TNT MINES LIMITED

ABN 67 107 244 039

RL10/1988

MOINA

ANNUAL REPORT TO 21 OCTOBER 2011

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CONTENTS

FIGURES

TABLES

1.0 INTRODUCTION

1.1 Location and tenure

The Moina tenement is located approximately 40km south-west of Devonport, in north-west Tasmania (Figure 1). The 2 km^2 tenement is centred approximately 2 km south-west of the small town of Moina. The tenement area can be found on the Forth (1:100,000) LTIS map sheets.

Topographically the area is of variable relief with patches of rainforest, plantation and farmland. Vehicular access is good with Moina Road running through the tenement and numerous rough tracks giving 4WD access to most of the tenement. The land tenure is a mixture of State Forest and private freehold.

The owner of the tenement is Geotech International Pty Ltd ("Geotech"). That company has entered into an option agreement with TNT Mines (Moina) Pty Ltd, a wholly owned subsidiary of TNT Mines Limited (formerly part of the Minemakers Australia group).

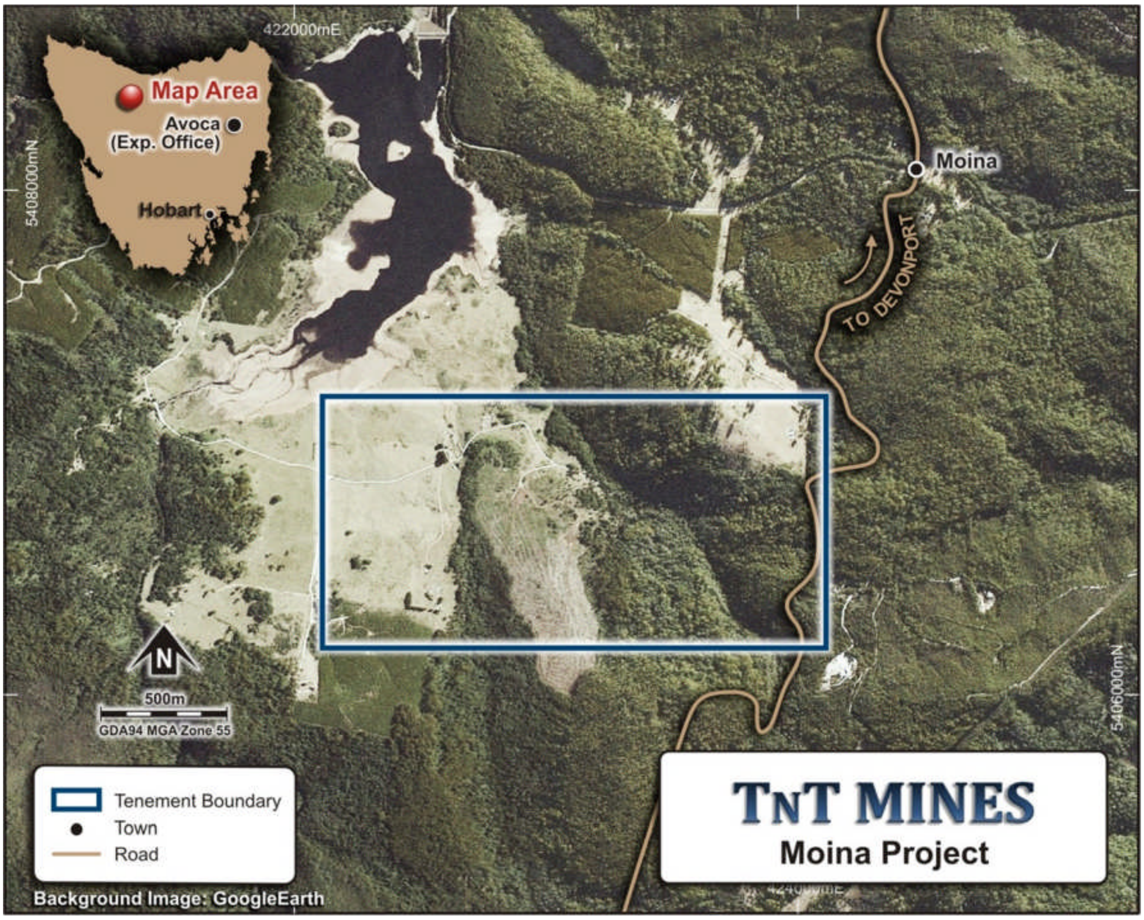

Figure 1: Tenement location plan

1.2 Geology overview

Tenement geology is shown below in Figure 2 and is taken from Map 9 (1:25,000) Geology of the Winterbrook – Moina Area, of the Geological Survey of Tasmania's Mt Read Volcanics Project 1989.

RL10/1988 is underlain by a thin sequence of Ordovician sediments. The Ordovician sedimentary package is a graded sequence of shallow water marine sediments with Roland Conglomerate at the base, overlain by medium to coarse grained Moina Sandstone, which in turn is overlain by Gordon Limestone. These three formations are conformable, gradational, and relatively thin, typically being in the range 50m to 150m thick. The sedimentary package dips gently north and has been lightly folded with fold axes trending NW sub parallel to the Bismuth Creek Fault. The sediments have been disrupted by a number of NW trending normal faults, principal of which is the Bismuth Creek Fault.

The Ordovician sediments are underlain in part by Cambrian volcanics and were intruded in Upper Devonian times by the Dolcoath Granite. A 2km wide stock of this leucogranite outcrops 3km to the east of Moina with an average composition of 40% orthoclase, 35% quartz, 20% plagioclase and 5% biotite. Gravity data indicates a west trending spine of this granite underlies RL10/1988 at depths of less than 1km. Drilling has revealed that beneath Moina the granite has been metasomatically altered to greisen. A Tertiary erosion surface, characterised by cemented gravels (graybilly) is patchily developed on the Ordovician sediments. Tertiary basalts, which are variably magnetic, cover substantial sections of the tenement area.

A large zone of hydrothermal alteration was associated with this granite spine. It caused dominantly iron and fluorine metasomatism of the Gordon Limestone and of calcareous beds in the Moina Sandstone and resulted in the formation of the Moina Skarn. These fluids were accompanied by variable amounts of tin, tungsten, bismuth, and molybdenum, which were fractionated from the granite; and by some precious metals and base metals either from the granite or leached from the Cambrian volcanics that lie between the sediments and the granite. This metasomatism resulted in a pocket of higher grade metamorphism turning the limestone to marble, the sandstone to quartzite, and indurating the conglomerate.

The Moina Skarn, with its associated tin-tungsten-fluorine veins and greisen, has been deposited in the roof above the Dolcoath Granite where it replaced Ordovician sediments. The skarn occurs as a thick horizontal plate roughly 1km in its longest dimension and up to 100m thick. It is separated from the granite’s upper near horizontal contact by about 200m of the Moina Sandstone and replaces parts of the Gordon Limestone. The plumbing system for the mineralizing fluids was probably a series of east-west trending tension fractures, now tin-tungsten-quartz veins, associated with the major NW trending Bismuth Creek Fault and named the Shepherd and Murphy Vein Swarm. Emplacement of the granite was at shallow depths, probably less than 3km.

The main body of skarn is zoned and consists of:

- A top zone of a granular garnet-pyroxene-vesuvianite-fluorite skarn overlying the other units. This unit is relatively enriched in boron;
- The main skarn (“wrigglite”) of fluorite-magnetite-vesuvianite (cassiterite-scheelite- adularia) and having a characteristic, fine grained (less than 0.2mm), rhythmic, finely layered, contorted structure;
- Within and near the base of the main skarn a granular, pale green pyroxene skarn occurs as thin units (less than 5cm) consisting of diopside-hedenbergite with very minor amounts of fluorite and garnet;
- A wollastonite-rich skarn may be present in places and can be a useful marker. It is probably derived from a silty/sandy facies of the limestone and consists of over 80% by volume of wollastonite with small amounts of garnet, pyroxene, vesuvianite and fluorite;
- A basal zone of granular garnet-pyroxene-vesuvianite-fluorite skarn;
-

However, the skarn is essentially variable depending on local factors that controlled the metasomatism. A number of distinctly different skarn types are found in limited quantities in other areas where metasomatic conditions varied. The two most notable are the pyrrhotite skarn and the sphalerite skarn. The former consists of medium to fine grained pyrrhotite, magnetite, fine grained actinolite/chlorite, and minor fluorite; the latter of granular to massive andradite garnet with minor diopside containing conspicuous bands of closely spaced lenses of sphalerite with quartz.

The various skarn units can carry up to 25% (by weight) fluorite; 0.6% tin, 0.5% tungsten, 0.2% beryllium, 27.5% zinc, and 4.5 g/t gold. Tin, beryllium, and iron values increase toward the upper part of the skarn sequence but zinc, copper, and molybdenum values are erratic. Secondary zinc-copper-indium-cadmium-gold-sulphide-amphibole alteration of the primary fluorine-tin-beryllium oxide skarn is related to the Bismuth Creek Fault. When the primary wrigglite skarn is altered, tin is largely lost from that part of the skarn.

The hydrothermal fluids that extensively skarned the Gordon Limestone resulted in the formation of a number of known significant mineral deposits, including:

- The Shepherd & Murphy vein swarm, consisting of a set of east-west near vertical veins containing tin-tungsten-bismuth-molybdenum mineralisation.
- The fluorite-magnetite “wrigglite deposit” in the basal section of the Gordon Limestone west of the Bismuth Creek Fault.
- The zinc-bismuth-gold mineralisation in the Hugo Skarn east of the Bismuth Creek Fault where the Hugo Thrust, which strikes E-W and dips north at 30°, has removed the top of the skarn and thrust older sediments over the top of the skarn.
- The auriferous pyrrhotite skarn west of the Shepherd & Murphy Mine.

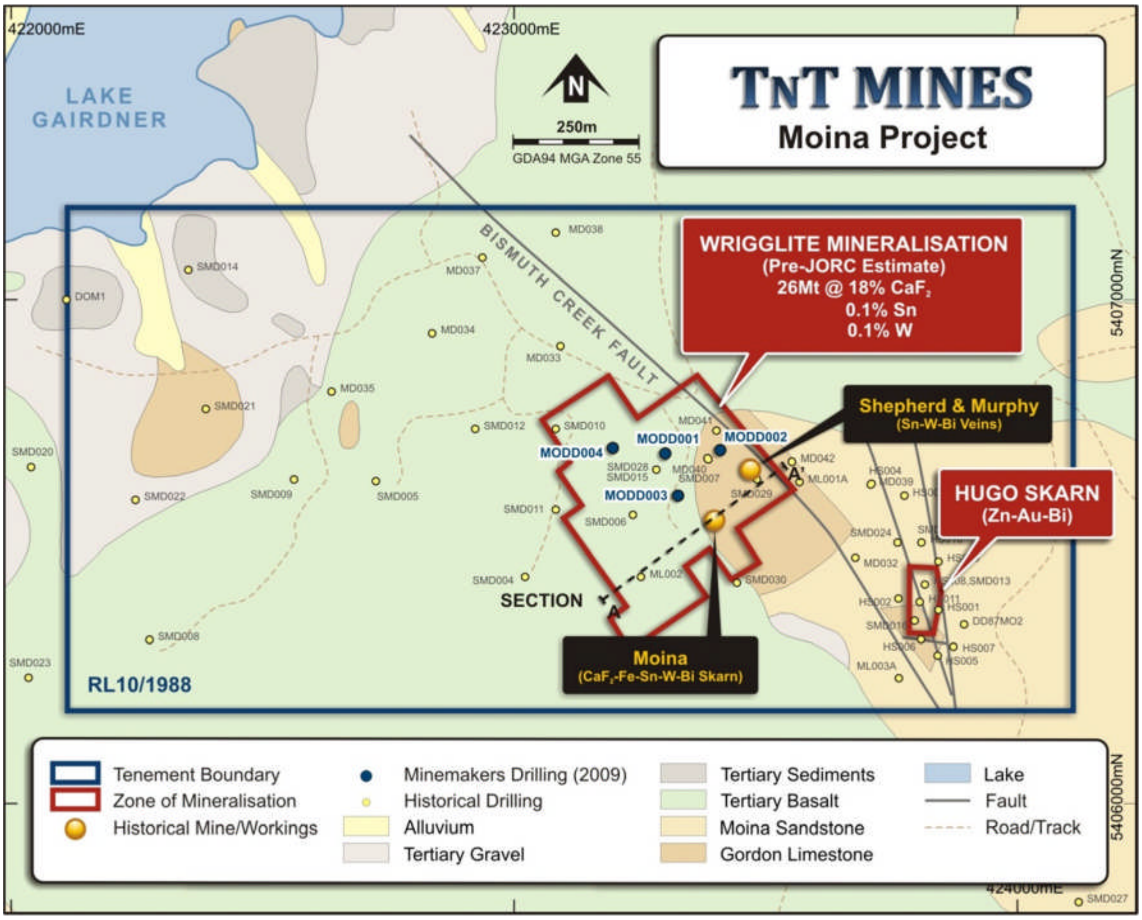

Figure 2: Tenement geology

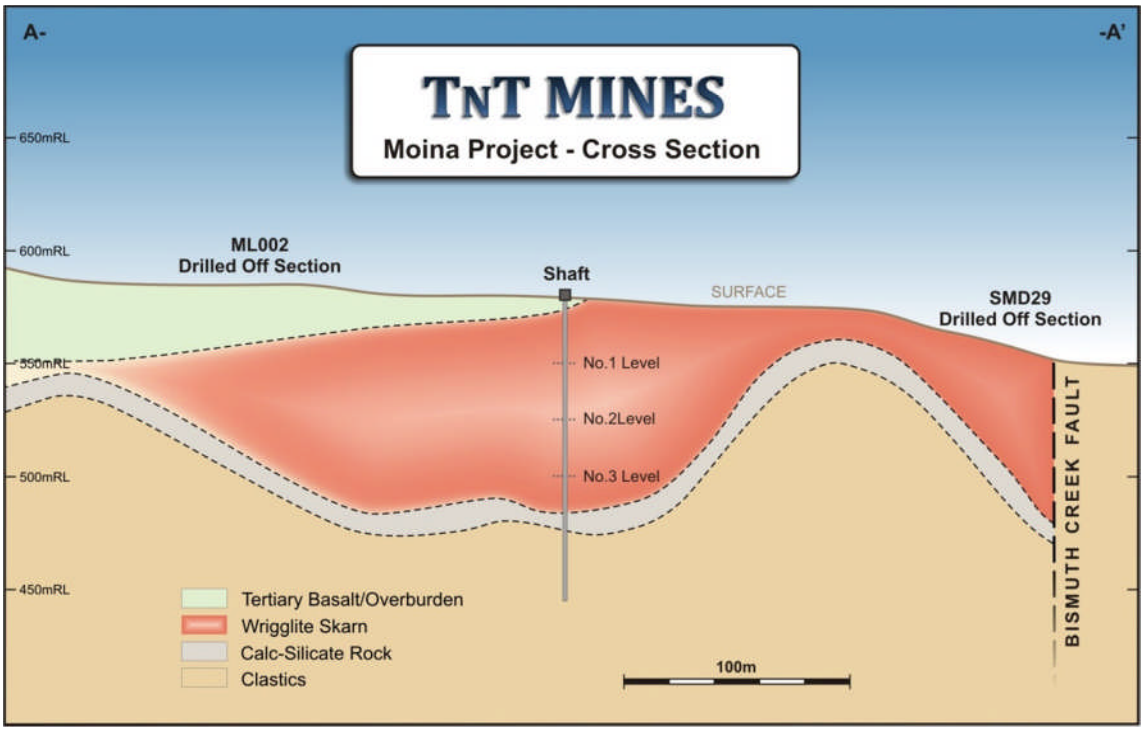

Figure 3: Section through Moina deposit

1.3 Exploration and development rationale

The Moina fluorspar deposit has been known about for a long time but has remained undeveloped due to the ready availability of cheap, high quality fluorspar. This situation has changed over the past five years or so and the supply of high quality fluorspar has decreased and the price risen significantly.

The Moina fluorspar deposit has a pre-JORC resource estimate of 26.5Mt @ 18% fluorite, 0.1% tungsten and 0.1% tin. The deposit also contains significant magnetite. Metallurgical test work carried out in the 1970s and 1980s was unable to define a clear pathway to generate a saleable product. TNT Mines believes that advances in processing technologies since then combined with dwindling fluorspar supply and consequent higher prices mean that the potential to develop an economically viable operation at the Moina deposit is now as high as it has ever been.

TNT Mines proposes to:

- Undertake the necessary metallurgical test work for optimal circuit design.
- Drill out sufficient of the main deposit to at least JORC-compliant Indicated Resource status and to allow open-pit design optimization for, say, an initial 10 year operation.
- Assess the potential to market the bulk commodities magnetite, fluoritic magnetite and garnet, which would be in the tails after extraction of the fluorite, and the tungsten, tin and sulphides.
- Look to marketing the fluorite and tungsten to Asian consumers who are seeking to gain independence from the decreasing Chinese supply situation.
- Complete bankable feasibility study and, if economic, commission an open-cut mining and processing operation.

2.0 REVIEW OF PREVIOUS WORK

2.1 Previous exploration prior to TNT Mines Limited (formerly Minemakers TTT Pty Ltd)

Although a considerable amount of historical exploration has been carried out in the district since mineralization was first discovered in 1878 it is only the more recent work (and for which reports are available) that contains relevant data. With respect to the Moina Skarn deposits there are reports of a number of drilling programmes that have been mounted on the area since 1970.

The Mount Lyell Mining and Railway Co. Ltd. (Mt Lyell) drilled three holes near the Shepherd and Murphy Mine in 1970-71. These holes were drilled to test for extensions to the known lodes previously worked at the mine and were drilled depressed at 50-55°. No significant mineralized veins were intersected. Wrigglite was intersected in holes ML2 and ML3A but it was not recognized as a fluorite rich skarn so was not split and analysed. The core from this drilling was later made available to Comalco Ltd (Comalco) and was re-logged, sampled, and analysed.

The Tasmanian Department of Mines drilled three holes in 1972-3 and the core logs, analyses, etc. were reported. In addition to the results produced by the Mines Department, Comalco carried out further analyses on pulps supplied to them by the Department. These holes were numbered DOM1, 2, & 3. Only DOM1 is currently relevant lying on the boundary of RL 8810 (Figure 1).

Basic data on the holes drilled during the 1970s is presented in Table 1. Hole collars are referenced by MGA co-ordinates.

TABLE 1 Moina Drill Hole Locations (Mt Lyell, MRT, and Comalco)

Year Drilled	Hole Number	MGA Co-ords E	N	Angle of Hole	Total Depth (m)
1970	M/ML1A	422128	5407280	50° to 180°	265.5
1970	M/ML 2	421775	5407135	50° to 192°	335.3
1971	M/ML 3A	423283	5406855	54° to 12°	260.3
1972	DOM 1	422713	5406885	Vertical	325
1976	SMD 4	423053	5406425	Vertical	109.25
1976	SMD 5	422743	5406635	Vertical	81.15
1976	SMD 6	423329	5406615	Vertical	102.5
1976	SMD 7	423383	5406715	Vertical	71.5
1976	SMD 8	422283	5406315	Vertical	60.8
1976	SMD 9	422543	5406705	Vertical	129.7
1976	SMD 10	423148	5406671	Vertical	117.5
1976	SMD 11	423238	5406533	Vertical	120
1976	SMD 12	422907	5406635	Vertical	123.5
1976	SMD 13	423833	5406455	Vertical	182.25
1976	SMD 14	422403	5407055	Vertical	194 (Strat)
1977	SMD 15	423349	5406687	Vertical	116.12
1977	SMD 16	423793	5406385	Vertical	171
1977	SMD 17	421883	5406593	Vertical	74.15
1977	SMD 18	Mt Jacob			
1977	SMD 19	Mt Jacob			
1977	SMD 20	422417	5406507	Vertical	94.75
1977	SMD 21	422657	5406777	Vertical	155.25

1977	SMD 22	422253	5406605	Vertical	110
1977	SMD 23	422617	5406145	Vertical	37
1978	SMD 24	423753	5406520	75° to 215°	Abandoned
1978	SMD 25	423753	5406520	65° to 215°	Abandoned
1976	SMD 26	424313	5405685	Vertical	202
1976	SMD 27	424113	5405785	Vertical	73
1978	SMD 28	423293	5406665	65° to 40°	101
1978	SMD 29	423483	5406645	60° to 360°	122
1979	SMD 30	423453	5406435	50° to 180°	126
1979	SMD 31	423733	5405660	Vertical	41

Comalco mounted a drilling programme in 1976-7 which was mainly aimed at delineating the extent of the wrigglite skarn. These holes are prefixed SMD and are detailed in Table 1. Holes were therefore located as close as physically practical to magnetic highs. An initial pre-JORC estimate of the resource was made in Askins 1978(c) which was:

Askins 1978. 15.5Mt at 18% fluorite, 0.1% tin, 0.1% tungsten.

Later drilling (SMD 20-23) was designed to test IP anomalies possibly due to massive pyrrhotite-cassiterite mineralization. The programme of 25 holes included two holes drilled at Mt Jacob and Holes SMD 24 & 25 were angled holes targeting mineralization associated with the Bismuth Creek Fault but encountered very difficult drilling conditions and had to be abandoned. Holes SMD 26 to SMD 31 were drilled on specific targets or to elucidate geophysics. Samples from Comalco drilling were analysed for: fluorine, tin, tungsten, bismuth, molybdenum, beryllium, copper, lead, zinc, cadmium, silver, gold, yttrium, scandium, and manganese.

In 1979 Comalco undertook a revised estimation of the fluorite and magnetite resource in the main wrigglite skarn. The diamond drill holes considered in this study are detailed in Table 2. The revised estimate was made on the basis of the extra drilling and a more refined interpretation of the geology.

TABLE 2

Weighted Average Grades of Intersections in the Main Skarn

Hole No.	From (m)	To (m)	Interval (m)	Fluorite (%)	Tin (ppm)	Tungsten (ppm)	Remarks
ML 2	43.3	50.4	7.1	17.8	c.800	c.400	
	50.4	61.0	10.6	11.6	c.1400	c.150	
	61.0	82.9	21.9	19.2	c.1500	c.800	Bulked sample analysis
	43.3	82.9	39.6		1350	540	
SMD 6	22.75	83.05	60.30	17.6	1400	910	
	22.75	67.70	44.95	19.5	1540	930	
SMD 7	1.00	55.00	54.00	20.9	1450	1030	
SMD 10	38.75	88.50	49.75	17.6	1320	535	0.35m interval of rich vein excluded
	38.75	76.00	37.25	19.2	1300	500	
SMD 11	31.00	74.00	43.00	16.9	1525	1020	1.35m interval of no core excluded
	31.00	60.70	29.70	19.4	1540	1010	
SMD 15	33.00	105.00	72.00	18.0	1470	1250	
SMD 28	29.00	90.60	61.60	20.3	1740	940	
	90.60	101.00	10.40	10.1	1110	560	
	29.00	101.00	72.00	18.8	1650	890	
SMD 29	0.00	23.25	23.25	20.8	2180	2260	

All intervals except for SMD 29 are approximate "true thicknesses".
The resource estimate was prior to the establishment of the JORC Code. Only the wrigglite skarn to the west of the Bismuth Creek Fault was considered. The estimated resource was:-

Askins 1979 26.5Mt at 18% fluorite, 0.1% tin, 0.1% tungsten. Cut-off grade 10% fluorite.
Overburden/wrigglite Ratio limited to less than 2.5: 1
giving an overall ratio of overburden/wrigglite of 1:3

Under the JORC Code Featherstone considers that this would probably be classified as an Inferred Resource. For this estimate the density of wrigglite was taken as 3.3 and the density of the basalt overburden as 2.5. This deposit is probably the largest single fluorite resource in Australia. Additional drilling has been carried out since this estimate was made but no new estimate of this resource has been calculated.

The Shell Company of Australia Ltd (Shell) entered into a joint venture with Comalco in 1980. At this time the Shell metals division went under the name Acacia Resources Pty Ltd and in 1984 became Billiton Ltd. Exploration commenced in July 1980 consisting mainly of DC drilling (holes MD 32-43). These holes are detailed in Table 3.

TABLE 3 Moina Drill Hole Locations (Shell and CRAE)

Year Drilled	Hole Number	MGA Co-ords E	N	Angle of Hole	Total Depth (m)
1980	MD 32	423713	5406485	Vertical	152.4
1981	MD 33	423093	5406905	Vertical	163.6
1980	MD 34	422843	5406935	Vertical	196.0
1980	MD 35	422643	5406815	Vertical	161.4
1980	MD 36	423243	5407305	Vertical	170.5
1980	MD 37	422933	5407085	Vertical	176.6
1980	MD 38	423093	5407185	70° to 222°	263.1
1980	MD 39	422713	5406645	Vertical	260.4
1981	MD 40	423393	5406735	45° to 222°	158.0
1981	MD 41	423393	5406775	45° to 222°	150.7
1981	MD 42	423573	5406685	Vertical	208.0
1981	MD 43	423803	5406625	Vertical	325.0
1987	MO 1	424423	5406655	Vertical	80
1987	MO 2	423893	5406385	Vertical	130.5

Shell's exploration is detailed in a number of reports from 1979 to 1983 and focussed its attention on the tin/tungsten potential of the skarns.

TABLE 4 Tin-Tungsten Potential of the Main Skarn

Drill Hole No.	From (m)	To (m)	Interval (m)	Tin (Sn) ppm	Tungsten (W) ppm
SMD 4	63.87	95.90	27.53	1320	840
	0.00	95.90	95.90	380	240
SMD 6	21.35	101.00	79.65	1100	960
	0.00	101.00	101.00	860	750
SMD 7	0.00	45.35	45.35	1630	740
SMD 10	38.75	76.00	37.25	1680	670
	0.00	76.00	76.00	820	330
SMD 11	31.00	74.00	43.00	1450	960
	0.00	74.00	74.00	840	560
SMD 15	33.00	103.00	70.00	1500	1270
	0.00	103.00	103.00	1020	860
SMD 28	17.70	90.60	72.90	1680	850
	0.00	90.60	90.60	1350	680
SMD 29	0.00	83.50	83.50	850	1760
MD 40	10.00	85.20	75.20	1360	950
MD 41	0.00	28.50	28.50	1560	820

Open pit potential of the main skarn was then estimated by Shell as:-

(1981) 16Mt @ 0.14% Sn, 0.10% W.

About 5.5Mt of this material would be available free of overburden with a possible 9.2Mt lying mainly under basalt overburden. This pre-JORC estimate would probably be considered to be an Inferred Resource under current JORC Code practice.

In the year to June 1982 exploration was focussed on a number of other targets within the JV area and generally outside the area which is now RL8810. Exploration was following up on targets established by geochemical and geophysical surveys, including TEM, and continuing work on areas of interest. Early in 1983 just over half of EL 7/74 was relinquished (224 km^2 of the total 405 km^2). At this time exploration was focussed on Wattle Valley and Black Bluff. No more targets were located and exploration moved to the Cambrian Volcanics in the Mt Jacob area. In July 1984 a further 60 km^2 of the licence was relinquished covering the Liena and Wattle Creek areas.

In 1987 the area of the remaining portion of EL 7/74 covered the Moina Skarn and surrounding ground. CRAE turned its attention to the gold potential of the skarns and veins. As well as collating old results twenty five drill holes were re-sampled for gold and two new DC holes were drilled (DD87 M 01 & 02). These holes failed to intersect significant mineralization. Better gold values are restricted to the sphalerite and pyrrhotite skarns - Funnel 1988.

Some of the better drill intersections were: -
Pyrrhotite Skarn

8m @ 1.5 g/t gold from 96m in SMD9.

Sphalerite Skarn

3m @ 2.18 g/t gold from 146.6m in LM3A.
16m @ 0.86 g/t gold from 86m in SMD13
7.1m @ 0.79 g/t gold from 65.5m in SMD16
9.5m @ 0.73 g/t gold from 81.5m in SMD24
15.0m @ 0.7 g/t gold from190m in SMD39

The oxide facies fluorite skarn gives irregular spotty values in the range 0.2 g/t to 0.4 g/t gold in the eastern section of the body.

On the 22nd October 1998 Retention Licence 8810 of 2 km^2 was granted to Shell and CRAE covering the main skarn area at Moina. This licence is a holding tenement and has no work commitment. It is renewable in three year terms.

In September 1993 a joint venture with Goldstream Mining NL (Goldstream) and Titan Resources NL (Titan) commenced over that portion of RL 8810 lying east of the Bismuth Creek Fault. Goldstream and Titan also held EL20/94 which surrounded RL 8810.

The Goldstream - Titan interest was focussed on the zinc and gold potential of the Hugo Skarn adjacent to, and to the east of, the north westerly striking Bismuth Creek Fault. In this area a wedge of skarn lies between the steeply dipping Bismuth Creek and Eastern Faults which converge to the south. The skarn is also cut by other faults that include the steeply dipping, north westerly striking, Central Fault and the E-W striking, gently north dipping Hugo Fault.

The Hugo Skarn is mineralogically complex containing fluorite, magnetite, bismuthinite, molybdenite, sphalerite, gold, scheelite, and cassiterite. Of particular interest were several zones of significant zinc mineralization with some gold.

Two drill holes from the Comalco programme in 1976 intersected the Hugo Skarn. In 1993-94 Goldstream and Titan drilled four DC holes (HS01-HS04) for 790m to further define the mineralization. Holes HS03 and HS04 failed to intersect skarn due to faulting.

TABLE 5 Drilling of the Hugo Skarn

Year Drilled	Hole Number	MG A Co-ordinates (m) Easting Northing		Angle of Hole	Total Depth (m)
1976	SMD 13		5406455	Vertical	182.25
1976	SMD 16	423793	5406385	Vertical	171
1994	HS 01	423843	5406395	Vertical	152.0
1994	HS 02	423763	5406455	Vertical	157.4
1994	HS 03	423793	5406615	Vertical	196.6
1994	HS 04	423713	5406645	Vertical	297.7
1995	HS 05	423843	5406285	Vertical	141.4
1995	HS 06	423763	5406418	Vertical	151.1
1995	HS 07	423883	5406310	Vertical	132.5
1996	HS 08	423816	5406436	Vertical	144.3
1996	HS 09	423844	5406483	Vertical	150.0
1996	HS 10	423808	5406519	Vertical	147.3
1996	HS 11	423806	5406402	Vertical	135.0

In 1994-95 three more DC holes for 425m were drilled to the south of the area covered by drilling to that time. HS 05 was mainly in Moina Sandstone with the 11.3m from 65.8m in skarn underlain by metasomatised sandstone with a swarm of mineralized quartz veins. A skarn intercept of

100.2m from 30.0m containing an intercept of 83m @ 0.15 g/t gold is reported in HS 06 with anomalous tin and tungsten. Hole HS 07 lay to the east of Eastern Fault and was entirely within Moina Sandstone. The basic data on these drill holes is given in Table 5.

In 1995-96 a further four DC holes were drilled for 576m. HS 08 was drilled 25m SW from SMD 13 to validate results from that hole. In fact the results suggest that grades of gold and sulphides vary over relatively short distances and considerably denser drilling would be required to define a resource. HS 09 intersected only Moina Sandstone and was therefore located just east of the Eastern Fault. HS 10 was collared about 85m north of HS 08 and was interpreted as indicating that the Hugo Thrust dips more steeply than the skarn and therefore cuts out more and more of the skarn to the north. This indicates there is little potential for significant thicknesses of skarn to the north.

TABLE 6 Gold, Zinc and Bismuth Potential of the Hugo Skarn

Hole No.	Vertical Intercept (m)	Gold Grade (g/t)	Zinc Grade (%)	Bismuth Grade (%)
SMD 16	13.0 Inc. 6.7	0.47 0.66	4.4 6.8	0.05 0.07
HS 11	12.0 Inc. 6.0	0.64 1.15	3.3 3.9	0.07 0.09
SMD 13	16.65 Inc. 2.5m	c. 0.86	8.63 19.0	
HS 08	17.0 Inc. 9.0	1.34 2.34	6.7 8.9	0.10 0.16

The Hugo Skarn has a N-S dimension of approximately 130m and an E-W dimension of 50m and its upper surface lies about 60m below surface in the south increasing to 90m in the north. In 1997 these companies made an estimate of the Hugo Skarn mineralization as being in the range 250,000t to 300,000t at approximately 0.8 g/t gold, 5% zinc, 0.07% bismuth. The significant intersections are presented in Table 6. Featherstone believes that considering the geology of this body of skarn the available data on it is insufficient to calculate a resource complying with the current JORC Code.

2.2 Exploration by TNT Mines Limited (formerly Minemakers TTT Pty Ltd)

TNT Mines has completed the following work since 2006:

- Review of literature
- Fatal flaw review to determine potential project viability
- Metallurgical test work carried out in Austria by tungsten producer Wolfram Bergbau Material was collected on-site (tailings dump) or from diamond drill core held at the MRT core store in Mornington
- Infill assaying using diamond drill core obtained from the MRT core store
- Davis Tube Recovery work on selected intervals of wrigglite from diamond drill core held at the MRT core store in Mornington
- Drilling of four PQ- (HQ-) sized cored holes to recover mineralisation for further metallurgy
- Analysis of 274 half-PQ core sized samples for F, Al, Bi, Ca, Cd, Cu, Fe, Mg, Mo, Pb, S, Sb, Si, Sn, W and Zn

3.0 WORK COMPLETED DURING THE REPORTING PERIOD

3.1 Heritage survey

MRT required TNT Mines to carry out a heritage survey of the Shepherd and Murphy mining area before any further drilling or other ground-disturbing work programs would be approved. Gary Vines from Biosis Research Pty Ltd, a Melbourne-based consultancy, was commissioned to conduct the survey. Field work was carried out in May-June 2011 and a draft report submitted to TNT Mines in July. A final report is expected in early October. The draft report is attached as Appendix 1.

3.2 Beneficiation studies

A sample of a wrigglite composite made up from the core recovered during the diamond drill program in 2009 was submitted to SGS Lakefield for mineralogical analysis and 2D particle liberation modelling. The mineralogical characterisation uses QEMSCAN technology, chemical analysis, X-ray diffraction (XRD), scanning electron microscopy equipped with energy dispersive detectors. The report is attached as Appendix 2.

The composite was made up from the following intervals of PQ/HQ ½ core:

MODD001	25.0-50.0m	(25m total)
MODD001	62.0-71.0m	(9m total)
MODD003	31.0-79.0m	(48m total)
MODD004	52.0-74.0m	(22m total)

Total: 104 metres.

Approximately 200kg of material was crushed to 2mm and a split of about 30kg was further split into 1kg charges. A 1kg charge was sent to SGS Lakefield Ontario for QEMSCAN analysis. The material was separated into four size fractions: +63 µm, -63 µm+45 µm, -45 µm+20 µm, and -20 µm. The QEMSCAN work was completed in February 2011 and a report sent to TNT Mines. This is attached as Appendix 2.

4.0 DISCUSSION OF RESULTS

4.1 Heritage survey

The heritage survey has indicated that the Shepherd and Murphy site is of historical and technical interest due to the unusual history of the mine's operation and the extent of the surviving remains. The site is considered to be of significance at state level as an example of a distinctive and rare mining site reflecting a range of mineral extraction and processing technologies. In particular it represents an early example of tungsten production.

The site is also associated with Clive Loftus-Hills, a significant figure in the Tasmanian mining industry.

Gary Vines of Biosis Research has indicated that there is no impediment to the clearing of tracks, construction of drill pads and drilling operations providing recommended precautions are observed. These are:

- Prior to clearance of vegetation or construction of tracks, lay-down areas, drill pads or other earthworks, the historic features identified in the survey should be marked on the ground with suitable identification such as flagging or para-webbing.

- Any construction, drilling, access or environmental management plans should have significant features marked with annotations indicating how they should be protected. These areas should then be avoided during any vegetation clearance, track construction or drilling works.

- Existing tracks can be used for access and vehicle movements and, if necessary, lightly re-graded or topped up with gravel or other road base.

The scope of the survey did not extend to the potential impact of any new mining operation and this would need to be reconsidered in that event.

4.2 Beneficiation studies

The purpose of this work was to investigate the mineral distributions, deportment of F and Sn, locking/association and grain size characteristics of the fluorite, cassiterite, Bi-minerals, scheelite, sulphides and Fe-O oxides, and determine mineralogical parameters such as mineral release and grade recovery.

The work has demonstrated that to obtain reasonable recoveries the ore would need to be ground to -20 µ. At this size, fluorite would need to be agglomerated to produce a saleable producet. The analytical work has also demonstrated that only 48% of the tin is present in cassiterite, the remainder contained in garnet or Sn-Fe oxides.

TABLE 7 Head assay and element deportment in recoverable minerals

Head Assay	%
F	7.92
W	0.070
Sn	0.20
Bi	0.046

	F	W	Sn	Bi
Fluorite	**92.1**			
Scheelite		**94.8**		
Cassiterite			**48.3**	
Bi-Minerals				**100.0**
Actinolite/Cummingtonite	0.80			
Biotite	1.25			
Ca-Fe Carb/Ox				
Calcite				
Chlorite	0.15			
Chlorite(F)	0.53			
Clays				
Diopside/Salite	0.082			
Fe-Ca-Amphibole(LowAl&K)	2.07			
Garnet			36.8	
K-Feldspar				
Plagioclase				
Pyrite				
Quartz				
Sericite/Muscovite	0.36			
Sn-Fe Oxide			14.9	
Sphene				
Vesuvianite/Epidote	2.67			
Other	0.001	5.23		
Other Silicates				
Other_Sulphides				
Other Carbonates				
TOTAL	100.0	100.0	100.0	100.0

Fluorspar:

The fluorspar concentrate will need to be reground and will be too fine to market without agglomeration. The concentrate grade will be limited by the 1% limit of $CaCO3$.

The maximum fluorspar recovery will be 83% (@ -20 µm). This equates to the F-recovery of 76.4%.

The recovery of fluorspar from the sample will be dictated by the concentrate quality.

Scheelite:

At target grade of 60% WO3, the scheelite recovery would be 87% without regrinding and 97% for a fine regrind of -20 µm.

The WO3 recoveries will be 82.5% and 92% for no regrinding or -10 µm regrinding, respectively.

Cassiterite:

Target grade = 70% Sn. The cassiterite recovery would be 45% without regrinding and 75% for a fine regrind of -20 µm.

Since only 48.3% of the Sn is in cassiterite, the Sn-recoveries will be 22% and 36% for no regrinding or -20 µm regrinding, respectively.

Bismuth:

Assuming the processing of the Bi-concentrate will likely be a leaching process. May be able to accept low-grade concentrate, below 20% Bi, or even 10%Bi. Recoveries (based on grade-recovery) can be over 90%. Coarse flotation at start: maximum 73% Bi Recovery.

TABLE 8 Mineral distribution by size fraction

Survey		Minemakers								
Project		12547-001 / MI5031-OCT10								
Sample		PO268 Modd Comp								
Fraction		Combined	+63um		-63/+45um		-45/+20um		-20um	
Mass Size Distribution (%)			29.8		12.9		19.0		38.4	
Particle Size			56		32		21		8	
		Sample	Sample	Fraction	Sample	Fraction	Sample	Fraction	Sample	Fraction
Mineral Mass (%)	Fluorite	13.74	3.28	11.02	1.71	13.31	2.85	15.05	5.90	15.36
	Scheelite	0.21	0.04	0.12	0.03	0.23	0.03	0.15	0.12	0.30
	Bi-Minerals	0.09	0.02	0.06	0.01	0.07	0.01	0.05	0.06	0.14
	Cassiterite	0.07	0.02	0.05	0.01	0.05	0.00	0.02	0.04	0.10
	Sn-Fe Oxide	0.05	0.02	0.05	0.01	0.07	0.01	0.05	0.01	0.03
	Vesuvianite/Epidote	13.83	5.07	17.03	1.98	15.36	2.21	11.63	4.58	11.92
	Garnet	5.64	2.30	7.73	0.78	6.02	1.10	5.78	1.47	3.82
	Actinolite/Cummingtonite	5.84	2.24	7.53	0.86	6.67	0.95	4.99	1.79	4.66
	Fe-Ca-Amphibole(LowAl&K)	15.04	4.05	13.61	1.48	11.51	2.38	12.52	7.14	18.58
	Diopside/Salite	1.99	0.59	1.97	0.28	2.16	0.50	2.62	0.63	1.64
	Biotite	8.25	2.28	7.67	0.84	6.55	1.18	6.22	3.94	10.26
	Sericite/Muscovite	1.72	0.34	1.14	0.14	1.12	0.33	1.73	0.91	2.37
	Chlorite	1.10	0.15	0.50	0.08	0.61	0.15	0.78	0.72	1.87
	Chlorite(F)	0.64	0.27	0.89	0.11	0.83	0.16	0.86	0.11	0.29
	K-Feldspar	1.98	0.84	2.82	0.32	2.47	0.40	2.12	0.42	1.09
	Plagioclase	7.09	2.59	8.69	0.95	7.40	1.29	6.82	2.26	5.88
	Quartz	0.72	0.26	0.86	0.09	0.72	0.13	0.68	0.24	0.62
	Clays	0.31	0.14	0.48	0.04	0.34	0.06	0.31	0.07	0.18
	Sphene	0.13	0.04	0.14	0.02	0.13	0.03	0.14	0.04	0.12
	Other Silicates	0.36	0.05	0.16	0.01	0.09	0.05	0.26	0.25	0.65
	Fe-Oxides	18.56	4.51	15.14	2.84	22.05	4.67	24.64	6.54	17.02
	Other_Oxides	0.02	0.01	0.03	0.00	0.03	0.00	0.02	0.00	0.01
	Calcite	1.51	0.25	0.84	0.10	0.75	0.26	1.35	0.91	2.36
	Ca-Fe Carb/Ox	0.49	0.26	0.88	0.09	0.71	0.10	0.52	0.04	0.10
	Other Carbonates	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
	Pyrite	0.48	0.13	0.44	0.08	0.59	0.10	0.51	0.18	0.46
	Other_Sulphides	0.03	0.01	0.03	0.00	0.02	0.01	0.03	0.01	0.03
	Other	0.11	0.03	0.09	0.02	0.12	0.02	0.13	0.05	0.12
	Total	100.00	29.76	100.0	12.87	100.0	18.97	100.0	38.41	100.0

5.0 CONCLUSIONS AND FUTURE WORK

The heritage survey has indicated that there is no impediment to further drilling provided recommended precautions are observed. A significant drilling program will be necessary to establish a JORC-compliant resource at some stage in the future once an economically viable beneficiation pathway has been established. Some drilling is likely to be required to obtain further representative samples of mineralisation for beneficiation studies.

The mineralogical studies have confirmed that fine grinding will be required to liberate the mineral constituents. The fine grinding will produce a fluorspar product that will require agglomeration to be commercially saleable.

The program of work for next year will be:

- If required, diamond drilling to recover more material for metallurgical studies
- Comminution studies to determine the most cost effective method of fine grinding and the indicative cost per ton.
- Metallurgical studies to determine the best method for separating the mineral constituent. In particular to determine whether Mozley gravity separation is practicable.
- Fluorspar agglomeration studies to investigate whether the finely ground fluorspar can be upsized to a commercial product.

6.0 ENVIRONMENT

No ground-disturbing exploration work was carried out on RL10/1988 during the reporting period. No rehabilitation of previous disturbance relating to mining or mineral exploration was undertaken.

7.0 REFERENCES

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APPENDIX 1 Shepherd & Murphy Mine, Tasmania. Heritage Assessment. July 2011. Gary Vines. Biosis Research.

APPENDIX 2 An investigation into mineralogical characteristics of the Moina fluorspar, tin, tungsten and bismuth deposit for the purpose of metallurgical beneficiation. February 2011. SGS Mineral Services, Lakefield Ontario, Canada.

APPENDIX 3 QEMSCAN interpretation Powerpoint presentation. SGS Mineral Services, Lakefield Ontario, Canada.