

22 October 2014

## **HIGH-GRADE TIN AND COPPER MINERALISATION IN SURFACE SAMPLING AT CLEVELAND**

### **Highlights**

- Selective sampling of outcropping mineralisation includes high-grade results of 2.93% tin and 0.90% copper
- Mineralisation shows continuity along strike and is consistent with current geological interpretations for potential extensions of the Hall's Lode not previously mined

**Elementos Limited (ASX: ELT) ("Elementos" or the "Company")** is pleased to report the results of a selective surface sampling program of outcrops and historical spoil dumps in and around the historic Hall's open cut, which sits directly above the Cleveland underground mine (Figures 1 and 2).

Forty-nine selective samples were taken from outcrops and results included:

- 2.93% tin and 0.59% copper;
- 2.22% tin and 0.90% copper; and
- 1.73% tin and 0.57% copper.

These results were related to strong sulphide mineralisation, oxidation and silicification.

Seven selective samples were taken from spoil dumps and results included:

- 1.86% tin and 1.22% copper;
- 1.67% tin and 0.47% copper; and
- 1.47% tin and 0.33% copper.

The results of the sampling program suggest that the surface geology correlates with the current underground geological interpretation, with the shallow mineralisation potentially linking to the remnant underground mineralisation (Photo 1). This correlation of the high-grade outcrop samples to the known underground mineralisation justifies further exploration, to assess the potential for extensions of the Hall's Lode not previously mined.

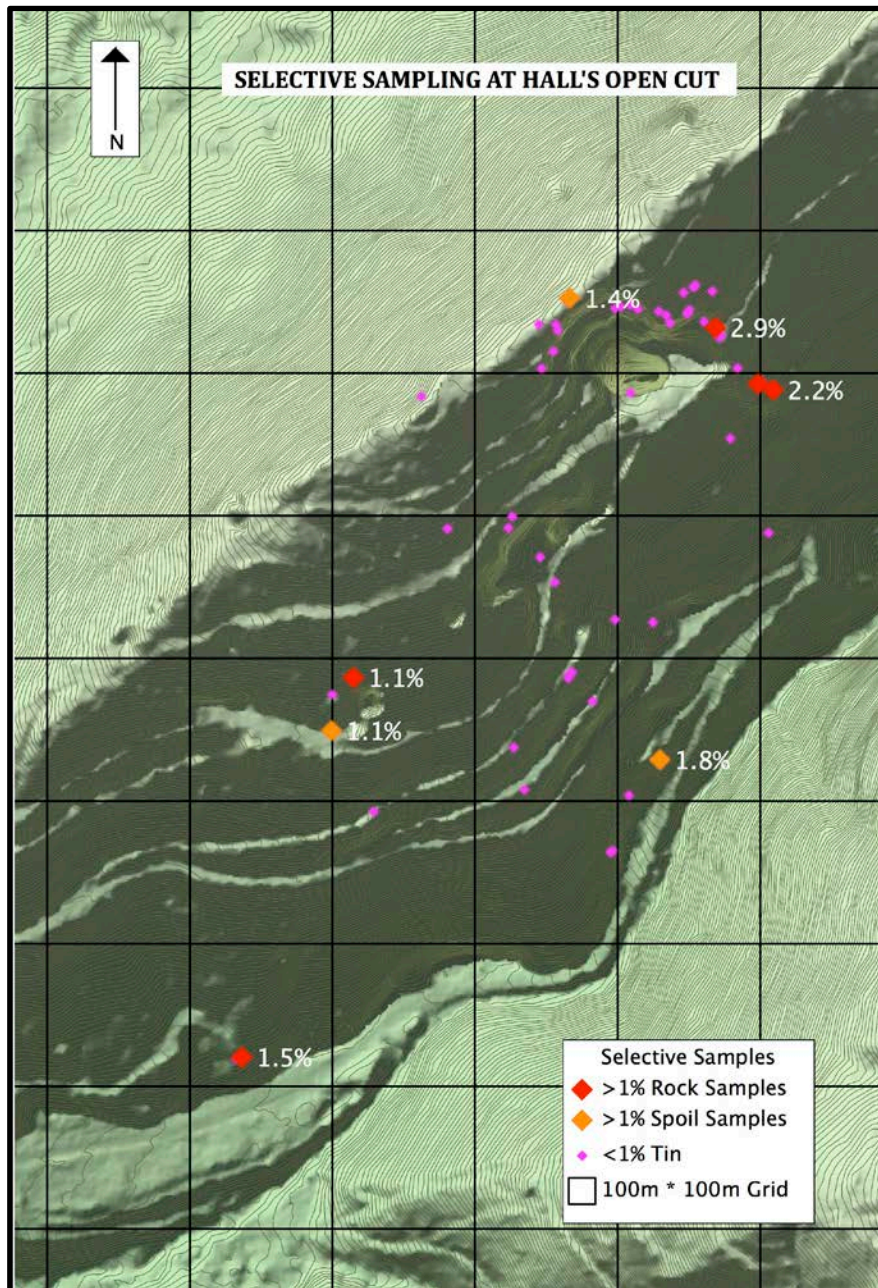
In addition, analysis of the spoil dump samples (Photo 2) indicates further investigation of their value is warranted, as a potential secondary feed source for the Company's tailings project.

The Company will look to further define surface mineralisation through selective sampling and handheld XRF exploration programs. The data collected will be used to define a cost effective drilling exploration program in 2015. At this stage, the work has provided no changes to the previously stated Mineral Resources<sup>1</sup>.

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<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" released 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 Competent Person's findings are presented have not been materially modified from the original market announcement.

**Figure 1:** Location of samples.

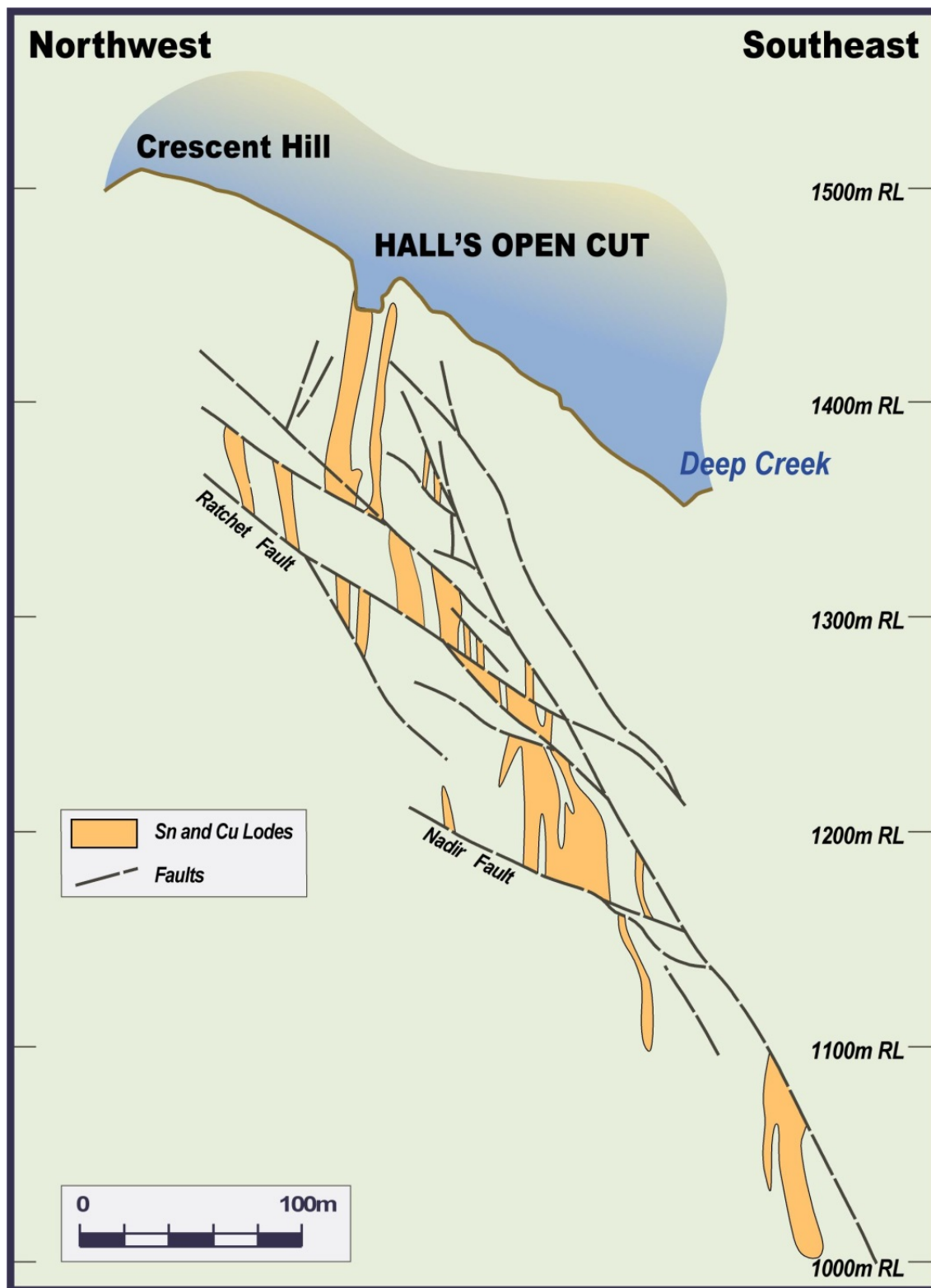


### Style and Nature of Mineralisation

The Cleveland deposit is located in the Dundas Trough of North-western 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 the 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.

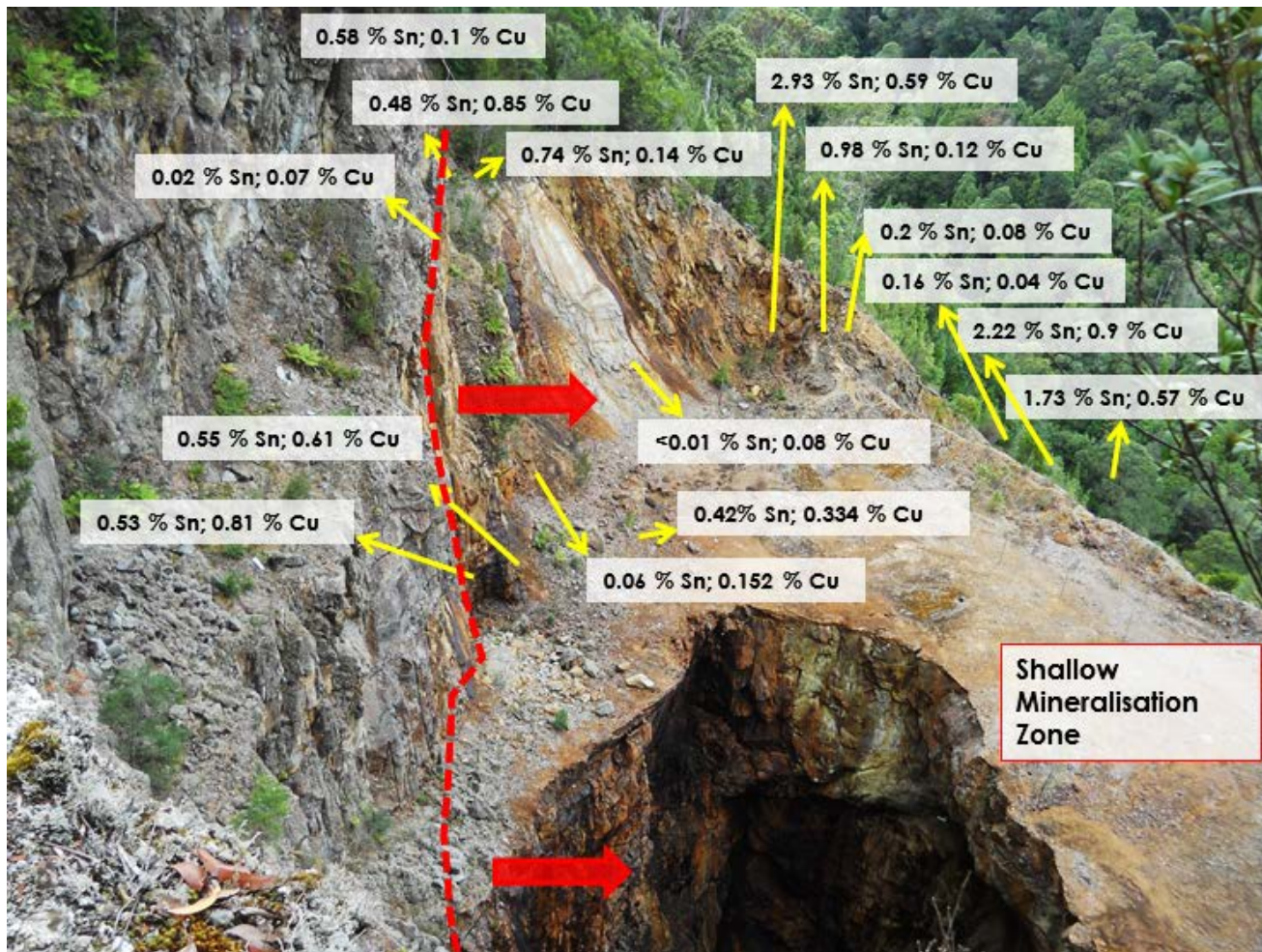
The semi-massive sulphide mineralisation was formed by the hydrothermal replacement of limestone beds by mineralising solutions associated with the emplacement of the Devonian-Carboniferous Meredith granite. The deposit is geologically similar to the tin bearing semi-massive and massive sulphide stratiform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

**Figure 2:** Historically mined, tin and copper bearing, semi-massive sulphide mineralisation in cross-section<sup>2</sup>.



<sup>2</sup> 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.





**Photo 1:** Hall's northern open-cut from a higher bench, looking north. Note the sampling results in the northern wall. The area from the red dotted line to the east is considered the most mineralised. Note the strong oxidation related with tin-copper mineralisation within and east of the glory hole.





**Photo 2:** Selective sampling results on mineralisation outcropping eastwards of Hall's open-cut (looking north) and spoil dump material on the slope of the hill. Sample results on the spoil dumps (light blue label) indicates that further investigation is required to assess the potential value of these dumps when considered with the rehabilitation of historic tailings.



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Elementos is an Australian, ASX-listed, diversified metals company, including Cleveland, an advanced stage tin-copper and tungsten project in Tasmania, together with a number of prospective copper and gold assets in South America and Australia.

Please visit us at [www.elementos.com.au](http://www.elementos.com.au)

**SAMPLE QUALITY CONTROL AND ASSURANCE**

Samples were prepared at the Australian Laboratory Services Pty("ALS") preparation facility in Burnie, Tasmania and assayed by Ore Grade Elements Four Acid Digestion with ICP-AES instrument at the ALS laboratory in Brisbane, all ISO-9001:2000 certified laboratories.

**COMPETENT PERSON STATEMENT**

The information in this report that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Mr Gustavo Delendatti a member of Australian Institute of Geoscientist. Mr Delendatti is a full-time employee of Elementos Ltd and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.' Mr Delendatti consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

**Table 1: 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

Sample ID	Easting	Northing	RL	Sn %	Cu %	Type
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>



## Appendix – Supporting Data Tables

### Section1 - Surface Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary
Sampling techniques	<p>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</p> <p>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</p> <p>Aspects of the determination of mineralisation that are Material to the Public Report.</p> <p>In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</p>	<p>56 rock chips were collected. Rock chip samples are collected from selected outcropping rocks and dumps. No effort has been made to ensure representative sampling of the collected rock. The samples varied in size ranging from approximately 0.5-1kg.</p> <p>No duplicate samples were collected and no standards were incorporated in the sample batch. A hand held GPS was used to record sample locations (+/- 5m accuracy).</p>
Drilling techniques	<p>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</p>	<p>Not applicable, no drilling was conducted.</p>
Drill sample recovery	<p>Method of recording and assessing core and chip sample recoveries and results assessed.</p> <p>Measures taken to maximise sample recovery and ensure representative nature of the samples.</p> <p>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</p>	<p>Not applicable, no drilling was conducted.</p>

Criteria	JORC Code Explanation	Commentary
Logging	<p>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</p> <p>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</p> <p>The total length and percentage of the relevant intersections logged.</p>	<p>Field notes regarding rock type and location were recorded in a sample book. This information is of insufficient detail to support any Mineral Resource Estimation.</p>
Sub-sampling techniques and sample preparation	<p>If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</p> <p>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</p> <p>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</p> <p>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</p> <p>Whether sample sizes are appropriate to the grain size of the material being sampled.</p>	<p>The entire collected sample is submitted for analysis. No duplicate samples are submitted. No measures are taken to ensure sampling is statistically representative of the in situ sampled material. The collection methodology is considered appropriate for rock chip sampling and is in line with standard industry practice.</p>
Quality of assay data and laboratory tests	<p>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</p>	<p>The laboratory analysis technique utilises the entire sample. The laboratory assay procedure is considered appropriate for samples of this type. No additional quality control measured beyond the standard laboratory "checks and balances" implemented by the lab as part of their normal assaying procedure were conducted. Samples were assayed for Sn and W by Oxidizing Fusion with XRF Finish at the ALS laboratory in Burnie and for Ag, As, Bi, Cu, Mo, Fe, Pb and Zn by Ore Grade Elements Four Acid Digestion with ICP-AES instrument at the ALS laboratory in Brisbane, all ISO-9001:2000 certified laboratories. Four acid digestion is considered to be a total technique. No on site analysis was conducted.</p>

Criteria	JORC Code Explanation	Commentary
Verification of sampling and assaying	<p>The verification of significant intersections by either independent or alternative company personnel.</p> <p>The use of twinned holes.</p> <p>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</p> <p>Discuss any adjustment to assay data.</p>	<p>Any sample returning a four acid digest result of &gt;1,500 ppm Ag was re-assayed using a four acid technique. The results are considered to be acceptable. The Company conducts internal data verification, data entry and storage protocols which are followed and adhered to. None of the received assays have been adjusted in any way.</p>
Location of data points	<p>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</p> <p>Specification of the grid system used.</p> <p>Quality and adequacy of topographic control.</p>	<p>Rock chip samples are located using a hand held GPS (+/- 5m accuracy). The grid system is GDA 94 (zone 51). No topographic data (ie RL) was recorded.</p>
Data spacing and distribution	<p>Data spacing for reporting of Exploration Results.</p> <p>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</p> <p>Whether sample compositing has been applied.</p>	<p>The sampling methodology is considered unbiased. The relationship to geological structures and orientation is unknown apart from local geological information that was recorded at the sample point. The nature of the results do not support Mineral Resource and Ore Reserve estimate procedures. No sample compositing applies.</p>
Orientation of data in relation to geological structure	<p>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</p> <p>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</p>	<p>Samples were collected over a small area (ie 1m x 1m each), the orientation in relation to geological structures is unknown. No orientation based sampling bias has been identified in the data to date.</p>
Sample security	<p>The measures taken to ensure sample security.</p>	<p>Samples were collected in the field and stored in a secure lockable location until dispatched to the laboratory via company personnel and vehicle where the laboratory controls custody of the samples.</p>
Audits or reviews	<p>The results of any audits or reviews of sampling techniques and data.</p>	<p>No audits or reviews have been conducted at this stage.</p>



## Section 2 - Reporting of Exploration Results

Criteria	JORC Code Explanation	Commentary
Mineral tenement and land tenure status	Type, reference name/number, location ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	Exploration Licence EL7/2005 covers the Cleveland mine and Mineral Resource. EL7/2005 is held by Elementos Ltd, through its wholly owned subsidiary Rockwell Minerals (Tasmania) Pty Ltd.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties	See Table 1 below for a summary of work carried out by other parties.
Geology	Deposit type, geological setting and style of mineralisation	<ul style="list-style-type: none"> <li>The Cleveland tin copper mineralisation is hydrothermal mineralisation associated with Devonian granite which outcrops within 5 kilometres of the mine and is interpreted from gravity surveys to lie about 4 kilometres beneath the surface at the mine.</li> <li>The host sedimentary rocks were intruded by the Devonian-Carboniferous Meredith granite. A quartz porphyry dyke occurs in the bottom of the mine below 350m from the surface.</li> <li>The tin copper mineralisation occurs as semi-massive sulphide lenses consisting of pyrrhotite and pyrite with cassiterite and lesser chalcopyrite and stannite, and quartz, fluorite and carbonates. Sulphide minerals make up 20% to 30% of the mineralisation.</li> <li>The semi-massive sulphide lenses have formed by the replacement of limestone and are geologically similar to the tin bearing semi-massive and massive sulphide mineralisation at Mt Bischoff and Renison.</li> </ul>

Criteria	JORC Code Explanation	Commentary
Drill hole Information	<ul style="list-style-type: none"> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	For these Selective Samples, there have been no holes drilled.
Data aggregation methods	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	For these Selective Samples, there have been no averaging techniques, composition of data or data aggregation undertaken.
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li> </ul>	The Samples are selective grab samples and do not represent intersections. The results are indicative of surface mineralisation only and do not imply any lengths, volumes or quantities of mineralisation.
Diagrams		See Figures in this announcement.
Balanced reporting		All Selective Sampling results have been reported.

Criteria	JORC Code Explanation	Commentary
Other substantive exploration data	<ul style="list-style-type: none"> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	<p>Modeling of the granite, based on geophysical gravity survey, indicates that the top of the granite is nearly 4 kilometres deep at Cleveland (Leaman and Richardson, 1989 and 2003).</p> <p>The metallurgical amenability of the tin copper mineralisation was established by mining and processing operations from 1968 to 1986.</p> <p>The acceptable geotechnical conditions in the mine were established by successful mining operations from 1968 to 1986.</p> <p>Groundwater inflows to the mine were easily handled by conventional pumping techniques during mining operations from 1968 to 1986.</p>
Further work	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul style="list-style-type: none"> <li>There is excellent potential for further exploration of the Cleveland tin and copper mineralisation. A first definition and prioritisation of Exploration Targets was completed by MiningOne (see Elementos Ltd ASX release of 2 April 2014 "Acquisition of Advanced Tin Deposit). The Cleveland tin and copper mineralisation is open at depth and along strike, including several shallow targets near the surface. This report is focused on the exploration potential at shallow levels.</li> </ul>



**Table 1: Historical Summary of Exploration and Mining at the Cleveland Mine**

1898	S.C. Coundon, Prospector	Pegged leases over gossan for possibility of silver and lead.
1900	Harcourt Smith Government Geologist Department of Mines, Tasmania	Identified cassiterite in gossan.
1908 - 1917	Cleveland Tin Mining Company N.L.	Mined oxidised ore for tin.
1923	A.M. Reid Government Geologist Department of Mines, Tasmania	Recognised fissure lodes and replacement lodes.
1935-1937	Mount Bischoff Tin Mining Company	Small scale underground exploration: Battery, Smithy, Lucks, Khaki, Hall's, Henry's recognised.
1937	Q.J. Henderson Government Geologist Department of Mines, Tasmania	Described the work undertaken by the Mount Bischoff tin mining company.
1945	S.W. Carey Government Geologist Department of Mines, Tasmania	Reported all deposits were of replacement style.
1952-1954	T.D. Hughes Government Geologist Department of Mines, Tasmania	Postulated that the ore would continue in depth. Recommended cutting of a grid and geophysical surveys.
1953-1954	O. Keunecke and K.H. Tate Bureau of Mineral Resources Commonwealth of Australia	Concluded self-potential and magnetic surveys anomalies suggested that sulphide mineralisation may extend beyond the old workings.
1961-1965	Aberfoyle Tin Development Partnership	Explored the area with diamond drilling and proved up sufficient resources for mining.
1968-1986	Cleveland Tin N.L. and Aberfoyle Limited	Mined tin and copper ore.
2007	Lynch Mining Pty Ltd	Drilled 30 aircore holes, for a total length of 561m, to test tailings dams.
2013	Rockwell Minerals (Tasmania) Pty Ltd	Acquired high resolution topographic data using LiDAR. Drilled 32 aircore holes, for a total length of 612m, to test tailings dams and to obtain samples for metallurgical testing.