



RESOURCES  
LIMITED

a Level 14, 31 Queen Street Melbourne, Victoria 3000  
t +61 3 8610 8633 f +61 3 8610 8666 e info@aruntaresources.com.au  
www.aruntaresources.com.au  
ABN 73 089 224 402

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ASX ANNOUNCEMENT (ASX: AJR)

## HATCHES CREEK: MAIDEN HIGH-GRADE TUNGSTEN RESOURCE TO UNDERPIN DEVELOPMENT STUDIES

*Substantial tonnages of high-grade tungsten mineralisation in surface stockpiles confirmed in maiden JORC compliant Mineral Resource*

### *Highlights:*

- Maiden Inferred Resource of 225,066 tonnes grading 0.58% WO<sub>3</sub> calculated for surface mineralisation stockpiles at advanced Hatches Creek Tungsten Project, NT.
- For comparison purposes, the average grade of eight major global tungsten deposits currently being explored/developed by ASX-listed companies is 0.34% WO<sub>3</sub>.
- The stockpiled material consists of mineralised mine waste, tailings and eluvial/alluvial material located at the 11 largest historical mines in the Hatches Creek Tungsten Field.
- The Inferred Resource confirms the presence of sufficient tonnages to support the viability of a potential low-cost processing operation to deliver saleable tungsten concentrates, creating an early development pathway for Hatches Creek.
- Strong expressions of interest have been received from specialty metals traders for project off-take.
- Arunta proposes to proceed with definitive metallurgical test work and a Scoping Study to assess the viability of processing the resources.
- Drilling is planned for Q1 2015 to test the open pit potential of the abundant, close-spaced Hit or Miss lodes, as well as the excellent resource potential below the old mines, which were historically worked to a depth of just 60m.

Arunta Resources Ltd (ASX: AJR) is pleased to advise that it has taken a key step towards outlining a near-term development pathway for its 100%-owned **Hatches Creek Tungsten Project** in the Northern Territory after completing a **maiden high-grade JORC compliant resource**.

The Inferred Resource, of **225,066 tonnes grading 0.58% WO<sub>3</sub> for 1,311 tonnes of contained WO<sub>3</sub>**, encompasses surface stockpiles of material accumulated during a 42-year mining history at Hatches Creek between 1915 and 1957.

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For comparison purposes, the resource grade is some 70 per cent higher than the average grade of the eight major global tungsten deposits currently being explored or developed by ASX-listed companies.

In light of this and the favorable outlook for the tungsten market – which is being driven by growing demand for its use in cutting and drilling tools, military applications, light bulbs and high-tech applications such as super-alloys for turbine blades – the Company has decided to use the maiden JORC resource as the foundation to evaluate a commercial development of the Hatches Creek Project.

The maiden JORC resource confirms that sufficient tonnages of high-grade near-surface material are available at Hatches Creek to support a potential near-term development. This maiden JORC resource will underpin a Scoping Study, which is targeted for completion before the end of 2014.

The study will assess the viability of bringing this advanced project into production in 2015.

Arunta has received strong expressions of interest from specialty metals traders for potential off-take of tungsten concentrate from the Hatches Creek Project, giving it confidence in the commercial imperatives to fast-track development of the project.

### Hatches Creek Maiden JORC Mineral Resource Statement

Independent mineral resource consultant, Mr. Tony Ryall, was commissioned by Arunta to complete a JORC compliant resource estimate for the stockpiled surface mineralisation within the Companies 100% owned Hatches Creek Tungsten Field.

The reporting of all domains (capturing material above 0.2% WO<sub>3</sub>) results in an Inferred Mineral Resource Estimate for the Hatches Creek surface stockpiles of:

**Inferred: 225,066 tonnes @ 0.58% WO<sub>3</sub> (1,311 tonnes of contained WO<sub>3</sub>)**

A top-cut of 1.5% WO<sub>3</sub> was applied to the resource calculation.

### Overview of the Hatches Creek Mineral Field

The Hatches Creek tenements (EL 22912 and EL 23462) cover the historical Hatches Creek mining field (see Figure 1), which is known as the Hatches Creek Wolfram Field, within which numerous underground mines exploited quartz veins containing wolframite and to a lesser extent scheelite, bismuth and copper oxides, mostly to the water table or just below it and to a maximum vertical depth of only 60m.

All of the mined lodes continue at depth and of the many individual lodes none were recorded as mined out. Mining of alluvial and eluvial deposits containing wolframite, gold and copper also occurred.

The total recorded production from the Hatches Creek Wolfram Field has been 2,839.85 tonnes of wolfram and scheelite concentrates, worth about A\$100 million at today's prices. In addition,

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some bismuth concentrates and copper ore were produced.

In June 1956, the following mines were producing in the Company's Hatches Creek mineral field: Pioneer, Endurance, Black and Green Diamond, Hen and Chickens, Masters Gully, Hit or Miss Extended, Hit or Miss, and several other lodes on the Hit or Miss Lease including Silver Granites, Kangaroo, Lady Hamilton and Copper Show. In addition, prospectors were active on the Kangaroo Group.

The field closed in 1958 due to the collapse of the tungsten price and has remained virtually untouched until the present day.

Several companies have held the tenements since this time, predominantly with a gold and uranium focus, and only very limited exploration has been carried out.

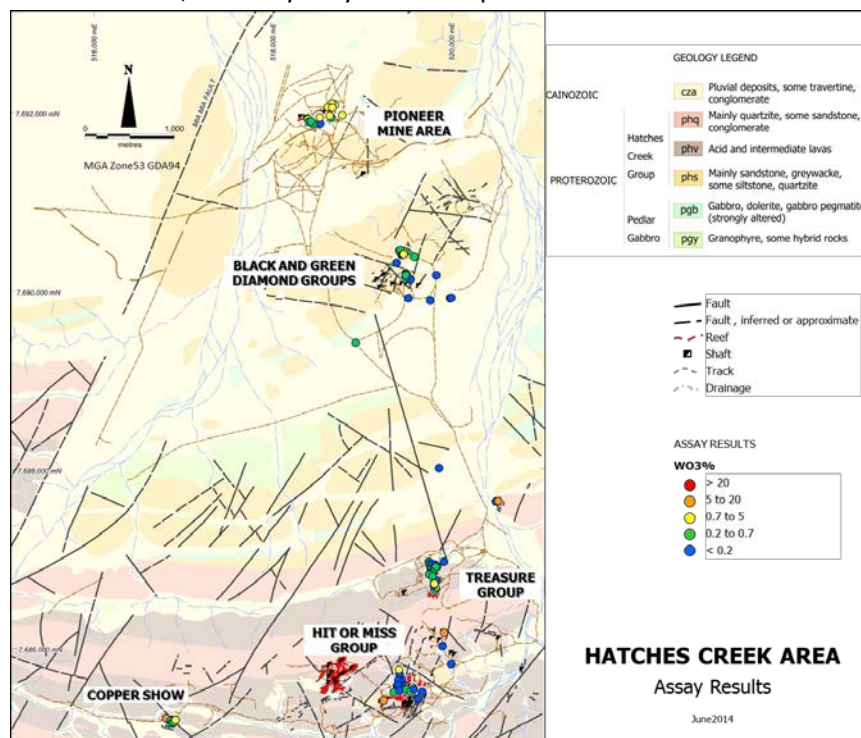


Figure 1. Hatches Creek Tungsten Mines

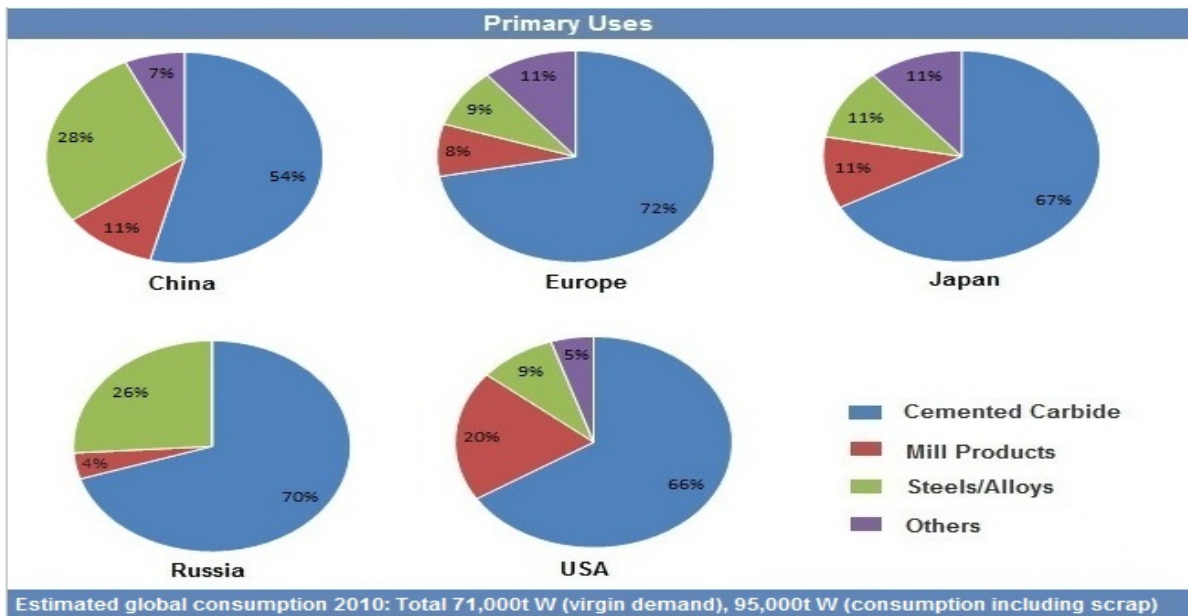
### About Tungsten

Tungsten (wolfram, W) has an atomic number of 74 and sits within Group 6 of the periodic table. The metal has a very high density of 19.3g/cm<sup>3</sup> (the same as gold), the lowest coefficient of expansion of any pure metal and, at 3,410°C, has the highest melting point of any of the metallic elements.

Tungsten occurs in nature only in the form of minerals. Although more than 30 tungsten-bearing minerals are known, only two of them are important for economic use, namely wolframite and scheelite.

Tungsten is used mainly for the production of Tungsten Carbides (56%) for use in cutting and

drilling tools. These hard metals are also used in the military for armour-piercing rounds, while light bulb manufacturers use the tungsten metal for filaments within incandescent light bulbs due to its resistance to heat (based on CRU analysis).



The airline industry also uses tungsten in super-alloys for turbine blades due to their high heat tolerance, high thermal fatigue resistance, good oxidation resistance, excellent heat corrosion resistance, good welding properties and ease of casting. Other applications include a widespread variety of chemical uses.

Wolframite (Fe, Mn) or  $WO_4$  contains around 76%  $WO_3$  and wolfram concentrates attract a premium in the market. However, the price of tungsten is best followed by Ammonium Paratungstate (APT), an intermediate tungsten product which acts as one of the industry's main reference pricing products. In recent years the APT price has seen new highs of up to US\$440 per mtu.

The outlook for tungsten demand is positive, with expected annual growth rates of 6% to 2016 according to leading commodity forecasters Roskill.

### FUTURE WORK

Arunta is fast-tracking exploration activities at Hatches Creek with a view to completing a Scoping Study before end 2014. The study will assess the viability of bringing this advanced project into production in 2015.

The Company proposes to collect two 1-tonne representative bulk samples for immediate definitive metallurgical testing at Nagrom's metallurgical laboratory in Kelmscott WA. The metallurgical test work program will provide the specifications of tungsten concentrates and recommended process plant flowsheet to be incorporated into the Scoping Study.

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## Hit or Miss Group Drilling

The Company is also proposing to undertake resource delineation drilling at the “Hit or Miss Group” of historical mines (Figure 2), which are part of the southern group of workings, located approximately 5km due south of the Pioneer Mine.

This area, which includes Masters Gully and Silver Granite, is considered to have significant economic potential.

The quartz lodes are very closely spaced within a 500m by 300m zone of intense brittle fracturing. The east-west oriented lodes contain substantial copper mineralisation which was penalised in the concentrates during the 1950’s and, as a result, these lodes remain unmined or mined to only very shallow depths.

Arunta proposes to drill the Hit or Miss lode system during the first Quarter of 2015 to assess the potential to establish resources which are amenable to extraction by open pit.

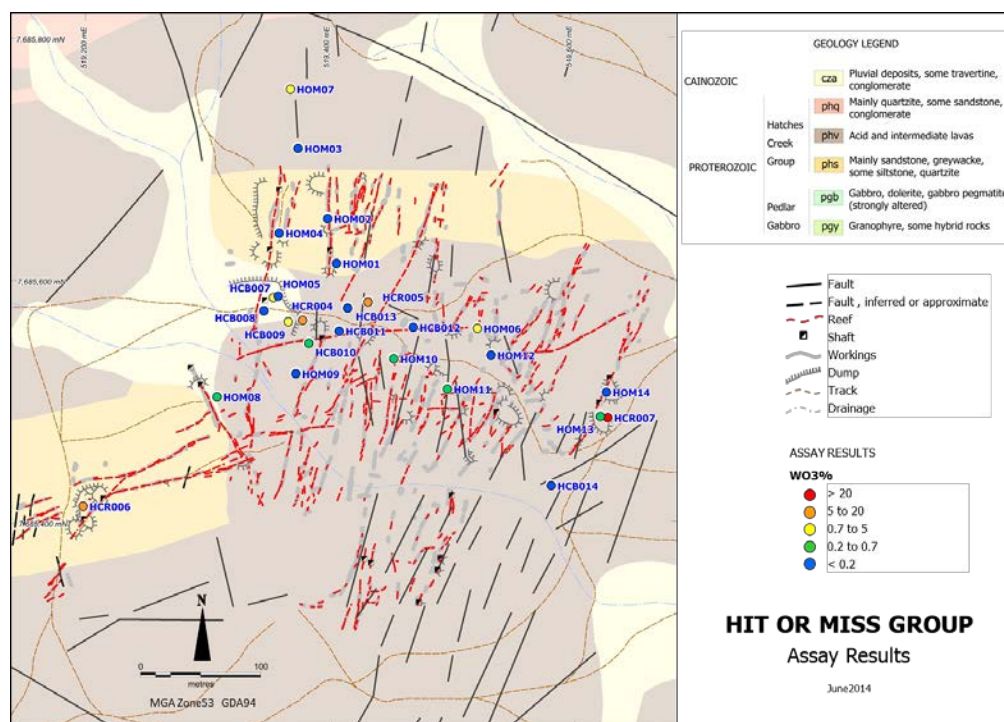


Figure 2. Hit or Miss Group Lodes projected to surface, plots of recent bulk sampling results

For further information:

Investors:

Neil Biddle, Executive Director

Arunta Resources Limited

Tel: +61 (0)418 915 752

### *Competent Person Statement:*

*The information in this report that relates to Exploration Results is based on and fairly represents information and supporting documentation prepared by Mr John Young (Exploration Manager of Arunta Resources Limited). Mr Young is a shareholder of Arunta Resources Limited. Mr Young is a member of the Australasian Institute of Mining and Metallurgy and has sufficient experience of relevance to the styles of mineralisation and types of deposits under consideration, and to the activities undertaken to qualify as Competent Persons as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Specifically, Mr Young consents to the inclusion in this report of the matters based on his information in the form and context in which they appear.*

*The information in this report that relates to the mineral resource estimations are based on work completed by Mr. Anthony Ryall who is a member of the Australian Institute of Mining and Metallurgy. Mr. Ryall is an Independent Consultant with sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity 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'.*

### **Summary of Resource Estimate and Reporting Criteria**

As per ASX Listing Rule 5.8 and the 2012 JORC reporting guidelines, a summary of the material information used to estimate the Mineral Resource is detailed below (for more detail please refer to Table 1, Sections 1 to 3 included below in Appendix 2).

### **Geology and Geological Database**

The Hatches Creek Minerals Field located 450kms NE of Alice Springs was mined in the early part of the 20<sup>th</sup> Century for tungsten and other byproducts. A number of prospects were mined in tandem with periods of an elevated tungsten price. Due to the high grade nature of this tungsten mineral field, miners hand sorted the ore which resulted in high grade material being retained in mullock and battery sands dumps as well as alluvial drainage systems. Records of the surface geology, mine plans and tungsten production from at least a dozen different prospects are very well documented.

Three types of mineralisation characterised by mineral assemblage are recognised at Hatches Creek.

- Type 1, the **Wolframite-Scheelite** Type is typified by the **Pioneer Group** and is distinguished by abundant scheelite and bismuth; it is confined to lodes lying in the Pedlar Gabbro. The **Diamond Group** is also classified as Type 1.
- Type 2, the **Wolfram-Copper** Type contains abundant copper, molybdenite in some lodes and scheelite is rarely present. Type 2 is confined to lodes within acid porphyry volcanic within the **Hit or Miss Group**.
- Type 3, **Wolfram** lodes, occur mainly within the volcanic rocks of the **Treasure Group** and are distinguished by a total lack of any accessory minerals to wolfram. These are the highest grade wolfram bearing lodes within the Hatches Creek Field.

Approximately 100 bulk samples collected from 166 dumps in two separate programs form the basis of current resource estimates, although a number of the regional prospects and associated have also been considered on the basis of production records, similar geology, and demonstrated



alluvial potential. The database is based on two bulk sampling of over 65000 cubic metres of stockpiles (166 stockpiles) covering 5 main sets of workings: Pioneer, Treasure, Hit or Miss, Black Diamond and Green Diamond.

### **Sampling and sub-sampling techniques**

Sample information used in resource estimation was derived exclusively from bulk sampling. The Samples have been geologically logged and sub-sampled for lab analysis. GPS coordinates were recorded for each sample site. The sample was collected using a shovel into the stockpile and about 10kg of material was placed in a polyweave bag. Samples were occasionally collected from various parts of the pile.

- Sampling has been conducted on approximately 70% of this dump volume material from these prospects, typically 10 to 20kg samples, from several spear positions around stockpiles.
- Sampling of stockpiles has been carried out and volumes sampled to provide a good representation of grade range.
- Importantly the focus has been to sample the larger stockpiles as therefore covering a larger representative material volume than sampling of isolated smaller stockpiles.

### **Sample analysis method**

Sample analysis was conducted by Nagrom Mineral Processors. The majority of samples were generated by the collection of 3 kg to 32.2kg of material on site as bulk samples and then freighted to the Laboratory. Samples were crushed to P100 - 2mm. They were then riffle Split to provide 2 samples, one for analysis, and the second retained for metallurgical purposes.

All samples were analysed for  $WO_3$  , Sn ,  $Fe_2O_3$  , MnO ,  $SiO_2$  ,  $Al_2O_3$  ,  $TiO_2$  , CaO , MgO ,As, P, S , Mo, Cu, Bi, Au, Ag and LOI1000.

### **Cut-off grades**

Upper and lower cut off grades were applied. The upper cut at the 97<sup>th</sup> percentile and lower cut based on current production economics. A lower cutoff grade of 0.2%  $WO_3$  was applied as economic cut and an upper cut of 1.5%  $WO_3$  applied as best case for mineability at bulk sample scale. The lower cutoff grade reflects likely current economics of production. The upper cut approximates 97<sup>th</sup> percentile on log probability plot.

### **Dump Estimation Methodology**

Grade estimation was by a manual method using a tape and was located by use of a Garmin GPS. The waste dumps were treated as a simple hexahedrons and their area determined by measuring the top of the dump to determine length and width. As the dumps had sloped sides it was necessary to include a correction factor to the length and width so as to allow for the calculation to be performed treating the dump as having vertical sides.

In a number of instances small waste dumps were present adjacent to larger waste dumps. Most of these were less than 10 m<sup>3</sup> in these instances the volume of these small waste dumps were visually estimated. It was established that hexahedron method allowed for sufficient accuracy for the purposes of this survey. In addition it is considered that the volumes estimated using the

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hexahedron method are conservative in nature and if anything underestimate the volume of the material surveyed within the Hatches Creek mining field.

**The Hexahedron volume calculation was done using the formula below:  $v = l \times w \times h$  Where:  $v$  = volume in  $m^3$**

( $l$  = length in m,  $w$  = width in m,  $h$  = height in m)

Top-cuts were decided by completing an outlier analysis using a combination of methods including grade histograms, log probability plots and other statistical tools. Based on this statistical analysis of the data population a top-cut of 1.5%  $WO_3$  was applied to the resource.

### **Bulk Density Estimation**

Gas pycnometer specific gravity measurements have been applied to 30 samples covering all 6 prospects and range of mullock dumps, battery stockpile and alluvial samples representing the three sample sources or material types. All specific gravity measurements lie in the range of 2.7 to 3.05, consistent with the lithologies hosting the quartz wolfram veined structurally complex mineralization.

Density reduction from specific gravity measurements for compacted dumps (voids / moisture) assumed: approx. 10% for Battery Sands, 15% for Mullock Dumps (coarser) and 25% for alluvials.

### **Classification criteria**

The Mineral Resource has been classified on the basis of confidence in the historical mining information, manual volume estimation method, sampling density, confidence in the underlying database and the available bulk density information.

The Hatches Creek Mineral Resource has all been classified as Inferred according to JORC 2012.

### **Mining and metallurgical methods and parameters**

Forty One samples from November 2013 sampling were crushed to P100 -2mm and assayed with the remainder composited to create 10 composites (of approximately 10kg each). The composites were created to represent either mullock or eluvial/alluvial samples from each location. After crushing the samples were wet tabled with further concentration by magnetic separation and gravity separation.

The results were from six historical prospect areas – Pioneer, Black Diamond, Green Diamond, Treasure Group, Copper Show and Hit or Miss. Four of these areas have returned excellent grade and recovery results, with concentrate grades ranging from 20% to 47%  $WO_3$  from Green Diamond, Treasure Group, and Hit or Miss with recoveries ranging from 65% to 75%.

Results highlight the potential to process the significant volumes of previously mined material available at surface. Importantly some of these composites included alluvial material further justifying its consideration within the resource estimate.

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a Level 14, 31 Queen Street Melbourne, Victoria 3000  
 t +61 3 8610 8633 f +61 3 8610 8666 e info@aruntaresources.com.au  
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## APPENDIX 1

### RESOURCE INVENTORY FOR HATCHES CREEK MULLOCK DUMPS AND ALLUVIAL

Prospect Location	Material Type	Volume cu m	In Situ Specific Gravity g/cc	Dumps: Compact Bulk Density	Resource Tonnes	Weighted Grade %WO3: No Upper cut:	Weighted Grade Upper Cut 1.5%WO3	Category
Pioneer	BS	14,260	2.80	2.60	37,076	0.60	0.60	Inferred
Pioneer	MD	19,426	2.85	2.50	48,565	0.80	0.70	Inferred
Treasure	MD	11,516	2.85	2.50	28,790	0.78	0.76	Inferred
Hit or Miss	MD	9,351	2.80	2.45	22,909	0.76	0.68	Inferred
Black Diamond	MD	6,262	2.80	2.45	15,342	0.58	0.57	Inferred
Green Diamond	MD	1,252	2.80	2.45	3,067	0.86	0.86	Inferred
Copper Show	MD	1,012	2.80	2.45	2,479	1.79	0.96	Inferred
Masters Gully	MD	4,301	2.80	2.45	10,537	0.40	0.40	Inferred
Hens and Chickens	MD	2,008	2.80	2.45	4,919	0.40	0.40	Inferred
White Diamond	MD	1,564	2.80	2.45	3,831	0.40	0.40	Inferred
Silver Granite	MD	3,664	2.80	2.45	8,977	0.40	0.40	Inf-2
Kangaroo Group	MD	4,112	2.80	2.45	10,074	0.40	0.40	Inf-2
Alluvial All Areas	AL	15,000	2.50	1.90	28,500	0.25	0.25	Inf-3
<b>Total</b>		<b>95,773</b>			<b>225,066</b>	<b>0.62</b>	<b>0.58</b>	<b>Inferred</b>

\*BS: Battery Sands Dumps

\*MD: Historic "Mullock" Dumps

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\*AL: Alluvial

**Key Notes and Assumptions:**

- 1 Excellent documented geological and historic mining production records as background support for these resource estimates.
- 2 Lower cut grade 0.2%WO<sub>3</sub> applied throughout.
- 3 Upper cut grade 1.5% WO<sub>3</sub> based on 97<sup>th</sup> percentile log probability
- 4 In Situ SG based on Nagrom Laboratory gas pycnometry on 30 samples from various prospects and material types
- 5 Density reduction from SGs for compacted dumps (voids / moisture) assumed: approx. 10% for Battery Sands, 15% for Mullock Dumps (coarser) and 25% for Alluvials
- 6 All Bulk sample assays from two programs in Nov 2013 and June 2014 applied- 110 samples. Rock chip sample assays not applied to this resource estimate do confirm very high grade tenor of veined tungsten mineralization.
- 7 Each prospect is considered a separate resource
- 8 In all cases unsampled dumps have been assigned the weighted average grade of sampled dumps.
- 9 Volumes of dumps measured from average dump area at base x height and GPS located. In total 166 dumps measured this way.
- 10 Metallurgical testing on composite dump samples shows high tungsten concentrate grades from (29% to 47% WO<sub>3</sub>) with up to 78% recovery achieved via a simple gravity and magnetics circuit

## APPENDIX 2

### JORC Code, 2012 Edition – Table 1 report

#### Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Bulk Samples were taken as cut channels on Mullock dumps. Rock chips and grab samples were selected samples of visibly mineralized material and weighed between 0.5kg and 1.7kg. All sample material is derived locally within 5m of sample location.</li> <li>Bulk samples were between 5kg and 24kg in weight</li> <li>All samples were individually labelled and documented</li> </ul>
	<ul style="list-style-type: none"> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> </ul>	<ul style="list-style-type: none"> <li>Mullock samples were taken perpendicular across general trend of the dump over distance of 1 to 3m.</li> </ul>
	<ul style="list-style-type: none"> <li>Aspects of the determination of mineralisation that are Material to the</li> </ul>	<ul style="list-style-type: none"> <li>The majority of samples were generated by the collection of 5 kg to</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>Public Report.</i></p> <p><i>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.</i></p>	<p>24kg of material on site and have been shipped to the Laboratory. Samples will be;</p> <ul style="list-style-type: none"> <li>Crushed to P100 2mm Head Analysis Reserve Remainder</li> <li>All samples were be analysed for WO<sub>3</sub>, Sn, Fe<sub>2</sub>O<sub>3</sub>, MnO, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, CaO, MgO, As, P, S, Mo, Cu, Bi, Au, Ag and LOI1000.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li><i>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).</i></li> </ul>	<ul style="list-style-type: none"> <li>No Drilling was used to collect these samples</li> </ul>
<b>Drill sample recovery</b>	<p><i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></p>	<ul style="list-style-type: none"> <li>No Drilling was used to collect these samples</li> </ul>
	<ul style="list-style-type: none"> <li><i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> </ul>	<ul style="list-style-type: none"> <li>No Drilling was used to collect these samples</li> </ul>
	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>No Drilling was used to collect these samples</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Geology was logged by geologist and located by using a hand held GPS</li> <li>Descriptions exist for all samples in the database</li> </ul>
	<ul style="list-style-type: none"> <li><i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> </ul>	<ul style="list-style-type: none"> <li>Sample descriptions are has primarily been quantitative and contain some components of semi-quantitative analysis</li> <li>Photographs of sample sites are available.</li> </ul>
	<ul style="list-style-type: none"> <li><i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<ul style="list-style-type: none"> <li>Estimated</li> </ul>
<b>Sub-sampling</b>	<ul style="list-style-type: none"> <li><i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> </ul>	<ul style="list-style-type: none"> <li>No Drilling was used to collect these samples.</li> <li>Whole rock or mullock samples were taken, these was no preparation</li> </ul>

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Criteria	JORC Code explanation	Commentary
<b>techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> </ul>	of sample on site.
	<ul style="list-style-type: none"> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> </ul>	<ul style="list-style-type: none"> <li>Whole rock or mullock samples were taken</li> </ul>
	<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> </ul>	<ul style="list-style-type: none"> <li>No duplicates were taken.</li> </ul>
	<ul style="list-style-type: none"> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>Bulk samples were a minimum of 10kg. These are appropriate for early stage assessment.</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> </ul>	<ul style="list-style-type: none"> <li>No Assays completed at this stage.</li> </ul>
	<ul style="list-style-type: none"> <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> </ul>	<ul style="list-style-type: none"> <li>No geophysical tools were used to determine any element concentrations.</li> </ul>
	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>No Assays completed at this stage.</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> </ul>	<ul style="list-style-type: none"> <li>No field duplicates were submitted in this sample program</li> <li>No Assays completed at this stage.</li> <li>Sample information is recorded at the time in hard copy format</li> </ul>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> </ul>	<ul style="list-style-type: none"> <li>An electronic database containing collars, surveys, assays and geology will be compiled into the company's database.</li> <li>Data verification was undertaken by checking assays and collars against hard copy logs.</li> </ul>
	<ul style="list-style-type: none"> <li>Discuss any adjustment to assay data.</li> </ul>	<ul style="list-style-type: none"> <li>No adjustment has been required</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> </ul>	<ul style="list-style-type: none"> <li>Sample locations have been surveyed by handheld GPS only.</li> </ul>
	<ul style="list-style-type: none"> <li>Specification of the grid system used.</li> </ul>	<ul style="list-style-type: none"> <li>The GPS locations were recorded MGA (GDA94, Zone 53) coordinates.</li> </ul>
	<ul style="list-style-type: none"> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>No topographic control</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> </ul>	<ul style="list-style-type: none"> <li>Grab or bulk samples representivity cannot be assessed as they are localized samples.</li> </ul>
	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Sample space is not sufficient, material sampled is local in nature, and not continuous with regard to geology.</li> </ul>
	<ul style="list-style-type: none"> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>No compositing at this stage.</li> </ul>
<b>Orientation of data in relation to geological</b>	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> </ul>	<ul style="list-style-type: none"> <li>The sample orientations are deemed appropriate.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>structure</b>	<ul style="list-style-type: none"> <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>No orientation-based sampling bias has been identified.</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>Chain of custody for samples were managed by Arunta personnel. Samples were delivered to Nagrom laboratory by freight company.</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>No Audits or reviews have been completed</li> </ul>

## 1. Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li><i>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</i></li> </ul>	<ul style="list-style-type: none"> <li>Exploration Licences 22912 and 23462 are 100% are held by Davenport Resources Limited a 100% owned subsidiary of Arunta Resources Limited.</li> </ul>
	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>All statutory approvals have been acquired to conduct exploration.</li> <li>No known impediments.</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>Thor Mining PLC, were the last company to explore the area in 2008.</li> </ul>
<i>Geology</i>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Hatches Creek tenements are underlain by Paleoproterozoic sequence of weakly metamorphosed clastic sedimentary and felsic volcanic rocks. The sequence is intruded by igneous sills. Sandstone</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>is the dominant sedimentary lithology. The sequence has been subjected to folding and faulting and has been cut by numerous narrow quartz reefs which follow lines of shearing. The quartz reefs are mineralised, the main mineral of economic interest being wolframite, although bismuth, gold and copper mineralisation is also present within them. The average tungsten grade of the mined reefs was between 1% and 5% WO<sub>3</sub>.</p> <ul style="list-style-type: none"> <li>The mineralised reefs are present in groups. The average reef width is 30cm, with the maximum width being 1.5m. The maximum strike length of any one reef is around 170m however enechelon lines of reefs are up to 1.5km in length. The reefs strike in two main directions, just east of north, parallel to the main fault direction, and east-northeast. The north-striking reefs dip at moderate to steep angles either to the west or the east; those striking easterly dip at moderate to steep angles to the south. The majority of the reefs are within volcanic or intrusive rocks, rather than in the sandstone units. The more mafic host rocks (gabbro, diorite) appear to have been important host rocks for some of the significant mineralisation in the area.</li> </ul>
<p><i>Drill hole Information</i></p>	<ul style="list-style-type: none"> <li><i>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:</i> <ul style="list-style-type: none"> <li><i>easting and northing of the drill hole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>down hole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> </li> <li><i>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</i></li> </ul>	<ul style="list-style-type: none"> <li>No Drilling conducted</li> </ul>



Criteria	JORC Code explanation	Commentary
	<i>explain why this is the case.</i>	
<i>Data aggregation methods</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> <li><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<ul style="list-style-type: none"> <li>No weighting techniques have been used all results have been reported</li> <li>Where results have been discussed, a simple arithmetic average has been used.</li> </ul>
<i>Relationship between mineralisation widths and intercept lengths</i>	<ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>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').</i></li> </ul>	<ul style="list-style-type: none"> <li>Results are from bulk samples or rock chips, no geometry or width are able to be reported.</li> </ul>
<i>Diagrams</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>See Figures 1</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>All results have been reported</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Description of sample type and size has been reported, bulk samples were 5-24kg. Rock chips were 0.5 to 1.7kg</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li><i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li><i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas,</i></li> </ul>	<ul style="list-style-type: none"> <li>Further metallurgical testing of samples are required.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<i>provided this information is not commercially sensitive.</i>	

### Section 3 Estimation and Reporting of Mineral Resources

Criteria	Explanation	Commentary
<i>Database Integrity</i>	<ul style="list-style-type: none"> <li><i>Measures taken to ensure data has not been corrupted by, for example, transcription or keying errors, between its initial connection and its use for Mineral Resource estimation purposes</i></li> <li><i>Data validation procedures used</i></li> </ul>	<ul style="list-style-type: none"> <li>Data checked between lab results sheets and from excel spreadsheets provided from client and cross checked. Data signed off under previous Reporting of Exploration Results statement- attached.</li> <li>Cross checking between lab sheets and Client excel sheets</li> </ul>
<i>Site Visits</i>	<ul style="list-style-type: none"> <li><i>Comment on any site visit undertaken by the Competent Person and the outcome of those visits</i></li> <li><i>If no site visits have been undertaken indicate why this is the case</i></li> </ul>	<ul style="list-style-type: none"> <li>Site visit not conducted as assessment is based on recent sampled stockpiles of historic dumps evident on satellite photography, well documented and geologically described with volumes measured by geologist. A site visit was not considered necessary in this case as excellent historic records exist for resource estimate based on measured / mined stockpiles from historic production not in- ground mineralisation.</li> </ul>
<i>Geological Interpretation</i>	<ul style="list-style-type: none"> <li><i>Confidence in or conversely the uncertainty of the geological interpretation of the mineral deposit</i></li> <li><i>Nature of the data used and any of the assumptions made</i></li> <li><i>The effect, if any, of any alternate interpretations on Mineral resource estimation</i></li> <li><i>The use of geology in guiding and controlling Mineral resource estimation</i></li> <li><i>The factors affecting continuity both of grade and geology</i></li> </ul>	<ul style="list-style-type: none"> <li>A strong geological knowledge is documented from past BMR mining history and geological publication by Ryan 1961 of each prospect within the mineral field. Detailed description of mineralisation, structural and alteration control on tungsten mineralisation is described in each case and a robust regional geological interpretation of this mineral field has resulted.</li> <li>Data used included locations and volume measurements of dumps by area/ height measurement, supported by SGs measurements on host rocks, and assay results from two separate bulk sample phases on 10 to 20kg samples. Assumptions made of 10% to 15% SG reduction on conversion to compacted dump density after over 50 years stockpile compaction.</li> <li>Being stockpiles the mineral resource estimation is factually based, not subject to significant interpretation .Host rocks for each prospect are recorded and visually confirmed from</li> </ul>

		<p>photos of each location and dump material type as well as excellent geological volume by Ryan in 1961 BMR Report.</p> <ul style="list-style-type: none"> <li>The geology has been used in SG estimation for tonnage estimates from dump volumes and confirmatory of underground source. Alteration zoning and structural intersections control mineralisation more than lithology. Rock chip samples show veined nature and not used directly in estimates but show mineralisation grade potential before mine dilution considered. Bulk samples reflect mineability</li> <li>Lode structure orientations and extent have been mapped/ recorded / reflected in stockpile locations, geology and grade. Historic mining involved hand selection of very high grade. Alluvial drainage patterns define lower grade trends, some economic</li> </ul>
<i>Dimensions</i>	<ul style="list-style-type: none"> <li><i>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</i></li> </ul>	<ul style="list-style-type: none"> <li>Separate resource estimations were conducted on each project area. All resource estimations based on surface historic mined dumps and minor alluvial component. Volumes of dumps were estimated from area and height using GPS .Sampling of dumps was carried out by shovel spearing. Grade weighting was applied based on dump volumes and then tonnages from SG data. Unsampled dumps within each prospect were applied the average grade of sampled dumps. Alluvial estimates were based on sampling and drainage trends from Aerial photography</li> </ul>
<i>Estimation and Modelling techniques</i>	<ul style="list-style-type: none"> <li><i>The nature and appropriateness of the estimation technique applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If computer assisted estimation is used include a description of 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>Assumptions made about recovery of by products</i></li> </ul>	<ul style="list-style-type: none"> <li>Grade weighting based on sample location and dump size/ tonnage for each prospect and material type/ host rock was a key assumption. Upper and lower cut off grades were applied described below. The upper cut at the 97<sup>th</sup> percentile and lower cut based on current production economics. Each resource reflects a separate prospect – considered a separate geological domain Where dumps were not sampled but contained within a known mineralised domain average grade of that prospect domain was applied. No computer assisted or interpolation applied.</li> <li>Each sample is representative of approximately 2000 tonnes of ore grade stockpile material, which is similar to current RC</li> </ul>

	<ul style="list-style-type: none"> <li>• <i>Estimation of deleterious elements or other non-grade variables of economic significance ( eg 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 spacing and search employed.</i></li> <li>• <i>Any assumptions behind modelling of selected mining units</i></li> </ul>	<p>grade control drilling definition on a 12.5m x 12.5m spacing..</p> <ul style="list-style-type: none"> <li>• No check estimates except independent sampling programmes but production records and detailed lode mapping available to support grades and tonnages achieved</li> <li>• No assumptions made on recovery of by-products. Historic mining recovered tungsten. Sulphur values up to 0.5% noted from 41 HCB samples. Otherwise no deleterious elements evident. Any sulphur issue will be addressed in an NOI and if necessary contained in any future mining.</li> <li>• Block modelling interpolation not applicable in this case.</li> <li>• SMUs Not applicable in this case</li> </ul>
<i>Estimation and Modelling Techniques Continued</i>	<ul style="list-style-type: none"> <li>• <i>Any assumptions about correlations 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>• Mineral zonation and a varying association of mineralisation is evident between prospects. Previous mining has been successful for tungsten throughout all prospects and Nagrom testing also—detailed correlations not assessed as part of this estimate</li> <li>• All Dumps appear to be directly aligned on lode structural trends. Any dumps not sampled were assigned average grade of dumps from that prospect / domain. Alluvials were included in resource based on alluvial drainage patterns.</li> <li>• Used modest grade upper cut cutting to 1.5%WO3 approximating the 97% intersection with sample on log probability distribution. A top cut was applied because of vein irregularity with likely nugget effect – evident in rock chip samples. Rock chip results not used in resource estimation because not mineable. Rock chip results however show the grade character of the resource</li> <li>• Validation by comparing stockpile record against production records for each prospect. Validation by sampling being conducted in two separate programmes and sample weights considered. ( except by large parcel throughput)</li> <li>• Sampling results grade weighted against the size stockpile represented</li> </ul>
<i>Moisture</i>	<ul style="list-style-type: none"> <li>• <i>Whether the tonnages are estimates 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>• Moisture contents not determined but estimate within mineral lattice at less than 5%. Dumps been exposed for 60 years in a semi desert environment.</li> </ul>
<i>Cut Off Parameters</i>	<ul style="list-style-type: none"> <li>• <i>The basis of the adopted cut-off grade(s) or quality</i></li> </ul>	<ul style="list-style-type: none"> <li>• A lower cut-off grade of 0.2%WO3 was applied as economic</li> </ul>

	<i>parameters applied</i>	cut and both an uncut and an upper cut of 1.5%WO <sub>3</sub> applied as best case for mineability at bulk sample scale. The lower cut-off grade reflects likely current economics of production. The upper cut approximates 97 <sup>th</sup> percentile on log probability.
<i>Mining factors or assumptions</i>	<ul style="list-style-type: none"> <li>Assumptions made about possible mining methods, minimum mining dimensions and internal (or if applicable, external) mining dilution. In considering potential mining methods for eventual economic extraction, the assumptions made regarding mining methods 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 applicable to this estimate as resource already mined and on surface. Future mining will be able to utilise past information.</li> </ul>
<i>Metallurgical Factors or assumptions</i>	<ul style="list-style-type: none"> <li>The basis for assumptions about metallurgical amenability. In considering potential metallurgical methods assumptions made when reporting Mineral resources may not always be rigorous. In this case this should be reported with the basis of metallurgical assumptions made</li> </ul>	<ul style="list-style-type: none"> <li>Extensive compositing and metallurgical test work from Nagrom and historic mining records and treatment have been favourable to recovery. There appear to be no metallurgical issues of concern as gravity and magnetic separation on sample composites have been successful.</li> </ul>
<i>Environmental factors or assumptions</i>	<ul style="list-style-type: none"> <li>Assumptions made regarding possible waste and process residue disposal options. In considering potential environmental impacts of the mining and processing option the determination of potential environmental impacts, especially for greenfields projects, may not be well advanced, the status of early consideration of these environmental impacts should be reported. Where these have not been considered this should be reported with an explanation of environmental assumptions made.</li> </ul>	<ul style="list-style-type: none"> <li>Existing Mining areas Isolated with minor topographic gradient that could be exploited for containment of tailings into a dam if necessary. A current Environmental historical liability exists which Arunta plans to address should it proceed to production.</li> <li>May need to investigate sustainable water supply and low sulphur assays recorded should ensure any Acid mine drainage could be contained. Arunta will address this and assumption will be that if any environmental concern from sulphur then planned to be contained.</li> </ul>
<i>Bulk density</i>	<ul style="list-style-type: none"> <li>Whether assumed or determined. If assumed the basis for this. If determined, the method used, whether wet or dry, 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 used in the</li> </ul>	<ul style="list-style-type: none"> <li>Detailed assessment carried out by gas pycnometer on 30 samples for various prospects and material types,</li> <li>Assumption on voids and porosity content applied later. Battery sands fine grained a 10% sg reduction and Mullock Dumps up to 15% reduction for density. The material on stockpile has been compacted for 50 years in a semi desert environment. Both low inherent moisture and voids content assumed.</li> </ul>

	<i>evaluation process of the different materials</i>	
<i>Classification</i>	<ul style="list-style-type: none"> <li>• <i>The basis for the Classification of the Mineral resources into varying confidence categories</i></li> <li>• <i>Where appropriate account has been taken of all relevant factors (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.</i></li> <li>• <i>Whether the result appropriately reflects the Competent Persons view of the deposit.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Mined ore stockpiles in modern mining would be classified Measured Resource. However in this case - because of historic mining and therefore uncertainty on exact underground location and grade control practices and since e not every stockpile was sampled in some prospects it is therefore classified as Inferred throughout.</li> <li>• Based on availability of relatively reliable recent stockpile tonnage measurement and sampling/ assay data, continuity of stockpiles along lodes from excellent production and geological records as well as satellite photography and the number and size of samples collected. Given the amount of high grading conducted in historic mining Areas of little confidence have been excluded subject to confirmatory sampling</li> </ul>
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of mineral resource estimates</i></li> </ul>	<ul style="list-style-type: none"> <li>• None conducted previously on these stockpiles.</li> </ul>
<i>Discussion of relative accuracy/ confidence</i>	<ul style="list-style-type: none"> <li>• <i>Where appropriate a statement of the relative accuracy and confidence level in the estimate using an approach or procedure deemed appropriate to the Competent Person. For example application of statistical or geostatistical procedures to quantify the accuracy of the resource stated confidence limits or if not deemed appropriate a qualitative discussion of factors that could affect the relative accuracy and confidence of the estimate.</i></li> <li>• <i>Statement should specify whether it relates to global or local estimates and if local, state the relative tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and procedures used.</i></li> <li>• <i>The 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 estimates have been conducted on prospects/domains as local estimates.</li> <li>• Different prospect areas have some difference in confidence based on degree of sampling, evidence of geological control. Prospects called Pioneer, Treasure, Hit or Miss, Green Diamond, Black Diamond and Copper Show have highest level of confidence Inferred level 1. The other prospects are Inferred Level 2 with measured stockpiles but not sampled – assumed a lower grade than above. The alluvials despite only applying a 30% estimate of area being above cut off relatively lower level of confidence, Level 3 but based on production evidence this is likely conservative.</li> <li>• Assumption any unsampled stockpiles along mined lodes are assigned average resource grade of that prospect</li> <li>• Production data supports the resource estimate</li> <li>• Statement relates to local estimates</li> </ul>



