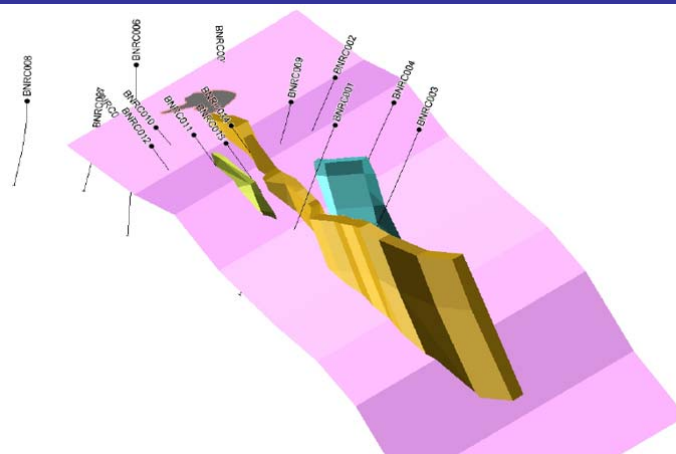
Further, the third reported hole from the drilling at Bygoo North shows intercepts of either four distinct structures, or more likely 3, with a lower grade "core" in the middle structure.

Figure 12 shows TMZ interpretation of the presence of 3 greisens, which are bounded by the Ardlethan granite intrusive.

Figure 11 : Tin mineralisation on contact with Ardlethan granite

Source : TMZ ASX announcement, 21 April 2016

Figure 12 also shows TMZ's drill traces. Note that this model pre-dates the latest round of drilling that has further served to confirm this model.

Figure 12 : TMZ's geological Interpretation

Source : TMZ ASX announcement, 21 October 2015

TMZ has interpreted, from the geological logging, that the high grade tin intercepts are near boundary of the granite intrusive, which dips to the east

TMZ interprets 3 mineralised greisens bounded by the granite intrusive

Bygoo South

Bygoo South was mined historically

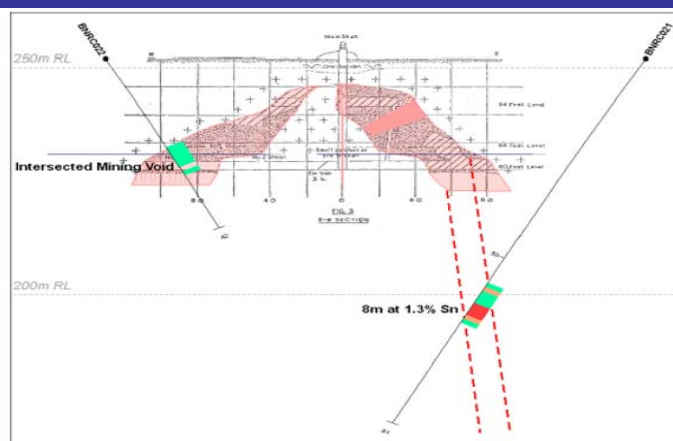
The last 3 drill results reported by TMZ were at Bygoo South, about 150m south of Bygoo North.

As shown in Figure 13, Bygoo South was mined historically as an underground mine that started where the east lode and the west lode initially came together. The original drawing dates from 1939.

Figure 13 shows 2 of the 3 holes that TMZ drilled into Bygoo South

TMZ has drilled 3 holes, one of which intersected previously mined areas, while another was below the mined area, reporting an intercept of 8m at 1.3%

- BNRC022 intersected the level 2 drive, which had been mined, though an intercept of 7m of 0.2% Sn was reported, showing a wide system that, at first pass appears to be sub-economic, though this conclusion is likely to be driven by the ore having been extracted; and
- BNRC021 which intersected 8m at 1.3% Sn below the interpreted extension at depth of the western lode.

Figure 13 : Bygoo South – Historic mine and TMZ drilling

Source : TMZ ASX announcement, 21 April 2016

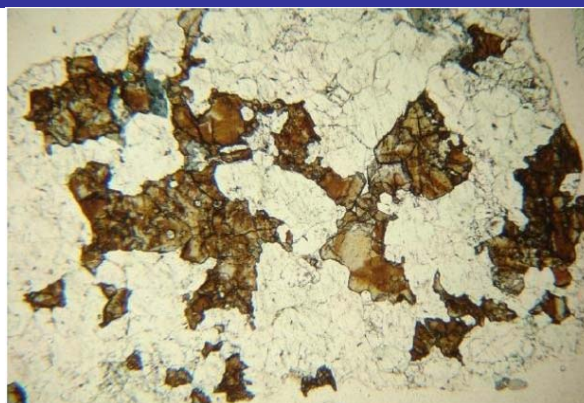
Mineralisation

In their December quarterly, TMZ reported that identified minerals at Bygoo were dominated by quartz (75%), with topaz (10% - 15%) and cassiterite (tin oxide, 5% - 8%), with trace amounts of tourmaline, fluorite and wolframite (contains tungsten).

TMZ also reported that the rock, including the cassiterite, was coarsely crystalline with quartz crystals up to 2mm long.

TMZ further stated that his mineral assemblage is typical of a granite greisen.

Figure 14 is a slide from petrological analysis showing coarse cassiterite (in brown) in clean host rock.

Figure 14 : Bygoo mineralisation

Source : TMZ, December 2015 Quarterly

Mineralisation is coarse grained

All mineralisation is oxide, with no sulphides

In contrast to the Ardlethan mine

Suggests good recoveries to a clean concentrate

Importantly, all the heavy minerals are oxide; NO sulphide minerals have been observed in the ore zone. This is a strong contrast to the Ardlethan Tin Mine, where sulphide minerals are abundant and associated with the tin mineralisation.

The Ardlethan mineralisation has been described as “porphyry style cassiterite-sulphide deposits”. In contrast, the Bygoo North mineralisation appears to be of a vein or fracture-controlled greisen style.

It means that

- Processing costs should be moderate, as the grain is coarse;
- Recoveries should be better than those at Ardlethan;
- Capital costs for the processing circuit will be contained as it will require only gravity circuits; and
- The resulting concentrate should have a high tin grade and be clean of deleterious (penalty) elements.

Exploration Target

TMZ has further tin potential

Following the work done to date, in defining the geological structures and the extent of drilling, TMZ has estimated an Exploration Target of 0.9 to 1.4Mt grading 0.8% to 1.4% Sn. The structure is open along strike and down-dip.

The next drill campaign is to lead to a JORC Resource, with a feasibility study to follow.

Other Tin

Figure 8 shows many more tin occurrences than Bygoo, mostly associated with the eastern margin of the Ardlethan Granite. While many are shallow workings in outcropping granite, there is also potential for mineralisation to occur under thin, cropped, cover.

The potential for undiscovered tin is shown by the Bald Hill alluvial system, 10km south of Ardlethan which contains 2.5Mt of alluvial tin deposits derived from an as yet undiscovered hard rock system.

Conclusions

TMZ has a strong focus on tin

TMZ is an explorer, with all of its interests in NSW, covering the Thomson Fold Belt, the Lachlan Fold Belt and the New England Fold Belt.

TMZ has a strong focus on tin, with many prospects in the Wagga Tin Belt. Beer & Co believes that tin is a commodity that will see better prices soon.

Beer & Co believe that tin is a good commodity and we expect prices to rise

TMZ has drilled 23 holes to date :

- Only one has failed to intersect tin mineralisation;
- Nearly half have reported economic grades and widths;
- All are shallow

Figure 15 shows that only the Renison mine, which is now over 1km below surface and has difficult metallurgy, has a higher grade.

TMZ has had drill success

- **Good grades**
- **Good widths**
- **shallow**

Figure 15 : Other tin companies

Company	E V	Measured		Indicated		Inferred	
		Sn eq		Sn eq		Sn eq	
Venture Minerals	VMS.ASX	\$A 8.4m	4.3 Mt	0.9% Sn	5.2 Mt	0.7% Sn	3.9 Mt
Consolidated Tin	CSD.ASX	\$A 27m	1.1 Mt	0.9% Sn	8.3 Mt	0.4% Sn	3.7 Mt
Stellar Resources	SRZ.ASX	\$A 4.6m			2.6 Mt	1.0% Sn	5.9 Mt
Kasbah Resources	KAS.ASX	\$A 19m	1.6 Mt	1.0% Sn	13.4 Mt	0.8% Sn	
Metals X Limited	MLX.ASX	\$A 695m	1.2 Mt	2.1% Sn	8.6 Mt	1.5% Sn	3.4 Mt
Elementos Limited	ELT.ASX	\$A 6.3m			4.2 Mt	0.8% Sn	1.9 Mt
AusTin Mining	ANW.ASX	\$A 1.3m			26.9 Mt	0.2% Sn	9.4 Mt
European Metals	EMH.ASX	\$A 53.4m			7.0 Mt	0.7% Sn	72.7 Mt
Tin International	unlisted				21.6 Mt	0.3% Sn	34.7 Mt

Source : various company announcements, Beer & Co

Beer & Co rates TMZ

a

Speculative

BUY

In Beer & Co's view TMZ has

- A good geological basis on the contact of the Ardlethan granite intrusive;
- Reported good tin grades over wide intersections, at shallow depth; and
- Has significant further prospects.

Beer & Co rates TMZ as a Speculative BUY.

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The analyst responsible for this research report certifies that all of the views expressed reflect his personal views about the securities and the issuer.

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