

# **SUBSTANTIAL INCREASE IN RENISON BELL MINERAL RESOURCE**

Metals X Limited (**Metals X** or the **Company**) is pleased to provide its annual update of Mineral Resource and Ore Reserve estimates for the Renison Tin Operations (**Renison**) in Tasmania. Renison is 50% owned by Metals X through the Bluestone Mines Tasmania Joint Venture.

## **HIGHLIGHTS**

- ▶ 22% increase in Mineral Resources at the Renison Bell underground mine from 166,000 tonnes of contained tin to 203,000 tonnes of contained tin
  - Total Renison Bell Measured, Indicated and Inferred Resource of 15.0 Mt at 1.35% Sn for 203,000 tonnes of contained tin.
- ▶ Replenishment of Renison Bell mining depletion to maintain an 8 year underground Ore Reserve
  - Total Renison Bell Proved and Probable Reserve of 6.8 Mt at 1.06% Sn for 72,000 tonnes of contained tin.

Managing Director, Mr Warren Hallam, said:

“Although mining has taken place at Renison for over 100 years, each year we continue to advance our geological understanding of this massive tin system which has once again resulted in another substantial increase in resources.”

“This increase is yet to be fully reflected in the conversion to reserves at this time. However we have maintained an 8 year Ore Reserve and, based upon the resource inventory and exploration upside, are confident that Renison will remain a long-life profitable operation.”

“The ore sorter, currently under construction, will increase the grade of ore to the mill by 15 to 20%. As such, we propose to bulk mine areas that have shown to be economically amenable to ore sorting. This has marginally reduced the grade of the Ore Reserve whilst increasing tonnes and maintaining contained tin. The move to bulk mining of selected areas will increase productivity, continue to lower unit costs across the operation and will further extend the mine life by making previously uneconomic areas profitable.”

## **ENQUIRIES**

Warren Hallam  
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## MINERAL RESOURCE AND ORE RESERVE STATEMENT - RENISON

**TABLE 1. RENISON TIN OPERATIONS MINERAL RESOURCE ESTIMATE AT 31 MARCH 2017**

MLX equity share is 50% of the Mineral Resource estimate shown below.

Deposit	Mineral Resource Category <sup>1</sup>	Tin			Copper		
		'000 tonnes <sup>2</sup>	Grade % Sn	Tin tonnes <sup>2</sup>	'000 tonnes	Grade % Cu	Copper tonnes <sup>2</sup>
Renison Bell <sup>3</sup>	Measured	1,452	1.85%	26,900	1,452	0.39%	5,600
	Indicated	6,731	1.28%	86,300	6,538	0.30%	19,800
	Inferred	6,791	1.32%	89,700	6,782	0.14%	9,200
	<b>Total</b>	<b>14,974</b>	<b>1.35%</b>	<b>202,900</b>	<b>14,772</b>	<b>0.23%</b>	<b>34,600</b>
Mt Bischoff <sup>4</sup>	Measured	-	-	-	-	-	-
	Indicated	968	0.59%	5,700	-	-	-
	Inferred	699	0.47%	3,300	-	-	-
	<b>Total</b>	<b>1,667</b>	<b>0.54%</b>	<b>9,000</b>	<b>-</b>	<b>-</b>	<b>-</b>
Rentails Project <sup>5</sup>	Measured	23,220	0.44%	103,000	23,220	0.23%	52,700
	Indicated	-	-	-	-	-	-
	Inferred	-	-	-	-	-	-
	<b>Total</b>	<b>23,220</b>	<b>0.44%</b>	<b>103,000</b>	<b>23,220</b>	<b>0.23%</b>	<b>52,700</b>
<b>TOTAL</b>	Measured	24,672	0.53%	129,800	24,672	0.24%	58,300
	Indicated	7,699	1.19%	92,000	6,538	0.30%	19,800
	Inferred	7,490	1.24%	93,000	6,782	0.14%	9,200
	<b>Total</b>	<b>39,861</b>	<b>0.79%</b>	<b>314,800</b>	<b>37,993</b>	<b>0.23%</b>	<b>87,300</b>

1. Mineral Resources are reported inclusive of Mineral Resources modified to produce the Ore Reserve;
2. Tonnes are reported as kilo tonnes ('000t) and rounded to nearest 1,000; Sn and Cu tonnes are rounded to the nearest 100 tonnes; rounding may result in some slight apparent discrepancies in totals.
3. Cut-off grade of 0.7% Sn.
4. Cut-off Grade of 0.5% Sn.
5. Cut-off Grade of 0.0% Sn.

**TABLE 2. RENISON TIN OPERATIONS ORE RESERVE ESTIMATE AT 31 MARCH 2017**

MLX equity share is 50% of the Ore Reserve estimate shown below

Project	Ore Reserve Category <sup>1</sup>	Tin			Copper		
		Ore '000 tonnes	Grade % Sn	Tin tonnes <sup>2</sup>	Ore '000 tonnes	Grade % Cu	Copper tonnes <sup>2</sup>
Renison Bell	Proved	1,267	1.46%	18,500	1,267	0.35%	4,400
	Probable	5,554	0.97%	53,900	5,232	0.25%	13,000
	<b>Total</b>	<b>6,821</b>	<b>1.06%</b>	<b>72,400</b>	<b>6,499</b>	<b>0.27%</b>	<b>17,400</b>
Rentails	Proved	-	-	-	-	-	-
	Probable	22,313	0.44%	98,900	22,313	0.23%	50,700
	<b>Total</b>	<b>22,313</b>	<b>0.44%</b>	<b>98,900</b>	<b>22,313</b>	<b>0.23%</b>	<b>50,700</b>
<b>TOTAL</b>	Proved	1,267	1.46%	18,500	1,267	0.35%	4,400
	Probable	27,867	0.55%	152,800	27,546	0.23%	63,700
	<b>Total</b>	<b>29,134</b>	<b>0.59%</b>	<b>171,400</b>	<b>28,812</b>	<b>0.24%</b>	<b>68,100</b>

1. The Ore Reserve is based on the Renison Mineral Resource estimate at 31 March 2017, with applied modifying factors, at a cut-off grade of 0.8% Sn for Renison Bell and 0.0% Sn for Rentails;
2. Sn and Cu tonnes are rounded to the nearest 100 tonnes; rounding may result in some slight apparent discrepancies in totals.

## KEY ASSUMPTIONS AND JORC 2012 REQUIREMENTS

Mineral Resources are reported inclusive of Ore Reserves. Mining production data up to 31 March 2017 and all exploration information has been included. Mineral Resources have been depleted for mining to 31 March 2017.

The tin price assumption used to estimate Mineral Resources and Ore Reserves was US\$17,000/t Sn at an assumed exchange rate of USD/AUD 0.75 giving a price of AUD \$22,667/t Sn.

The Mineral Resources and Ore Reserves have been classified in accordance with the guidelines set out in the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves, published by the Joint Ore Reserves Committee (JORC), of the Australasian Institute of Mining and Metallurgy, the Australian Institute of Geoscientists and the Minerals Council of Australia, December 2012 (the 'JORC Code' or 'JORC 2012').

The full Mineral Resource and Ore Reserve estimates for the Renison Tin Operations are tabulated in Table 1 and Table 2 respectively.

Material Information for the individual deposits, including a summary of material information pursuant to ASX Listing Rules 5.8 and 5.9 and the Assessment and Reporting Criteria in accordance with JORC 2012 requirements, is included in the body of this report and in Appendix A to this announcement.

## MINERAL RESOURCE AND ORE RESERVE GOVERNANCE STATEMENT

In accordance with ASX Listing Rule 5.21.5, governance of the Company's Mineral Resources and Ore Reserves development and management activities is a key responsibility of the Executive Management of the Company.

Senior geological and mining engineering staff of the Company oversee reviews and technical evaluations of the estimates and evaluates these with reference to actual physical, cost and performance measures. The evaluation process also draws upon internal skill sets in operational and project management, ore processing and commercial/financial areas of the business.

The Chief Operating Officer (in consultation with senior staff) is responsible for monitoring the planning, prioritisation and progress of exploratory and resource definition drilling programs across the Company and the estimation and reporting of resources and reserves. These definition activities are conducted within a framework of quality assurance and quality control protocols covering aspects including drill hole siting, sample collection, sample preparation and analysis as well as sample and data security.

A four-level compliance process guides the control and assurance activities:

- Provision of internal policies, standards, procedures and guidelines;
- Mineral Resource and Ore Reserve reporting based on well-founded geological and mining assumptions and compliance with external standards such as the Australasian Joint Ore Reserves Committee (JORC) Codes;
- Internal review of process conformance and compliance; and
- Internal assessment of compliance and data veracity.

The Executive Management aims to promote the maximum conversion of identified mineralisation into JORC 2012 compliant Mineral Resources and Ore Reserves.

The Company reports its Mineral Resources and Ore Reserves, as a minimum, on an annual basis, in accordance with ASX Listing Rule 5.21 and clause 14 of Appendix 5A (the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, or the “JORC Code” 2012 Edition).

Competent Persons named by the Company are members of the Australasian Institute of Mining and Metallurgy (AusIMM) and/or the Australian Institute of Geoscientists (AIG), and qualify as Competent Persons as defined in the JORC Code 2012.

## MINERAL RESOURCE ESTIMATE

Table 1 shows the updated Mineral Resource estimate for the Renison Tin Operations at 31 March 2017.

### SUMMARY OF MATERIAL INFORMATION

Appendix A to this report contains all information material to understanding the estimates of Mineral Resources. In accordance with Listing Rule 5.8.1, the following summary of material information in this regard is provided below.

Geology and geological interpretation: Renison is one of the world’s largest operating underground tin mines and Australia’s largest primary tin producer. Renison is the largest of three major Skarn, carbonate replacement, pyrrhotite-cassiterite deposits within western Tasmania. The Renison Mine area is situated in the Dundas Trough, a province underlain by a thick sequence of Neoproterozoic-Cambrian siliciclastic and volcanoclastic rocks. At Renison there are three shallow-dipping dolomite horizons which host replacement mineralisation. The major structure associated with tin mineralisation at Renison, the Federal Basset Fault, was formed during the forceful emplacement of the Pine Hill Granite during the Devonian and is also an important source of tin mineralisation.

Drilling techniques, sampling and sub-sampling techniques: The bulk of the data used in resource calculations at Renison has been gathered from diamond core using NQ2, LTK60 and LTK48 sizes. This core is geologically logged and subsequently halved for sampling. Drill holes may be whole-cored to streamline the core handling process if required. Each development face / round is horizontally chip sampled with the sampling intervals being dominated by geological constraints. Sludge drilling is performed with an underground production drill rig (64mm diameter hole). It is an open hole drilling method using water as the flushing medium,

Samples are dried at 90°C, crushed to <3mm and riffle split to obtain a sub-sample of approximately 100g which is then pulverized to 90% passing 75µm. A weighed sample is then then compressed into a pressed powder tablet for introduction to the XRF. QA/QC is ensured during the sub-sampling stages process via the use of the systems of an independent NATA / ISO accredited laboratory contractor. The sample size is considered appropriate for the grain size of the material being sampled. The un-sampled half of diamond core is retained for check sampling if required.

Criteria for classification: Resources are classified in line with JORC guidelines utilising a combination of various estimation derived parameters, the input data and geological / mining knowledge. This approach considers all relevant factors and reflects the Competent Person's view of the deposit. At Renison, material classified as Measured must have development (with face samples) within 20m. Indicated Mineral Resource must have sufficient grade and geology continuity with drillhole intersections generally between 40m and 20m apart. Inferred Mineral Resource is material that is defined by drillholes greater than 40m apart. Geological continuity may be present but the grade estimate is lower in confidence.

Sample analysis method: Samples are dried at 90°C, then crushed to <3mm, samples are then riffle split to obtain a sub sample of approximately 100g which is then pulverized to 90% passing 75µm. 2g of the pulp sample is then weighed with 12g of reagents including a binding agent, the weighed sample is then pulverized again for one minute. The sample is then compressed into a pressed powder tablet for introduction to the XRF. Sn, As and Cu have a detection limit 0.01%, Fe and S detection limits are 0.1%. Each XRF batch of twenty consists of one blank, one internal standard, one duplicate and a replicate. Anomalous assay results are re-assayed to ensure quality control.

Estimation methodology: All modelling and estimation work undertaken by BMTJV is carried out via Surpac Vision by creating three dimensional ore body wireframes using sectional techniques. Drill hole intersections within the three dimensional wireframes are composited and statistical analysis is conducted to determine appropriate search parameters within individual domains. An empty block model is created and grade estimation is undertaken using ordinary Kriging estimation methods. The resource is then depleted using mining voids and subsequently classified in line with JORC guidelines as above.

Cut-off grades: The resource reporting cut-off grade is 0.7% Sn at Renison. The cut-off grade used for inclusion in the Ore Reserve is 0.8% Sn based on economic assessment and current operating and market parameters.

Mining and metallurgical methods and parameters: The Renison mine predominantly applies up-hole benching and open stoping mining methods with (in some cases), post fill and cemented rock fill to fill voids. The weighted average mining dilution is 14% at zero grade. Minimum widths for underground development are 4.5m and for stoping minimum widths are 2.2m. Mining recoveries are generally between 65 and 100% with the weighted average recovery for the reserve model being 88%. No inferred resources are included within either the reserve or the mining plan.

The Renison mine produces a tin concentrate of grade varying between 50- 60 % Sn with internal process designed to reduce penalty metals such as iron, sulphur, tungsten and copper. The metallurgical process is complex and applies several stages of gravity-type concentration as well as sulphide and oxide flotation, regrinding and acid leach methods. The metallurgical recovery is estimated based on regression analysis of grade recovery curves from the actual processing of ores in the plant. Metallurgical recoveries on the various ore and grades were considered as part of the cut-off grade analysis.

## **ANNUAL COMPARISON OF MINERAL RESOURCES**

Tables 3 and 4 compare the 2016 Mineral Resource estimate with the updated Mineral Resource estimate at 31 March 2017 for the Renison Operations. The Mineral Resource estimate for Mount Bischoff is unchanged from 2016.

MLX equity share is 50% of the Mineral Resource estimates shown below.

TABLE 3. RENISON MINERAL RESOURCE ESTIMATE – DEPLETION &amp; RESOURCE ADJUSTMENTS FROM PRIOR YEAR

Project	Tin			Copper		
	Tonnes kt	Grade % Sn	Metal kt Sn	Tonnes kt	Grade % Cu	Metal kt Cu
<b>30 June 2016</b>						
Renison Bell	11,530	1.44	166	10,721	0.31	33
Mt Bischoff	1,667	0.54	9	-	-	-
Rentails	22,503	0.45	100	22,503	0.22	51
	<b>35,701</b>	<b>0.77</b>	<b>275</b>	<b>33,224</b>	<b>0.25</b>	<b>84</b>
<b>Mining Depletion</b>						
Renison Bell	(753)	1.23	(9)	(753)	0.32	(2)
Mt Bischoff	-	-	-	-	-	-
Rentails	-	-	-	-	-	-
	<b>(753)</b>	<b>1.23</b>	<b>(9)</b>	<b>(753)</b>	<b>0.32</b>	<b>(2)</b>
<b>Resource Adjustments</b>						
Renison Bell	4,196	1.11	47	4,805	0.08	4
Mt Bischoff	-	-	-	-	-	-
Rentails	717	0.35	3	717	0.29	2
	<b>4,913</b>	<b>1.00</b>	<b>49</b>	<b>5,522</b>	<b>0.11</b>	<b>6</b>
<b>31 March 2017</b>						
Renison Bell	14,974	1.35	203	14,772	0.23	35
Mt Bischoff	1,667	0.54	9	-	-	-
Rentails	23,220	0.44	103	23,220	0.23	53
	<b>39,861</b>	<b>0.79</b>	<b>315</b>	<b>37,993</b>	<b>0.23</b>	<b>87</b>

The difference between the 2017 Renison Bell Mineral Resource estimate and 2016 estimate include the following modifications:

- All drilling data, development face and sludge data obtained between 2016 and 31 March 2017 has been included in the model; and
- Updates to all wireframe models based on this data.

The inclusion of a new model for the upper strata bound resource which was previously reported in the “prospects” area. All resources in this area remain as inferred material.

**TABLE 4. RENISON BELL MINERAL RESOURCE ESTIMATE – ANNUAL COMPARISON**

MLX equity share is 50% of the Mineral Resource estimate shown below.

Mineral Resource reporting date	Mineral Resource Category <sup>1</sup>	Tin			Copper		
		'000 tonnes <sup>2</sup>	Grade % Sn	Tin tonnes <sup>2</sup>	'000 tonnes	Grade % Cu	Copper tonnes <sup>2</sup>
30 June 2016 <sup>3</sup>	Measured	1,437	2.06%	29,600	1,360	0.44%	6,000
	Indicated	6,738	1.31%	88,300	6,303	0.32%	20,200
	Inferred	3,356	1.42%	47,700	3,057	0.22%	6,800
	<b>Total</b>	<b>11,530</b>	<b>1.44%</b>	<b>165,600</b>	<b>10,721</b>	<b>0.31%</b>	<b>33,000</b>
31 March 2017 <sup>4</sup>	Measured	1,452	1.85%	26,900	1,452	0.39%	5,600
	Indicated	6,731	1.28%	86,300	6,538	0.30%	19,800
	Inferred	6,791	1.32%	89,700	6,782	0.14%	9,200
	<b>Total</b>	<b>14,974</b>	<b>1.35%</b>	<b>202,900</b>	<b>14,772</b>	<b>0.23%</b>	<b>34,600</b>

1. Mineral Resources are reported inclusive of Mineral Resources modified to produce the Ore Reserve;
2. Tonnes are reported as kilo tonnes ('000t) and rounded to nearest 1,000; Sn and Cu tonnes are rounded to the nearest 100 tonnes; rounding may result in some slight apparent discrepancies in totals.
3. As reported by Metals X in its Annual Update of Mineral Resources and Ore Reserves at 30 June 2016. Cut-off grade of 0.7% Sn.
4. Mineral Resources are calculated at 31 March 2017 by Metals X, adjusted for depletion to 31 March 2017, using a lower cut-off grade of 0.7% Sn.

## COMPETENT PERSON'S STATEMENT

The information in this report that relates to Mineral Resources has been compiled by Metals X Limited technical employees under the supervision of Mr Colin Carter B.Sc. (Hons), M.Sc. (Econ. Geol), AusIMM. Mr Carter is a full-time employee of the Company and has sufficient experience which is relevant to the style of mineralisation and types of deposit under consideration and to the activities which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Carter consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

## ORE RESERVE ESTIMATE

Table 2 shows the updated Ore Reserve estimate for the Renison Tin Operations at 31 March 2017.

## SUMMARY OF MATERIAL INFORMATION

The updated Renison Bell Ore Reserve estimate is based on the updated Mineral Resource estimate, as detailed in this announcement (refer to Table 1), with modifying factors applied. The modifying factors and associated criteria used in determining the Ore Reserve are summarised below, in accordance with ASX Listing Rule 5.9.1, and detailed in Appendix A:

- Geological models used in the estimation are summarised in Appendix A: Table 1 Report: Modelling Techniques;
- Cut-off grade was determined based on actual unit costs currently being experienced at the Renison operations;
- Tin price assumption of US\$17,000/t at an assumed exchange rate of USD/AUD 0.75 for a price of AUD \$22,667/t Sn;
- Open stoping and up hole benching is assumed as per current operations;

- Underground stoping uses mining recovery factor of between 65% and 100% depending on the individual block (average 88%). Additionally, mining dilution of between 0% and 20% has also been applied individual blocks (average over the resource of 14%);
- Metallurgical recoveries applied to produce tin concentrate from ore are based on historical and current recoveries in the operating Renison Tin Concentrator based on a regression analysis of the grade recovery curve;
- The operation is fully permitted allowing production to continue for the life of mine.

## ANNUAL COMPARISON OF ORE RESERVES

Table 6 compares the 2016 Ore Reserve estimate with the updated Ore Reserve estimate at 30 June 2017 for the Renison Bell deposit. The Ore Reserve estimates for Rentails has been updated based on the actual additions of tailings material from the Renison mill into A, B and C dams between the 2016 Ore Reserve statement and 31 March 2017.

MLX equity share is 50% of the Ore Reserve estimates shown below. Ore Reserves are a subset of the Mineral Resource estimate.

**TABLE 5. RENISON ORE RESERVE ESTIMATE – DEPLETION & RESERVE ADJUSTMENTS FROM PRIOR YEAR**

Project	Tin			Copper		
	Ore kt	Grade % Sn	Metal kt Sn	Ore kt	Grade % Cu	Metal kt Cu
<b>30 June 2016</b>						
Renison Bell	5,691	1.28	73	5,396	0.28	15
Rentails	21,628	0.45	97	21,628	0.23	49
	<b>27,319</b>	<b>0.62</b>	<b>170</b>	<b>27,024</b>	<b>0.24</b>	<b>64</b>
<b>Mining Depletion</b>						
Renison Bell	(753)	1.23	(9)	(753)	0.32	(2)
Rentails	-	-	-	-	-	-
<b>Reserve Adjustments</b>						
Renison Bell	1,883	0.46	9	1,856	0.25	5
Rentails	686	0.35	2	686	0.29	2
<b>31 March 2017</b>						
Renison Bell	6,821	1.06	72	6,499	0.27	17
Rentails	22,313	0.44	99	22,313	0.23	51
	<b>29,134</b>	<b>0.59</b>	<b>171</b>	<b>28,812</b>	<b>0.24</b>	<b>68</b>

The difference between the 2017 Renison Bell Ore Reserve estimate and 2016 Ore Reserve estimate include the following modifications:

- Update of reserve position based on all new drilling, face sampling and sludge data incorporated with stope shape estimations in each mine area;
- All dilution and recovery factors updated as appropriate; and
- Inclusion of mining areas that have been found to be economically amenable to bulk mining techniques.



**TABLE 6. RENISON BELL ORE RESERVE ESTIMATE – ANNUAL COMPARISON**

MLX equity share is 50% of the Ore Reserve estimates shown below

Ore Reserve reporting date	Ore Reserve Category <sup>1</sup>	Tin			Copper		
		Ore kt <sup>3</sup>	Grade % Sn	Tin Tonnes <sup>4</sup>	Ore kt <sup>3</sup>	Grade % Cu	Copper tonnes <sup>4</sup>
30 June 2016 <sup>1</sup>	Proved	1,105	1.29%	14,300	1,077	0.43%	4,600
	Probable	4,586	1.28%	58,700	4,319	0.25%	10,600
	<b>Total</b>	<b>5,691</b>	<b>1.28%</b>	<b>73,000</b>	<b>5,396</b>	<b>0.28%</b>	<b>15,200</b>
31 March 2017 <sup>2</sup>	Proved	1,267	1.46%	18,500	1,267	0.35%	4,400
	Probable	5,554	0.97%	53,900	5,232	0.25%	13,000
	<b>Total</b>	<b>6,821</b>	<b>1.06%</b>	<b>72,400</b>	<b>6,499</b>	<b>0.27%</b>	<b>17,400</b>

1. As reported by Metals X in its Annual Update of Mineral Resources and Ore Reserves at 30 June 2016.
2. Ore Reserves as calculated at 31 March 2017 by Metals X, adjusted for depletion to 31 March 2017, based on the Mineral Resource estimate of 31 March 2017.
3. Tonnes are reported as thousand tonnes (Kt) and rounded to the nearest 1,000 tonnes.
4. Tin and copper tonnes are rounded to the nearest 100 tonnes. Rounding may result in some slight apparent discrepancies in totals.

## COMPETENT PERSON'S STATEMENT

The information in this report that relates to Ore Reserves has been compiled by Metals X Limited technical employees under the supervision of Mr Allan King B App Sc (Mining Engineering), AusIMM. Mr King is a full time employee of the Company. Mr King has sufficient experience which is relevant to the style of mineralisation and types of deposit under consideration and to the activities which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr King consents to the inclusion in this report of the matters based on his information in the form and context in which it appears. Mr King is eligible to participate in the Company's short and long term incentive plan and holds performance rights in the Company.

## APPENDIX A

### INFORMATION MATERIAL TO UNDERSTANDING THE MINERAL RESOURCES AND ORE RESERVES

#### JORC CODE, 2012 EDITION

JORC TABLE 1: THE INFORMATION IN THIS TABLE REFERS TO THE FOLLOWING PROJECTS AT THE RENISON TIN OPERATIONS: RENISON BELL, RENTAILS AND MOUNT BISCHOFF

#### SECTION 1: SAMPLING TECHNIQUES AND DATA

(Criteria in this section apply to all succeeding sections)

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Nature and quality of sampling (e.g. 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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>In cases where 'industry standard' work has been done this would be relatively simple (e.g. '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 (e.g. submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<p><b>Diamond Drilling</b></p> <ul style="list-style-type: none"> <li>The bulk of the data used in resource calculations at Renison has been gathered from diamond core. Three sizes have been used historically NQ2 (45.1mm nominal core diameter), LTK60 (45.2mm nominal core diameter) and LTK48 (36.1mm nominal core diameter), with NQ2 currently in use. This core is geologically logged and subsequently halved for sampling. Grade control holes may be whole-cored to streamline the core handling process if required.</li> <li>NQ and HQ core sizes have been recorded as being used at Mount Bischoff. This core is geologically logged and subsequently halved for sampling.</li> <li>There is no diamond drilling for the Rentails Project.</li> </ul> <p><b>Face Sampling</b></p> <ul style="list-style-type: none"> <li>Each development face / round is horizontally chip sampled at Renison. The sampling intervals are dominated by geological constraints (e.g. rock type, veining and alteration / sulphidation etc.). Samples are taken in a range from 0.3m up to 1.2m in waste. All exposures within the orebody are sampled. A similar process would have been followed for historical Mount Bischoff face sampling.</li> <li>There is no face sampling for the Rentails Project.</li> </ul> <p><b>Sludge Drilling</b></p> <ul style="list-style-type: none"> <li>Sludge drilling at Renison is performed with an underground production drill rig. It is an open hole drilling method using water as the flushing medium, with a 64mm (nominal) hole diameter. Sample intervals are ostensibly the length of the drill steel. Holes are drilled at sufficient angles to allow flushing of the hole with water following each interval to prevent contamination.</li> <li>There is no sludge drilling for the Mount Bischoff Project.</li> <li>There is no sludge drilling for the Rentails Project.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. 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.).</li> </ul>	
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> </ul>	

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<p><b>RC Drilling</b></p> <ul style="list-style-type: none"> <li>RC drilling has been utilised at Mount Bischoff.</li> <li>Drill cuttings are extracted from the RC return via cyclone. The underflow from each interval is transferred via bucket to a four tiered riffle splitter, delivering approximately three kilograms of the recovered material into calico bags for analysis. The residual material is retained on the ground near the hole. Composite samples are obtained from the residue material for initial analysis, with the split samples remaining with the individual residual piles until required for re-split analysis or eventual disposal.</li> <li>There is no RC drilling for the Renison Project.</li> <li>There is no RC drilling for the Rentails Project.</li> </ul> <p><b>Percussion Drilling</b></p> <ul style="list-style-type: none"> <li>This drilling method was used for the Rentails project and uses a rotary tubular drilling cutter which was driven percussively into the tailings. The head of the cutting tube consisted of a 50mm diameter hard tipped cutting head inside which were fitted 4 spring steel fingers which allowed the core sample to enter and then prevented it from falling out as the drill tube was withdrawn from the drill hole.</li> <li>There is no percussion drilling for the Renison Project.</li> <li>There is no percussion drilling for the Mount Bischoff Project.</li> <li>All geology input is logged and validated by the relevant area geologists, incorporated into this is assessment of sample recovery. No defined relationship exists between sample recovery and grade. Nor has sample bias due to preferential loss or gain of fine or coarse material been noted.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>Diamond core is logged geologically and geotechnically.</li> <li>RC chips are logged geologically.</li> <li>Development faces are mapped geologically.</li> <li>Logging is qualitative in nature.</li> <li>All holes are logged completely, all faces are mapped completely.</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> </ul>	<ul style="list-style-type: none"> <li>Drill core is halved for sampling. Grade control holes may be whole-cored to streamline the core handling process if required.</li> <li>Samples are dried at 90°C, then crushed to &lt;3mm. Samples are then riffle split to obtain a sub-sample of approximately 100g which is then pulverized to 90% passing 75µm. 2g of the pulp sample is then weighed with 12g of reagents including a binding agent, the weighed sample is then pulverised again for one minute. The sample is then compressed into a pressed powder tablet for introduction to the XRF. This preparation has been proven to be appropriate for the style of mineralisation being considered.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>QA/QC is ensured during the sub-sampling stages process via the use of the systems of an independent NATA / ISO accredited laboratory contractor.</li> <li>The sample size is considered appropriate for the grain size of the material being sampled.</li> <li>The un-sampled half of diamond core is retained for check sampling if required.</li> <li>For RC chips regular field duplicates are collected and analysed for significant variance to primary results.</li> </ul>
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>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.</li> <li>Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</li> </ul>	<ul style="list-style-type: none"> <li>Assaying is undertaken via the pressed powder XRF technique. Sn, As and Cu have a detection limit 0.01%, Fe and S detection limits are 0.1%. These assay methodologies are appropriate for the resource in question.</li> <li>All assay data has built in quality control checks. Each XRF batch of twenty consists of one blank, one internal standard, one duplicate and a replicate, anomalies are re-assayed to ensure quality control.</li> <li>Specific gravity / density values for individual areas are routinely sampled during all diamond drilling where material is competent enough to do so.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul style="list-style-type: none"> <li>Anomalous intervals as well as random intervals are routinely checked assayed as part of the internal QA/QC process.</li> <li>Virtual twinned holes have been drilled in several instances across all sites with no significant issues highlighted. Drillhole data is also routinely confirmed by development assay data in the operating environment.</li> <li>Primary data is loaded into the drillhole database system and then archived for reference.</li> <li>All data used in the calculation of resources and reserves are compiled in databases (underground and open pit) which are overseen and validated by senior geologists.</li> <li>No primary assays data is modified in any way.</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>All data is spatially oriented by survey controls via direct pickups by the survey department. Drillholes are all surveyed downhole, currently with a GyroSmart tool in the underground environment at Renison, and a multishot camera for the typically short surface diamond holes.</li> <li>All drilling and resource estimation is undertaken in local mine grid at the various sites.</li> <li>Topographic control is generated from remote sensing methods in general, with ground based surveys undertaken where additional detail is required. This methodology is adequate for the resource in question.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li><i>Data spacing for reporting of Exploration Results.</i></li> <li><i>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.</i></li> <li><i>Whether sample compositing has been applied.</i></li> </ul>	<ul style="list-style-type: none"> <li>Drilling in the underground environment at Renison is nominally carried-out on 40m x 40m spacing in the south of the mine and 25m, x 25m spacing in the north of the mine prior to mining occurring. A lengthy history of mining has shown that this data spacing is appropriate for the Mineral Resource estimation process and to allow for classification of the resource as it stands.</li> <li>Drilling at Mount Bischoff is variably spaced. A lengthy history of mining has shown that this data spacing is appropriate for the Mineral resource estimation process and to allow for classification of the resource as it stands.</li> <li>Drilling at Rentails is usually carried out on a 100m centres. This is appropriate for the Mineral resource estimation process and to allow for classification of the resource as it stands.</li> <li>Compositing is carried out based upon the modal sample length of each individual domain.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <li><i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Drilling intersections are nominally designed to be normal to the orebody as far as underground infrastructure constraints / topography allows.</li> <li>Development sampling is nominally undertaken normal to the various orebodies.</li> <li>It is not considered that drilling orientation has introduced an appreciable sampling bias.</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li><i>The measures taken to ensure sample security.</i></li> </ul>	<ul style="list-style-type: none"> <li>At Renison, Mount Bischoff and Rentails samples are delivered directly to the on-site laboratory by the geotechnical crew where they are taken into custody by the independent laboratory contractor.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<ul style="list-style-type: none"> <li>Site generated resources and reserves and the parent geological data is routinely reviewed by the Metals X Corporate technical team.</li> </ul>

## SECTION 2: REPORTING OF EXPLORATION RESULTS

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li>Type, reference name/number, location and 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.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>All Tasmania resources are hosted within 12M1995 and 12M2006. Both tenements are standard Tasmanian mining leases.</li> <li>No native title interests are recorded against the Tasmanian tenements.</li> <li>Tasmanian tenements are held by the Bluestone Mines Tasmania Joint Venture of which Metals X has 50% ownership.</li> <li>No royalties above legislated state royalties apply for the Tasmanian tenements.</li> <li>Bluestone Mines Tasmania Joint Venture operates in accordance with all environmental conditions set down as conditions for grant of the mining leases.</li> <li>There are no known issues regarding security of tenure.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>The Renison and Mount Bischoff areas have an exploration and production history in excess of 100 years.</li> <li>Bluestone Mines Tasmania Joint Venture work has generally confirmed the veracity of historic exploration data.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>Renison is one of the world's largest operating underground tin mines and Australia's largest primary tin producer. Renison is the largest of three major Skarn, carbonate replacement, pyrrhotite-cassiterite deposits within western Tasmania. The Renison Mine area is situated in the Dundas Trough, a province underlain by a thick sequence of Neoproterozoic-Cambrian siliciclastic and volcanoclastic rocks. At Renison there are three shallow-dipping dolomite horizons which host replacement mineralisation.</li> <li>Mount Bischoff is the second of three major Skarn, carbonate replacement, pyrrhotite-cassiterite deposits within western Tasmania. The Mount Bischoff Mine area is situated within the Dundas Trough, a province underlain by a thick sequence of Neoproterozoic-Cambrian siliciclastic and volcanoclastic rocks. At Mount Bischoff folded and faulted shallow-dipping dolomite horizons host replacement mineralisation with fluid interpreted to be sourced from the forceful emplacement of a granite ridge and associated porphyry intrusions associated with the Devonian Meredith Granite, which resulted in the complex brittle / ductile deformation of the host rocks. Lithologies outside the current mining area are almost exclusively metamorphosed siltstones. Major porphyry dykes and faults such as the Giblin and Queen provided the major focus for ascending hydrothermal fluids from a buried ridge of the Meredith Granite. Mineralisation has resulted in tin-rich sulphide replacement in the dolomite lodes, greisen and sulphide lodes in the porphyry and fault / vein lodes in the major faults. All lodes contain tin as cassiterite within sulphide mineralisation with some coarse cassiterite as veins throughout the lodes.</li> <li>The Rentails resource is contained within three Tailing Storage Facilities (TSF's) that have been built up from the processing of tin ore at the Renison Bell mine over the period 1968 to 2013.</li> </ul>



Criteria	JORC Code explanation	Commentary
<b>Drill hole Information</b>	<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</li> <li>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>	<ul style="list-style-type: none"> <li>No exploration results are reported as part of this release, results relating to the deposits have been previously released.</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. 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>	<ul style="list-style-type: none"> <li>No exploration results are reported as part of this release, results relating to the deposits have been previously released.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<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 (e.g. 'down hole length, true width not known').</li> </ul>	<ul style="list-style-type: none"> <li>No exploration results are reported as part of this release, results relating to the deposits have been previously released.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>	<ul style="list-style-type: none"> <li>No exploration results are reported as part of this release, results relating to the deposits have been previously released.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	<ul style="list-style-type: none"> <li>No exploration results are reported as part of this release, results relating to the deposits have been previously released.</li> </ul>
<b>Other substantive exploration data</b>	<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>	<ul style="list-style-type: none"> <li>No relevant information to be presented.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (e.g. 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>Exploration assessment and normal mine extensional drilling continues to take place at Renison.</li> <li>Exploration assessment continues to progress at Mount Bischoff.</li> <li>Project assessment continues to progress at Rentails.</li> </ul>



## SECTION 3: ESTIMATION AND REPORTING OF MINERAL RESOURCES

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
<b>Database integrity</b>	<ul style="list-style-type: none"> <li>Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</li> <li>Data validation procedures used.</li> </ul>	<ul style="list-style-type: none"> <li>Drillhole data is stored in a Maxwell's DataShed system based on the Sequel Server platform which is currently considered "industry standard".</li> <li>As new data is acquired it passes through a validation approval system designed to pick-up any significant errors before the information is loaded into the master database. The information is uploaded by a series of Sequel routines and is performed as required. The database contains diamond drilling (including geotechnical and specific gravity data), face chip and sludge drilling data and some associated metadata. By its nature this database is large in size, and therefore exports from the main database are undertaken (with or without the application of spatial and various other filters) to create a database of workable size, preserve a snapshot of the database at the time of orebody modelling and interpretation and preserve the integrity of the master database.</li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>Mr. Colin Carter is employed as Renison Tin Operations' Geology Manager and is located on site on a full time basis.</li> </ul>
<b>Geological interpretation</b>	<ul style="list-style-type: none"> <li>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>The factors affecting continuity both of grade and geology.</li> </ul>	<ul style="list-style-type: none"> <li>Mining has occurred since 1800's providing significant confidence in the currently geological interpretation across all projects.</li> <li>No alternative interpretations are currently considered viable.</li> <li>Geological interpretation of the deposit was carried out using a systematic approach to ensure that the resultant estimated Mineral Resource figure was both sufficiently constrained, and representative of the expected sub-surface conditions. In all aspects of resource estimation the factual and interpreted geology was used to guide the development of the interpretation.</li> <li>The architecture of the Renison horst / graben system is the dominant control on geological and grade continuity.</li> <li>Similarly at Mount Bischoff the extent of intrusive felsic dykes in proximity to carbonate horizons control the continuity of grade within the system.</li> <li>The depositional history of Rentails is well documented.</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</li> </ul>	<ul style="list-style-type: none"> <li>Renison has currently been mined over a strike length of &gt;1,950m, a lateral extent of &gt;1,250m and a depth of over 1,100m.</li> <li>Mount Bischoff mineralisation has currently been defined over a strike length of &gt;600m, a lateral extent of &gt;250m and a depth of &gt;250m.</li> <li>Rentails is deposited in three adjacent TSFs which have an aggregate length of approximately 1.8km and a width at the widest point of circa 1km. Maximum depth is in excess of 20m.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Estimation and modelling techniques</b>	<ul style="list-style-type: none"> <li><i>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.</i></li> <li><i>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</i></li> <li><i>The assumptions made regarding recovery of by-products.</i></li> <li><i>Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).</i></li> <li><i>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</i></li> <li><i>Any assumptions behind modelling of selective mining units.</i></li> <li><i>Any assumptions about correlation between variables.</i></li> <li><i>Description of how the geological interpretation was used to control the resource estimates.</i></li> <li><i>Discussion of basis for using or not using grade cutting or capping.</i></li> <li><i>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</i></li> </ul>	<ul style="list-style-type: none"> <li>All modelling and estimation work undertaken by BMTJV is carried out in three dimensions via Surpac Vision.</li> <li>After validating the drillhole data to be used in the estimation, interpretation of the orebody is undertaken in sectional and / or plan view to create the outline strings which form the basis of the three dimensional orebody wireframe. Wireframing is then carried out using a combination of automated stitching algorithms and manual triangulation to create an accurate three dimensional representation of the sub-surface mineralised body.</li> <li>Drillhole intersections within the mineralised body are defined, these intersections are then used to flag the appropriate sections of the drillhole database tables for compositing purposes. Drillholes are subsequently composited to allow for grade estimation. In all aspects of resource estimation the factual and interpreted geology was used to guide the development of the interpretation.</li> <li>Once the sample data has been composited, a statistical analysis is undertaken to assist with determining estimation search parameters, top-cuts etc. Variographic analysis of individual domains is undertaken to assist with determining appropriate search parameters, which are then incorporated with observed geological and geometrical features to determine the most appropriate search parameters.</li> <li>An empty block model is then created for the area of interest. This model contains attributes set at background values for the various elements of interest as well as density, and various estimation parameters that are subsequently used to assist in resource categorisation. The block sizes used in the model will vary depending on orebody geometry, minimum mining units, estimation parameters and levels of informing data available.</li> <li>Grade estimation is then undertaken, with ordinary kriging estimation method is considered as standard, although in some circumstances where sample populations are small, or domains are unable to be accurately defined, inverse distance weighting estimation techniques will be used. Both by-product and deleterious elements are estimated at the time of primary grade estimation. It is assumed that by-products correlate well with tin. There are no assumptions made about the recovery of by-products.</li> <li>The resource is then depleted for mining voids and subsequently classified in line with JORC guidelines utilising a combination of various estimation derived parameters and geological / mining knowledge.</li> <li>This approach has proven to be applicable to Metals X's tin assets.</li> <li>Estimation results are routinely validated against primary input data, previous estimates and mining output.</li> <li>Good reconciliation between mine claimed figures and milled figures is routinely achieved.</li> </ul>
<b>Moisture</b>	<ul style="list-style-type: none"> <li><i>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</i></li> </ul>	<ul style="list-style-type: none"> <li>Tonnage estimates are dry tonnes.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Cut-off parameters</b>	<ul style="list-style-type: none"> <li>The basis of the adopted cut-off grade(s) or quality parameters applied.</li> </ul>	<ul style="list-style-type: none"> <li>The resource reporting cut-off grade is 0.7% Sn at Renison.</li> <li>The resource reporting cut-off grade is 0.5% Sn at Mount Bischoff.</li> <li>There is no lower reporting cut-off grade for Rentals.</li> </ul>
<b>Mining factors or assumptions</b>	<ul style="list-style-type: none"> <li>Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>Not considered for Mineral Resource. Applied during the Reserve generation process.</li> </ul>
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li>The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>Not considered for Mineral Resource. Applied during the Reserve generation process.</li> </ul>
<b>Environmental factors or assumptions</b>	<ul style="list-style-type: none"> <li>Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>Both Bluestone Mines Tasmania Joint Venture operates in accordance with all environmental conditions set down as conditions for grant of the respective mining leases.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Bulk density</b>	<ul style="list-style-type: none"> <li>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</li> <li>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.</li> <li>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</li> </ul>	<ul style="list-style-type: none"> <li>Bulk density of the mineralisation at Renison and Mount Bischoff is variable. Bulk density sampling is undertaken via assessments of drill core (BMTJV practice is to undertake bulk density determinations on a representative selection of drill core sent for assay), and are reviewed constantly (BMTJV practice is to collect check SG samples as a regular part of the mining cycle). Where no drill core or other direct measurements are available, SG factors have been assumed based on similarities to other zones of mineralisation.</li> <li>Given the volume of the TSF's are known, and the tonnage of tailings material deposited into the dams was recorded, the insitu bulk density of the Rentails resource has been back-calculated.</li> </ul>
<b>Classification</b>	<ul style="list-style-type: none"> <li>The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).</li> <li>Whether the result appropriately reflects the Competent Person's view of the deposit.</li> </ul>	<ul style="list-style-type: none"> <li>Resources are classified in line with JORC guidelines utilising a combination of various estimation derived parameters, the input data and geological / mining knowledge.</li> <li>This approach considers all relevant factors and reflects the Competent Person's view of the deposit.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of Mineral Resource estimates.</li> </ul>	<ul style="list-style-type: none"> <li>Resource estimates are peer reviewed by the site technical team as well as Metals X's Corporate technical team.</li> </ul>
<b>Discussion of relative accuracy/ confidence</b>	<ul style="list-style-type: none"> <li>Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.</li> <li>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> <li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>	<ul style="list-style-type: none"> <li>All currently reported resources estimates are considered robust, and representative on both a global and local scale.</li> <li>A continuing history of mining with good reconciliation of mine claimed to mill recovered provides confidence in the accuracy of the estimate for Renison and Mount Bischoff.</li> <li>A detailed set of production records provides confidence in the accuracy of the estimate for Rentails.</li> </ul>

## SECTION 4: ESTIMATION AND REPORTING OF ORE RESERVES

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	JORC Code explanation	Commentary
<b>Mineral Resource estimate for conversion to Ore Reserves</b>	<ul style="list-style-type: none"> <li>Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.</li> <li>Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.</li> </ul>	<ul style="list-style-type: none"> <li>At all projects, all resources that have been converted to reserve are classified as either an Indicated or Measured Resource. Indicated Resources are only upgraded to Probable Reserves after adding appropriate modifying factors. Some Measured Resource may be classified as Proven Reserves and some is classified as Probable Reserve based on whether is capitally or fully developed.</li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>Mr Allan King was General Manager of the site until early this year and visits the active Metals X operations on a regular basis.</li> </ul>
<b>Study status</b>	<ul style="list-style-type: none"> <li>The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.</li> <li>The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.</li> </ul>	<ul style="list-style-type: none"> <li>Mining is in progress at Renison and has occurred for nearly 50 years. Following exploration and infill drilling activity, annual resource updates and economic assessment of the Measured and Indicated resources is completed using actual costs, operating parameters and modifying factors. An annual update of Ore Reserves is completed on this basis. With regard to the Rentails Mineral Resource and Ore Reserve, the proposed Rentails Tailings Re- treatment Project has been subject to a Definitive Feasibility Study to validate the operating parameters applied. Increases in both the Mineral Resource and Ore Reserve for Renison are a direct reflection of total tailings output to the tailings dam from the operating Renison tin concentrator plant.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Cut-off parameters</b>	<ul style="list-style-type: none"> <li>The basis of the cut-off grade(s) or quality parameters applied.</li> </ul>	<ul style="list-style-type: none"> <li>The cut-off grade used for inclusion in the Renison Ore Reserve is 0.8% Sn based on economic assessment and current operating and market parameters. No consideration is given to copper co-product revenue in the economic assessment as the mining and recovery of the material is ad hoc and occurs as a consequence of mining the tin.</li> <li>There is no lower cut-off for reporting of the Rentails Reserve as the entire resource will be mined as far as physical constraints allow.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Mining factors or assumptions</b>	<ul style="list-style-type: none"> <li>The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).</li> <li>The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.</li> </ul>	<ul style="list-style-type: none"> <li>The Renison mine predominantly applies up-hole benching and open stoping with in some cases post fill and cemented rock fill to fill voids. The mining method has been successfully applied over the past decade with small tweaks and geotechnical considerations progressively applied.</li> <li>Mining dilution for the Mining Reserve is different for each stope and depends upon stope shape, geological setting and size. The weighted average dilution is 14% at zero grade.</li> <li>A minimum mining width of underground development is 4.5m and for underground stoping a minimum width of 2.2 m. Resource models are diluted to these limits before dilution is applied.</li> </ul>



Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li><i>The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling.</i></li> <li><i>The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).</i></li> <li><i>The mining dilution factors used.</i></li> <li><i>The mining recovery factors used.</i></li> <li><i>Any minimum mining widths used.</i></li> <li><i>The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.</i></li> <li><i>The infrastructure requirements of the selected mining methods.</i></li> </ul>	<ul style="list-style-type: none"> <li>Mining recoveries vary depending upon the stopes physical shape, geological setting and size between 65% and 100%. The weighted average recovery for the reserve model is 88%.</li> <li>No Inferred resources are included within either the Reserve or the mine plan.</li> <li>Rentails resources have been converted to reserve via a DFS study.</li> <li>Rentails will be mined via a combination of dredging and monitoring.</li> <li>Mining dilution at Rentails is minimal.</li> <li>Mining recovery at Rentails will exceed 95%.</li> <li>No Inferred resources are included within either the Rentails Reserve or the mine plan.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li><i>The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.</i></li> <li><i>Whether the metallurgical process is well-tested technology or novel in nature.</i></li> <li><i>The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.</i></li> <li><i>Any assumptions or allowances made for deleterious elements.</i></li> <li><i>The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.</i></li> <li><i>For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?</i></li> </ul>	<ul style="list-style-type: none"> <li>The Renison mine produces a tin concentrate of grade varying between 50- 60 % Sn with internal process designed to reduce penalty metals such as iron, sulphur, tungsten and copper.</li> <li>The metallurgical process is complex and applies several stages of gravity-type concentration as well as sulphide and oxide flotation, regrinding and acid leach methods. The method is proved and has successfully operated for over 50 years.</li> <li>The metallurgical recovery is estimated based on regression analysis of grade recovery curves from the actual processing of ores in the plant.</li> <li>Metallurgical recoveries on the various ore and grades were considered as part of the cut-off grade analysis.</li> <li>The process proposed by Rentails project is to regrind the ores to a finer grind, the pre-concentration using sulphide and oxide flotation, and high-g-force gravity separation to produce a low-grade concentrate which is planned to be processed using an Ausmelt process to fume the tin to a high grade concentrate and tap out a copper matte.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Environmental</b>	<ul style="list-style-type: none"> <li><i>The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.</i></li> </ul>	<ul style="list-style-type: none"> <li>Waste is generally stored underground in old mine voids.</li> <li>The Renison mine operates under and in compliance with a number of operating permits, which cover its environmental impacts and outputs.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.</li> </ul>	<ul style="list-style-type: none"> <li>The Renison mine is currently active and has substantial in place infrastructure in place including a large amount of mine infrastructure, major electrical and pumping networks, and underground primary crusher and automated shaft hoist system, a 700,000-750,000tpa tin concentrator plant, a fully equipped laboratory, extensive workshop, administration facilities and a 100 person single person quarters nearby.</li> <li>The Rentails Project will be integrated with the Renison Project. There is sufficient land set aside for the Rentails expansion and future infrastructure requirements including tailings storage.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Costs</b>	<ul style="list-style-type: none"> <li>The derivation of, or assumptions made, regarding projected capital costs in the study.</li> <li>The methodology used to estimate operating costs.</li> <li>Allowances made for the content of deleterious elements.</li> <li>The source of exchange rates used in the study.</li> <li>Derivation of transportation charges.</li> <li>The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.</li> <li>The allowances made for royalties payable, both Government and private.</li> </ul>	<ul style="list-style-type: none"> <li>Costs for the Renison mine are based on historical actual site costs and future budget estimates for all functions at the existing mine.</li> <li>Costs for the Rentails Project have been defined through a Definitive Feasibility Study.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Revenue factors</b>	<ul style="list-style-type: none"> <li>The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.</li> <li>The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.</li> </ul>	<ul style="list-style-type: none"> <li>For the Renison Mine, revenue is based upon existing smelter contract costs and a base international tin price of US\$17,000 and an AUD to USD exchange rate of 0.75 : 1. No co-product revenue is considered in Mining Reserve or cut-off grade estimation.</li> <li>For the Rentails Project, similar industry based smelter contracts is considered. Credits for sale of a high-grade copper matte product are considered and applied as a co-product revenue in the estimation of operating costs.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Market assessment</b>	<ul style="list-style-type: none"> <li>The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</li> <li>A customer and competitor analysis along with the identification of likely market windows for the product.</li> <li>Price and volume forecasts and the basis for these forecasts.</li> <li>For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.</li> </ul>	<ul style="list-style-type: none"> <li>Detailed economic studies of the tin market and future price estimates are considered by Metals X and applied in the estimation of revenue, cut-off grade analysis and future mine planning decisions.</li> <li>There remains strong demand and no apparent risk to the long term demand for the tin products and / or copper products generated from the project.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Economic</b>	<ul style="list-style-type: none"> <li><i>The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.</i></li> <li><i>NPV ranges and sensitivity to variations in the significant assumptions and inputs.</i></li> </ul>	<ul style="list-style-type: none"> <li>As an operating mine, internal cash flow estimates and impairment models apply an implied 6.5% real discount rate for NPV analysis and only economically viable ores are considered for mining. The mine is operated in a JV and carries no external debt.</li> <li>For the Rentails Project, which is yet to be funded, an 8% real discount rate is applied to NPV analysis.</li> <li>Sensitivity analysis of key financial and physical parameters is applied to future development project considerations and mine.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li><i>The status of agreements with key stakeholders and matters leading to social licence to operate.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Renison mine is fully permitted and a major contributor to the local and regional economy. It has no external pressures that impact its operation or which could potentially jeopardise its continuous operation.</li> <li>The Rentails Project is yet to start and will require environmental and other regulatory permitting.</li> <li>The Mount Bischoff Project is currently closed and the site is under care and maintenance whilst addition drilling and economic evaluation or remaining resources is considered.</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li><i>To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:</i></li> <li><i>Any identified material naturally occurring risks.</i></li> <li><i>The status of material legal agreements and marketing arrangements.</i></li> <li><i>The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.</i></li> </ul>	<ul style="list-style-type: none"> <li>Renison is an active mining project.</li> </ul>



Criteria	JORC Code explanation	Commentary
<b>Classification</b>	<ul style="list-style-type: none"> <li><i>The basis for the classification of the Ore Reserves into varying confidence categories.</i></li> <li><i>Whether the result appropriately reflects the Competent Person's view of the deposit.</i></li> <li><i>The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).</i></li> </ul>	<ul style="list-style-type: none"> <li>The basis for classification of the resource into different categories is made on a subjective basis. Measured Resources have a high level of confidence and are generally defined in three dimensions and have been accurately defined or capitally and normally developed. Indicated resources have a slightly lower level of confidence but contain substantial drilling and are in most instances capitally developed or well defined from a mining perspective. Inferred resources always contain significant geological evidence of existence and are drilled, but not to the same density. There is no classification of any resource that isn't drilled or defined by substantial physical sampling works.</li> <li>Some Measured Resources have been classified as Proven and some are defined as Probable Reserves based on subjective internal judgements, but generally based upon the intensity of capital and normal development they have been subjected to.</li> <li>The result appropriately reflects the Competent Person's view of the deposit.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of Ore Reserve estimates.</i></li> </ul>	<ul style="list-style-type: none"> <li>Site generated reserves and the parent data and economic evaluation data is routinely reviewed by the Metals X Corporate technical team. Resources and Reserves have in the past been subjected to external expert reviews, which have ratified them with no issues. There is no regular external consultant review process in place.</li> </ul>
<b>Discussion of relative accuracy / confidence</b>	<ul style="list-style-type: none"> <li><i>Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.</i></li> <li><i>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</i></li> <li><i>Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.</i></li> <li><i>It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</i></li> </ul>	<ul style="list-style-type: none"> <li>All currently reported reserve calculations are considered representative on a local scale. Regular mine reconciliations occur to validate and test the accuracy of the estimates at Renison. A comprehensive production history confirms the validity of the Rentals reserve.</li> <li>No reserve is stated for Mount Bischoff.</li> </ul>