# **ASX ANNOUNCEMENT**



26 August 2019

# **CASSINI RESOURCE INCREASES 33% TO 37,800 NICKEL TONNES**

Greenfields nickel sulphide project now confirmed as one of the largest and highest grade deposits in the Kambalda District and a key pillar in Mincor's integrated restart strategy

### **Highlights**

- Cassini Mineral Resource increased to 985kt @ 3.8% Ni for 37,800 nickel tonnes (+9,300 nickel tonnes)
- Over 91% of the Mineral Resource now in the Indicated category, available for conversion to Ore Reserves
- The additional 9,300 nickel tonnes were added at an average grade of 4.5% Ni
- Cassini is one of the largest and highest grade nickel Mineral Resources in the Kambalda district
- Mincor's total Kambalda Mineral Resource inventory now stands at 4.7Mt @ 3.7% Ni for 175,300 nickel tonnes, with 86% in the Indicated/Measured category
- Maiden Ore Reserve to be announced around the same time as the DFS, late in the December Quarter
- Diamond drilling at Cassini to move to the CS1 channel and the untested magnetic anomaly

Mincor Resources NL (ASX: MCR, "Mincor" or the "Company") is pleased to announce a further substantial increase in the Mineral Resource for the Cassini nickel sulphide deposit at Kambalda, with ongoing drilling during the June 2019 quarter delivering a 33% increase in contained nickel to 37,800 tonnes.

The updated Indicated and Inferred Mineral Resource of **985,000 tonnes @ 3.8% Ni** represents an increase of 9,300 high-grade nickel tonnes. Importantly, the addition of 205,000 tonnes of ore was delivered at a grade of 4.5% Ni, confirming Cassini as one of the largest and highest grade nickel resources in the Kambalda district. In addition, over 91% of the expanded Mineral Resource is now classified in the higher-confidence Indicated category, and is available for conversion to Ore Reserves.

Given its grade, location and growth potential, Cassini will be a key pillar of Mincor's integrated nickel restart strategy in the Kambalda district following the recently signed Offtake Agreement with BHP Nickel West.

Mincor's Managing Director, David Southam, said the continued rapid growth in the Cassini Resource this year in terms of tonnage, grade and quality vindicated its decision to accelerate exploration drilling following its successful \$23 million capital raising.

"Our well-executed diamond drilling strategy has resulted in the addition of a further 9,300 high-grade nickel tonnes in a relatively short space of time," Mr Southam said.

"This is a tremendous result which justifies our decision to increase the number of rigs operating with a focus on rapidly increasing the resource and testing extensions, particularly in the CS4 and CS5 channels."

"Continuing the recent trend at Cassini, every parent drill hole and wedge has intersected nickel sulphide mineralisation, demonstrating the continuity of the orebody, with most of these intersections containing massive sulphides – an impressive result. Drilling at Cassini will continue through the September quarter, albeit at a reduced pace in conjunction with geotechnical drilling for the Cassini box-cut and underground diamond drilling in the Spanner area of the Long nickel mine."



"The updated Mineral Resource from Cassini will be incorporated into the Definitive Feasibility Study on our Nickel Restart Strategy, which we are planning to release late in the December quarter, along with a Maiden Ore Reserve.

"With the planned resource extension drilling program almost at an end to allow completion of the DFS, a diamond drill rig will be moved to commence a drilling program in the lightly tested CS1 Channel, which yielded some very high-grade intersections. As part of that program we will also drill the adjacent untested magnetic anomaly.

"Further exploration success in the Cassini area clearly has the potential to leverage additional value from the infrastructure we are currently planning and designing to access this high-grade, high-value deposit," Mr Southam added.

#### **Mincor and Cassini Mineral Resources**

Following the completion of the updated Cassini Mineral Resource, the total nickel Mineral Resources across Mincor's Kambalda tenements now stands at **4.7Mt @ 3.7% Ni for 175,300 nickel tonnes**.

The Cassini Mineral Resource now stands at 985kt @ 3.8% Ni for 37,800 nickel tonnes. The latest Cassini 3D resource shape is depicted below.

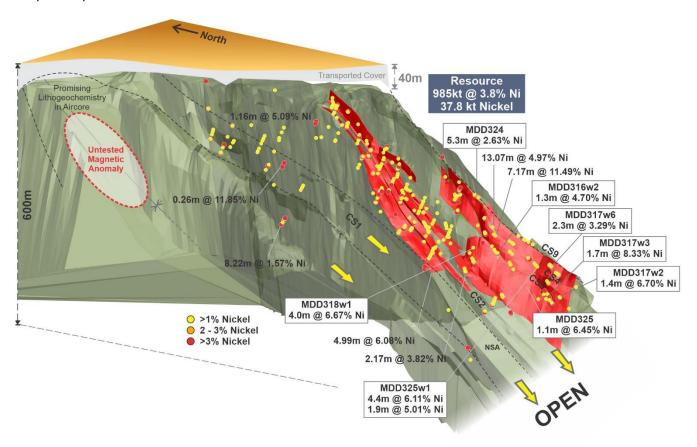


Figure 1: Cassini 3D of basalt surface and resource shapes



# **Technical Summary – Mineral Resource Estimation Methodology and Data**

Cassini Mineral Resources were estimated by independent consultants from Cube Consulting Pty Ltd in conjunction with Mincor technical staff.

## Geology and Geological Interpretation

The Cassini Nickel Project area lies on the southern end of the Widgiemooltha Dome in the southern part of the Archaean Norseman–Wiluna Greenstone Belt.

The geology of the area consists of a recent cover sequence of sands and muds linked to lake systems in the north. Sediments of the Black Flag group are intersected in the upper parts of drilling on the eastern side of the Project. Underlying this is a basaltic unit which appears to be similar in characteristics to the Devons Consul basalt in Kambalda but not seen in other areas of the Widgiemooltha Dome.

Thick ultramafic sequences underlie this basalt, which have thin sedimentary units within it. High MgO ultramafic occurs immediately above the underlying basalt (equivalent to the Mount Edwards Basalt). This ultramafic unit has consistent >30% MgO and whilst spinifex textures are not preserved several flows can be inferred from geochemistry.

The nickel mineralisation occurs within a structurally modified channel in a synclinal fold with mineralisation extending to the west to the apex of the anticline and to the east associated with sediments up the eastern limb. The mineralisation is also stoped out by two subparallel to plunge porphyry dykes associated with small-scale step faults.

## **Drilling Techniques**

Drill holes are all NQ or HQ diamond drill-holes with density measurements taken with every sample interval.

# Sampling and Subsampling Techniques

Diamond core is marked in 1m or to geological contacts and half sawn, half is sampled and the rest retained in core trays.

All the samples collected for assaying weighed 1–3kg, which is considered appropriate for grain sizes of the material expected.

## Sample Analysis Method

Mincor samples were sent to either ALS in the 2015 campaign or Bureau Veritas for the recent campaigns. The samples were oven dried and pulverised. A small subsample is then dissolved in a four-acid digest and analysed via Inductively Coupled Plasma – Mass Spectrometry (ICP-MS). Ore grade results are reread with a higher dilution to achieve accuracy above the upper limits of the routine method. This method is considered a near total measure of nickel.

### **Estimation Methodology**

- Ordinary kriging (OK) estimation method was used to estimate nickel, cobalt, copper, arsenic sulphur and density into the 3D block model.
- Variogram calculations were carried out on the 1m composites from three main domains (shoots 2, 3, 4 and 5), the other domains had too few samples for variography. The variogram parameters for the three well informed domains were therefore used to represent the poorly informed domains.
- Samples were composited to 1m within each estimation domain, using fixed length option and a threshold inclusion of samples at sample length 50% of the targeted composite length.
- The influence of extreme grade values was reduced by top-cutting where required. The top-cut levels were determined using a combination of top-cut analysis tools (grade histograms, log probability plots and coefficients of variation (CVs). Top-cuts were reviewed and applied on a domain basis.
- Kriging neighbourhood analysis (KNA) was used to determine the most appropriate block size and other estimation parameters such as minimum and maximum samples, discretisation, to be used for the estimation.
- Parent block size of 10m x 10m x 4m in the X, Y, Z directions respectively was used, and they were sub-blocked to 2.5m x 0.25m x 0.5m. This was deemed to be appropriate for block estimation and modelling the selectivity for an underground operation.



• Elements were estimated in three passes with the first pass using optimum search distance of 120m to 50m as determined through the KNA process and the second run was set at double the first pass and a third at four times the primary search distance in order to populate all blocks.

### **Cut-off Grade**

Cut-off grade for reporting is 1% nickel, in line with recommendations from Mincor. Resources would likely be mined via underground methods. Thus, a 1% nickel lower cut-off was deemed appropriate.

#### Resource Classification Criteria

Blocks have been classified as Indicated or Inferred essentially based on data spacing and using a combination of search volume and number of data used for the estimation. Indicated Mineral Resources are defined nominally on 25mE x 40mN spaced drilling or less. Inferred Mineral Resources are defined by data density greater than 25mE x 40mN spaced drilling and confidence that the continuity of geology and mineralisation can be extended along strike and at depth.

Classification limits may vary where grade and geology are extremely continuous, even though drill spacing extends passed the nominal limits specified.

The resource classifications are based on the quality of information for the geological domaining, as well as the drill spacing and geostatistical measures to provide confidence in the tonnage and grade estimates.

The Mineral Resource estimate appropriately reflects the Competent Person's view of the deposit.

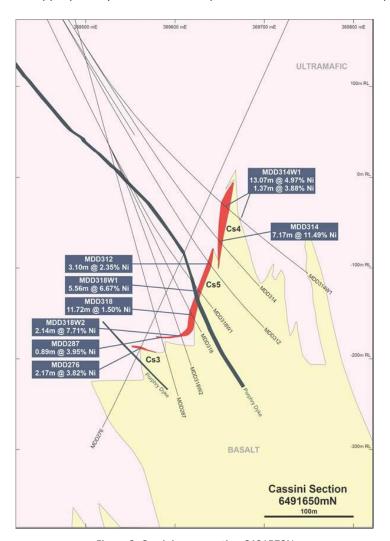


Figure 2: Cassini cross-section 6491570N



# **Further Drilling Programs**

Drilling planned in the September quarter will involve down plunge drill testing of the CS2 to CS5 resource areas, followed by drill testing of the shallower targets on the CS1 trends.

The information in this Public Report that relates to Exploration Results is based on information compiled by Robert Hartley, who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Hartley is a full-time employee of Mincor Resources NL. Mr Hartley has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as Competent Persons as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Hartley consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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#### **APPENDIX 1: Nickel Mineral Resources and Ore Reserves**

### Nickel Mineral Resources as at 30 June 2019

DECOLIDE	MEASUF	RED	INDICAT	ED	INFERR	ED		TOTAL	
RESOURCE	Tonnes	Ni (%)	Tonnes	Ni (%)	Tonnes	Ni (%)	Tonnes	Ni (%)	Ni tonnes
Cassini			902,000	3.9	83,000	3.4	985,000	3.8	37,800
Long			410,000	4.0	340,000	4.4	750,000	4.2	32,000
Redross	39,000	4.9	138,000	2.9	67,000	2.9	244,000	3.2	7,900
Burnett	-	-	241,000	4.0	-	-	241,000	4.0	9,700
Miitel	156,000	3.5	408,000	2.8	27,000	4.1	591,000	3.1	18,100
Wannaway	-	-	110,000	2.6	16,000	6.6	126,000	3.1	3,900
Carnilya*	33,000	3.6	40,000	2.2	-	-	73,000	2.8	2,100
Otter Juan	2,000	6.9	51,000	4.1	-	-	53,000	4.3	2,300
Ken/McMahon**	25,000	2.7	183,000	3.9	54,000	3.2	262,000	3.7	9,600
Durkin North	-	-	417,000	5.3	10,000	3.8	427,000	5.2	22,400
Durkin Oxide			154,000	3.2	22,000	1.7	176,000	3.0	5,200
Gellatly	-	-	29,000	3.4	-	-	29,000	3.4	1,000
Voyce	-	-	50,000	5.3	14,000	5.0	64,000	5.2	3,400
Cameron	-	-	96,000	3.3	-	-	96,000	3.3	3,200
Stockwell	-	-	554,000	3.0	-	-	554,000	3.0	16,700
TOTAL	256,000	3.7	3,783,000	3.7	633,000	3.9	4,671,000	3.7	175,300

#### Note:

- Figures have been rounded and hence may not add up exactly to the given totals.
- Note that nickel Mineral Resources are inclusive of nickel Ore Reserves.
- Subsequent drilling information is yet to be incorporated into the Resource estimates but will be updated for June 2019

The information in this report that relates to nickel Mineral Resources is based on information compiled by Rob Hartley, who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Hartley is a full-time employee of Mincor Resources NL and has 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. Mr Hartley consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

# Nickel Ore Reserves as at 30 June 2019

DECEDI/E	PROVE	:D	PROBAB	LE		TOTAL	
RESERVE	Tonnes	Ni (%)	Tonnes	Ni (%)	Tonnes	Ni (%)	Ni tonnes
Burnett	-	-	271,000	2.6	271,000	2.6	6,900
Miitel	28,000	2.6	129,000	2.2	157,000	2.3	3,600
Durkin North	-	-	708,000	2.5	708,000	2.5	17,700
TOTAL	28,000	2.6	1,108,000	2.5	1,136,000	2.5	28,200

#### Note:

- Figures have been rounded and hence may not add up exactly to the given totals.
- Note that nickel Mineral Resources are inclusive of nickel Ore Reserves.

<sup>\*</sup>Nickel Mineral Resource shown for Carnilya Hill are those attributable to Mincor – that is, 70% of the total Carnilya Hill nickel Mineral Resource.

<sup>\*\*</sup>Ken/McMahon also includes Coronet (in the 2010/11 Annual Report it was included in Otter Juan).



The information in this report that relates to nickel Ore Reserves is based on information compiled by Paul Darcey, who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Darcy is a full-time employee of Mincor Resources NL and has 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 "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Darcey consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

# **APPENDIX 2: Drill Hole Tabulations**

		Coll	ar coordi	nates						Estimated	%	%	%
Hole ID	MGA easting	MGA northing	MGA RL	EOH depth	Dip	MGA azimuth	From	То	Interval	true width	Nickel	Copper	Cobalt
Cassini - Dia	mond Drillir	ng											
MDD317W6	369440.8	6491440.4	309.7	672.9	-60	90.0	556	558.4	2.44	2.3	3.29	0.13	0.10
MDD317W6							561.3	562.8	1.46	1.3	5.31	0.19	0.17
MDD317W6							566.27	567.1	0.84	0.8	4.90	0.33	0.11
MDD318W1	369389.9	6491604.0	307.4	522.8	-63	88.0	491.4	497.0	5.56	3.8	6.67	0.37	0.13
MDD318W2	369389.9	6491604.0	307.4	564.5	-60	90.0	527.97	530.11	2.14	1.3	7.71	0.45	0.07
MDD323W1	369375.0	6491514.8	308.4	660.5	-64	90.0	623.05	625.0	1.95	1.2	4.38	0.43	0.10
MDD325	369407.8	6491477.2	309.0	693	-60	90.0	590.44	591.88	1.44	1.1	6.45	0.77	0.09
MDD325							610.25	612.04	1.79	1.1	7.51	0.35	0.09
MDD325W1	369411.8	6491480.0	308.4	591	-60	90.0	558.8	561.12	2.32	2.1	4.94	0.23	0.19
MDD325W1							571.05	576.41	5.36	4.4	6.05	0.36	0.12
MDD325W2	369411.8	6491480.0	308.4	645.3	-60	90.0	598.4	598.9	0.41	0.3	1.35	0.22	0.03
MDD325W3	369411.8	6491480.0	308.4	627.3	-60	90.0	559.0	560.2	1.16	1.1	1.05	0.06	0.02
							570.0	570.4	0.36	0.3	5.31	0.27	0.12
MDD329	369400.0	6491560.0	306.4	606.4	-67	90.0	568.7	570.9	2.24	2.2	7.92	0.29	0.15



# APPENDIX 3: JORC Code, 2012 Edition – Table 1

# Section 1: Sampling Techniques and Data (criteria in this section apply to all succeeding sections)

Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <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 downhole 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 1m samples from which 3kg was pulverised to produce a 30g 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>	<ul> <li>Mineralisation is visible so only a few metres before and after intersection are sampled.</li> <li>For diamond drill core, representivity is ensured by sampling to geological contacts. Diamond samples are usually 1.5m or less.</li> </ul>
Drilling techniques	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.).	Diamond drill core is NQ or HQ sizes. All surface core is orientated.
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <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>	<ul> <li>For diamond core, recoveries are measured for each drill run. Recoveries generally 100%. Only in areas of core loss are recoveries recorded and adjustments made to metre marks.</li> <li>There is no relationship to grade and core loss.</li> </ul>
Logging	<ul> <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> <li>All drilling is geologically logged and stored in database.</li> <li>For diamond core, basic geotechnical information is also recorded.</li> </ul>
Subsampling techniques and sample preparation	<ul> <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 subsampling stages to maximise representivity of samples.</li> <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> <li>Half cut diamond sawn core sampled, marked up by Mincor geologists while logging and cut by Mincor field assistants.</li> <li>Sample lengths to geological boundaries or no greater than 1.5m per individual sample.</li> <li>As nickel mineralisation is in the 1% to 15% volume range, the sample weights are not an issue vs grain size.</li> </ul>



Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	<ul> <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> <li>Drill core assayed by four-acid digest with ICP finish and is considered a total digest.</li> <li>Reference standards and blanks are routinely added to every batch of samples. Total QAQC samples make up approx. 10% of all samples.</li> <li>Monthly QAQC reports are compiled by database consultant and distributed to Mincor personnel.</li> </ul>
Verification of sampling and assaying	<ul> <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> <li>As nickel mineralisation is highly visible and can be relatively accurately estimated even as to grade, no other verification processes are in place or required.</li> <li>Holes are logged on Microsoft Excel templates and uploaded by consultant into Datashed format SQL databases; these have their own inbuilt libraries and validation routines.</li> </ul>
Location of data points	<ul> <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> <li>Surface holes surveyed in by differential GPS in MGA coordinates by registered surveyor both at set out and final pick up.</li> <li>Downhole surveys are routinely done using single shot magnetic instruments. Surface holes or more rarely long underground holes are also gyroscopic surveyed.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <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> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>Current drill-hole spacing is 40–80m between sections and 10–25m between intercepts on sections.</li> <li>This program is infilling to a nominal 20–40m strike spacing to allow for a possible Inferred/Indicated Resource classification.</li> </ul>
Orientation of data in relation to geological structure	<ul> <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> <li>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.</li> </ul>	<ul> <li>Surface drill-holes usually intersect at various angles to contact due to the complex folding in the Cassini area.</li> <li>Mineralised bodies at this prospect are irregular which will involve drilling from other directions to properly determine overall geometries and thicknesses.</li> </ul>
Sample security	The measures taken to ensure sample security.	Core is delivered to logging yard by drilling contractor but is in the custody of Mincor employees up until it is sampled. Samples are either couriered to a commercial lab or dropped off directly by Mincor staff.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	In-house audits of data are undertaken on a periodic basis.

Section 2: Reporting of Exploration Results (criteria listed in the preceding section also apply to this section)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <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> <li>All resources lie within owned 100% by Mincor Resources NL. Listed below are tenement numbers and expiry dates:</li> <li>M15/1457 – Cassini (01/10/2033)</li> </ul>



Criteria	JORC Code explanation	Commentary
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	Jupiter Mines and WMC have previously explored this area, but Mincor has subsequently done most of the drilling work.
Geology	Deposit type, geological setting and style of mineralisation.	Typical "Kambalda" style nickel sulphide deposits.
Drill-hole information	<ul> <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> <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>downhole 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>	See attached tables in previous releases and Appendix 2 of this release.
Data aggregation methods	<ul> <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> </ul>	<ul> <li>Composites are calculated as the length and density weighted average to a 1% Ni cut-off.</li> <li>They may contain internal waste; however, the 1% composite must carry in both directions.</li> </ul>
	<ul> <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>	The nature of nickel sulphides is that these composites include massive sulphides (8–14% Ni), matrix sulphides (4–8% Ni) and disseminated sulphides (1–4% Ni). The relative contributions can vary markedly within a single orebody.
Relationship between mineralisation widths and intercept lengths	<ul> <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>	The general strike and dip of the basalt contact is well understood so estimating likely true widths is relatively simple, although low angle holes can be problematic.
Diagrams	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.	See plan, cross section and 3D image
Balanced reporting	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.	All holes are represented on the 3d image and characterised by grade ranges to show distribution of metal.
Other substantive exploration data	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.	Downhole electromagnetic modelling has been used to support geological interpretation where available.
Further work	<ul> <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> <li>Resources at the extremities are usually still open down plunge (see 3D image).</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
Database integrity	<ul> <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> <li>All assay data is sent electronically from the assay lab to Maxwell Geoservices, Mincor's database consultant for upload into the SQL database. All other data is filled in on Microsoft Excel templates which then imported into the SQL database.</li> <li>Validation occurs when the geologist uses updated access extracts to both plot and visually inspect drill-hole data.</li> </ul>
Site visits	<ul> <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>	The Competent Person has visited the site and inspected the drill core on numerous occasions over the last 12 months.
Geological interpretation	<ul> <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> <li>Geological domaining and mineralised shoot interpretation is considered appropriate. The geometry and location of the mineralised shoots (seven separate shoots are currently defined) and ultramafic/basalt contact is well drilled and understood – as existing drilling was added, the interpretation stood up well to the new data, and wholesale changes to the geological interpretation were not required. This indicates a sound understanding of the geological framework of the deposit.</li> <li>Of the 39 drill holes that intercept the mineralised shoots, 38 are very good quality recent diamond core holes. The single RC hole is also of good quality.</li> <li>There is little scope for alternative interpretation beyond extending the limits of the mineralisation away from drilling.</li> <li>The mineralised shoots are comprised of massive sulphide and matrix disseminated nickel sulphides and are defined by geological logging and with Ni grade &gt;1%.</li> </ul>
Dimensions	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.	• The shoots plunge to the south at about 40° to 45° and extend for ~700m down plunge. The shoots vary in width (east-west) from 2m up to 50m wide and vary in vertical thickness from 1m to more than 10m with an average of 3–5m. The upper limit of mineralisation is 60m below surface, extending to at least 500m vertically below surface.
Estimation and modelling techniques	<ul> <li>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.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</li> <li>The assumptions made regarding recovery of byproducts.</li> <li>Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>Any assumptions behind modelling of selective mining</li> </ul>	<ul> <li>Estimation of nickel, cobalt, copper, arsenic and bulk density was by Ordinary Kriging within the mineralised shoots, using Datamine's 'dynamic anisotropy' process. This allows the search ellipse and variogram directions to rotate locally to reflect local variations in dip and strike of the mineralised shoots.</li> <li>Drill-hole samples were length and density weight composited to 1m downhole, which was the most frequent sample size.</li> <li>Variography was done in Isatis software for the five variables to be estimated.</li> <li>Quantitative kriging neighbourhood analysis (QKNA) was used to determine the search neighbourhood.</li> <li>The minimum number of samples required was six, with a maximum of 18.</li> <li>First pass search ellipse radii were similar to the variogram ranges, with the same anisotropy as the variogram models. For the major shoots, this was 100m down plunge, 40m across strike and 5m perpendicular to plunge. For the smaller shoots, the search was 50m x 20m</li> </ul>



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	units.	x 5m.
Criteria		<ul> <li>x 5m.</li> <li>If a block was not estimated with this first search pass, a second pass twice the size of the first was used, and a third pass four times the original search was used if required. For the main shoots, &gt;90% of the blocks were informed on the first or second pass. The third pass was only required for some of the smaller, less well-informed shoots. For a very small percentage of blocks that did not</li> </ul>
		<ul> <li>This is a maiden Mineral Resource estimate, and therefore there are no previous estimates or production data to compare with.</li> </ul>
Moisture	Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	Tonnages are estimated on a dry basis.
Cut-off parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	The mineralised shoots have been defined stratigraphically and >1% Ni. No cut-off grade has been used for reporting, but is essentially 1% Ni.
Mining factors or assumptions	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.	<ul> <li>Mining would be by underground methods, such as those used at the nearby Redross, Mariners and Miitel nickel mines. There is existing infrastructure in place. Minimum mining widths would be in the order of 2m.</li> <li>Ore would be transported by road train to BHP Nickel West's nearby Kambalda nickel processing operation.</li> </ul>



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Metallurgical factors or assumptions	<ul> <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.</li> <li>Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</li> </ul>	<ul> <li>metallurgical testwork has been completed on a master composite representing average mining grade with appropriate dilution materials.</li> <li>Results indicated normal Kambalda sulphide recoveries comparable to other mines in the area.</li> </ul>
Environmental factors or assumptions	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.	<ul> <li>Ore treatment would be at BHP Nickel West's Kambalda nickel processing operation, which has been in operation for 50 years and has adequate tailing facilities. Haulage of waste rock to surface would be minimal, and any potentially acid forming material would be encapsulated in the waste rock dump. Surface disturbance would be minimal, as existing infrastructure would be used.</li> <li>Hypersaline ground water from the overlying sediments would be discharged to lakes to the north.</li> </ul>
Bulk density	<ul> <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> <li>Bulk density has been determined by water immersion techniques for drill core for every sampled interval.</li> <li>The drill core is solid, and is not porous, and thus negligible moisture content. The results are consistent with similar rock types at nearby nickel deposits.</li> <li>Bulk density was estimated into the block model, and as such local variation is available in the mineralised shoots. Densities for the non-mineralised material were applied per rock type and oxidation state.</li> </ul>
Classification	<ul> <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> <li>Indicated Mineral Resource has a nominal drill spacing of 40mN x 20 to 30mE, and used search passes 1 and 2, and Inferred Mineral Resource has a nominal drill spacing of 80mN x 40 to 80mE, and search pass 3 or assigned default value.</li> <li>There is high confidence in the geological interpretation, and the input data has been thoroughly checked and is reliable. The geometry and consistency of the mineralised shoots is similar to nearby 'Kambalda-style' nickel deposits.</li> <li>The results reflect the Competent Person's view of the deposit.</li> </ul>
Audits or reviews  Discussion of relative accuracy/ confidence	<ul> <li>The results of any audits or reviews of Mineral Resource estimates.</li> <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</li> </ul>	<ul> <li>No independent external audits have occurred, but the work has been internally peer reviewed by Cube Consulting.</li> <li>Confidence in the estimate is reflected in the Mineral Resource classification. Geostatistical metrics (e.g. slope of regression) have been used to assist with classification but are not the only measure of confidence.</li> </ul>
connuence	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	<ul> <li>but are not the only measure of confidence.</li> <li>The Mineral Resource relates to global tonnage and grade estimates.</li> <li>This is a maiden Mineral Resource estimate, and no mining production has occurred at the Cassini nickel deposit.</li> </ul>



Criteria	JORC Code explanation	Commentary
	estimate.	
	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.	
	<ul> <li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>	