



Rockwell Minerals Ltd is a wholly owned subsidiary of Elementos Limited

Combined Annual Report for:  
**EL15/2011**  
**EL9/2006**  
**Cleveland Province**

Report Period: 13 September 2013 to 21 September 2014

Author: Tim McManus

Address: PO Box 10555, Brisbane Adelaide Street, QLD 4000

**TABLE OF CONTENTS**

<b>INTRODUCTION</b>	<b>3</b>
Licensing & Ownership	3
Location & Datum	3
Location Map	3
Geological Setting	4
Exploration Objective	4
<b>REVIEW OF PREVIOUS WORK</b>	<b>4</b>
Cleveland Tin Mine	5
<b>EXPLORATION COMPLETED DURING THE REPORTING PERIOD</b>	<b>5</b>
LIDAR Survey	6
<b>DISCUSSION OF RESULTS</b>	<b>6</b>
Use of LIDAR in GIS	7
<b>CONCLUSIONS</b>	<b>7</b>
<b>ENVIRONMENT</b>	<b>8</b>
<b>EXPENDITURE</b>	<b>8</b>
Table of Expenditure	8
<b>REFERENCES</b>	<b>8</b>
<b>APPENDICES</b>	<b>10</b>

## Introduction

### Licensing & Ownership

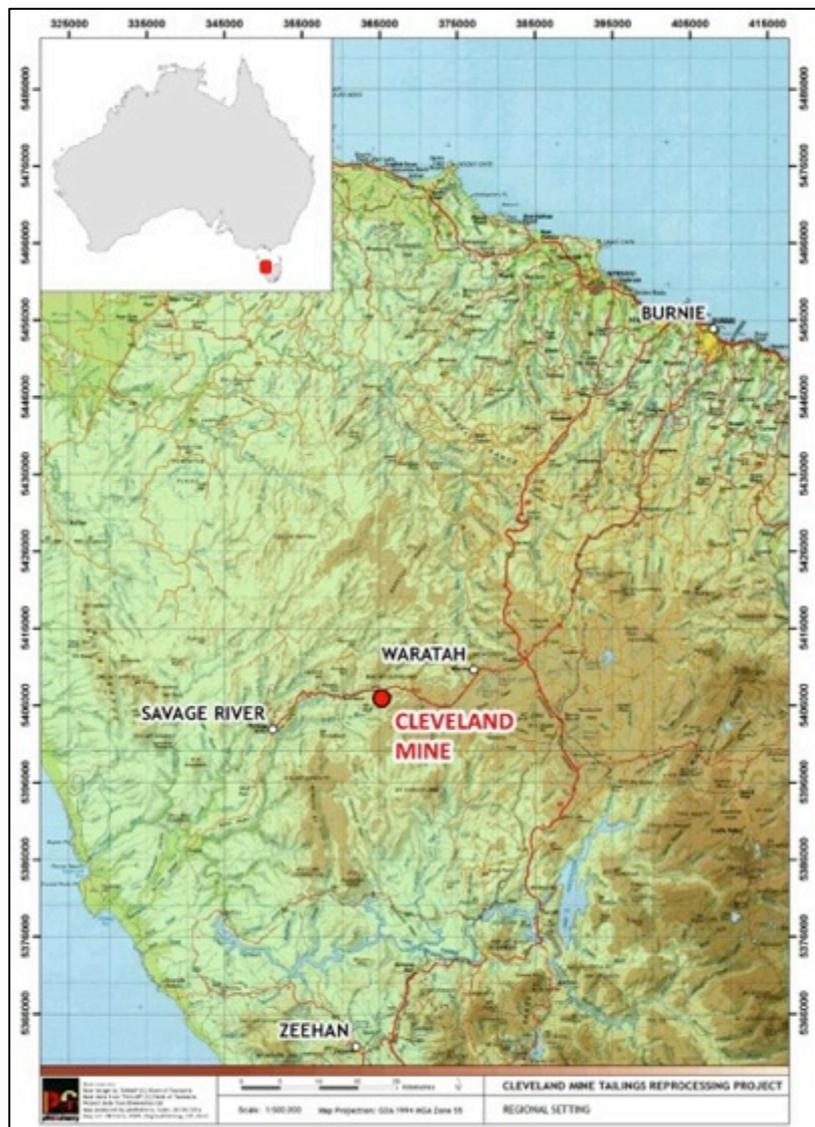
Exploration license 15/2011, covering 34 sq km, was granted to Rockwell Minerals Ltd on 13<sup>th</sup> September 2011. Exploration license 9/2006, covering 42 sq km, was granted to Rockwell Minerals Ltd on 21<sup>st</sup> September 2007. Together with Exploration License 7/2005, covering 18 sq km, which has been transferred from Lynch Mining Pty Ltd to Rockwell Minerals Ltd, these licenses are known as the Cleveland Province (94 sq km).

Rockwell Minerals Pty Ltd (“Rockwell”), which owns Rockwell Minerals Ltd, is a wholly owned subsidiary of Elementos Limited (“Elementos”).

### Location & Datum

The Cleveland Province is located in Western Tasmania, 131 km north of Queenstown, 89 km south of Burnie and 21 km east of Savage River. The Datum used in this report is GDA94.

### Location Map



## Geological Setting

The Cleveland Province mineralisation is located in the Dundas Trough of northwestern Tasmania. The tin and copper mineralisation (pyrrhotite-cassiterite-stannite-chalcopyrite) is hosted in semi-massive sulphide lenses within a series of sedimentary rocks belonging to Hall's Formation of Cambrian age. Having undergone intense deformation from thrust faulting, the tin and copper lenses are steeply dipping and have strike lengths of up to 500 metres, across strike thicknesses of up to 30 metres and down-dip extents of up to 800 metres.

The semi-massive sulphide mineralisation was formed by the hydrothermal replacement of limestone beds by mineralizing solutions associated with the emplacement of the Devonian-Carboniferous Meredith granite. The deposit is geologically similar to the tin bearing semi-massive and massive sulphide stratiform mineralisation at Renison.

## Exploration Objective

The area surrounding the Cleveland Mine site is known to host other occurrences of Sn, and base metal mineralisation related to the Devonian-aged granite intrusive activity within surrounding host rocks. Identification of repetitions of this style of mineralization is the primary focus of the company's exploration efforts.

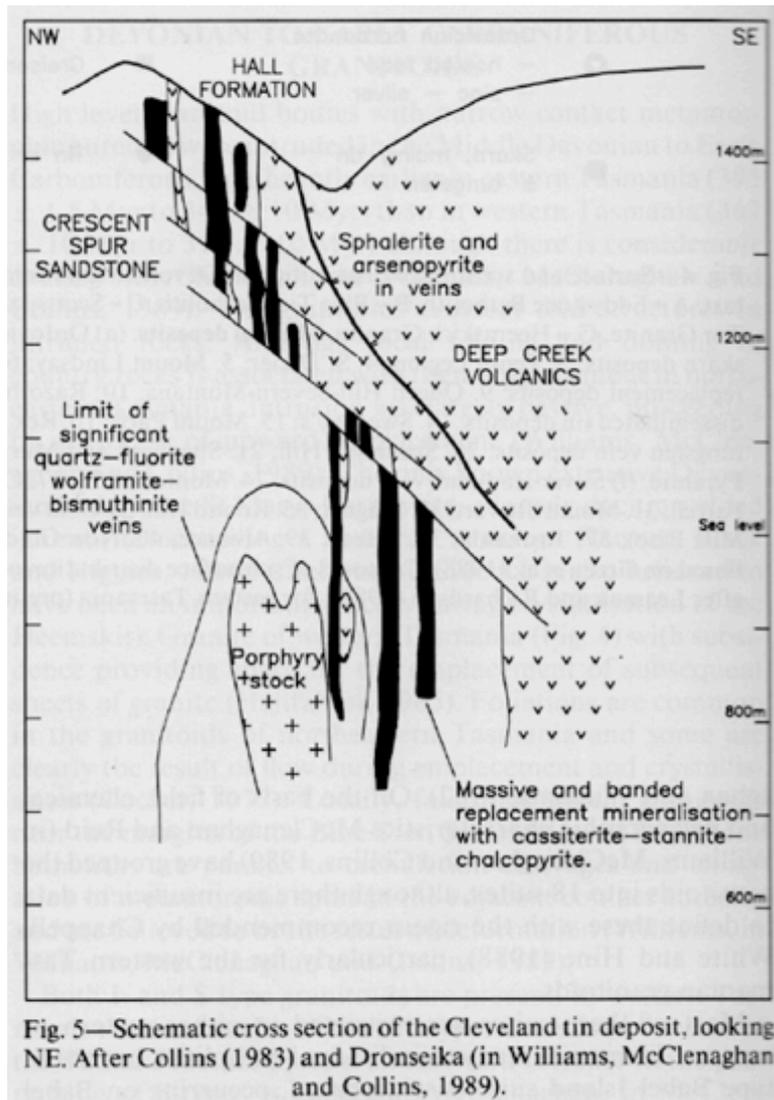
## Review of Previous Work

The Cleveland deposit was discovered in 1898. Initial production of the surficial ore commenced in 1908, and ceased in 1914 after production of 295.5 tonnes of cassiterite. Tributing continued until 1917, during which time a further 48 tonnes were produced. Aberfoyle commenced mining in 1968, and mining was ceased in early 1986, primarily due to the collapse of the tin price. At the cessation of the more recent mining activity, approximately 7 million tonnes of ore assaying 0.82% Sn and 0.35% Cu had been processed.

Various reports show that a significant resource remains in the deposit, with Measured and Indicated resources of 5.2 million tonnes @0.70Sn and 0.31%Cu and Inferred resources of 1.3 million tonnes @0.72% and 0.22% Cu at a 0.35% Sn cut-off.

In addition, a large resource known as the Foley Zone located at the lower levels of the mine had been drilled and is reported to contain 3.8 million tonnes @0.28% WO<sub>3</sub> at a 0.2% cut-off. Data for these estimates has been sourced to archived reports currently stored at Burnie Labs and available online on the MRT website. The most important document for confirmation of this data is Aberfoyle's "close-out report".

## Cleveland Tin Mine



## Exploration completed during the reporting period

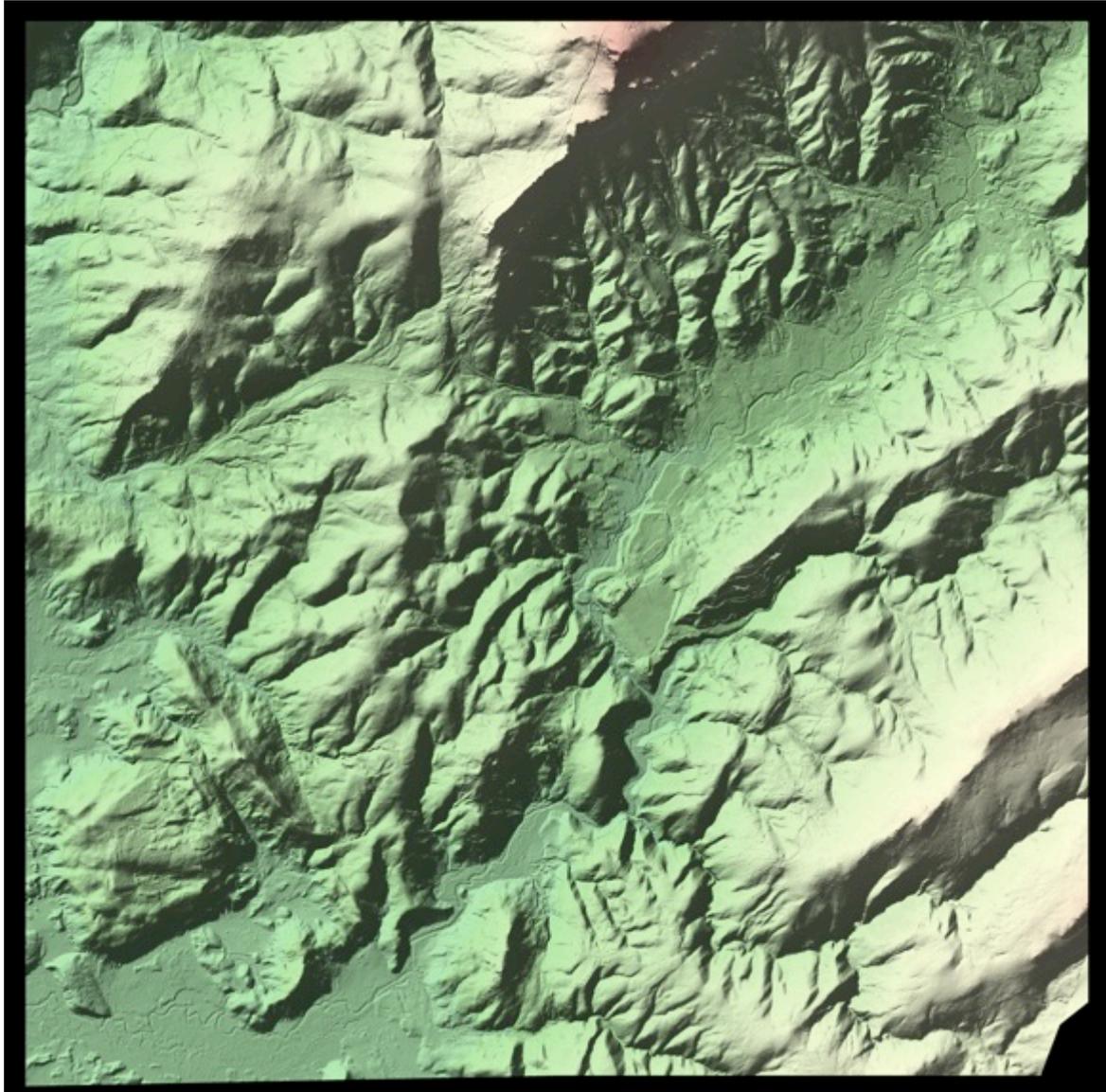
The Company completed a LIDAR survey, in partnership with Forestry Tasmania, of the Cleveland area. The survey provided detailed surface topography including the location of haul roads, ventilation ducts, historic mining operations and portals.

The company is also progressing with its study work for different elements required for the project's development. Other works nearing completion are:

- Digitising and 3D wireframing
- Develop common mine grid (U/G)
- Tailings Disposal Study for UG project
- Tailings retreatment mining study
- Surface Infrastructure and Services Study
- U/G mining study and geotechnical review
- Contract mine/ owner operator study

At this time these works have yet to be finalized and there has been no compiled documentation, such as a pre-feasibility to report the findings. The company will look to report the results of these works in the next reporting period.

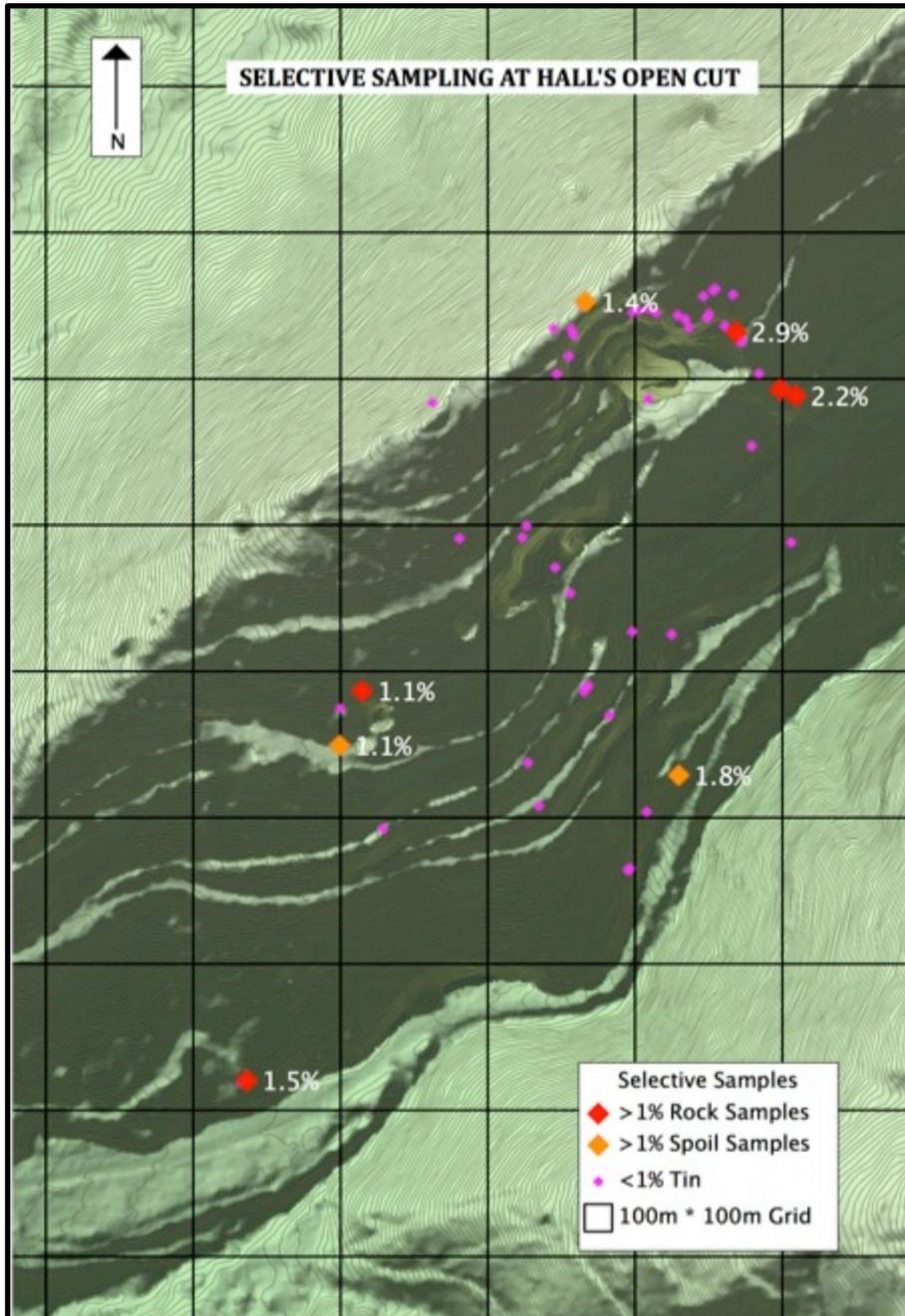
## LIDAR Survey



## Discussion of Results

Significant Geographic Information Systems (GIS) work has now incorporated the Lidar data set into the company database. Using this data, significant work has been completed within the exploration period in calculating the volume of the historical tailings dumps on site. The volumes have been used in internal production studies to ascertain the economics of rehabilitating the tailings to recover tin and copper concentrates. This work continues and is linked with metallurgical test work in order to define the company's processing options.

### Use of LIDAR in GIS



### Conclusions

The company continues to be encouraged by the results from the Cleveland Province, which includes the EL's 9/2006 & 15/2011. Recently taken selective samples, taken from outcrops, were correlated with the current geological model. The results encourage further exploration to assess the potential for extensions of the Hall's Lode not previously mined. The geology also correlated to current underground interpretations, with shallow mineralisation potentially linking with remnant underground mineralisation. However, to date this work has provided no material changes to previously stated Mineral Resources<sup>1</sup>.

<sup>1</sup> The information in this Announcement that relates to the Mineral Resource is a subset based on information extracted from the report entitled "Cleveland JORC Resources Significantly Expanded" created on 5 March 2014 and is available to view on [www.elementos.com.au](http://www.elementos.com.au). Elementos confirms that the form and context in which

The spoil dump samples indicated that further investigation is required as to the potential value of these dumps when considered with the rehabilitation of historic tailings. The Company will look to further define surface mineralisation throughout the Province through the implementation of a handheld XRF exploration program. The data collected will be used to potentially define a cost effective Reverse Circulation (“RC”) drilling exploration program planned for 2015.

## Environment

There have been no environmental impacts recorded for the Betts Creek project. There has been limited to no activity directly on site. However, the company continues to monitor flora and fauna in the region, along with groundwater chemistry.

## Expenditure

Table of Expenditure

Date	Activity	Cost
Sept 2013	Lidar survey	\$15,000
Nov 2013	Digitising and 3D wireframing	\$20,000
Dec 2013	Develop common mine grid (U/G)	\$20,000
Feb 2014	Tailings Disposal Study for UG project	\$25,100
Jan 2014	Tailings retreatment mining study	\$20,500
Feb 2014	Surface Infrastructure and Services Study	\$19,000
Feb 2014	U/G mining study and geotechnical review	\$65,000
Mar 2014	Contract mine/ owner operator study	\$15,000
Apr 2014	Compile P&S PFS components	\$20,155
<b>Total</b>		<b>\$219,755</b>

## References

**Barth, W. H., 1986.** Geology of the Cleveland tin mine, Tasmania, Australia with special reference to mineral chemistry and rare earth distribution. Doctoral thesis, University of Heidelberg, Germany.

**Brewer, A., 2008.** Cleveland tailings drilling, 17/3/2008. Memorandum from Adrian Brewer, Brewer Geological Services to John Lynch.

**Buckland, K.R., 1980.** Tin-copper ore mining at Cleveland Tin Limited, Luina, Tas. *in* Woodcock, J.T., 1980, Mining and Metallurgical Practices in Australasia, Monograph Series No. 10, The Australasian Institute of Mining and Metallurgy.

**Carey, S.W., 1945.** Geological Report of the Mt. Cleveland Tin Mine. Unpublished Report, Tasmania Department of Mines, 10th April 1945.

**Collins, P.L.F., Brown, S.G., Dronseika, E.V. and Morland, R., 1989.** Mid-Palaeozoic Ore Deposits *in* *Geology and Mineral Resources of Tasmania* (Eds. C.F. Burrett and E.L. Martin), Special Publication 15, Geological Society of Australia Incorporated.

**Cottle, V.M., 1953.** Magnet silver-lead mine *in* *Geology of Australian Ore Deposits, Fifth Empire Mining and Metallurgical Congress Australia and New Zealand, 1953* (Ed. A.B. Edwards), The Australasian Institute of Mining and Metallurgy.

**Cox, R., 1967.** The use of comparative sampling methods at Cleveland mine, Tasmania, March 1967. Unpublished report, Aberfoyle Tin Development Partnership, Cleveland Development Project.

**Cox, R. and Glasson, K.R., 1966.** Cleveland mine, Tasmania, report on ore reserve estimates, 4<sup>th</sup> March 1966. Aberfoyle Tin Development Partnership.

**Cox, R. and Glasson, K.R., 1967.** The Geology and Mineralisation of Cleveland Mine in The Geology of Western Tasmania –a Symposium, University of Tasmania, Department of Geology, November 1967.

**Dronseika, E.V., 1983.** Geological assessment of the Foley zone mineralisation at Cleveland mine Tasmania, May 1983. Unpublished report for Cleveland Tin Ltd.

**Dronseika, E.V., 1986.** Geological Resource Assessment, Cleveland Tin Mine, as at End of Milling-Mining Operations, 12<sup>th</sup> June 1986. Unpublished report for Aberfoyle Resources Limited, Cleveland Division by E.V. Dronseika, Senior Mine Geologist.

**Everett, H.R., 1977.** Current mining practice at Cleveland mine of Abminco N.L.. in Underground Operators' Conference, October 1977, The AusIMM Broken Hill Branch.

**Foo, K.A., 1981.** Performance of concentrators within Aberfoyle, past present and future, March 1981. Unpublished report, Aberfoyle Limited.

**Goodall, W. and McKeown, M.V. 2011.** 110711 Cleveland tailings reserve calc – annual report basis.xlsx. Spreadsheet prepared from Aberfoyle Public Annual Reports. Rockwell Resources Ltd, 11 July 2011 and Cleveland Historical Production 3 Aug MM.xls. Validation and extension of spreadsheet by Goodall (2011), 3 August 2011.

**Hamill, J.P., 1981.** Ore sorting of Foley's zone. Internal Memorandum to G.A. McArthur, 27<sup>th</sup> October 1981, Cleveland Tin Limited.

**Hample, B.W. and Waters, M.T., 1981.** Accuracy of Foley's mine assays in comparison to outside assay services. Internal Memorandum to G.A. McArthur, 16<sup>th</sup> July 1981, Cleveland Tin Limited.

**Hughes, T.D., 1952.** The Cleveland Mine. Unpublished Report, Tasmania Department of Mines, 4<sup>th</sup> November 1952.

**Hughes, T.D., 1953a.** The Mount Cleveland Mine. Unpublished Report, Tasmania Department of Mines, 13<sup>th</sup> July 1953.

**Hughes, T.D., 1953b.** Cleveland Mine. Unpublished Report, Tasmania Department of Mines, 12<sup>3rd</sup> October 1953.

**Hughes, T.D., 1954.** The Mt. Cleveland Mine – Supplementary Report. Unpublished Report, Tasmanian Department of Mines, 2<sup>nd</sup> June 1954.

**Jackson, P., Changkakoti, A., Krouse, H.R. and Gray, J., 2000.** The origin of the greisen fluids of the Foleys zone, Cleveland tin deposit, Tasmania, Australia in *Economic Geology volume 95, pages 227-236.*

**Keunecke, O. and Tate, K.H., 1954.** Records 1954 No. 7. Geophysical Survey at Mt. Cleveland Mine, Waratah, Tasmania. Commonwealth of Australia, Department of National Development, Bureau of Mineral Resources, Geology and Geophysics.

**Leaman, D.E. and Richardson, R.G., 1989.** The granites of west and north-west Tasmania – a geophysical interpretation. Geological Survey Bulletin 66, Tasmania Department of Mines.

**Leaman, D.E. and Richardson, R.G., 2003.** A geophysical model of the major Tasmanian granitoids. Tasmanian Geological Survey Record 2003/11, Mineral Resources Tasmania.

**Mason, A.A.C., 1965.** Tin ore deposits of Mount Cleveland. Geology of Australian Ore Deposits, Eighth Commonwealth Mining and Metallurgical Congress, 1965, the Australasian Institute of Mining and Metallurgy.

**Mason, A.A.C., Glasson, K.R. and Hopwood, T., 1963.** Outline of proposed exploratory development and ore testing programme. Aberfoyle Tin Development Partnership (Mount Cleveland Project), November 1963.

**McArthur, G.A., 1983.** Schematic 1983 Ore Reserve Procedure, 31 May 1983. Unpublished report for Cleveland Tin Ltd.

**McIntosh Reid, A., 1923.** The Cleveland mine – area, situation, etc., 19<sup>th</sup> March 1923. Unpublished Report, Geological Survey of Tasmania, Launceston.

**McKeown, M.V., 2011.** Re-sampling and re-assaying of Cleveland drill core. Memorandum from Mick McKeown to Mike Adams, 12 December, 2011. Mining One Pty Ltd.

**McKeown, M.V., 2013.** Mineral Resource report, for Rockwell Minerals Limited, March 2013. Mining One Pty Ltd.

**Moony, N., 2008.** Report on the Cleveland tailings deposit, 2008. Unpublished report by Esker Milling and Processing Pty Ltd for The Lynch Group.

**Ransom, D.M. and Hunt, F.L., 1975.** Cleveland tin mine in Knight, C.L. (editor), 1975, Economic Geology of Australia and Papua New Guinea, Monograph Series No. 5, the Australasian Institute of Mining and Metallurgy.

**Reid, A.M., 1923.** The Cleveland Mine. Unpublished Report, Tasmanian Department of Mines, 19th March 1923.

**Stribley, D.J., Tapp, G.C. and Meik, S.S, 1984.** Cleveland tailings re-treatment, pilot plant and laboratory flotation results, February 1984. Unpublished report by Aberfoyle Central Metallurgical Services.

**Thomas, I., 1983.** Analysis of metallurgical products from Foley Zone Upper Stockwork. Internal Memorandum to G.J. McArthur, 22<sup>nd</sup> March 1983, Aberfoyle Central metallurgical Services.

## Appendices

### Assay Results from Selective Sampling at the Cleveland Project

Sample ID	Easting	Northing	RL	Sn %	Cu %	Type
8	365370	5407153	1467	0.20	0.08	Rock
<b>9</b>	<b>365371</b>	<b>5407154</b>	<b>1468</b>	<b>0.98</b>	<b>0.12</b>	<b>Rock</b>
10	365338	5407166	1465	0.55	0.61	Rock
11	365342	5407164	1466	0.53	0.81	Rock
12	365354	5407167	1470	0.06	0.15	Rock
<b>13</b>	<b>365368</b>	<b>5407158</b>	<b>1467</b>	<b>2.93</b>	<b>0.59</b>	<b>Rock</b>
14	365357	5407180	1483	0.58	0.10	Rock
15	365356	5407179	1483	0.02	0.07	Rock
16	365351	5407176	1482	0.48	0.85	Rock
17	365366	5407177	1483	0.74	0.14	Rock
26	365315	5407167	1469	0.04	0.04	Rock
27	365318	5407168	1470	0.02	0.06	Rock
28	365323	5407169	1470	0.81	0.32	Rock
29	365327	5407167	1469	0.03	0.04	Rock
30	365353	5407165	1468	0.02	0.11	Rock
31	365344	5407160	1465	0.42	0.33	Rock
32	365362	5407161	1466	-0.01	0.08	Rock
34	365393	5407130	1442	0.26	0.14	Rock
35	365324	5407123	1469	-0.01	0.26	Rock
36	365275	5407158	1509	0.03	0.03	Rock
37	365214	5407119	1511	0.04	0.01	Rock
38	365285	5407155	1497	0.03	0.30	Rock

39	365284	5407158	1497	0.10	0.04	Rock
40	365290	5407170	1498	0.02	0.02	Rock
42	365283	5407144	1496	-0.01	0.01	Rock
43	365277	5407135	1495	-0.01	0.04	Rock
44	365229	5407050	1485	0.06	0.30	Rock
<b>45</b>	<b>365391</b>	<b>5407129</b>	<b>1441</b>	<b>1.73</b>	<b>0.57</b>	<b>Rock</b>
<b>46</b>	<b>365399</b>	<b>5407126</b>	<b>1435</b>	<b>2.22</b>	<b>0.90</b>	<b>Rock</b>
47	365380	5407137	1453	0.16	0.04	Rock
48	365263	5407057	1456	0.02	0.23	Rock
49	365261	5407051	1456	0.21	0.28	Rock
50	365278	5407036	1447	0.01	0.08	Rock
52	365170	5406962	1447	0.15	0.08	Rock
<b>53</b>	<b>365181</b>	<b>5406971</b>	<b>1447</b>	<b>1.18</b>	<b>0.39</b>	<b>Rock</b>
55	365307	5406961	1400	0.09	0.10	Rock
56	365318	5407004	1417	0.06	0.22	Rock
57	365296	5406976	1416	0.32	0.39	Rock
58	365295	5406975	1416	0.02	0.21	Rock
60	365266	5406936	1416	0.02	0.02	Rock
61	365193	5406901	1408	-0.01	0.01	Rock
62	365272	5406914	1402	0.03	0.05	Rock
63	365338	5407003	1399	0.03	0.02	Rock
64	365398	5407051	1398	0.03	0.02	Rock
66	365327	5406912	1365	-0.01	0.02	Rock
67	365319	5406883	1361	0.08	0.04	Rock
68	365318	5406882	1361	0.35	0.27	Rock
69	365123	5406770	1346	0.47	0.58	Rock
<b>70</b>	<b>365126</b>	<b>5406771</b>	<b>1346</b>	<b>1.57</b>	<b>0.23</b>	<b>Rock</b>
33	365377	5407100	1437	0.37	0.50	Spoil Dump
<b>41</b>	<b>365291</b>	<b>5407172</b>	<b>1498</b>	<b>1.47</b>	<b>0.33</b>	<b>Spoil Dump</b>
<b>51</b>	<b>365286</b>	<b>5407023</b>	<b>1445</b>	<b>0.76</b>	<b>1.14</b>	<b>Spoil Dump</b>
<b>54</b>	<b>365170</b>	<b>5406943</b>	<b>1443</b>	<b>1.18</b>	<b>0.20</b>	<b>Spoil Dump</b>
59	365294	5406973	1416	0.53	0.39	Spoil Dump
<b>65</b>	<b>365343</b>	<b>5406931</b>	<b>1369</b>	<b>1.86</b>	<b>1.22</b>	<b>Spoil Dump</b>
<b>71</b>	<b>364802</b>	<b>5407259</b>	<b>1348</b>	<b>1.67</b>	<b>0.47</b>	<b>Spoil Dump</b>