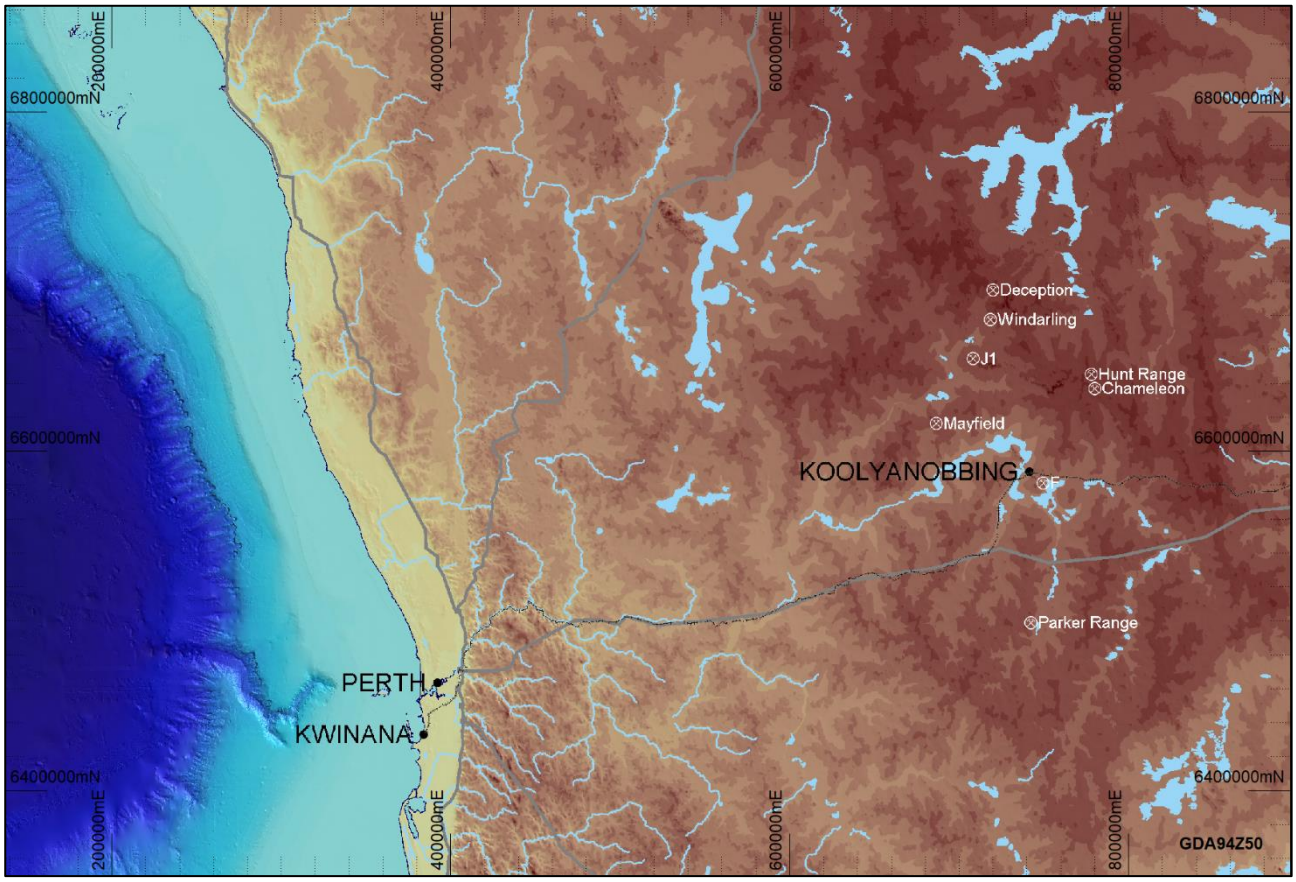
ASX ANNOUNCEMENT
Wednesday 20th November 2019

MINERAL RESOURCE STATEMENT – KOOLYANOBBING, MT DIMER & PARKER RANGE

AS AT 30 JUNE 2019

HIGHLIGHTS

- **Maiden Statement of Group Resources for the Koolyanobbing and Mt Dimer assets.**
- **Restatement of the Parker Range asset.**



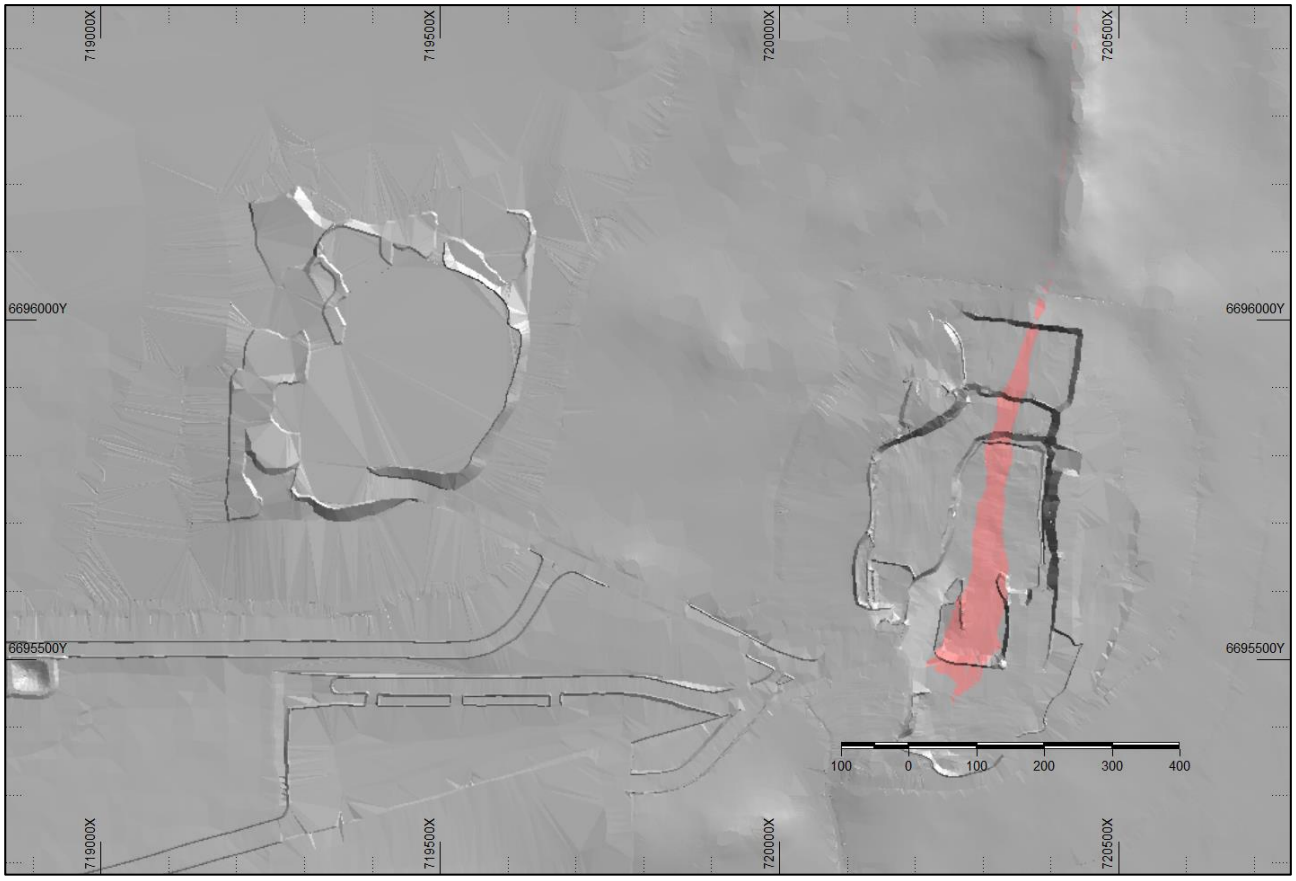
RESOURCE SUMMARY

Group Mineral Resources

The JORC compliant Group Mineral Resources as at 30 June 2019 are estimated to be 108.6 million tonnes at 56.8% Fe, 6.3% SiO_2, 2.2% Al_2O_3, 0.11% P and 8.2% LOI using a nominal Fe cut-off grade of 50%.

For the purpose of satisfying "reasonable prospects for eventual extraction" (JORC 2012), the Mineral Resources have been constrained by optimised open pit shells developed using environmental constraints, operating costs and a long term iron ore price assumption. Material occurring outside of these pit shells is unclassified and not reported anywhere in this statement.

Deception / Altair Deposits



Mineral Resource Estimate

The following Resource estimate was created by Mr. Matthew Watson who is a full time employee of Mineral Resources Limited. Mr Watson is signing off as the Competent Person.

Resource Model Name: DC_Resource_Model_11_03_2019

Geology and Geological Interpretation

The Deception / Altair iron deposits are located in the Die Hardy Range in the northern portion of the Archaean aged Diemals Greenstone Belt. The Diemals Greenstone Belt is bounded to the east by the Evanston Shear Zone.

The mineralisation has been described as highly friable goethite and hematite altered iron formation (BIF) hosted within mafic country rock. The deposit has been tilted and faulted into its present sub-vertical setting.

The iron mineralisation trends roughly north-south. Altair is the northern continuance of the Deception deposit. The Deception deposit has a strike length of 500m, an across dip width of 50m and a down dip extension of 330m. The Altair deposit has a strike length of 900m, an across dip width of 20m and a down dip extension of 200m.

Sampling and Sub-sampling

The vast majority of samples were collected via reverse circulation drilling. Drill holes were predominantly down-hole sampled at 1m intervals with a minority at 2m. The RC sub-samples were generated using a cone-splitter.

RAB drilling was used for waste rock landform sterilisation. Sub-samples were collected using a spear for 1m composite lengths.

Diamond drilling was run in the form of HQ3 diamond tails on the end of RC drill holes to reach the deeper parts of the orebody beyond RC drill rig capabilities, and PQ3 diamond holes from surface for density, geotechnical and metallurgical characterisation test work. Core was half sampled at 1m downhole intervals for analytical test work.

Sample Analysis Method

Analytical test work was completed by ALS, SGS and Ultratrace commercial laboratories in Perth. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

RC drilling was completed using face sampling hammers with bit sizes ranging in diameter from 4.5 to 5.5 inches. Diamond drilling was completed using PQ3 and HQ3 sized core. Half core was sent for analytical test work.

Estimation Methodology

The estimation methodology used was ordinary kriging (OK). Block model dimensions used are 12m (east) by 12m (north) by 6m (elevation) with sub-blocking down to 1.5m (east) by 1.5m (north) by 1.5m (elevation).

The estimation was constrained within manually generated 50% Fe mineralisation domains defined from the resource drillhole dataset, and guided by a geological model.

Detailed statistical investigations have been completed on the captured estimation data set. This includes exploration data analysis, boundary analysis and grade estimation trials. No high grade cuts were applied to the composited sample data. The estimation employed a three-pass search strategy.

An inverse distance squared estimate was run to provide an independent check on the OK model. The check estimates produced confirmation of the primary OK results.

Resource Classification

The resource has been classified as Indicated and Inferred for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code. Remaining mineralisation has been left as unclassified.

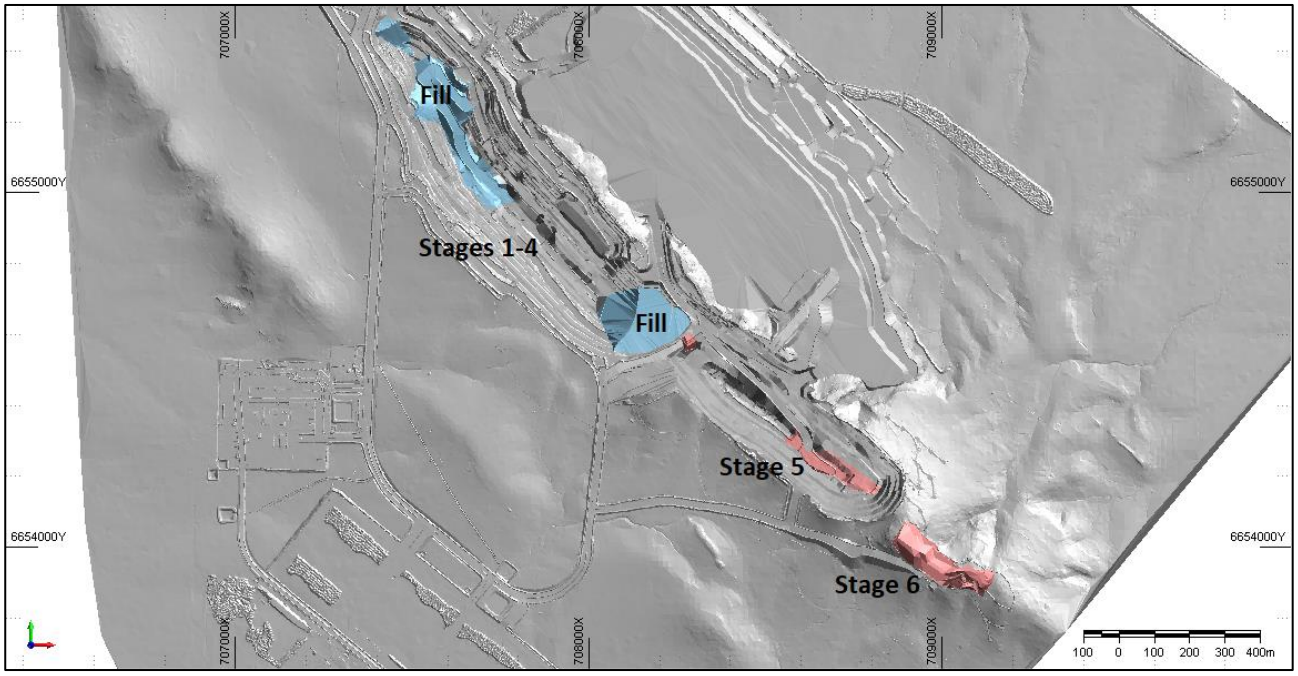
A range of criteria has been considered in determining this classification including:

- Geological continuity
- Data quality
- Drill hole spacing
- Modelling technique
- Estimation properties including search strategy, number of informing data and average distance of data from blocks

Cut-off Grade

A cut-off grade of 50% Fe was used for the stated Mineral Resource estimate, which is industry standard.

J1 Deposit



Mineral Resource Estimate

The following Resource estimate was created by Mr. Clint Ward who was a full time employee of Cliffs APIO Ltd at the time the Resource estimate was completed. Mr Matthew Watson who is a full time employee of Mineral Resources Ltd is signing off on the Resource estimate as the Competent Person.

Resource Model Name: J1_2016_Insitu

Geology and Geological Interpretation

The J1 iron deposit is located in the Mt Jackson Range, part of the Archaean aged Marda Greenstone Belt. The range is composed of Archaean Banded Iron Formation ('BIF"), mafics, ultramafics and metasediments which trend WNW-ESE over a length of approximately 20km.

The J1 deposit forms a prominent ridge at the western end of the Mount Jackson Range approximately 9.5 km west-northwest of Mount Jackson. The J1 Deposit outcrops over a strike length of approximately 2 km and dips to the south at 80-85°. The elongate J1 Deposit strikes north-west/south-east and varies between 50-120 metres width (70 m on average). The depth of mineralization varies between 50 to 200 m with a sharp truncation at depth. Mineralisation at the J1 Deposit is predominantly goethitic, massive to poorly bedded and extremely vuggy and cellular, although it is generally quite hard. Mineralisation occurs as discontinuous pods along two distinct lines. A distinct hydrated cap rock has developed where the mineralisation outcrops. The cap rock is depleted in iron content. The base of the mineralisation is underlain by a volcanic massive sulphide (VMS) body. Host rock surrounding the mineralisation includes banded iron formation, cherty-banded iron formation, jaspilite, tholeiitic basalt, sediments, canga and iron-rich lateritic duricrust.

Sampling and Sub-sampling

The vast majority of samples were collected via reverse circulation (RC) drilling. RC holes were generally sampled at 1m or 2m intervals down-hole. The majority of RC sub-samples were generated using a riffle-splitter with the remainder generated using a cone splitter.

RAB was used for waste rock landform sterilisation. Sub-samples were collected via grab sampling for 1m composite lengths.

Diamond core was used for density, geotechnical and metallurgical characterisation. PQ3, HQ3 and NQ3 diameter whole core was sent for analytical test work.

Sample Analysis Method

The majority of the assaying was completed by the Portman Iron Ore Lab with a minority of the assaying carried out by SGS and Ultratrace commercial laboratories in Perth. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

In the resource area, reverse circulation (RC) drilling was completed predominantly with a 5.25 inch diameter face sampling hammer and Diamond (DD) was completed with PQ3 & HQ3 sized core. A minor number of RAB drill holes were also completed.

Estimation Methodology

A grid with nodes of 3mE x 3mN x 3mRL was used for the conditional simulations. These nodes were then re-blocked to a selective mining unit (SMU) size of 12mE x 12mN x 3mRL.

Conditional simulation (CS) by Sequential Gaussian Simulation (SGS) method was used to generate 100 realizations for Fe, SiO2, Al2O3, LOI, Mn, P & S. The realisations in the simulation model were used to make an estimate of the local recoverable resource at the scale of SMUs. Recoverable resource estimates are estimates of the resource tonnage and grade that is expected to be realised during mining. The final estimate is based on the probability (from 100 realisations) that a 12 x 12 x 3m block will exceed a grade of 54% Fe, where the probability is captured in the block density value. No dilution or minimum proportion of the block exceeding 54% Fe has been applied.

The estimation was constrained within manually generated 50% Fe mineralisation domains defined from the resource drillhole dataset, and guided by a geological model.

Resource Classification

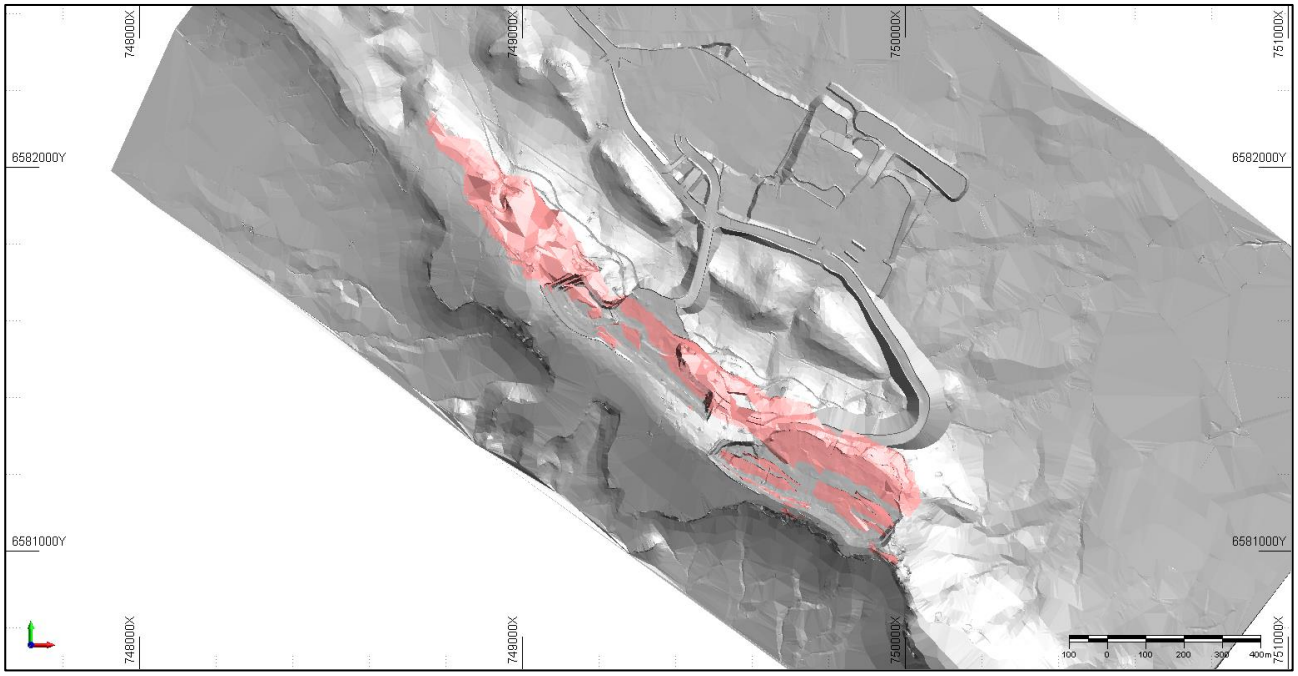
The resource has been classified as Indicated for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code. Remaining mineralisation has been left as unclassified.

The Mineral Resource has been classified based on data density, domain geometry and resource confidence.

Cut-off Grade

A cut-off grade of 54% Fe was used for the stated Mineral Resource estimate. The cut-off grade is in line with the estimation methodology which was selected to predict recoverable resources above 58% Fe. There are no resources between Fe grades of 50% - 54%.

F Deposit



Mineral Resource Estimate

The following Resource estimate was created by Mr. Mike Job formerly a full time employee at QG Pty Ltd. Mr Matthew Watson who is a full time employee of Mineral Resources Ltd is signing off on the Resource estimate as the Competent Person.

Resource Model Name: f1412bm_etype

Geology and Geological Interpretation

The F deposit lies within the Koolyanobbing greenstone belt, which forms part of the Southern Cross Greenstone Terrane in the central part of the Achaean Yilgarn Craton. The greenstone belt, which trends northwest-southeast, has a strike length of approximately 35 km and a maximum width of 8 km. The greenstone belt is comprised of tholeiitic basalts, dolerites and komatiitic volcanics, together with metasediments and banded iron formation (BIF).

The stratigraphy of the Koolyanobbing BIF in the vicinity of F Deposit shows strong weathering, hydrothermal alteration, tectonism and generally poor exposure, leading to considerable variability over the length of the South Range and repetition of the strata due to isoclinal folding.

Based on geometrical and mineralogical characteristics, the mineralisation of BIF at the F Deposit can be subdivided into two types: Strata-bound hematite-goethite mineralisation and lateritic goethite-limonite mineralisation. Strata-bound hematite-goethite mineralisation is the dominant type of mineralisation at the SE limb of the BIF sequence. The lateritic goethite-limonite zone of mineralisation crops out just above the northern BIF/tuffaceous sediment contact, extending along the entirety of the deposit and over the major part of the core of the synform. Mineralisation is characterised by strong goethite-limonite replacement of the BIF host, with minor hematite preserved in places.

The mineralisation trends roughly northwest-southeast over a distance of 1,600m and dips between 25° to 65° northeast. The strata-bound mineralisation consists of several lodes ranging in thickness from 3m to 50m, averaging 5-10m, and bottoms out at 130m below surface. The lateritic goethite-limonite mineralisation reaches up to 150m in width and bottoms out at an average depth of 50-60m.

Sampling and Sub-sampling

The vast majority of samples were collected via reverse circulation (RC) drilling. RC holes were generally sampled at 1m or 2m intervals down-hole. The majority of RC sub-samples were generated using a riffle-splitter with the remainder generated using a cone splitter.

Air core (AC) was used for waste rock landform sterilisation. Sub-samples were collected using a spear for 1m composite lengths.

Diamond core was used for density, geotechnical and metallurgical characterisation. PQ3 diameter whole core was sent for analytical test work.

Sample Analysis Method

The majority of the assaying was completed by the Portman Iron Ore Lab with a minority of the assaying carried out by SGS and Ultratrace commercial laboratories in Perth. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

In the resource area AC drilling was completed with an 4.25 inch diameter AC blade, RC drilling was completed with a 5.25 inch diameter face sampling hammer and DD was completed at PQ3 sized core.

Estimation Methodology

A grid with nodes of 3mE x 3mN x 3mRL was used for the conditional simulations. These nodes were re-blocked to a selective mining unit (SMU) size of 12mE x 12mN x 6mRL.

Conditional co-simulation (CCS) by the Turning Bands (TBS) method was used to generate spatial models of Fe, SiO2, Al2O3 and LOI using correctly modelled direct and cross-variograms of the multivariate data. The other variables, Mn, P and S were simulated by TBS independently.

The estimation was constrained within manually generated 50% Fe mineralisation domains defined from the resource drillhole dataset, and guided by a geological model.

Detailed statistical investigations have been completed on the captured estimation data set. This includes exploration data analysis, boundary analysis and grade estimation trials. Appropriate high grade cuts were applied to the composited sample data for manganese and sulphur.

A standard ordinary kriged (OK) estimate was run to provide an independent check on the e-type mean values of the conditional simulation. The check estimates produced confirmation of the primary e-type mean results.

Resource Classification

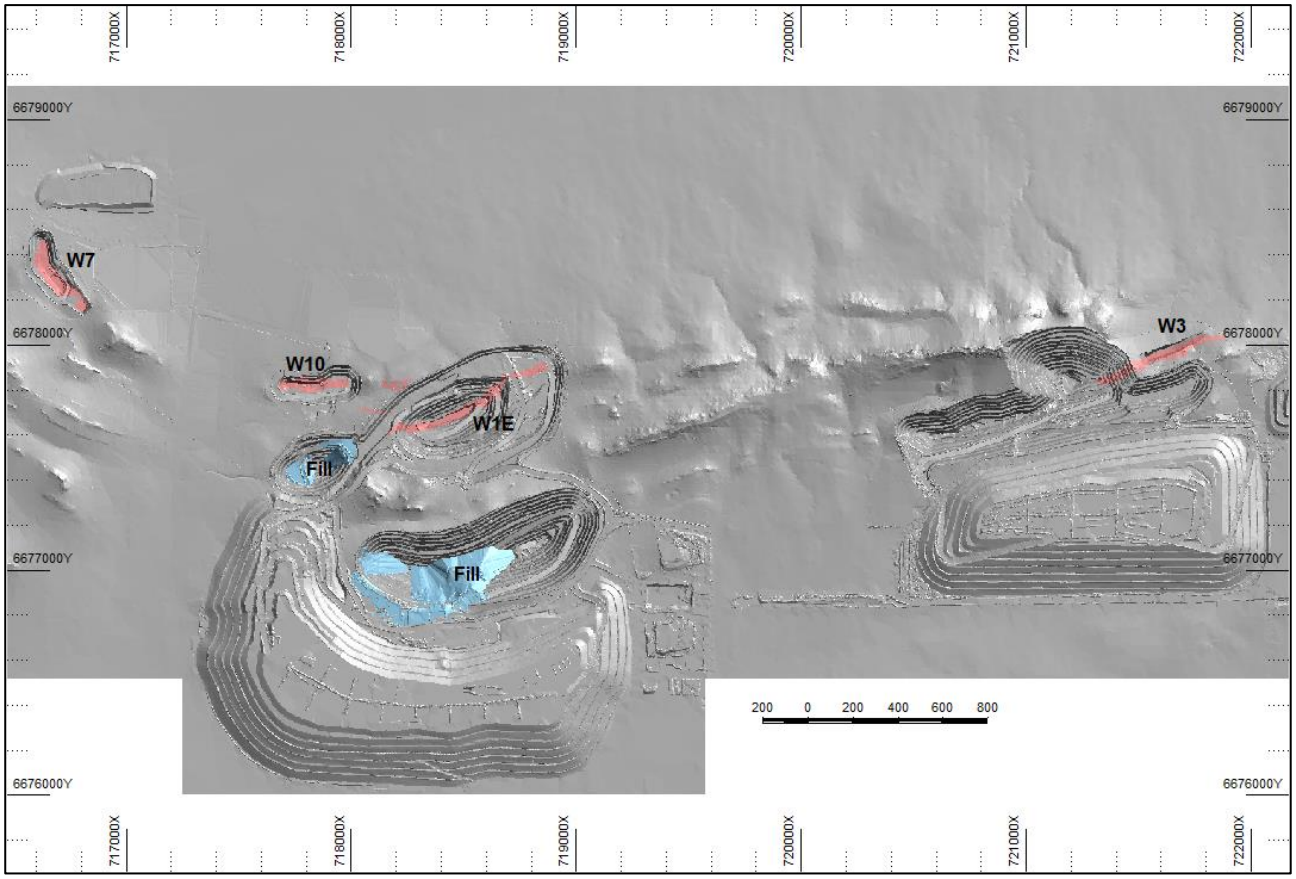
The resource has been classified as Indicated for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code. Remaining mineralisation has been left as unclassified.

The Mineral Resource has been classified based on data density, domain geometry and resource confidence.

Cut-off Grade

A cut-off grade of 50% Fe was used for the stated Mineral Resource estimate, which is industry standard.

Windarling Deposit



Mineral Resource Estimate

The following Resource estimate was created by Mr. Matthew Watson who is a full time employee of Mineral Resources Limited. Mr Watson is signing off as the Competent Person.

Resource Model Name: W10_W1E_W3_W7_Resource_Model_05_11_2019

Geology and Geological Interpretation

The Windarling iron deposits are located in the Windarling Range in the western portion of the Archaean aged Marda Greenstone Belt. The Marda Greenstone Belt is bounded to the west by the Koolyanobbing Fault.

The mineralisation has been described as well bedded, medium grained hematite, with minor goethite.

The iron mineralisation trends roughly east-west in multiple lodes which are hosted in two parallel zones of banded iron formation (BIF), about 600 metres apart at the western end of the range, with the two units gradually converging to the east. The BIF units are enveloped by metasediments and mafic volcanic rocks, which are deeply oxidised. The stratigraphy has been tilted and faulted into its present sub-vertical setting.

The strata-bound mineralisation consists of several lodes ranging in thickness from 40m to 60m, strike lengths of 300m to 800m and depths below surface of 80m to 250m.

Sampling and Sub-sampling

The vast majority of samples were collected via reverse circulation (RC) drilling. RC holes were generally sampled at 1m or 2m intervals down-hole. The majority of RC sub-samples were generated using a cone-splitter with the remainder generated using a riffle-splitter.

RAB and AC drilling was used for waste rock landform sterilisation. Sub-samples were collected via grab sampling for 1m composite lengths.

Diamond core was used for density, geotechnical and metallurgical characterisation. PQ3 and HQ3 diameter half core was sent for analytical test work.

Sample Analysis Method

The majority of the assaying was completed by Ultratrace and SGS commercial laboratories in Perth with a minority of the assaying carried out by the Site lab. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

In the resource area, reverse circulation (RC) drilling was completed predominantly with a 5.5 inch diameter face sampling hammer and Diamond (DD) was predominantly completed with PQ3 sized core. Air Core drilling was completed using 4.25 inch blades and RAB drilling was completed using 5.5 inch hammers.

Estimation Methodology

The estimation methodology used was ordinary kriging (OK). Block model dimensions used are 12m (east) by 12m (north) by 6m (elevation) with sub-blocking down to 3m (east) by 3m (north) by 3m (elevation).

The estimation was constrained within manually generated 50% Fe mineralisation domains defined from the resource drillhole dataset, and guided by a geological model.

Detailed statistical investigations have been completed on the captured estimation data set. This includes exploration data analysis, boundary analysis and grade estimation trials. No high grade cuts were applied to the composited sample data. The estimation employed a three-pass search strategy.

An inverse distance squared estimate was run to provide an independent check on the OK model. The check estimates produced confirmation of the primary OK results.

Resource Classification

The resource has been classified as Indicated and Inferred for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code. Remaining mineralisation has been left as unclassified.

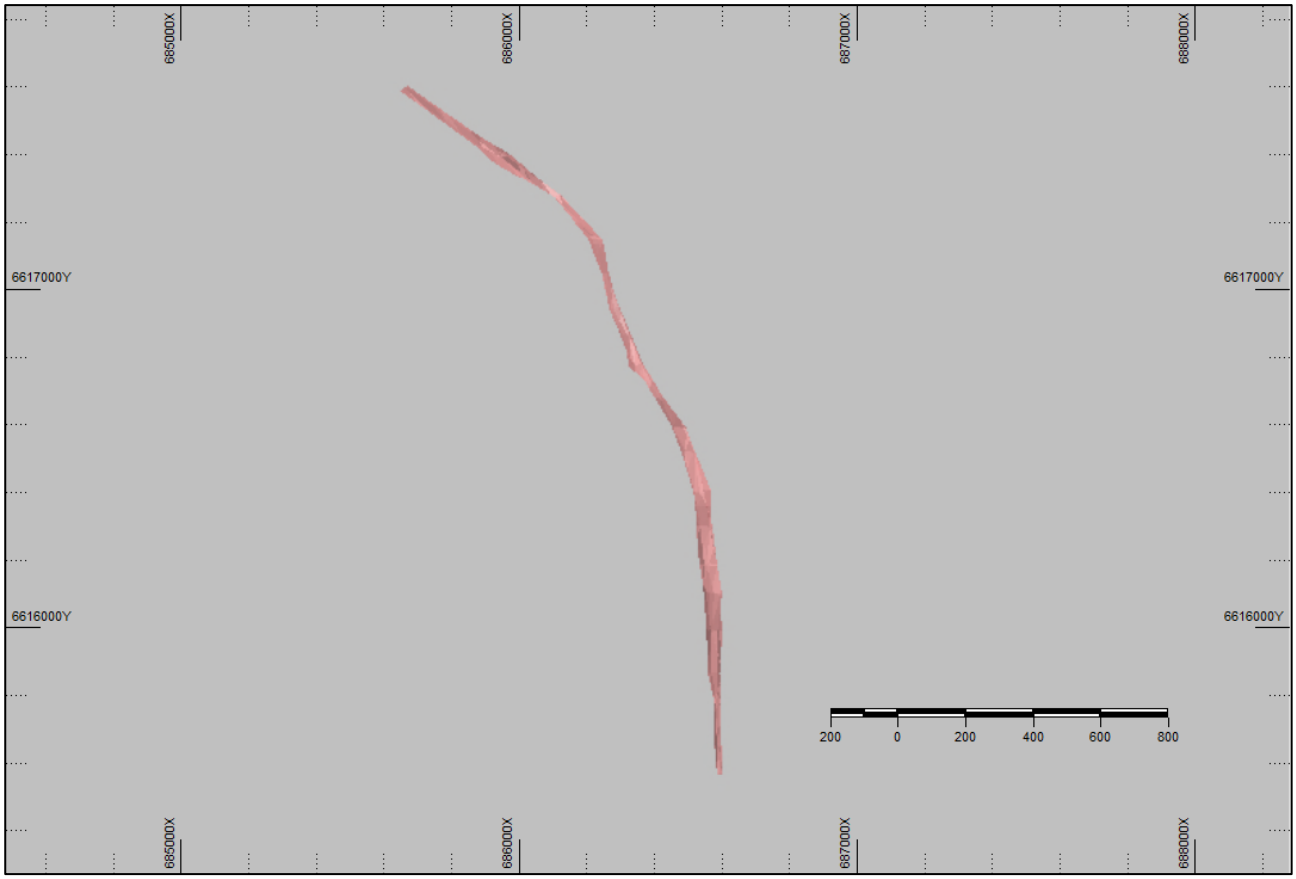
A range of criteria has been considered in determining this classification including:

- Geological continuity
- Data quality
- Drill hole spacing
- Modelling technique
- Estimation properties including search strategy, number of informing data and average distance of data from blocks

Cut-off Grade

A cut-off grade of 50% Fe was used for the stated Mineral Resource estimate, which is industry standard.

Mayfield Deposit



Mineral Resource Estimate

The following Resource estimate was created by Mr. Matthew Watson who is a full time employee of Mineral Resources Limited. Mr Watson is signing off as Competent Person.

Resource Model Name: BM_PARTS_5x5x2.5m_ROT_-25DEG_Z_AXIS_WST

Geology and Geological Interpretation

The Mayfield deposit lies in the centre of the northern limb of the Southern Cross Greenstone Belt. This portion of the belt strikes northwest from the township of Southern Cross and is approximately 120 km in length.

The greenstones generally consist of mafic and ultramafic volcanic rocks overlain by clastic sedimentary rocks. The geology of the area is poorly defined due to extensive colluvial and alluvial cover, but is interpreted to be dominated by the lower mafic/ultramafic sequence of Archaean komatiitic and tholeiitic volcanic rocks, gabbros and dolerites, with subordinate siliceous banded iron formations.

The Mayfield deposit is composed of goethite and magnetite mineralisation within a zone of Thuringite, a variety of Chamosite which is an iron-rich member of the Chlorite family of minerals that contain up to 40% Fe. The goethite occurs as a weathered cap above the magnetite mineralisation.

The goethite cap iron mineralisation has a variable trend being roughly north-south for the southern portion and northwest-southeast for the northern portion.

The strike length is 2600m, the across dip width is 30-50m and the down dip extension is up to a maximum of 70m. For depths below 70m the mineralisation changes from goethite to magnetite.

Sampling and Sub-sampling

The vast majority of samples were collected via reverse circulation drilling. Drill holes were predominantly down-hole sampled at 2m intervals. The RC sub-samples were generated using a either a riffle-splitter or a cone-splitter.

Diamond drilling was run in the form of HQ3 diamond core. Core was sampled at 1m downhole intervals for analytical test work.

Sample Analysis Method

Analytical test work was completed by Ultratrace, ALS and NAGROM commercial laboratories in Perth. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

RC drilling was completed using face sampling hammers with bit sizes of 5.5 inches. Diamond drilling was completed using P HQ3 sized core. Whole core was sent for analytical test work.

Estimation Methodology

The estimation methodology used was inverse distance squared (ID2). Block model dimensions used are 5m (east) by 25m (north) by 5m (elevation) with sub-blocking down to 2.5m (east) by 5m (north) by 2.5m (elevation).

The estimation was constrained within manually generated 50% Fe mineralisation domains defined from the resource drillhole dataset, and guided by a geological model.

Detailed statistical investigations have been completed on the captured estimation data set. No high grade cuts were applied to the composited sample data. The estimation employed a three-pass search strategy.

Resource Classification

The resource has been classified as Inferred for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code.

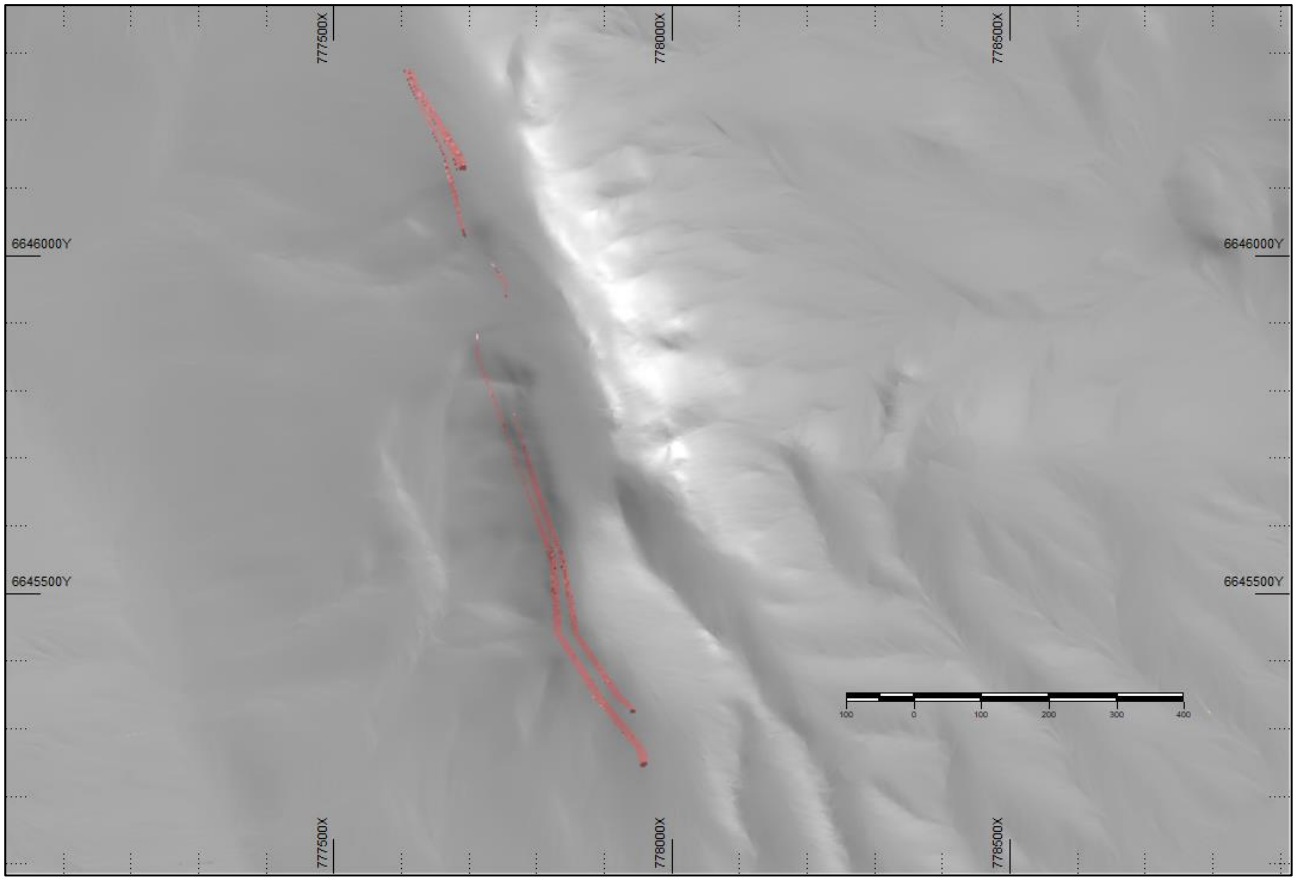
A range of criteria has been considered in determining this classification including:

- Geological continuity
- Data quality
- Drill hole spacing
- Modelling technique
- Estimation properties including search strategy, number of informing data and average distance of data from blocks

Cut-off Grade

A cut-off grade of 50% Fe was used for the stated Mineral Resource estimate, which is industry standard.

Hunt Range Deposit



Mineral Resource Estimate

The following Resource estimate was created by Mr. Matthew Watson who is a full time employee of Mineral Resources Limited. Mr Watson is signing off as Competent Person.

Resource Model Name: HR_2013_ID2

Geology and Geological Interpretation

The Hunt Range Deposit is located in the southern part of the Hunt Range Greenstone Belt.

The mineralisation is hematite-goethite with intercalated zones of basalt. The mineralisation abuts a BIF-chert sequence that forms the range of low lying hills to the East, and shares a contact with a basalt unit on the West.

The iron mineralisation trends roughly north-south. The Hunt Range deposit has a strike length of 1200m, an across dip width of 30m including a series of intercalated basalts reducing the true width to 20m. The deposit has a down dip extension of 120m.

Sampling and Sub-sampling

The samples were collected via reverse circulation drilling. Drill holes were down-hole sampled at 2m. The RC sub-samples were generated using a cone-splitter.

Sample Analysis Method

Analytical test work was completed by the ALS commercial laboratory in Perth. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

RC drilling was completed using face sampling hammers with a bit size diameter of 5.5 inches.

Estimation Methodology

The estimation methodology used was Inverse Distance Squared (ID2). Block model dimensions used are 10m (east) by 25m (north) by 5m (elevation) with sub-blocking down to 2.5m (east) by 2.5m (north) by 2.5m (elevation).

The estimation was constrained within manually generated 43.6% Fe mineralisation domains defined from the resource drill hole dataset, and guided by a geological model.

Detailed statistical investigations have been completed on the captured estimation data set. No high grade cuts were applied to the composited sample data. The estimation employed a three-pass search strategy.

Resource Classification

The resource has been classified as Inferred for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code.

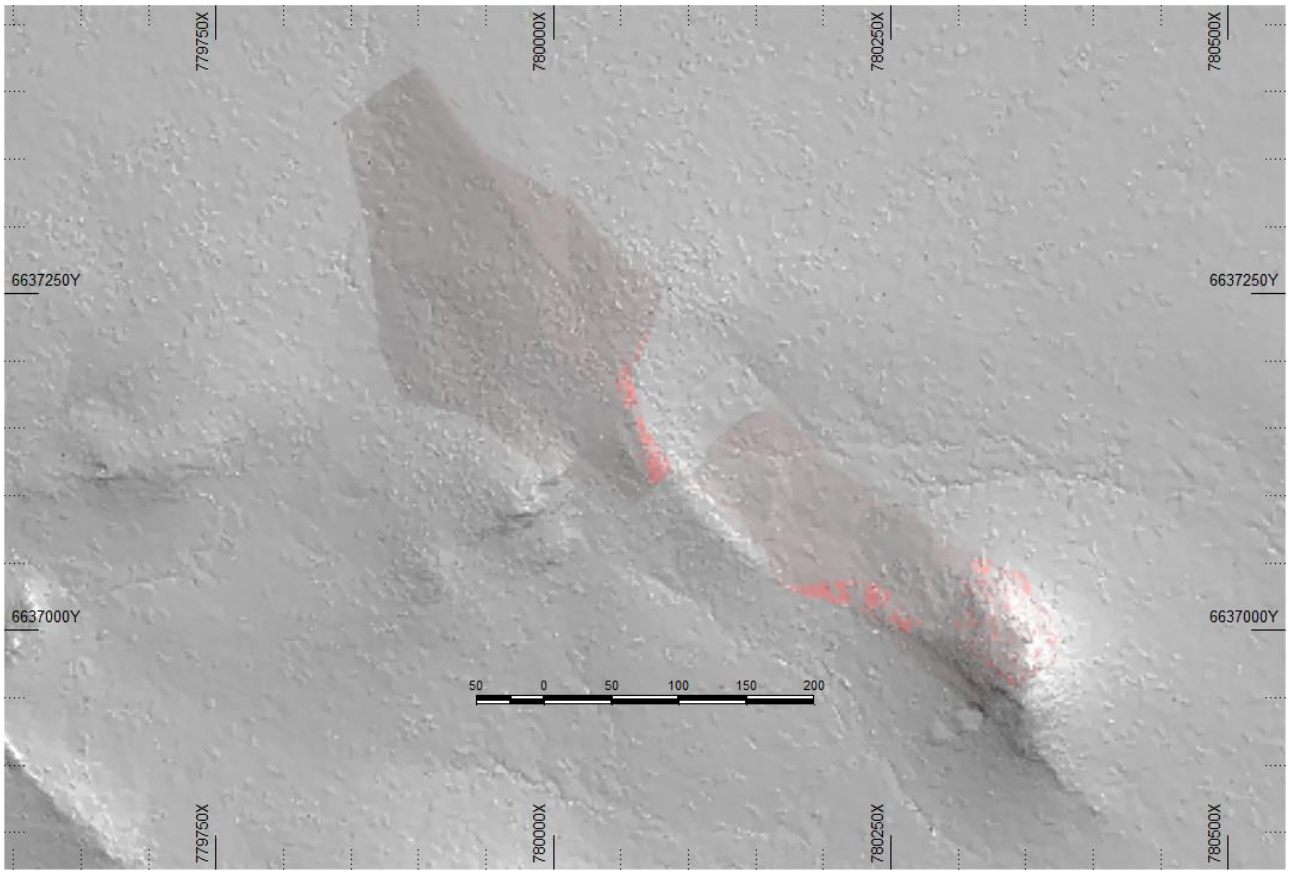
A range of criteria has been considered in determining this classification including:

- Geological continuity
- Data quality
- Drill hole spacing
- Modelling technique
- Estimation properties including search strategy, number of informing data and average distance of data from blocks

Cut-off Grade

A cut-off grade of 50% Fe was used for the stated Mineral Resource estimate, which is industry standard.

Chameleon Deposit



Mineral Resource Estimate

The following Resource estimate was created by Mr. Lynn Widenbar who is a full time employee of Widenbar and Associates. Mr Widenbar is signing off as Competent Person.

Resource Model Name: Chamaeleon_Model_27_02_2013

Geology and Geological Interpretation

The Chameleon deposit is stratigraphically situated within the basalt sequence of the Yendilberin Hills Greenstone Belt.

Polaris geologists believe that Chamaeleon is a residual volcanogenic massive sulphide deposit. The deposit is deeply oxidised resulting in a gossanous goethite cap that extends to the depth of current drilling without encountering substantial sulphides.

The goethite cap is consistently impregnated with non-shear related clay and minor manganese replacement. The deposit is closed-off by structural faulting to the south and remains open to the north where the mineralisation is pinching off and becoming more silicified.

The North West zone is approximately 350m in strike length with a width typically of 20m. It extends from surface to 175m below surface.

The Eastern zone consists of two zones of 280m and 210m strike length.

The major, North West plunging domain typically has a width of 40m and extends from surface to 225m below surface.

The minor sub-vertical domain is typically 20m thick and extends from surface to approximately 190m in depth.

Sampling and Sub-sampling

All samples were collected via reverse circulation drilling. Drill holes were down-hole sampled at 2m intervals. The RC sub-samples were generated using a cone-splitter.

Sample Analysis Method

Analytical test work was completed by the ALS commercial laboratory in Perth. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

RC drilling was completed using face sampling hammers with bit sizes ranging in diameter from 4.75 to 5.5 inches.

Estimation Methodology

The estimation methodology used was ordinary kriging (OK). Block model dimensions used are 10m (east) by 10m (north) by 5m (elevation) with sub-blocking down to 1 m (east) by 1m (north) by 1m (elevation).

The estimation was constrained within manually generated 40% Fe mineralisation domains defined from the resource drillhole dataset, and guided by a geological model.

Detailed statistical investigations have been completed on the captured estimation data set. This includes exploration data analysis and grade estimation trials. No high grade cuts were applied to the composited sample data. The estimation employed a two-pass search strategy.

An inverse distance squared estimate was run to provide an independent check on the OK model. The check estimates produced confirmation of the primary OK results.

Resource Classification

The resource has been classified as Indicated and Inferred for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code. Remaining mineralisation has been left as unclassified.

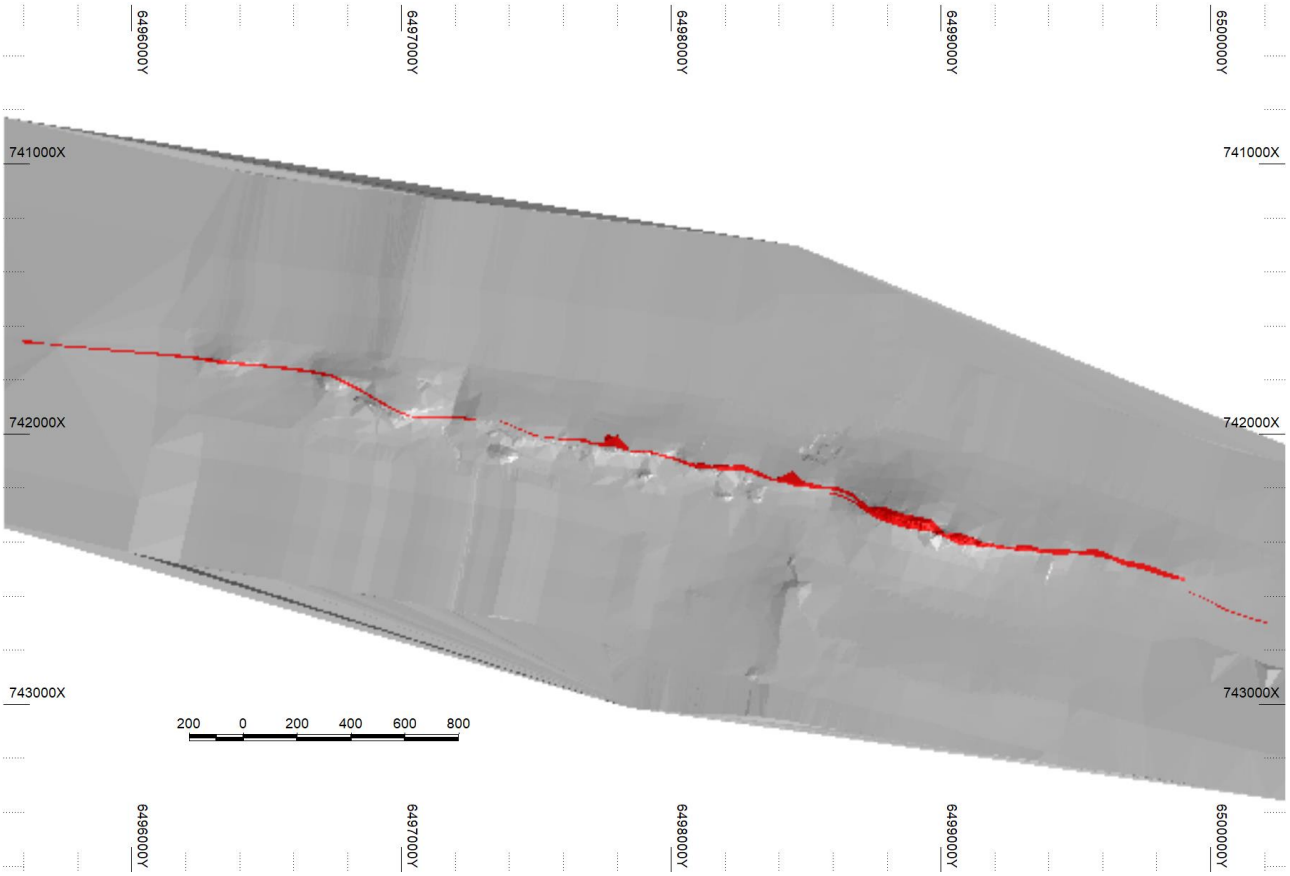
A range of criteria has been considered in determining this classification including:

- Geological continuity
- Data quality
- Drill hole spacing
- Modelling technique
- Estimation properties including search strategy, number of informing data and average distance of data from blocks

Cut-off Grade

A cut-off grade of 50% Fe was used for the stated Mineral Resource estimate, which is industry standard.

Mt Caudan Deposit



Mineral Resource Estimate

The following Resource estimate was created by Mr. David Allmark who is a full time employee of RPMGlobal. Mr Allmark is signing off as Competent Person.

Mr David Allmark is a full-time employee of RPMGlobal

Resource Model Name: mt_caudan_20101203

Geology and Geological Interpretation

The deposit is a Goethite-Hematite-Martite surface enriched SIF (Sedimentary Iron Formation) and associated detrital mineralisation. The enrichment of the SIF has been limited to the rock zone above the top of fresh rock surface. Adjacent to the SIF in both the hanging wall and footwall rock there is a supergene zone elevated in iron and manganese values.

The deposit sits within a metasedimentary sequence on the western side of the Parker Dome granitoid.

The strike length is 4500m in a NNE-SSW direction. The mineralisation extends from surface outcrops to a depth of between 30m and 175m below the surface. True width of the mineralisation varies from approximately 10m in the Rainmaker prospect up to 70m around 6,499,000mN, but is commonly in the order of 30m.

Sampling and Sub-sampling

Samples were collected via reverse circulation and diamond drilling. RC Drill holes were down-hole sampled at 1m intervals through the mineralisation and between 4-6m intervals through the waste. The 1m RC sub-samples were generated using a riffle and rotary splitters. The 4-6m composite RC samples using a sample spear. Diamond core was half cored through the mineralised zones.

Sample Analysis Method

Analytical test work was completed by the Kalassay and Genalysis commercial laboratory in Perth. Analysis was via XRF for the standard Fe suite of analytes and TGA for LOI measurements.

Drilling Techniques

RC drilling was completed using face sampling hammers with bit sizes ranging in diameter from 4.25 to 4.75 inches.

Diamond drilling was completed using PQ triple tube equipment.

Estimation Methodology

The estimation methodology used was ordinary kriging (OK). Block model dimensions used are 12.5m (east) by 30m (north) by 5m (elevation) with sub-blocking down to 3.125 m (east) by 7.5m (north) by 1.25m (elevation).

The estimation was constrained within manually generated mineralisation domains for Detrital, SIF and Supergene domains defined by the Cazaly geological team.

Detailed statistical investigations have been completed on the sample data set occurring in each of the respective mineralisation domains. High grade cuts were applied to the manganese sample data in each of the mineralisation domains. The estimation employed a three-pass search strategy.

Resource Classification

The resource has been classified as Measured, Indicated and Inferred for mineralisation satisfying the requirement of 'reasonable prospects for eventual economic extraction' in accordance with the JORC (2012) Code. Remaining mineralisation has been left as unclassified.

The Measured portion of the resource was defined where the drill spacing was closed in to approximately 60m by 20m and continuity in both grade and geological structure was demonstrated.

The Indicated portion of the resource was defined where the drill spacing was less than 200m by 40m and lode continuity was good. The Inferred Resource included areas of the resource where sampling was greater than 200m by 40m or was represented by isolated, discontinuous zones of mineralisation.

Cut-off Grade

A cut-off grade of 50% Fe was used for the stated Mineral Resource estimate, which is industry standard.

Koolyanobbing, Mt Dimer & Parker Range Group Mineral Resources (as at 30 June 2019)

Commodity: Iron (Fe)			Measured Resources						Competent Person Identifier
Deposit	Type	Cut-off (Fe%)	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	LOI (%)	
Deception/Altair	BID	50	-	-	-	-	-	-	A
J1	BID	54	-	-	-	-	-	-	A
F	BID	50	-	-	-	-	-	-	A
Windarling	BID	50	-	-	-	-	-	-	A
Mayfield	BID	50	-	-	-	-	-	-	A
Hunt Range	BID	50	-	-	-	-	-	-	A
Chameleon	BID	50	-	-	-	-	-	-	B
Mt Caudan	BID	50	25.7	55.7	6.4	2.7	0.02	8.9	C
Sub-Total			**25.7**	**55.7**	**6.4**	**2.7**	**0.02**	**8.9**	

Note: Small discrepancies may occur due to rounding

Commodity: Iron (Fe)			Indicated Resources						Competent Person Identifier
Deposit	Type	Cut-off (Fe%)	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	LOI (%)	
Deception/Altair	BID	50	15.6	60.1	4.6	1.8	0.12	6.2	A
J1	BID	54	2.8	58.9	4.7	1.8	0.13	8.1	A
F	BID	50	9.8	54.8	9.3	2.0	0.06	9.4	A
Windarling	BID	50	23.3	57.6	4.9	1.8	0.23	8.5	A
Mayfield	BID	50	-	-	-	-	-	-	A
Hunt Range	BID	50	-	-	-	-	-	-	A
Chameleon	BID	50	2.5	54.0	4.3	3.4	0.12	10.3	B
Mt Caudan	BID	50	7.7	56.3	6.3	3.1	0.02	9.0	C
Sub-Total			**61.7**	**57.5**	**5.7**	**2.1**	**0.14**	**8.2**	

Note: Small discrepancies may occur due to rounding

Koolyanobbing, Mt Dimer & Parker Range Group Mineral Resources (as at 30 June 2019)

Commodity: Iron (Fe)			Inferred Resources						Competent Person Identifier
Deposit	Type	Cut-off (Fe%)	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	LOI (%)	
Deception/Altair	BID	50	3.9	59.3	5.7	2.1	0.11	6.2	A
J1	BID	54	-	-	-	-	-	-	A
F	BID	50	-	-	-	-	-	-	A
Windarling	BID	50	5.1	59.4	2.9	1.3	0.27	9.0	A
Mayfield	BID	50	6.6	53.8	11.6	2.3	0.14	6.5	A
Hunt Range	BID	50	2.4	54.4	10.7	1.9	0.02	8.3	A
Chameleon	BID	50	0.4	52.1	6.9	4.1	0.13	10.9	B
Mt Caudan	BID	50	2.8	53.8	9.0	3.7	0.02	8.8	C
Sub-Total			**21.2**	**56.2**	**7.9**	**2.2**	**0.14**	**7.6**	

Note: Small discrepancies may occur due to rounding

Commodity: Iron (Fe)			Total Resources						
			Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	LOI (%)	
Grand Total			**108.6**	**56.8**	**6.3**	**2.2**	**0.11**	**8.2**	

Note: Small discrepancies may occur due to rounding

Competent Person's Statement

The information in this report that relates to the Mineral Resources listed in the previous tables is based on work compiled by the person(s) whose name appears below. Mr Matthew Watson is a full-time employee of Mineral Resources Limited, Mr Lynn Widenbar is a full-time employee of Widenbar & Associates, and Mr David Allmark is a full-time employee of RPMGlobal. Each person named in the table below are Members of The Australian Institute of Mining and Metallurgy and/or The Australian Institute of Geoscientists and have sufficient experience which is relevant to the style of mineralisation and types of deposits under consideration and to the activity which they have undertaken to qualify as a Competent Person as defined in the JORC Code 2012. Each Person named in the table below consents to the inclusion in this report of the matters based on their information in the form and context in which it appears.

Group Competent Persons

Resources and Reserves as at 30 June 2019

Competent Person	Identifier	Institute
Matthew Watson	A	Australasian Institute of Mining and Metallurgy
Lynn Widenbar	B	Australasian Institute of Mining and Metallurgy
David Allmark	C	Australasian Institute of Mining and Metallurgy

Forward Looking Statement

This ASX announcement may contain forward looking statements that are subject to risk factors associated with iron ore exploration, mining and production businesses. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to price fluctuations, actual demand, currency fluctuations, drilling and production results, Reserve estimations, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory changes, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

Forward-looking statements, including projections, forecasts and estimates, are provided as a general guide only and should not be relied on as an indication or guarantee of future performance and involve known and unknown risks, uncertainties and other factors, many of which are outside the control of Mineral Resource Ltd. Past performance is not necessarily a guide to future performance and no representation or warranty is made as to the likelihood of achievement or reasonableness of any forward looking statements or other forecast.

APPENDIX 1: JORC COMPLIANT IRON ORE RESOURCES

The following information is provided in accordance with Table 1 of Appendix 5A of the JORC Code 2012 – Section 1 (Sampling Techniques and Data), Section 2 (Reporting of Exploration Results) and Section 3 (Estimation and Reporting).

Section 4 (Estimation and Reporting of Ore Reserves) is not being reported in this document.

DECEPTION / ALTAIR DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	The vast majority of drilling consisted of reverse circulation (RC) holes drilled by Cliffs Asia Pacific Iron Ore between 2009 and 2014, with a minor number of diamond (DD) and RAB holes. The majority of holes were sampled at 1m intervals down-hole with a minor number sampled at 2m intervals. Ninety-five RAB holes for 4,366m were drilled for waste rock landform sterilization in 2012. Thirty-four DD holes including diamond tails for 4,741m were drilled for geometallurgical, density and geotechnical characterisation in the period 2010 - 2013.

Criteria	JORC Code explanation	Commentary
		Two Hundred and Sixty-Three RC holes for 31,878m were drilled for metallurgical assay in the period 2009 - 2014.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.
	Aspects of the determination of mineralisation that are Material to the Public Report. *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.*	RC, DD, and RAB drilling was used to obtain 1 m and 2 m samples. All RC samples were collected from a fixed cyclone fitted with a butterfly gate. 1m and 2m RC samples were obtained via a cone-splitter where 1/8th of the sample was collected into a calico bag for assay and the 7/8th residue was used for logging. Calico samples were sent to one of two labs for splitting and pulverisation in preparation for XRF and TGA analysis. Sample weights were recorded for drilling through the Altair portion of the deposit. The majority of sample weights were between 2-6 kg for each 2m interval at Altair. Diamond core was predominantly used for lithology logging and assaying using half core. RAB drill sample spoils were sampled via diagonal spearing method.
Drilling techniques	*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).*	RC drilling used a face sampling hammer and drill bit sizes of 4.5 – 5.5 inch diameters. Diamond drilling from surface used PQ3 core bits, and diamond drilling from the bottom of RC holes used HQ3 core bits. Drill core was not orientated. RAB drilling used a bit diameter of 5 inches. RAB assay data was not used for the mineralisation estimation but was considered for the geological interpretation.

Criteria	JORC Code explanation	Commentary
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was measured for all drill holes by comparing tape measured core runs against drill run lengths as recorded by the driller. Overall recovery was 97.7% of the total drill hole length. Sample recoveries were recorded for seventy-six RC drill holes and fourteen DD drill hole tails. RC recovery was recorded as a qualitative visual observation by the attending rig geologist, whereas the DD core loss was recorded as a quantitative observation by the driller.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.
	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.	Sample bias due to preferential loss/gain of fine/coarse material is considered to be within acceptable limits.
Logging	*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.*	All 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. Cliffs logging codes were used to record lithology, colour, regolith, weathering, texture, structure, magnetic susceptibility and mineralisation type.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative and some observations are quantitative such as core loss and magnetic susceptibility measurements. Core photography was carried out as part of the logging procedure.
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full.
	If core, whether cut or sawn and whether quarter, half or all core taken.	Half core was sent for metallurgical evaluation.

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	*If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*	RC samples were cone split. A proportion of the drilling intercepts are below the water table.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All RC samples are collected in labelled bags which are stored onsite or sent for analysis. RC cuttings were taken at regular intervals. Samples were generated by sending dry drill cuttings through a cone or riffle splitter. Where the drill cuttings were wet, these cuttings were either left to dry in poly weave bags prior to being passed through a riffle 3 tier splitting process, or via grab sampling or the wet cuttings pile.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field RC duplicates were taken within the mineralisation and waste rock zones. Drill intervals selected for duplicates were either collected from a secondary sample chute on the cone-splitter or generated by passing the interval sample through the 10 vane 3 tier riffle splitter twice. Field duplicates were taken every 20th sample. Laboratory repeats (pulp splits) were also completed roughly every 20 samples. Field duplicates on core, i.e. other half of cut core have not been routinely assayed.
	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.	Duplicate results confirmed excellent reproduction of sample grades across all analytes indicating that the sub-sampling system has provided good repeatability with no apparent bias.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using +5 inch (RC) face sampling hammers per 1 m sample interval are considered appropriate in size to accurately represent the iron mineralisation style (bedded iron).

Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by the ALS, SGS & Ultratrace commercial laboratories in Perth. The technique is consider a total analysis with measured analyte oxides summing to approximately 100%.
	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.	Samples were analyzed using X-Ray Spectrometers. LOI was determined Gravimetrically at 950ºC via thermos-gravimetric analysis (TGA). XRF analysis is industry standard for iron mineralization and considered appropriate. As such, the competent person considers XRF and TGA analysis suitable for Resource estimation studies.
	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.	Lab duplicates were run at all three labs on the sample pulps. Lab repeats were run every 20th sample. Certified Reference Material (CRM or standards) were inserted within the lab batches to assess the assaying accuracy of each lab. Four types of standards were used and alternately inserted into lab batches every 20th sample. QAQC sampling results are considered to be within acceptable limits for both accuracy and precision.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	No independent personnel have visually inspected the significant intersections in RC chips. Numerous highly qualified and experienced company personnel from the Cliffs exploration teams have visually inspected the significant intersections in RC chips. No MRL personnel have inspected the significant intersections in RC chips.

Criteria	JORC Code explanation	Commentary
	The use of twinned holes.	At the time of this report, near surface grade control holes have consistently verified the spatial location, width and tenor of the resource drilling intercepts.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Logging was completed electronically using Tough Books directly at the drill rig. Code validation was set-up to ensure that only valid codes could be entered. Drill hole detail along with sampling information was entered and validated into Micromine software on a weekly basis and then sent to Cliffs database.
	Discuss any adjustment to assay data.	Any samples not assayed (i.e. destroyed in processing, listed not received) have had the assay value converted to a -996.99 in the database. Any samples assayed below detection limit i.e. 0.01% SiO_2 have been converted to 0.005% (half detection limit) in the database.
Location of data points	*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.*	All drill hole collars were picked up by the mine site surveyors using a Leica System Real Time Kinematics system. The majority of drill holes (265 holes) were gyro surveyed at 10m intervals. Gyro surveys were carried out by ABIMS, PWS or Surtron surveyors. Residual drill holes were orientated using handheld compass, with the majority of these holes being vertical (96 holes) and the remainder inclined at 60 and 80 degrees (11 holes). Removal of the RAB drilling reduces the number of un-surveyed holes to twelve holes.
	Specification of the grid system used.	The grid system used is MGA Zone 50 (GDA 94) for surveying pickups, as well as for all modelling work.
	Quality and adequacy of topographic control.	The topographic surface has been derived from a LiDAR survey.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drill hole spacing over the deposit is nominally 50m along strike by 40m across strike for the Deception drilling, and 100m along strike by 40m across strike for the Altair drilling.

Criteria	JORC Code explanation	Commentary
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred and Indicated Mineral Resources under the 2012 JORC code once all other modifying factors have been addressed.
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The dominant drilling direction dips 60° to the east (approximately UTM grid 090°, although there are a few vertical and high angle dipping holes. Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.
	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.	It is not believed that drilling orientation has introduced a sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are securely sealed in string drawn calico bags and stored on site until delivery to a Perth based laboratory via contract freight transport. Sample submission forms are sent with the samples as well as emailed to the laboratory, and are used to keep track of the sample batches.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits on sampling techniques and data have been completed.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures,*	The Deception and Altair Deposits are located on M77/1257, M77/1258 and M77/1259, located approximately 150km north of Southern Cross.

Criteria	JORC Code explanation	Commentary
land tenure status	*partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The current registered holder of the tenements is Cliffs Asia Pacific Iron Ore Pty Ltd, however the tenements are beneficially held by Yilgarn Iron Pty Ltd, a wholly owned subsidiary of MRL. The tenements will be registered in the name of Yilgarn Iron Pty Ltd following assessment and payment of transfer duty. Normal Western Australian State royalties apply. A royalty of 2% on tonnes transported from M77/1258 exists to a third party and a further royalty of 1.5% on tonnes transported from M77/1259 exists to a separate third party.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Exploration has previously been carried Cliffs Asia Pacific Iron Ore.
Geology	*Deposit type, geological setting and style of mineralisation.*	The Deception / Altair iron deposits are located in the Die Hardy Range in the northern portion of the Archaean aged Diemals Greenstone Belt. The Diemals Greenstone Belt is bounded to the east by the Evanston Shear Zone. The mineralisation has been described as highly friable goethite and hematite altered iron formation (BIF) hosted within mafic country rock. The deposit has been tilted and faulted into its present sub-vertical setting.
Drill hole Information	*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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in*	This release is in relation to a Mineral Resource estimate with no exploration results being reported.

Criteria	JORC Code explanation	Commentary
	metres) of the drill hole collar ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.*	
	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.	Not applicable as there are no exploration results reported as part of this statement.
Data aggregation methods	*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.*	Not applicable as there are no exploration results reported as part of this statement.
	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.	Not applicable as there are no exploration results reported as part of this statement.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable as there are no exploration results reported as part of this statement.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	The dominant drilling direction dips 60° to the east (approximately UTM grid 090°, although there are a few vertical and high angle dipping holes. Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.

Criteria	JORC Code explanation	Commentary
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	An infill drill program is planned to close the drill hole spacing at Altair from 100m by 40m to 50m by 40m. Drilling will test across dip thickness for variability and improve confidence in the grade.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The deposit remains open at depth. Depth extensions are not being tested.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	Data was acquired by Mineral Resources Limited (MRL) from Cliffs Asia Pacific Iron Ore (APIO) in the form of an Access database and as a set of comma-delimited tables. MRL is unable to confirm the quality of the provided database, but assume in good faith that Cliffs APIO have made every effort to ensure the validity and quality of their database was maintained.
	Data validation procedures used.	The database has been reviewed and validated using Micromine software. Minor database conflicts were noted between the Cliffs and MRL database regarding incorrect drillhole surveys and missing assay data for a small number of Altair drill holes within the Cliffs database. These conflicts were resolved by substituting Cliffs data for data contained in the MRL database.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	No site visits have been undertaken by the Competent Person.
	If no site visits have been undertaken indicate why this is the case.	The exploration drilling was completed prior to the Competent Person reviewing the data.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Confidence in the geological interpretation is high. Continuity and mineralisation boundaries are informed by geological-structural interpretations carried out by Cliffs exploration personnel and an iron grade cut-off of 50%. Near surface mining to date correlates well with the interpreted mineralisation envelope.

Criteria	JORC Code explanation	Commentary
	Nature of the data used and of any assumptions made.	The geological data used to construct the geological model includes regional and detailed surface mapping, logging of RC/diamond core drilling and associated geochemical assays.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Mineralisation is not complex and as such alternative interpretations on mineralisation are unlikely.
	The use of geology in guiding and controlling Mineral Resource estimation.	The Mineral Resource estimate has been constructed using a combination of sectional interpretations provided by the Cliffs APIO exploration team, geology logging, and a Fe grade envelope of 50%.
	The factors affecting continuity both of grade and geology.	Lateritic weathering and hydration zone were investigated for impact on grade and geology. Impact was considered to be negligible.
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 iron mineralisation trends roughly north-south. Altair is the northern continuance of the Deception deposit. The Deception deposit has a strike length of 500m, an across dip width of 50m and a down dip extension of 330m. The Altair deposit has a strike length of 900m, an across dip width of 20m and a down dip extension of 200m.
Estimation and modelling techniques	*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.*	An Ordinary Kriging (OK) Interpolation was selected as the estimation method. A single geological/mineralisation domain was used to control the estimation. No top-cuts were applied to the data. Analysis of sample lengths indicated that compositing to 1m was appropriate. Variography was carried out on the mineralisation domain to determine kriging interpolation parameters.

Criteria	JORC Code explanation	Commentary
		Search ellipse (SE) sizes for the estimation were based on a combination of drill spacing and variogram ranges. The primary SE radii was 131m along strike, 48m down dip and 15m across strike. A minimum of 16 samples and a maximum of 40 samples were required in the search pass; a minimum of two drill holes was required. A maximum of 8 samples per drill hole was used. Where blocks were not informed in the first pass, a second search was used with a radii of 220m along strike, 81m down dip and 26m across strike. A minimum of 8 samples and a maximum of 40 samples were required in the search pass; a minimum of one drill hole was required. A maximum of 8 samples per drill hole was used. Where blocks were not informed in the second pass, a third search was used with a radii of 300m along strike, 110m down dip and 35m across strike. A minimum of 4 samples and a maximum of 40 samples were required in the search pass; a minimum of one drill hole was required. A maximum of 8 samples per drill hole was used. Fe, SiO_2, Al_2O_3, P, LOI, Mn and S were estimated. Modelling and variography were carried out in Micromine 2018.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	An ID2 model has been run as a check estimate. Check estimates produced confirmation of primary OK results.
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	Along with SiO_2, Al_2O_3, P, LOI and Mn, S has been modelled and can be used to inform acid mine drainage characterisation.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block dimensions are 12m (E-W) by 12m (N-S) by 6m (Vertical) with sub-cells to 1.25m x 1.25m x 1.25m.

Criteria	JORC Code explanation	Commentary
		Block sizes are nominally one quarter of the lateral sample spacing and six metres in the vertical to align with mine bench heights.
	Any assumptions behind modelling of selective mining units.	Block size was chosen to align with mine planning requirements.
	Any assumptions about correlation between variables.	No assumptions were made regarding the correlation between variables. The variograms for Fe were used to inform all estimated variables.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to define the mineralisation domain. The mineralisation domain was used to constrain composite data and model blocks during the resource estimation process.
	Discussion of basis for using or not using grade cutting or capping.	Top-cuts were not applied. This decision was informed through examination of histograms and probability plots of the composite data, and by considering the spatial location of the outliers within the mineralisation domain.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the final resource has been carried out in a number of ways, including: Drill hole section comparison, swathe plot validation, model versus declustered composites by domain. All modes of validation have produced acceptable results. Reconciliation data has not been used to validate or inform the estimation process.
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.*	A cut-off grade of 50% Fe is used for reporting purposes.

Criteria	JORC Code explanation	Commentary
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.*	Mining method is expected to be open pit. Dilution from blast movement and during digging is expected. A small scale vertical band of sub-mineralised BIF has been included within the south east corner of the mineralisation envelope to aid the interpretation. It is expected that the mining method will incur some dilution in this area, so the inclusion of these composite waste grades into the estimation will simulate dilution into the mineralised blocks immediately adjacent to the waste. External mining dilution has not been factored into the Resource Model as a hard boundary was applied to the mineralisation envelope used for the estimation.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Mineralised material from the Deception / Altair deposit is expected to undergo crushing and screening to produce separate lump and fines products. It is expected that these products will be blended downstream with products from other deposits to produce an ultimate blended product for sale. Metallurgical characterisation of the mineralisation into its constituent lump and fines products is not covered in this model.
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*	Waste storage is expected to occur on flat stable ground in the form of waste dumps to the west of the pit. Any potential acid forming (PAF) material is expected to be correctly stored within the waste dump landform. PAF forming material within the waste material is not expected to be an issue for mining or waste storage. >90% of all waste material in the project area has a sulfur value below 0.3%.

Criteria	JORC Code explanation	Commentary
	aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	
Bulk density	*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.*	Dry density values have been collected across ten diamond drill holes.
	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.	Bulk densities have been assigned based on whole tray density measurements. Measurements were subset into groups and averaged based on location relative to the water table (above water table – AWT, below water table - BWT) and rock type. Core trays were left to dry in the sun prior to measurement. Three calliper measurements and a weight were recorded for each core tray interval.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The following density values have been assigned to the deposit: Rock Type (AWT) — Dry Bulk Density (t/m^3) BIF — 2.90 MAFIC — 2.20 MINERALISATION — 2.90 Rock Type (BWT) — Dry Bulk Density (t/m^3) BIF — 2.80 MAFIC — 2.65 MINERALISATION — 2.80

Criteria	JORC Code explanation	Commentary
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	A range of criteria has been considered in determining this classification including: - Geological continuity - Data quality - Drill hole spacing - Modelling technique - Estimation properties including search strategy, number of informing data and average distance of data from blocks
	Whether appropriate account has been taken of all relevant factors (ie 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).	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised envelopes and to support the definition of an Indicated and Inferred Mineral Resource under the 2012 JORC code once all other modifying factors have been addressed.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person supports the reported Mineral Resource classification.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	No audits or reviews of the Mineral Resource estimate have carried out.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	Resource Estimation is qualitative in nature and based on the general approach used by resource estimation practitioners to indicate in relative terms the level of risk or uncertainty that may exist with respect to resource estimation which have cumulative effects on project outcome.

Criteria	JORC Code explanation	Commentary
	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.	The Mineral Resource has been validated both globally and locally against the input composite data. The indicated portion of the Mineral Resource estimate is considered to be locally accurate at the scale of the parent block size. Close spaced drilling is required to assess the confidence of the short range grade continuity. The reported Mineral Resources for the Deception / Altair Deposit are within a pit shell created from an open pit optimisation developed with environmental constraints, appropriate wall angles, operating costs and a long term iron ore price assumption of AUD($)200 per dry metric tonne for 62% Fines CFR, with a discount of 15% and exchange rate of 0.74 USD/AUD.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Product data is currently limited, there is insufficient data for model comparisons.

J1 DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	Portman Mining drilled a total of 293 reverse circulation (RC) holes between 2001- 2007 for 29,894m, 66 RAB holes in 2007 for 1027m, and 18 diamond holes in 2008 for 1,856m Cliffs APIO drilled a total of 72 reverse circulation (RC) holes between 2010– 2015 for 7,670m and 24 diamond holes between 2010– 2013 for 3,375m. WMC drilled a total of 3 diamond drill holes for 334m (drilled circa 1962), These holes were used for the interpretation but not used to estimate grade.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.
	Aspects of the determination of mineralisation that are Material to the Public Report. *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*	RC, Diamond and RAB drilling was used to obtain 1 m and 2 m samples. All Portman RC samples were collected via plastic bags from a fixed cyclone fitted with a butterfly gate. Portman samples were collected into bags. Once dry, samples were manually transferred to a 3-tier, 10 vane riffle splitter fitted with a vibrator, from which 1/8th of the sample was collected into a calico bag for assaying at one of three labs for splitting and

Criteria	JORC Code explanation	Commentary
	where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	pulverisation in preparation for XRF and TGA analysis. The 7/8th residue was used for logging and the intermittent production of duplicates. All Cliffs RC samples were collected from a fixed cyclone fitted with a butterfly gate. Sub samples were obtained via a cone-splitter where 1/8th of the sample was collected into a calico bag for assay at one of three labs for splitting and pulverisation in preparation for XRF and TGA analysis. The 7/8th residue was used for logging. No recordings of sample weight were captured in the exploration database.
Drilling techniques	*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).*	RC drilling carried out Portman Iron Ore Limited and Cliffs APIO used face sampling hammers with a majority drill bit diameter of 5.25 inches. Diamond drilling was predominantly PQ triple tube with minor HQ triple tube. No records exist regarding core orientation method. Information on the RAB drill bit size is not available. These drill holes were not used for the estimation.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was measured for 38 drill holes by comparing tape measured core runs against drill run lengths as recorded by the driller. Overall recovery was 88% of the total drill hole length. Sample recoveries were recorded for 70 RC drill holes. Recovery was recorded as a qualitative visual observation by the attending rig geologist.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.

Criteria	JORC Code explanation	Commentary
	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.	Sample bias due to preferential loss/gain of fine/coarse material is considered to be within acceptable limits.
Logging	*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.*	All 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. Portman and Cliffs logging codes were used to record lithology, colour, regolith, weathering and mineralisation type.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative. Core photography was carried out as part of the logging procedure.
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Half core was sent for metallurgical evaluation.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	The majority of RC samples were riffled, with the remainder being cone split. All RC drill holes terminated above the standing water table.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All RC samples are collected in labelled bags which are stored onsite or sent for analysis. RC cuttings were taken at regular intervals. Samples were generated by sending dry drill cuttings through a cone or riffle splitter. Where the drill cuttings were wet, these cuttings were either left to dry in poly weave bags prior to being passed through a riffle 3 tier splitting process, or via grab sampling or the wet cuttings pile.

Criteria	JORC Code explanation	Commentary
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field RC duplicates were taken within the mineralisation and waste rock zones. Drill intervals selected for duplicates were either collected from a secondary sample chute on the cone-splitter or generated by passing the interval sample through the 10 vane 3 tier riffle splitter twice. No field duplicates were carried out on the drill core.
	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.	Duplicate results confirmed excellent reproduction of sample grades across all analytes indicating that the sub-sampling system has provided good repeatability with no apparent bias.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using +5 inch (RC) face sampling hammers per 1 m sample interval are considered appropriate in size to accurately represent the iron mineralisation style (bedded iron).
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by the SGS & Ultratrace commercial laboratories in Perth and the Site lab facilities. The technique is consider a total analysis with measured analyte oxides summing to approximately 100%.
	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.	Samples were analyzed using Philips PW2404/2440 X-Ray Spectrometers using a 4KW end window Rh X-ray Tube. LOI was determined Gravimetrically at 950ºC via thermos-gravimetric analysis (TGA). XRF analysis is industry standard for iron mineralization and considered appropriate. As such, the competent person considers XRF and TGA analysis suitable for Resource estimation studies.

Criteria	JORC Code explanation	Commentary
	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.	Lab splits and repeats were run at all three labs. In total the exploration database recorded 910 lab splits and 185 repeats. Certified Reference Material (CRM or standards) were inserted within the lab batches to assess the assaying accuracy of each lab. Seventeen types of standards were used for a total of 1,116 Standards. QAQC sampling results are considered to be within acceptable limits for both accuracy and precision.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	No independent personnel have visually inspected the significant intersections in RC chips. Numerous highly qualified and experienced company personnel from Portman and Cliff' exploration and production positions visually inspected the significant intersections in RC chips. No MRL personnel have inspected the significant intersections in RC chips.
	The use of twinned holes.	Grade control holes consistently verify the spatial location, width and tenor of the resource drilling intercepts.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Logging was completed electronically using Tough Books directly at the drill rig. Code validation was set-up to ensure that only valid codes could be entered. Drill hole detail, along with sampling information, was entered and validated into Micromine software on a weekly basis and then sent to St. Arnauld Data Management (SADM) for its addition into the central Portman database.
	Discuss any adjustment to assay data.	Any samples not assayed (i.e. destroyed in processing, listed not received) have had the assay value converted to a -996.99 in the database. Any samples assayed below detection limit (0.01% SiO_2) have been converted to 0.005% (half detection limit) in the database.

Criteria	JORC Code explanation	Commentary
Location of data points	*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.*	All drill holes collars were picked up by the mine site surveyors using a Leica System Real Time Kinematics system. Holes were gyro surveyed by ABIM, PWS and Portman at incremental downhole intervals of 10m. In total 39 diamond holes and 110 RC holes were gyro surveyed. Holes were surveyed by the Redmond and Boart drilling companies using an Eastman single shot downhole camera at incremental downhole intervals of approximately 30m. In total 1 diamond hole and 14 RC holes were camera surveyed for dip measurements. Unsurveyed holes were aligned with the drill line using a handheld compass. There were 223 angled RC drill holes and 18 vertical RC drill holes given an assumed azimuth and dip. RAB holes were unsurveyed and all drill holes were vertically orientated.
	Specification of the grid system used.	The grid system used is MGA Zone 50 (GDA 94) for surveying pickups, as well as for all modelling work.
	Quality and adequacy of topographic control.	The topographic surface has been derived from a LiDAR survey.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Nominal drillhole spacing over the deposit is 25m along strike x 40m across strike.
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred and Indicated Mineral Resources under the 2012 JORC code once all other modifying factors have been addressed.
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The dominant drilling direction (~55%) dips 60° to the north-east (approximately UTM grid 45°), however there are a also a number of scissor holes (~25%) dipping 60° to the south-west (approximately UTM grid 235°) and several vertical (~20%) dipping holes. The mineralisation dip plane is high angle sub-vertical in direction UTM grid 235°. Overall the angled drilling is roughly perpendicular to the strike and dip of the mineralisation, reducing the impact of drill orientation related sampling bias.
	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.	It is not believed that drilling orientation has introduced a material sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are securely sealed in string drawn calico bags and stored on site until delivery to the Site lab by the field technicians or delivered to a Perth laboratory via contract freight transport. Sample submission forms are sent with the samples as well as emailed to the laboratory, and are used to keep track of the sample batches.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits on sampling techniques and data have been completed.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures,*	The J1 Deposit is located on M77/994, located approximately 115km north of Southern Cross.

Criteria	JORC Code explanation	Commentary
land tenure status	*partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The current registered holder of the tenement is Cliffs Asia Pacific Iron Ore Pty Ltd, however the tenement is beneficially held by Yilgarn Iron Pty Ltd, a wholly owned subsidiary of MRL. The tenement will be registered in the name of Yilgarn Iron Pty Ltd following assessment and payment of transfer duty. Normal Western Australian State royalties apply. A royalty of AUD($)0.13/tonne of saleable ore product produced from the tenement is split between two third parties.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Exploration has previously been carried out by WMC, Portman Iron Ore and Cliffs Asia Pacific Iron Ore.
Geology	*Deposit type, geological setting and style of mineralisation.*	The J1 deposit occurs as a goethite enriched portion of a larger banded iron formation (BIF). The deposit lies within the Marda greenstone belt, which forms part of the Southern Cross Greenstone Terrane in the central part of the Achaean Yilgarn Craton. The greenstone belt trends WNW-ESE. It is comprised of tholeiitic basalts, a volcanic massive sulphide body at depth, sedimentary units including shale, siltstone, chert, red jasperlitic BIF and the massive vuggy goethite iron orebody itself.

Criteria	JORC Code explanation	Commentary
Drill hole Information	*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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.*	This release is in relation to a Mineral Resource estimate with no exploration results being reported.
	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.	Not applicable as there are no exploration results reported as part of this statement.
Data aggregation methods	*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.*	Not applicable as there are no exploration results reported as part of this statement.
	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.	Not applicable as there are no exploration results reported as part of this statement.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable as there are no exploration results reported as part of this statement.

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	The dominant drilling direction (~55%) dips 60° to the north-east (approximately UTM grid 45°), however there are a also a number of scissor holes (~25%) dipping 60° to the south-west (approximately UTM grid 235°) and several vertical (~20%) dipping holes. The mineralisation dip plane is high angle sub-vertical in direction UTM grid 235°. Overall the angled drilling is roughly perpendicular to the strike and dip of the mineralisation.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	A small step-out drill program is planned to improve confidence in the grade continuity of the south eastern volume of the mineralisation referred to as the stage 6 design.

Criteria	JORC Code explanation	Commentary
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The deposit has been closed out in all directions by current drilling. No extensions are being tested.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	Data was acquired by Mineral Resources Limited (MRL) from Cliffs Asia Pacific Iron Ore (APIO) in the form of an Access database and as a set of comma-delimited tables. MRL is unable to confirm the quality of the provided database, but assume in good faith that Cliffs APIO have made every effort to ensure the validity and quality of their database was maintained.
	Data validation procedures used.	The database has been reviewed and validated using Micromine software. No database issues have been noted.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	No site visits have been undertaken by the Competent Person.
	If no site visits have been undertaken indicate why this is the case.	Both the drilling and modelling of this deposit were completed prior to the Competent Person reviewing the data.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Confidence in the geological interpretation is high. Continuity and mineralisation boundaries are informed by geological-structural interpretations carried out by Cliffs exploration personnel and an iron grade cut-off of 50%.

Criteria	JORC Code explanation	Commentary
	Nature of the data used and of any assumptions made.	The geological data used to construct the geological model includes regional and detailed surface mapping, logging of RC/diamond core drilling and associated geochemical assays.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Mineralisation envelopes are generally well defined by the drilling, there is some scope for volumetric variations in the interpreted mineralisation at depth where drilling coverage is limited. Variations should only impact reported tonnages.
	The use of geology in guiding and controlling Mineral Resource estimation.	The Mineral Resource estimate has been constructed using mineralisation domains provided by Cliffs APIO. These domains were constructed using a Fe grade cut-off of 50% Fe. Manganese content has been used to sub-domain the Stage 6 mineralisation (eastern pod) into zones of high and low manganese.
	The factors affecting continuity both of grade and geology.	The mineralisation has been interpreted to be associated with a supergene enrichment of a strata-bound BIF unit, however there is potential for some of the mineralisation to also be associated with the oxidised zone of a pyrite dominant volcanic massive sulphide (VMS) body.
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 mineralisation trends roughly northwest-southeast over a distance of 2,000m and dips to the south at 80-85°. The strata-bound mineralisation consists of several lodes ranging in thickness from 50m to 120m, averaging 70m, and depths varying between 50 to 200m with a sharp truncation at depth.
Estimation and modelling techniques	*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*	Conditional simulation (CS) by Sequential Gaussian Simulation (SGS) method was used to generate spatial models of Fe, SiO_2, Al_2O_3, LOI, Mn, P and S using normal score variograms.

Criteria	JORC Code explanation	Commentary
	was chosen include a description of computer software and parameters used.	Estimation was into 3mN x 3mE x 3mRL grid nodes constrained by the 50% Fe mineralisation domains. 100 realisations were run for each node respectively. Through post processing, each individual realisation (for all nodes) was flagged if it met (or not) the appropriate grade range (i.e. >54% Fe). The proportion of node realisations that met the appropriate grade range was recorded along with the resultant average node grade of those flagged realisations. Resultant node probabilities and grades were averaged into 12mN x 12mE x 3mRL selective mining units ("SMU") to estimate the proportion (=tonnage: through adjusted density) and grade of material that will be recovered during mining at a given selectivity (SMU) within a 'semi-local' area, rather than making direct estimates of grades of individual SMU volumes. This acknowledges that the location of material above a given cut-off (54% Fe) within the SMU will not be known until more information (grade control data) is acquired prior to making mining selection. No account was made for dilution during the construction of the SMU blocks. The output of 'recoverable resource' estimates are probabilistic – for example the proportion of blocks above a given cut-off, and the grades associated with this proportion. Modelling was carried out in Isatis and Surpac.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	No check estimates were run. Comparison with a previous estimate (2014) shows that the new model (2016) contains more marginal material close to the surface. Changes are mainly attributed to the impact of additional near surface drilling completed in 2015.

Criteria	JORC Code explanation	Commentary
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	Along with SiO_2, Al_2O_3, P, LOI and Mn, S has been modelled and can be used to inform acid mine drainage characterisation.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block dimensions are 12m (East) by 12m (North) by 3m (RL). Block grades are calculated as an average of the grid nodes falling within the block. Default waste grades occurring outside the mineralisation envelopes but within the mineralisation hosting blocks have not been applied, i.e. blocks do not account for dilution. Search parameters were constructed in line with variogram ranges. A single set of search parameters was used to generate 100 realisations for the univariate variables (Fe, SiO_2, Al_2O_3, LOI, Mn, P & S).
	Any assumptions behind modelling of selective mining units.	Block size was chosen to align with the likely mining block size and bench height to be used at Deposit J1.
	Any assumptions about correlation between variables.	Moderate to strong correlations exist between Fe, SiO_2 and Al_2O_3.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to split the mineralisation into hydrated, high manganese and low manganese mineralisation domains above 50% Fe. These domains were used to control the resource estimate.
	Discussion of basis for using or not using grade cutting or capping.	No top-cutting was applied to the composite data.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the resource model has been carried out in a number of ways, including: Drill hole section comparison, swathe plot validation, model versus declustered composites by domain. All modes of validation have produced acceptable results.

Criteria	JORC Code explanation	Commentary
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 cut-off grade of 54% Fe has been used to generate a deposit grade of +58% Fe.
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.*	Historic mining of Stages 1-4 have resulted in all economic mineralisation being extracted from the western pit and most of the economic mineralisation being extracted from the eastern pit. Economic mineralisation remaining within the eastern pit is accounted for in the Stage 5 design. Economic mineralisation contained in a separate pit further to the east is accounted for in the Stage 6 design. Mining method is expected to be open pit. Dilution from blast movement and during digging is expected. Dilution is not built into the Resource model. A grade / tonnage matching methodology (Ward, 2015) has been developed to account for dilution and near surface short range variability associated with the hydration zone. This method when applied to the Resource model has been used to create a mining model for use in short term planning.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Mineralised material from the J1 deposit is expected to undergo crushing and screening to produce separate lump and fines products. It is expected that these products will be blended downstream with products from other deposits to produce an ultimate blended product for sale. Metallurgical characterisation of the mineralisation into its constituent lump and fines products is not covered in this model.

Criteria	JORC Code explanation	Commentary
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.*	Waste storage is expected to occur on flat stable ground in the form of waste dumps to the north of the pit, and as backfill into the J1 west pit. A sterilisation report addressing in-pit waste/tailings disposals has been submitted to DMIRS with approval granted for the disposal of up to 5,7000,000 BCM of waste rock within the west pit. Any potentially acid forming material encountered in the Stage 5 and Stage 6 East Pit cutbacks will be adequately disposed of within the West Pit backfill.
Bulk density	*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.*	Several geometallurgical drilling campaigns have been undertaken at J1. Density studies were completed as part of these campaigns. Downhole density measurements were also collected.
	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.	Downhole density data has been used for interpolation of material in the stage 5 and 6 areas of the deposit.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	Based on downhole density data, an average density of 2.74t/m^3 has been assigned to the mineralisation within the stage 5 and 6 areas. The average density value is applied across all mineralisation domains irrespective of Fe grade. Recoverable tonnes in the model are calculated through the following relationship: sg_p1 = mineralisation_density * prop_54 Where: • Sg_p1 is the proportional density of the parcel above a lower Fe

Criteria	JORC Code explanation	Commentary
		cut-off of 54% • Mineralisation_density is the interpolated bulk density at 12x12x3m support • Prop_54 is the proportion of each conditional Fe distribution above 54% Fe at 12x12x3m support
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	The Mineral Resource has been classified based on data density, domain geometry and resource confidence.
	Whether appropriate account has been taken of all relevant factors (ie 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).	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains and to support the definition of an Indicated Mineral Resource under the 2012 JORC code once all other modifying factors have been addressed.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person supports the reported Mineral Resource classification.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	The Mineral Resource Estimate dated April 2016, completed by Mr. Clint Ward, Principal Resource Geologist formerly at Cliffs APIO Pty Ltd, has been reviewed by Matthew Watson, a full time employee at MRL acting as the Competent Person. No fatal flaws have been found that would question the validity of the model.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of*	The conditional simulations enable a probabilistic assessment of confidence in the actual grades by means of mapping the dispersion of the realisations about the mean of the realisations i.e., the coefficient of variation (CV) for each node/block. In this instance the mean of the realisations per node as well as the individual realisation grades have not been preserved for comment, and as such it is not possible to comment

Criteria	JORC Code explanation	Commentary
	the factors that could affect the relative accuracy and confidence of the estimate.	on the degree of dispersion and the associated confidence in the resultant grades.
	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.	The estimate is for the proportion and grade of material above a Fe cut-off of 54% that will be recovered during mining at a given selectivity (SMU) within a 'semi-local' area, rather than making direct estimates of grades of individual SMU volumes. The reported Mineral Resource for the J1 Deposits is within a pit shell created from an open pit optimisation developed with environmental constraints, appropriate wall angles, operating costs and a long term iron ore price assumption of AUD($)200 per dry metric tonne for 62% Fines CFR, with a discount of 15% and exchange rate of 0.74 USD/AUD.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	The latest production data for Stage 5 suggests a high level of relative accuracy and confidence in the estimate. Comparison of the grade control model with the resource model for the latest two months of production (October & November 2018) show that mining recovered 96% of the tonnes, 100% of the Fe and <100% of the deleterious elements as predicted from the Resource model. Mining of the Stage 6 deposit has not yet commenced.

F DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	The vast majority of drilling consisted of reverse circulation (RC) holes drilled by Portman Mining between 1997 and 2006, with four deeper RC holes (>150m) added in 2009 for a total of 251 holes for 18,340m. The RC holes were generally sampled at 1m or 2m intervals down-hole. There are thirteen historical drill holes for 1,090m (drilled prior to 1990) drilled by WMC which were used for the interpretation but not used to estimate grade. Forty air core holes (AC) for 917m were drilled for waste rock landform sterilization in 2014. Three diamond drill holes for 203m were drilled for geometallurgical characterisation in 2006. Seven RC holes for 849m were drilled for geotechnical parameter appraisal in 2014. A small number of RAB holes (5) were removed from the dataset.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.

Criteria	JORC Code explanation	Commentary
	Aspects of the determination of mineralisation that are Material to the Public Report. *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.*	RC, DD, AC, and RAB drilling was used to obtain 1 m and 2 m samples. All samples were collected via plastic bags from a fixed cyclone fitted with a butterfly gate. Bags containing dry samples were manually transferred to a 3-tier, 10 vane riffle splitter fitted with a vibrator, where 1/8th of the sample could be collected in a calico bag, which in turn were sent to one of three labs for splitting and pulverisation in preparation for XRF and TGA analysis. No recordings of sample weight were captured in the exploration database.
Drilling techniques	*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).*	RC drilling carried out Portman Iron Ore Limited and Cliffs APIO used face sampling hammers with a majority drill bit diameter of 5.25 inches. Diamond drilling was by PQ triple tube. Core was orientated but the method is unknown. AC drilling carried out by Cliffs APIO used a blade diameter of 4.25 inches. Information on the RAB drill bit size is not available. These drill holes were not used for the estimation. Information regarding drill type is unavailable for the pre 1990 drilling conducted by WMC.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was measured for all three drill holes by comparing tape measured core runs against drill run lengths as recorded by the driller. Overall recovery was 91% of the total drill hole length. Sample recoveries were recorded for seven RC drill holes and 40 AC drill holes. Recovery was recorded as a qualitative visual observation by the attending rig geologist.

Criteria	JORC Code explanation	Commentary
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.
	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.	Sample bias due to preferential loss/gain of fine/coarse material is considered to be within acceptable limits.
Logging	*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.*	All 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. Portman logging codes were used to record lithology, colour, regolith, weathering and mineralisation type.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative. Core photography was carried out as part of the logging procedure.
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Whole core was sent for metallurgical evaluation.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	The majority of RC samples were riffled, with the remainder being cone split. The majority of RC drill holes terminated above the standing water table with four drill holes terminating within the water table. Wet samples were sub sampled straight out of the cyclone plastic bag using a PVC spear. The spear was pushed diagonally through the sample to collect between 2 and 3 kg for assaying.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All RC samples are collected in labelled bags which are stored onsite or sent for analysis.

Criteria	JORC Code explanation	Commentary
		RC cuttings were taken at regular intervals. Samples were generated by sending dry drill cuttings through a cone or riffle splitter. Where the drill cuttings were wet, these cuttings were either left to dry in poly weave bags prior to being passed through a riffle 3 tier splitting process, or via grab sampling or the wet cuttings pile.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field RC duplicates were taken within the mineralisation and waste rock zones. Drill intervals selected for duplicates were either collected from a secondary sample chute on the cone-splitter or generated by passing the interval sample through the 10 vane 3 tier riffle splitter twice. No field duplicates were carried out on the drill core, i.e. other half of cut core, as the whole core was used for metallurgical test work.
	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.	Duplicate results confirmed excellent reproduction of sample grades across all analytes indicating that the sub-sampling system has provided good repeatability with no apparent bias.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using +5 inch (RC) face sampling hammers per 1 m sample interval are considered appropriate in size to accurately represent the iron mineralisation style (bedded iron).
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by the SGS & Ultratrace commercial laboratories in Perth and the Site lab facilities. The technique is consider a total analysis with measured analyte oxides summing to approximately 100%.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument	Samples were analyzed using Philips PW2404/2440 X-Ray Spectrometers using a 4KW end window Rh X-ray Tube.

Criteria	JORC Code explanation	Commentary
	make and model, reading times, calibrations factors applied and their derivation, etc.	LOI was determined Gravimetrically at 950ºC via thermos-gravimetric analysis (TGA). XRF analysis is industry standard for iron mineralization and considered appropriate. As such, the competent person considers XRF and TGA analysis suitable for Resource estimation studies.
	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.	Lab duplicates were run at all three labs on the sample pulps. In total the exploration database recorded 112 lab pulp duplicates taken across 5 AC and 27 RC drill holes. Certified Reference Material (CRM or standards) were inserted within the lab batches to assess the assaying accuracy of each lab. Four types of standards were used for a total of 472 Standards. QAQC sampling results are considered to be within acceptable limits for both accuracy and precision.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	No independent personnel have visually inspected the significant intersections in RC chips. Numerous highly qualified and experienced company personnel from Portman and Cliff' exploration and production positions visually inspected the significant intersections in RC chips. No MRL personnel have inspected the significant intersections in RC chips.
	The use of twinned holes.	Grade control holes consistently verify the spatial location, width and tenor of the resource drilling intercepts.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Logging was completed electronically using Tough Books directly at the drill rig. Code validation was set-up to ensure that only valid codes could be entered. Drill hole detail, along with sampling information, was entered and validated into Micromine software on a weekly basis and then sent to

Criteria	JORC Code explanation	Commentary
		St. Arnauld Data Management (SADM) for its addition into the central Portman database.
	Discuss any adjustment to assay data.	Any samples not assayed (i.e. destroyed in processing, listed not received) have had the assay value converted to a -996.99 in the database. Any samples assayed below detection limit (0.01% SiO_2) have been converted to 0.005% (half detection limit) in the database.
Location of data points	*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.*	All drill holes collars were picked up by the mine site surveyors using a Leica System Real Time Kinematics system. Pre 1990 drill holes were not down hole surveyed and assume a compass bearing aligned with the drill rig. The majority of Post 1990 drill holes were not downhole surveyed and assume a compass bearing aligned with the drill rig. Eastman single downhole shots were conducted during drilling at regular intervals (every 30 to 40 meters) recording dip on twenty-five RC holes and two diamond holes with associated azimuths aligned with the drill rig using a compass. Forty-two RC drill holes and one diamond hole were gyro surveyed at regular intervals (every 10m). Seven RC holes were camera surveyed for geotechnical measurements.
	Specification of the grid system used.	The grid system used is MGA Zone 50 (GDA 94) for surveying pickups, as well as for all modelling work.
	Quality and adequacy of topographic control.	The topographic surface has been derived from a LiDAR survey.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drillhole spacing over the deposit is 50m along strike x 25m across strike.
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred and Indicated Mineral Resources under the 2012 JORC code once all other modifying factors have been addressed.

Criteria	JORC Code explanation	Commentary
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The dominant drilling direction dips 60° to the south-west (approximately UTM grid 215°, although there are a few vertical and shallow dipping holes. Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.
	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.	It is not believed that drilling orientation has introduced a sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are securely sealed in string drawn calico bags and stored on site until delivery to the Site lab by the field technicians or delivered to a Perth laboratory via contract freight transport. Sample submission forms are sent with the samples as well as emailed to the laboratory, and are used to keep track of the sample batches.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits on sampling techniques and data have been completed.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*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.*	The F Deposit is located on M77/989 and M77/1278, located approximately 50km north-east of Southern Cross. The current registered holder of the tenements is Cliffs Asia Pacific Iron Ore Pty Ltd, however the tenements are beneficially held by Yilgarn Iron Pty Ltd, a wholly owned subsidiary of MRL. The tenements will be

Criteria	JORC Code explanation	Commentary
		registered in the name of Yilgarn Iron Pty Ltd following assessment and payment of transfer duty. Normal Western Australian State royalties apply. A royalty of AUD($)0.13/tonne of saleable ore product produced from the tenements is split between two third parties.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Exploration has previously been carried out by WMC, Portman Iron Ore and Cliffs Asia Pacific Iron Ore.
Geology	*Deposit type, geological setting and style of mineralisation.*	The F deposit occurs as an enriched portion of a larger banded iron formation (BIF). The deposit lies within the Koolyanobbing greenstone belt, which forms part of the Southern Cross Greenstone Terrane in the central part of the Achaean Yilgarn Craton. The greenstone belt trends northwest-southeast. It is comprised of tholeiitic basalts, dolerites and komatiitic volcanics, together with metasediments and the banded iron formation (BIF). Based on geometrical and mineralogical characteristics, the mineralisation of BIF at the F Deposit can be subdivided into two types: Strata-bound hematite-goethite mineralisation and lateritic goethite-limonite mineralisation.

Criteria	JORC Code explanation	Commentary
Drill hole Information	*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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.*	This release is in relation to a Mineral Resource estimate with no exploration results being reported.
	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.	Not applicable as there are no exploration results reported as part of this statement.
Data aggregation methods	*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.*	Not applicable as there are no exploration results reported as part of this statement.
	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.	Not applicable as there are no exploration results reported as part of this statement.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable as there are no exploration results reported as part of this statement.

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	The dominant drilling direction dips 60° to the south-west (approximately UTM grid 215°, although there are a few vertical and shallow dipping holes. Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	A small step-out drill program is planned to improve confidence in the grade continuity of the strata-bound sub-vertical mineralisation occurring between drill lines and in the deeper parts of the deposit.

Criteria	JORC Code explanation	Commentary
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The deposit has been closed out in all directions by current drilling. No extensions are being tested.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	Data was acquired by Mineral Resources Limited (MRL) from Cliffs Asia Pacific Iron Ore (APIO) in the form of an Access database and as a set of comma-delimited tables. MRL is unable to confirm the quality of the provided database, but assume in good faith that Cliffs APIO have made every effort to ensure the validity and quality of their database was maintained.
	Data validation procedures used.	The database has been reviewed and validated using Micromine software. No database issues have been noted.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	No site visits have been undertaken by the Competent Person.
	If no site visits have been undertaken indicate why this is the case.	Both the drilling and modelling of this deposit were completed prior to the Competent Person reviewing the data.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Confidence in the interpretation for the outcropping sub-horizontal +50% Fe mineralisation is high. Continuity and mineralisation boundaries are informed by geological-structural mapping and close spaced exploration drilling. Mining to date correlates well with the interpreted mineralisation envelope.

Criteria	JORC Code explanation	Commentary
		Some uncertainty exists in the interpretation for the sub-vertical +58% Fe mineralisation. Multiple mineralised envelopes truncate and aggregate over short distances along strike. Mining to date suggests that the thickness of these bands is more variable than has been picked up by the exploration drilling. It is possible that individual band interpretation could be over selective regarding the sub-setting of the mineralisation into multiple sub-vertical envelopes based on Fe grades below 58%.
	Nature of the data used and of any assumptions made.	The geological data used to construct the geological model includes regional and detailed surface mapping, logging of RC/diamond core drilling and associated geochemical assays.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	The impact of changing the sub-vertical interpretation could result in a slight increase in tonnes at the expense of lower Fe grades and higher SiO_2 & Al_2O_3 grades.
	The use of geology in guiding and controlling Mineral Resource estimation.	The Mineral Resource estimate has been constructed using mineralisation envelopes provided by Cliffs APIO. These envelopes were constructed using Fe grade cut-offs.
	The factors affecting continuity both of grade and geology.	The mineralisation occurs exclusively within the BIF host rock. The lateritic sub-horizontal mineralisation is continuous across the strike length of the deposit. Grade is strongly controlled by the depth of weathering. The strata-bound sub-vertical mineralisation is poddy in natural. The controls on grade and continuity are unknown.
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 mineralisation trends roughly northwest-southeast over a distance of 1,600m and dips between 25° to 65° northeast. The strata-bound mineralisation consists of several lodes ranging in thickness from 3m to 50m, averaging 5-10m, and bottoms out at 130m below surface. The

Criteria	JORC Code explanation	Commentary
		lateritic goethite-limonite mineralisation reaches up to 150m in width and bottoms out at an average depth of 50-60m.
Estimation and modelling techniques	*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.*	Conditional co-simulation (CCS) by the turning bands method was used to generate spatial models of Fe, SiO_2, Al_2O_3 and LOI using normal score cross-variograms. Conditional simulation (CS) by the turning bands method was used to simulate Mn, P and S directly with normal score variograms. Estimation was into 3mN x 3mE x 3mRL grid nodes constrained by the 50% and 58% Fe mineralisation envelopes. 100 realisations were run for each node respectively with an average grade across all 100 realisations assigned into each respective node. Modelling was carried out in Datamine and Isatis.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	An OK model has been run as a check estimate. Grades for all variables are very similar to the averaged CS model grades.
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	Along with SiO_2, Al_2O_3, P, LOI and Mn, S has been modelled and can be used to inform acid mine drainage characterisation.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block dimensions are 12m (East) by 12m (North) by 6m (RL). Block grades are calculated as an average of the grid nodes falling within the block. Default waste grades have been assigned for grid nodes occurring outside the mineralisation envelopes but within the block, this has introduced dilution.

Criteria	JORC Code explanation	Commentary
		Default values used were: Fe: 10%, Al_2O_3: 20%, SiO_2: 50%, LOI: 4%, Mn: 0.1%, P: 0.02% and S: 0.1%. Search parameters were constructed in line with variogram ranges. A single search was used to generate 100 realisations for the multivariate variables (Fe, SiO_2, Al_2O_3 & LOI), and again for each of the univariate variables (Mn, P & S). A search required a minimum of 10 samples, a maximum of 40 samples, and no more than 10 samples being used from any single drill hole. Two sectors were used for all searches.
	Any assumptions behind modelling of selective mining units.	Block size was chosen to align with the likely mining block size to be used at Deposit F.
	Any assumptions about correlation between variables.	Moderate to strong correlations exist between Fe, SiO_2, Al_2O_3 and LOI. Mn, P and S are not particularly well correlated with any of the other variables.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to split the mineralisation into low grade lateritic mineralisation envelopes and strata bound poddy high grade mineralisation envelopes. These envelopes were used to control the resource estimate.
	Discussion of basis for using or not using grade cutting or capping.	Top-cuts were applied to extremely high manganese and sulphur values. Top-cut values were selected by examining histogram and probability plots, and by considering the spatial location of the outliers. For S, the majority of the extreme values were at depth in the background waste.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Non-back-transformed simulation realisations have been compared with the cross and direct Gaussian input variograms. The reproduction is acceptable up to a range of 100m.

Criteria	JORC Code explanation	Commentary
		Swathe plots in directions X, Y and Z were constructed to compare the mean of the realisations with the drilling data. The mean of the realisations adequately reproduces the trends seen in the drilling data. The Multivariate relationship was investigated using scatter plots comparing the mean of the simulated variables against the original drilling data. The correlation coefficients have been adequately reproduced.
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.*	Cut-off grades of 50% and 58% Fe were chosen based on distribution statistics and validated via domain boundary assessment.
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.*	Mining method is expected to be open pit. Dilution from blast movement and during digging is expected. For this reason 12mE by 12mN by 6mRL blocks have been constructed that factor in boundary dilution.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Mineralised material from the F deposit is expected to undergo crushing and screening to produce separate lump and fines products. It is expected that these products will be blended downstream with products from other deposits to produce an ultimate blended product for sale. Metallurgical characterisation of the mineralisation into its constituent lump and fines products is not covered in this model.

Criteria	JORC Code explanation	Commentary
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.*	Waste storage is expected to occur on flat stable ground in the form of waste dumps to the north of the pit and within ramp constructions leading up to the pit. Potential for acid forming material within the waste is not expected to be an issue. 95% of all waste material has a sulfur value below 0.3%
Bulk density	*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.*	Only a small amount of bulk density data is available for Deposit F, taken from metallurgical composites and some core measurements. Density values have been generated using values generated from density studies of other iron deposits at Koolynobbing.
	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.	Bulk densities have been assigned based on mean Fe grade of the CS node. No account has been made for void spaces, moisture, alteration or variations in the host rock.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The following density values have been assigned to the deposit: Fe grade (%) — Dry Bulk density (t/m^3) <50 — 2.60 50 – 52 — 2.68 52 – 54 — 2.76 54 – 56 — 2.84 56 – 58 — 2.92

Criteria	JORC Code explanation	Commentary
		>58 3.00 Sub-Vert >58 3.20
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	The Mineral Resource has been classified based on data density, domain geometry and resource confidence.
	Whether appropriate account has been taken of all relevant factors (ie 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).	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised envelopes and to support the definition of an Indicated Mineral Resource under the 2012 JORC code once all other modifying factors have been addressed.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person supports the reported Mineral Resource classification.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	The Mineral Resource Estimate dated 18th December 2014, completed by Mr. Mike Job, Principal Consulting Geologist formerly at QG Pty Ltd, has been reviewed by Matthew Watson, a full time employee at MRL acting as the Competent Person. No fatal flaws have been found that would question the validity of the model.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The conditional simulations enable a probabilistic assessment of confidence in the actual grades by means of mapping the dispersion of the realisations about the mean of the realisations i.e., the coefficient of variation (CV) for each node/block. The mean CV values are very low, indicating that there is little dispersion of the grades about the expected value. This suggests that there is a high confidence that the mean Fe grade will not vary significantly and that the mean grade of the realisations will be an accurate predictor of grade.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be	The reported Mineral Resources for the F Deposit are within a pit shell created from an open pit optimisation developed with environmental constraints for the protection of Tetratheca populations occurring along the

Criteria	JORC Code explanation	Commentary
	relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	BIF ridge line, appropriate wall angles, operating costs and a long term iron ore price assumption of AUD($)200 per dry metric tonne for 62% Fines CFR, with a discount of 15% and exchange rate of 0.74 USD/AUD.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Reconciliation comparisons against production data for the period 1st April 2019 – 30th June 2019 were performed as part of the Resource audit process. The competent person is of the opinion that the global Resource will continue to perform in line with industry standard tolerances for an Indicated Resource.

WINDARLING DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	The vast majority of drilling consisted of reverse circulation (RC) holes drilled by Portman Iron Ore between 2001 and 2008 and Cliffs Asia Pacific Iron Ore between 2009 and 2015, with a minor number of diamond tail (RD), Air Core (AC) and RAB holes completed by both companies. A small number of RC holes were completed by Mineral Resources in 2019. The majority of holes were sampled at 1m intervals with a minor number sampled at 2m intervals. Forty-three RAB holes and twenty-six AC holes were drilled for waste rock landform sterilization in 2008 and 2015. Eighteen RD holes were drilled for geometallurgical, density and geotechnical characterisation in the period 2001 - 2012. Two Hundred and Sixty-Three RC holes for 43,069m were drilled for metallurgical assay in the period 2001 - 2019.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.
	Aspects of the determination of mineralisation that are Material to the Public Report. *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m*	RC, DD, AC and RAB drilling was used to obtain 1 m and 2 m samples. All samples were collected from a fixed cyclone fitted with a butterfly gate. Sub-sampling was carried out via a process of riffle-splitting or cone

Criteria	JORC Code explanation	Commentary
	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.	splitting. For riffle splitting, the samples were collected from the cyclone into plastic bags. Dry samples were manually transferred to a 3-tier, 10 vane riffle splitter fitted with a vibrator, where 1/8th of the sample was transferred to a calico bag. For cone splitting, the sample was dropped directly from the cyclone onto an inverted cone to split off 1/8th of the sample directly into a calico bag. Calico bags were sent to the lab for sample preparation and analysis. Diamond core was predominantly used for lithology logging and assaying using half core. AC and RAB drill sample spoils were grab sampled.
Drilling techniques	*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).*	RC drilling used a face sampling hammer and drill bit sizes of 5.5 inch diameters. Diamond drilling used PQ3 and HQ3 core bits. RAB drilling used a hammer bit diameter of 5.5 inches. AC drilling used a blade diameter of 4.25 inches. RAB and AC assay data was not used for the mineralisation estimation but was considered for the geological interpretation.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was measured for all drill holes by comparing tape measured core runs against drill run lengths as recorded by the driller. Overall recovery was 90% of the total drill hole length. RC recovery was recorded as a qualitative visual observation by the attending rig geologist, whereas the DD core loss was recorded as a quantitative observation by the driller.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.

Criteria	JORC Code explanation	Commentary
	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.	Sample bias due to preferential loss/gain of fine/coarse material is considered to be within acceptable limits.
Logging	*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.*	All 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. Portman and Cliffs logging codes were used to record lithology, colour, regolith, weathering, texture, structure, magnetic susceptibility and mineralisation type.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative and some observations are quantitative such as core loss and magnetic susceptibility measurements. Core photography was carried out as part of the logging procedure.
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Half core was sent for metallurgical evaluation.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	RC samples were either cone split or riffle split. A proportion of the drilling intercepts are below the water table.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All RC samples are collected in labelled bags which are stored onsite or sent for analysis. RC cuttings were taken at regular intervals. Samples were generated by sending dry drill cuttings through a cone or riffle splitter. Where the drill cuttings were wet, these cuttings were either left to dry in poly weave bags prior to being passed through a riffle 3 tier splitting process, or via grab sampling or the wet cuttings pile.

Criteria	JORC Code explanation	Commentary
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field RC duplicates were taken within the mineralisation and waste rock zones. Drill intervals selected for duplicates were either collected from a secondary sample chute on the cone-splitter or generated by passing the interval sample through the 10 vane 3 tier riffle splitter twice. Field duplicates were carried out on approximately 3% of the samples sent for assay. Field duplicates on core, i.e. other half of cut core have not been routinely assayed.
	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.	Duplicate results confirmed good reproduction of sample grades across all analytes indicating that the sub-sampling system has provided good repeatability with no apparent bias.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using +5 inch (RC) face sampling hammers per 1 m sample interval are considered appropriate in size to accurately represent the iron mineralisation style (bedded iron).
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by the SGS & Ultratrace commercial laboratories in Perth and the Site lab facilities. The technique is consider a total analysis with measured analyte oxides summing to approximately 100%.
	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.	Samples were analyzed using X-Ray Spectrometers. LOI was determined Gravimetrically at 950ºC via thermo-gravimetric analysis (TGA). XRF analysis is industry standard for iron mineralization and considered appropriate. As such, the competent person considers XRF and TGA analysis suitable for Resource estimation studies.

Criteria	JORC Code explanation	Commentary
	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.	Lab repeats were carried out on the sample pulps at the Ultratrace and SGS commercial labs. Repeats constitute approximately two percent of all lab assays. Lab splits were carried out on the post crushed coarse samples at the Ultratrace commercial lab and at the Site lab. Splits constitute approximately one percent of all lab assays. Certified Reference Material (CRM or standards) were inserted within the lab batches to assess the assaying accuracy of each lab. Nine types of standards were used and alternately inserted into lab batches every 20th sample. QAQC sampling results are considered to be within acceptable limits for both accuracy and precision.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	No independent personnel have visually inspected the significant intersections in RC chips. Numerous highly qualified and experienced company personnel from the Cliffs exploration teams have visually inspected the significant intersections in RC chips. No MRL personnel have inspected the significant intersections in RC chips.
	The use of twinned holes.	At the time of this report, near surface grade control holes have consistently verified the spatial location, width and tenor of the resource drilling intercepts.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Logging was completed electronically using Tough Books directly at the drill rig. Code validation was set-up to ensure that only valid codes could be entered. Drill hole detail along with sampling information was entered and validated into Micromine software on a weekly basis and then sent to Cliffs database.

Criteria	JORC Code explanation	Commentary
	Discuss any adjustment to assay data.	Any samples not assayed (i.e. destroyed in processing, listed not received) have had the assay value converted to a -996.99 in the database. Any samples assayed below detection limit i.e. 0.01% SiO_2 have been converted to 0.005% (half detection limit) in the database.
Location of data points	*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.*	All drill hole collars were picked up by the mine site surveyors using a Leica System Real Time Kinematics system. The majority of drill holes (62%) were gyro surveyed at 10m intervals. Gyro surveys were carried out by ABIMS, PWS or Surtron surveyors, and drilling contractor Orlando. Residual drill holes were orientated using a handheld compass. Thirty-two percent of compass surveyed holes were vertical, with the remainder being angled at -60 degrees.
	Specification of the grid system used.	The grid system used is MGA Zone 50 (GDA 94) for surveying pickups, as well as for all modelling work.
	Quality and adequacy of topographic control.	The natural topographic surface has been derived from a LiDAR survey flown in 2003, while the end of month surface dated 30 June 2019 is created from a combination of survey pickups and LiDAR surveys flown 2019.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drill hole spacing over the deposit is nominally 25m along strike by 25m across strike.
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred and Indicated Mineral Resources under the 2012 JORC code once all other modifying factors have been addressed.
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The dominant drilling direction dips 70° to the south (approximately UTM grid 160°), with the exception of the most western lode which dips 80° southwest (approximately UTM grid 230°). Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.
	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.	It is not believed that drilling orientation has introduced a sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are securely sealed in string drawn calico bags and stored on site until delivery to a Perth based laboratory via contract freight transport. Sample submission forms are sent with the samples as well as emailed to the laboratory, and are used to keep track of the sample batches.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits on sampling techniques and data have been completed.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*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.*	The Windarling Deposits are located on M77/0999, M77/1000 and M77/1001, located approximately 135km north of Southern Cross. The current registered holder of the tenements is Cliffs Asia Pacific Iron Ore Pty Ltd, however the tenements are beneficially held by Yilgarn Iron Pty Ltd, a wholly owned subsidiary of MRL. The tenements will be registered in the name of Yilgarn Iron Pty Ltd following assessment and payment of transfer duty.

Criteria	JORC Code explanation	Commentary
		Normal Western Australian State royalties apply. A royalty of $0.13/tonne of saleable ore product produced from the tenements is split between two third parties.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Exploration has previously been carried Cliffs Asia Pacific Iron Ore and Portman Iron Ore Limited.
Geology	*Deposit type, geological setting and style of mineralisation.*	The Windarling iron deposits are located in the Windarling Range in the western portion of the Archaean aged Marda Greenstone Belt. The Marda Greenstone Belt is bounded to the west by the Koolyanobbing Fault. The mineralisation has been described as well bedded, medium grained hematite, with minor goethite. The iron mineralisation trends roughly east-west in multiple lodes which are hosted in two parallel zones of banded iron formation (BIF), about 600 metres apart at the western end of the range, with the two units gradually converging to the east. The BIF units are enveloped by metasediments and mafic volcanic rocks, which are deeply oxidised. The stratigraphy has been tilted and faulted into its present sub-vertical setting.
Drill hole Information	*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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*	This release is in relation to a Mineral Resource estimate with no exploration results being reported.

Criteria	JORC Code explanation	Commentary
	○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.*	
	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.	Not applicable as there are no exploration results reported as part of this statement.
Data aggregation methods	*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.*	Not applicable as there are no exploration results reported as part of this statement.
	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.	Not applicable as there are no exploration results reported as part of this statement.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable as there are no exploration results reported as part of this statement.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	The dominant drilling direction dips 60° to the North (approximately UTM grid 340°, although there are a few vertical and high angle dipping holes. Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.

Criteria	JORC Code explanation	Commentary
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	No further works are planned at this time. All lodes are considered sufficiently drilled out.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The deposit remains open at depth. Depth extensions are well below the current pit design and are not being tested at this time.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	Data was acquired by Mineral Resources Limited (MRL) from Cliffs Asia Pacific Iron Ore (APIO) in the form of an Access database and as a set of comma-delimited tables. MRL is unable to confirm the quality of the provided database, but assume in good faith that Cliffs APIO have made every effort to ensure the validity and quality of their database was maintained.
	Data validation procedures used.	The database has been reviewed and validated using Micromine software. No issues with the data were identified.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	No site visits have been undertaken by the Competent Person.
	If no site visits have been undertaken indicate why this is the case.	The exploration drilling was completed prior to the Competent Person reviewing the data.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Confidence in the geological interpretation is high. Continuity and mineralisation boundaries are informed by geological-structural interpretations and an iron grade cut-off of 50%. Near surface mining to date correlates well with the interpreted mineralisation envelope.
	Nature of the data used and of any assumptions made.	The geological data used to construct the geological model includes logging of RC/diamond core drilling and associated geochemical assays.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Mineralisation is not complex and as such alternative interpretations on mineralisation are unlikely.

Criteria	JORC Code explanation	Commentary
	The use of geology in guiding and controlling Mineral Resource estimation.	The Mineral Resource estimate has been constructed using geology logging, and a Fe grade envelope of 50%.
	The factors affecting continuity both of grade and geology.	The potential for manganese horizons has been investigated within each of the modelled lodes. A manganese horizon was found to exist in the W10 and W3 lodes. These horizons were sub-domained from the mineralisation domains. Boundary analysis was carried out for the major analytes. Only manganese was found to have a break in grade trend across the sub-domained boundary.
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 iron mineralisation trends roughly east-west in multiple lodes which are hosted in two parallel zones of banded iron formation (BIF). The lodes range in thickness from 40m to 60m, strike lengths of 300m to 800m and depths below surface of 80m to 250m.
Estimation and modelling techniques	*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.*	An Ordinary Kriging (OK) Interpolation was selected as the estimation method. A single geological/mineralisation domain was used to control the estimation for each lode. No top-cuts were applied to the data. Analysis of sample lengths indicated that compositing to 1m was appropriate. Variography was carried out separately for each mineralised domain as well as for the associated waste rock domains to determine kriging interpolation parameters. Search ellipse (SE) sizes for the estimation were based on a combination of drill spacing and variogram ranges. The SE radii by mineralised lode are:

Criteria	JORC Code explanation	Commentary
		W10 - 100m along strike, 70m down dip and 17.5m across strike; W1E - 108m along strike, 70m down dip and 30m across strike; W3 - 255m along strike, 85m down dip and 45m across strike; W7 – 85m along strike, 85m down dip and 32m across strike. For the first search pass the SE size was set at a multiple of 1. A minimum of 16 samples and a maximum of 40 samples were required in the search pass; a minimum of two drill holes was required. A maximum of 8 samples per drill hole was used. Where blocks were not informed in the first pass, a second search was used with the SE increased in size by a multiple of 1.5. A minimum of 8 samples and a maximum of 40 samples were required in the search pass; a minimum of one drill hole was required. A maximum of 8 samples per drill hole was used. Where blocks were not informed in the second pass, a third search was used with the SE increased in size by a multiple of 3. A minimum of 4 samples and a maximum of 40 samples were required in the search pass; a minimum of one drill hole was required. A maximum of 8 samples per drill hole was used. Fe, SiO_2, Al_2O_3, P, LOI, Mn and S were estimated. Modelling and variography were carried out in Micromine 2018.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	An ID2 model has been run as a check estimate. Check estimates produced confirmation of primary OK results.
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.

Criteria	JORC Code explanation	Commentary
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	Along with SiO_2, Al_2O_3, P, LOI and Mn, S has been modelled and can be used to inform acid mine drainage characterisation.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block dimensions are 12m (E-W) by 12m (N-S) by 6m (Vertical) with sub-cells to 3m x 3m x 3m. Block sizes are nominally half of the lateral sample spacing and six metres in the vertical to align with mine bench heights.
	Any assumptions behind modelling of selective mining units.	Block size was chosen to align with mine planning requirements.
	Any assumptions about correlation between variables.	No assumptions were made regarding the correlation between variables. The variograms for Fe were used to inform all estimated variables.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to define the mineralisation domains. The mineralisation domains were used to constrain composite data and model blocks during the resource estimation process.
	Discussion of basis for using or not using grade cutting or capping.	Top-cuts were not applied. This decision was informed through examination of histograms and probability plots of the composite data, and by considering the spatial location of the outliers within the mineralisation domain.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the final resource has been carried out in a number of ways, including: Drill hole section comparison, swathe plot validation, model versus declustered composites by domain. All modes of validation have produced acceptable results. Reconciliation data was used to validate the estimation process.

Criteria	JORC Code explanation	Commentary
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.*	A cut-off grade of 50% Fe is used for reporting purposes.
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.*	Mining method is expected to be open pit. Dilution from blast movement and during digging is expected. Small scale vertical bands of sub-mineralised BIF have been included within the mineralisation envelopes to aid the interpretation. It is expected that the mining method will incur some dilution in these areas, so the inclusion of these composite waste grades into the estimation will simulate dilution into the mineralised blocks immediately adjacent to the waste. External mining dilution has not been factored into the Resource Model as a hard boundary was applied to the mineralisation envelope used for the estimation.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Mineralised material from the Windarling deposits is expected to undergo crushing and screening to produce separate lump and fines products. It is expected that these products will be blended downstream with products from other deposits to produce an ultimate blended product for sale. Metallurgical characterisation of the mineralisation into its constituent lump and fines products is not covered in this model.
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*	Waste storage is expected to occur on flat stable ground in the form of waste dumps to the west of the pit. Any potential acid forming (PAF) material is expected to be correctly stored within the waste dump landform.

Criteria	JORC Code explanation	Commentary
	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.	PAF forming material within the waste material is not expected to be an issue for mining or waste storage. >95% of all waste material in the project area has a sulfur value below 0.3%.
Bulk density	*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.*	Dry density values are based on mine production observations.
	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.	Measurements are based on bulk material moved during the course of mining.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The following density values have been assigned to the deposit: Rock Type (AWT) — Dry Bulk Density (t/m^3) BIF — 2.40 MAFIC — 2.00 MINERALISATION — 2.80 Rock Type (BWT) — Dry Bulk Density (t/m^3) BIF — 2.40 MAFIC — 2.60 MINERALISATION — 2.80

Criteria	JORC Code explanation	Commentary
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	A range of criteria has been considered in determining this classification including: - Geological continuity - Data quality - Drill hole spacing - Modelling technique - Estimation properties including search strategy, number of informing data and average distance of data from blocks
	Whether appropriate account has been taken of all relevant factors (ie 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).	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised envelopes and to support the definition of an Indicated and Inferred Mineral Resource under the 2012 JORC code once all other modifying factors have been addressed.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person supports the reported Mineral Resource classification.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	No independent audits or reviews of the Mineral Resource estimate have carried out.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	Resource Estimation is qualitative in nature and based on the general approach used by resource estimation practitioners to indicate in relative terms the level of risk or uncertainty that may exist with respect to resource estimation which have cumulative effects on project outcome.

Criteria	JORC Code explanation	Commentary
	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.	The Mineral Resource has been validated both globally and locally against the input composite data. The Mineral Resource is considered to be a global estimate. The reported Mineral Resources for the Windarling Deposit are within a pit shell created from an open pit optimisation developed with environmental constraints, appropriate wall angles, operating costs and a long term iron ore price assumption of AUD($)200 per dry metric tonne for 62% Fines CFR, with a discount of 15% and exchange rate of 0.74 USD/AUD.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Comparison of the resource model with the production model has been carried out at a bench scale for the W10 lode. The comparison looked at the first 7 benches where the bench height was set at 6 m. The resource model approximates the Fe values to within 97% of the production model using a Fe block cut-off value of 50%.

MAFIELD DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	Drilling was conducted by Polaris Metals which is a subsidiary of Mineral Resources Limited, and by Portman Iron Ore Limited which was acquired by Cliffs Asia Pacific Iron Ore. All Polaris sampling has been carried out in accordance with the Polaris Sampling Procedure (described in detail below). A reverse circulation (RC) drill program was completed by Portman Iron Ore Limited in 2002. A total of 65 drill holes were completed. A Diamond drill program was completed by Polaris Metals Pty Ltd in 2010. A total of 3 drill holes were completed. A reverse circulation (RC) drill program was completed by Polaris Metals Pty Ltd in 2012. A total of 57 drill holes were completed.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.
	Aspects of the determination of mineralisation that are Material to the Public Report. *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*	The Polaris diamond drilling was used to obtain 1 m representative samples. The Polaris RC drilling produced consecutive 2m representative samples of the intersected geological formations, with each sample weighing approximately 4.0kg on average. The Portman Iron Ore Limited RC drilling produced consecutive 2m representative samples of the intersected geological formations.

Criteria	JORC Code explanation	Commentary
	commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	
Drilling techniques	*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).*	RC drilling used a face sampling hammer and drill bit sizes of 5.5 inch diameters. Diamond drilling was from surface. Core bit size was HQ3.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core recovery was not recorded, Sample recoveries were recorded all Polaris Metals RC drill holes. RC recovery was recorded as a qualitative visual observation by the attending rig geologist.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.
	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.	Sample bias due to preferential loss/gain of fine/coarse material is considered to be within acceptable limits.
Logging	*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.*	All core and chip samples have been geologically logged to a level of detail to support appropriate Mineral Resource estimation and metallurgical studies. The geological logging has been validated using geochemical lab results. Geological logging carried out included recording of major and minor lithology, colour, weathering, alteration, hardness and magnetic susceptibility.

Criteria	JORC Code explanation	Commentary
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative and some observations are quantitative such as core loss and magnetic susceptibility measurements.
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Whole core was sent for metallurgical evaluation.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	Polaris RC samples were cone split. No records are available for the sub-sampling method employed by Portman Iron Ore Limited. A proportion of the drilling intercepts are below the water table.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All Polaris RC samples are collected in labelled bags which are stored onsite or sent for analysis. Polaris RC cuttings were taken at regular intervals. Samples were generated by sending dry drill cuttings through a cone or riffle splitter. Where the drill cuttings were wet, these cuttings were either left to dry in poly weave bags prior to being passed through a riffle 3 tier splitting process, or via grab sampling or the wet cuttings pile.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	The Polaris drilling collected a primary and duplicate sample for every interval into a number calico bag. The primary calico bag was sent to the lab for analysis. If the sample was not of sufficient weight, both calico samples from that interval were combined and sent to the lab. Sample sizes > 3kg were considered to be of sufficient weight for the grain size of the material generated from the RC drilling. The whole core was processed.
	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.	Duplicate results confirmed good reproduction of sample grades across all analytes indicating that the sub-sampling system has provided satisfactory repeatability with no apparent bias.

Criteria	JORC Code explanation	Commentary
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using +5 inch (RC) face sampling hammers per 2 m sample interval are considered appropriate in size to accurately represent the iron mineralisation style (bedded iron).
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by the ALS, NAGROM & Ultratrace commercial laboratories in Perth. The technique is consider a total analysis with measured analyte oxides summing to approximately 100%.
	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.	Samples were analyzed using X-Ray Spectrometers. LOI was determined Gravimetrically at 950ºC via thermos-gravimetric analysis (TGA). XRF analysis is industry standard for iron mineralization and considered appropriate. As such, the competent person considers XRF and TGA analysis suitable for Resource estimation studies.
	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.	Field duplicates for the Polaris RC drilling were run every 25th sample. Blind Certified Reference Material (CRM or standards) were inserted within the Polaris lab batches by the lab to assess the assaying accuracy of the lab. Six types of standards were used. Lab repeats were carried out on the Polaris RC and Diamond samples. QAQC sampling results are considered to be within acceptable limits for both accuracy and precision.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	All Polaris RC drill intervals were systematically sampled and analysed. Cliffs only sampled DSO mineralisation.

Criteria	JORC Code explanation	Commentary
	The use of twinned holes.	Polaris twinned several earlier holes drilled by Portman. Intercepts and grades were repeated.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	All Polaris drilling-related data was captured using Log Chief software operated on Toughbook laptops in the field and via paper logs. Toughbook laptops and paper logs were uploaded to the Polaris Datashed database monthly.
	Discuss any adjustment to assay data.	No adjustments were made to the raw assay data received from the lab.
Location of data points	*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.*	Survey control of drill hole collar locations has been established using a Real Time Kinetic ("RTK") Global Positioning System ("GPS"). Detailed downhole deviation surveys of accessible holes have been carried out on 57 of 122 drill holes using non-north seeking and north seeking gyros. Remaining drill holes use an assumed collar orientation.
	Specification of the grid system used.	The Grid system is MGA Zone 50 (GDA94 based) for horizontal data and AHD (based on AusGeoid09) for vertical data
	Quality and adequacy of topographic control.	The topographic surface has been derived from the drill hole collars.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drill hole spacing over the deposit is nominally 100m along strike by 20m across strike.
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred Mineral Resources under the 2012 JORC code once all other modifying factors have been addressed.
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.

Criteria	JORC Code explanation	Commentary
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	Bore holes have been drilled sub-perpendicular to the local strike and dip of the mineralisation. The drilling has satisfactorily tested the geological structure and grade continuity of the mineralisation.
	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.	It is not believed that drilling orientation has introduced a sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples are securely sealed in string drawn calico bags and stored on site until delivery to a Perth based laboratory via contract freight transport. Sample submission forms are sent with the samples as well as emailed to the laboratory, and are used to keep track of the sample batches.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	External audits were carried out in 2008 by Maxwell Geoservices and Hellman& Schofield on the Carina deposit. Learnings from this audit were applied to the Polaris Mayfield drilling program. An internal audit was carried out by Polaris staff in 2013. Repeatability of field duplicate grades concluded that the sampling techniques utilized during the Polaris drill program were satisfactory. No major risk factors relating to the sampling and assaying of the data have been identified.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures,*	The Mayfield deposit is located on retention licence R 77 / 0003, located approximately 85km north west of Southern Cross.

Criteria	JORC Code explanation	Commentary
land tenure status	*partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*	The current registered holder of the tenements is Polaris Metals Pty Ltd. There are no agreements or material issues with third parties.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Exploration has previously been carried Portman Iron Ore Limited, later acquired by Cliffs Asia Pacific Iron Ore. A total of 65 reverse circulation drill holes were completed. No QAQC or metadata were provided, drill holes were not downhole surveyed. A selection of the Portman drill holes were twinned. Grades were sufficiently reproduced by Polaris drilling to be considered satisfactory for use in the estimation.
Geology	*Deposit type, geological setting and style of mineralisation.*	The Mayfield deposit lies in the centre of the northern limb of the Southern Cross Greenstone Belt. This portion of the belt strikes northwest from the township of Southern Cross and is approximately 120 km in length. The greenstones generally consist of mafic and ultramafic volcanic rocks overlain by clastic sedimentary rocks. The geology of the area is poorly defined due to extensive colluvial and alluvial cover, but is interpreted to be dominated by the lower mafic/ultramafic sequence of Archaean komatiitic and tholeiitic volcanic rocks, gabbros and dolerites, with subordinate siliceous banded iron formations. The Mayfield deposit is composed of goethite and magnetite mineralisation within a zone of Thuringite, a variety of Chamosite which is an iron-rich member of the Chlorite family of minerals that contain up to 40% Fe. The goethite occurs as a weathered cap above the magnetite mineralisation.

Criteria	JORC Code explanation	Commentary
Drill hole Information	*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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.*	This release is in relation to a Mineral Resource estimate with no exploration results being reported.
	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.	Not applicable as there are no exploration results reported as part of this statement.
Data aggregation methods	*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.*	Not applicable as there are no exploration results reported as part of this statement.
	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.	Not applicable as there are no exploration results reported as part of this statement.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable as there are no exploration results reported as part of this statement.

Criteria	JORC Code explanation	Commentary
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Additional drilling will be undertaken as required for the further development and mining of the deposit.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The deposit remains open at depth. Depth extensions are not being tested.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	Data was acquired by Mineral Resources Limited (MRL) from Cliffs Asia Pacific Iron Ore (APIO) in the form of an Access database and as a set of comma-delimited tables. MRL is unable to confirm the quality of the provided database, but assume in good faith that Cliffs APIO have made every effort to ensure the validity and quality of their database was maintained. Polaris Metals sample data was imported into a customised Access database (Datashed), which included a series of automated electronic validation checks. Datashed is a secure industry standard database.
	Data validation procedures used.	Only trained personnel perform further manual validation on the data in order to confirm results reflect field collected information and geology. In order to ensure integrity of the database, any changes to the database only occur after a review of the suggested changes are authorised, and these changes can only be performed by an authorised person. Prior to modelling, further validation was performed on the dataset being used using Micromine validation tools.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	No site visits have been undertaken by the Competent Person.
	If no site visits have been undertaken indicate why this is the case.	The exploration drilling was completed prior to the Competent Person reviewing the data. The Mineral Resource was collaboratively estimated in-house by Polaris Geologists who were present during the drill out and mapped the surface exposure of the mineralised outcrop.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Logging and geological interpretation was completed by geologists experienced in iron mineralisation. There is some risk of misinterpretation

Criteria	JORC Code explanation	Commentary
		in areas of wider spaced drilling with limited assay data, however this is not considered to be material.
	Nature of the data used and of any assumptions made.	The geological data used to construct the geological model includes regional and detailed surface mapping, logging of RC/diamond core drilling and associated geochemical assays.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Mineralisation is not complex and as such alternative interpretations on mineralisation are unlikely.
	The use of geology in guiding and controlling Mineral Resource estimation.	The interpretation was constructed based on geological logging, Fe grades, magnetic susceptibility measurements and weathering.
	The factors affecting continuity both of grade and geology.	Two zones of mineralisaton were interpreted, the weathered goethite surface cap that extends from surface to a depth of 70m, and the fresh rock magnetite that extends from 70m to depths exceeding 240m below surface. The interpreted base of oxidation appears as a soft boundary affecting the continuity of both grade and geology.
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 goethite cap iron mineralisation has a variable trend being roughly north-south for the southern portion and northwest-southeast for the northern portion. The strike length is 2600m, the across dip width is 30-50m and the down dip extension is up to a maximum of 70m. For depths below 70m the mineralisation changes from goethite to magnetite.
Estimation and modelling techniques	*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*	An Inverse Distance Squared Interpolation was selected as the estimation method. Estimations were run separately for the goethite and magnetite mineralisation domains. Which were divided into 3 sub-domains

Criteria	JORC Code explanation	Commentary
	was chosen include a description of computer software and parameters used.	respectively using selected northings. Sub-domains were used instead of unfolding / flattening the deposit along strike. No top-cuts were applied to the data. Variography was carried out on the mineralisation domains to determine search ellipse parameters. Search ellipse (SE) sizes for the estimation were based on a combination of drill spacing and variogram ranges. The southern section of the deposit was given the following SE values: 220m along strike, 25m across dip and 41m down dip. With a strike orientation of 355° and a dip and dip direction of -65°->265°. The central section of the deposit was given the following SE values: 150m along strike, 20m across dip and 30m down dip. With a strike orientation of 335° and a dip and dip direction of -68°->245°. The northern section of the deposit was given the following SE values: 110m along strike, 10m across dip and 72m down dip. With a strike orientation of 311° and a dip and dip direction of -70°->221°. Estimation was carried out in three passes with each pass uses a larger multiple of the SE values and more relaxed search criteria. All passes used 8 sectors with 5 samples per sector for a maximum of 40 samples. The first pass used a SE multiple of 2/3, a minimum of 11 samples from at least 2 drill holes. The second pass used a SE multiple of 1, a minimum of 11 samples from at least 2 drill holes.

Criteria	JORC Code explanation	Commentary
		The third pass used a SE multiple of 3, a minimum of 1 sample from at least 1 drill hole. Fe, SiO_2, Al_2O_3, P and LOI were estimated. Modelling and variography were carried out in Micromine 2011 SP6.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	No check estimates were run.
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	SiO_2, Al_2O_3, P, LOI have been modelled. Sulphur has not been modelled.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block dimensions are 5m (X) by 25m (Y) by 5m (Z) with sub-cells to 2.5m (X) x 5m (Y) x 2.5m (Z).
	Any assumptions behind modelling of selective mining units.	Block size was chosen to align with drill spacing, the shape of the deposit and mining bench heights.
	Any assumptions about correlation between variables.	No assumptions were made about correlation between variables.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to define the mineralisation domain. The mineralisation domain was used to constrain sample data and model blocks during the resource estimation process.
	Discussion of basis for using or not using grade cutting or capping.	Top-cuts were not applied to the data.

Criteria	JORC Code explanation	Commentary
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the final resource has been carried out in a number of ways, including: Drill hole section comparison with the model per variable, and average model grades versus average sample data grades per variable per domain. All modes of validation have produced acceptable results. Reconciliation data has not been used to validate or inform the estimation process.
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.*	A 50% Fe cut-off grade has been used for the goethite mineralisation, which is industry standard. The magnetite mineralisation is not being reported.
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.*	Mining method is expected to be open pit. Dilution from blast movement and during digging is expected. External mining dilution has not been factored into the Resource Model as a hard boundary was applied to the mineralisation envelope used for the estimation.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case,*	Davis tube test work carried out on RC samples taken from the fresh magnetite zone indicate that there is potential to upgrade the magnetite mineralisation through basic crushing (crush size = 3.3mm) and magnetic seperation (magnetic flux density = 1000Gauss). Test work on the head grade samples suggests the following correlations: Fe Product Grade% = 0.6791 * Fe Head Grade% + 24.914; Yield% = 2.2438 * Fe Head Grade% - 52.111.

Criteria	JORC Code explanation	Commentary
	this should be reported with an explanation of the basis of the metallurgical assumptions made.	No correlations are available for the other variables.
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.*	Waste storage is expected to occur on flat stable ground in the form of waste dumps to the west of the pit. Any potential acid forming (PAF) material is expected to be correctly stored within the waste dump landform.
Bulk density	*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.*	Dry density values are assumed.
	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.	Dry density values are assumed.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The following density values have been assigned to the deposit: Rock Type — Dry Bulk Density (t/m^3) MINERALISATION — 2.70
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	A range of criteria has been considered in determining this classification including:

Criteria	JORC Code explanation	Commentary
		- Geological continuity - Data quality - Drill hole spacing - Modelling technique - Estimation properties including search strategy, number of informing data and average distance of data from blocks
	Whether appropriate account has been taken of all relevant factors (ie 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).	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised envelopes and to support the definition of an Inferred Mineral Resource under the 2012 JORC code once all other modifying factors have been addressed.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person supports the reported Mineral Resource classification.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	No audits or reviews of the Mineral Resource estimate have carried out.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	Resource Estimation is qualitative in nature and based on the general approach used by resource estimation practitioners to indicate in relative terms the level of risk or uncertainty that may exist with respect to resource estimation which have cumulative effects on project outcome.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be	The Mineral Resource statement relates to global estimates of tonnes and grade.

Criteria	JORC Code explanation	Commentary
	relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Reconciliation could not be conducted as the project is not in production.

HUNT RANGE DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	All sampling has been carried out in accordance with the Polaris Sampling Procedure. Forty-six RC holes were drilled for metallurgical assay in 2012.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.
	Aspects of the determination of mineralisation that are Material to the Public Report. *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*	The Polaris RC drilling produced consecutive 2m representative samples of the intersected geological formations, with each sample weighing approximately 4.0kg on average.

Criteria	JORC Code explanation	Commentary
	commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	
Drilling techniques	*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).*	RC drilling used a face sampling hammer and drill bit sizes of 5.5 inch diameters.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Sample recoveries were recorded for all RC drill holes.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.
	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.	Sample bias due to preferential loss/gain of fine/coarse material is considered to be within acceptable limits.
Logging	*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.*	All chip samples have been geologically logged to a level of detail to support appropriate Mineral Resource estimation. Logging codes were used to record lithology, colour, weathering and hardness.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative. No core photography is available.
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full.
	If core, whether cut or sawn and whether quarter, half or all core taken.	No core collected.

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	*If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*	RC samples were cone split. A proportion of the drilling intercepts are below the water table.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All RC samples are collected in labelled bags which are stored onsite or sent for analysis. RC cuttings were taken at regular intervals. Samples were generated by sending dry drill cuttings through a cone splitter. Where the drill cuttings were wet, these cuttings were either left to dry in poly weave bags prior to being passed through a riffle 3 tier splitting process, or via grab sampling or the wet cuttings pile.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field RC duplicates were taken within the mineralisation and waste rock zones. Drill intervals selected for duplicates were collected from a secondary sample chute on the cone-splitter allowing the duplicate and main sample to be the same size and sampling technique. Field duplicates were taken every 25th sample. Laboratory repeats (pulp splits) were also completed roughly every 20 samples.
	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.	Inspection of duplicate grades show that the results correlate reasonably well with the original assay grades across all tested analytes.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using +5 inch (RC) face sampling hammers per 2 m sample interval are considered appropriate in size to accurately represent the iron mineralisation style (bedded iron).
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by the ALS commercial laboratory in Perth. The technique is consider a total analysis with measured analyte oxides summing to approximately 100%.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument	Samples were analyzed using X-Ray Spectrometers.

Criteria	JORC Code explanation	Commentary
	make and model, reading times, calibrations factors applied and their derivation, etc.	LOI was determined Gravimetrically at 950ºC via thermos-gravimetric analysis (TGA). XRF analysis is industry standard for iron mineralization and considered appropriate. As such, the competent person considers XRF and TGA analysis suitable for Resource estimation studies.
	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.	Lab repeats were on the sample pulps. Lab repeats were run every 20th sample. Certified Reference Material (CRM or standards) were inserted within the lab batches to assess the assaying accuracy of each lab. Three types of standards were used and alternately inserted into lab batches every 50th sample. QAQC sampling results are considered to be within acceptable limits for both accuracy and precision.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	No independent personnel have visually inspected the significant intersections in RC chips.
	The use of twinned holes.	No drill holes have been twinned.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	All drilling-related data was captured using Log Chief software operated on Toughbook laptops in the field and via paper logs. Toughbook laptops and paper logs were uploaded to the Polaris Datashed database monthly.
	Discuss any adjustment to assay data.	No adjustments have been made to the raw assay data received from the lab.

Criteria	JORC Code explanation	Commentary
Location of data points	*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.*	All drill hole collars were surveyed by MHR Surveyors using a Real Time Kinetic (RTK) Global Positioning System(GPS). Down hole surveys were carried out on 45 of the total 46 drill holes. 1 of 46 drill holes used the initial drill angle recorded at the beginning of the hole to estimate the path of the entire drill hole. Survey techniques included: Non-North Seeking Gyro. The down-hole surveys were carried out by Leon Marsh Drilling Pty Ltd in association with Polaris Metals.
	Specification of the grid system used.	The Grid system is MGA Zone 50 (GDA94 based) for horizontal data and AHD (based on AusGeoid09) for vertical data.
	Quality and adequacy of topographic control.	AAM Pty Ltd was contracted to produce a topographic profile of the Hunt Range area using a LiDAR survey on a fixed wing aircraft.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drill hole spacing over the deposit is nominally 100m along strike by 40m across strike.
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred Mineral Resources under the 2012 JORC code once all other modifying factors have been addressed.
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The drilling direction dips 60° to the east (approximately UTM grid 090°). Overall the drilling is roughly perpendicular to the strike and dip of the mineralisation, ensuring intercepts are close to true-width.
	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.	It is not believed that drilling orientation has introduced a sampling bias.

Criteria	JORC Code explanation	Commentary
Sample security	*The measures taken to ensure sample security.*	Samples are securely sealed in string drawn calico bags and stored on site until delivery to a Perth based laboratory via contract freight transport. Sample submission forms are sent with the samples as well as emailed to the laboratory, and are used to keep track of the sample batches.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	External sampling audits were last carried out in 2008 by Maxwell Geoservices and Hellman & Schofield at the Carina deposit. Learnings from this audit were implemented throughout the Hunt Range drilling program. An in-house audit by Polaris staff was carried out in 2013. Findings suggested satisfactory repeatability of field duplicates at the Hunt Range deposit.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*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.*	The Hunt Range Deposits are located on E77/2226, located approximately 120km north east of Southern Cross. The current registered holder of the tenements is Polaris Metals Pty Ltd. There are no agreements or material issues with third parties.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	No previous exploration has been carried out by third parties.

Criteria	JORC Code explanation	Commentary
Geology	*Deposit type, geological setting and style of mineralisation.*	The Hunt Range Deposit is located in the southern part of the Hunt Range Greenstone Belt. The mineralisation is hematite-goethite with intercalated zones of basalt. The mineralisation abuts a BIF-chert sequence that forms the range of low lying hills to the East, and shares a contact with a basalt unit on the West.
Drill hole Information	*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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.*	This release is in relation to a Mineral Resource estimate with no exploration results being reported.
	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.	Not applicable as there are no exploration results reported as part of this statement.
Data aggregation methods	*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.*	Not applicable as there are no exploration results reported as part of this statement.
	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.	Not applicable as there are no exploration results reported as part of this statement.

Criteria	JORC Code explanation	Commentary
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable as there are no exploration results reported as part of this statement.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Further work will be undertaken prior to mining, including infill drilling and metallurgical studies.

Criteria	JORC Code explanation	Commentary
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The deposit remains open along strike.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	Polaris Metals sample data was imported into a customised Access database (Datashed), which included a series of automated electronic validation checks. Datashed is a secure industry standard database.
	Data validation procedures used.	Only trained personnel perform further manual validation on the data in order to confirm results reflect field collected information and geology. In order to ensure integrity of the database, any changes to the database only occur after a review of the suggested changes are authorised, and these changes can only be performed by an authorised person. Prior to modelling, further validation was performed on the dataset being used using Micromine validation tools.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	No site visits have been undertaken by the Competent Person.
	If no site visits have been undertaken indicate why this is the case.	The exploration drilling was completed prior to the Competent Person reviewing the data. The exploration drilling was completed prior to the Competent Person reviewing the data. The Mineral Resource was collaboratively estimated in-house by Polaris Geologists who were present during the drill out and mapped the surface exposure of the mineralised outcrop.

Criteria	JORC Code explanation	Commentary
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Confidence in the geological interpretation is high.
	Nature of the data used and of any assumptions made.	The geological data used to construct the geological model includes regional and detailed surface mapping, logging of RC drilling and associated geochemical assays.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Mineralisation is not complex and as such alternative interpretations on mineralisation are unlikely.
	The use of geology in guiding and controlling Mineral Resource estimation.	Continuity and mineralisation boundaries are informed by geological-structural interpretations, surface mapping and an iron grade cut-off of 43.6%.
	The factors affecting continuity both of grade and geology.	Lateritic weathering and hydration zone have not been investigated for impact on grade and geology. Closer spaced drilling is required for this work.
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 iron mineralisation trends roughly north-south. The Hunt Range deposit has a strike length of 1200m, an across dip width of 30m including a series of intercalated basalts reducing the true width to 20m. The deposit has a down dip extension of 120m.
Estimation and modelling techniques	*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.*	An Inverse Distance Squared (ID2) Interpolation was selected as the estimation method. Two geological/mineralisation domain was used to control the estimation. No top-cuts were applied to the data. Analysis of sample lengths indicated that no compositing was necessary. Drill data density was insufficient to carry out meaningful variography. Search ellipse (SE) sizes for the estimation were based drill spacing.

Criteria	JORC Code explanation	Commentary
		The primary SE radii was set at 150m along strike, 30m down dip and 5m across dip. The SE orientation was set at strike of 342° and a dip and dip direction of -70° -> 252°. Estimation was carried out in three passes, with each pass having more relaxed search criteria. Blocks were discretised as 4 divisions in each direction, The first pass used a multiple of 1 for the primary SE radii, a minimum of 4 samples, maximum of 16 samples, a minimum of 2 drill holes and a maximum of 2 samples per hole. The second pass used a multiple of 3 for the primary SE radii, a minimum of 2 samples, maximum of 16 samples, a minimum of 1 drill hole and a maximum of 3 samples per hole. The third pass used a multiple of 5 for the primary SE radii, a minimum of 2 samples, maximum of 16 samples, a minimum of 1 drill hole and an unlimited number of samples per drill hole. Modelling was carried out in Micromine 2011 SP6.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	No check estimates were completed.
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	Along with SiO_2, Al_2O_3, P, LOI and Mn, S has been modelled and can be used to inform acid mine drainage characterisation.

Criteria	JORC Code explanation	Commentary
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block dimensions are 10m (X) by 25m (Y) by 5m (Z) with sub-cells to 2.5m (X) x 2.5m (Y) x 2.5m (Z). Block sizes are nominally one quarter of the lateral sample spacing and five metres in the vertical to align with mine bench heights.
	Any assumptions behind modelling of selective mining units.	Block size was chosen to align with mine planning requirements.
	Any assumptions about correlation between variables.	No assumptions were made about correlation between variables.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to define the mineralisation domain. The mineralisation domain was used to constrain sample data and model blocks during the resource estimation process.
	Discussion of basis for using or not using grade cutting or capping.	Top-cuts were not applied to the data.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the final resource has been carried out in a number of ways, including: Drill hole section comparison with the model per variable, and average model grades versus average sample data grades per variable per domain. All modes of validation have produced acceptable results. Reconciliation data has not been used to validate or inform the estimation process.
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.*	A cut-off grade of 50% Fe is used for reporting purposes.

Criteria	JORC Code explanation	Commentary
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.*	Mining method is expected to be open pit. Dilution from blast movement and during digging is expected. A hard boundary has been used to remove the intercalated mafic rock sitting between the two mineralised domains.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	Mineralised material from the Hunt Range deposit is expected to undergo crushing and screening to produce separate lump and fines products. It is expected that these products will be blended downstream with products from other deposits to produce an ultimate blended product for sale. Metallurgical characterisation of the mineralisation into its constituent lump and fines products is not covered in this model.
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.*	Waste storage is expected to occur on flat stable ground in the form of waste dumps to the west of the pit. Any potential acid forming (PAF) material is expected to be correctly stored within the waste dump landform. PAF forming material within the waste material is not expected to be an issue for mining or waste storage. >90% of all waste material in the project area has a sulfur value below 0.3%.
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the*	Dry density values are assumed.

Criteria	JORC Code explanation	Commentary
	frequency of the measurements, the nature, size and representativeness of the samples.	
	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.	Dry density values are assumed.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	The following density values have been assigned to the deposit: Rock Type Dry Bulk Density (t/m^3) MINERALISATION 2.90
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	A range of criteria has been considered in determining this classification including: - Geological continuity - Data quality - Drill hole spacing - Modelling technique - Estimation properties including search strategy, number of informing data and average distance of data from blocks
	Whether appropriate account has been taken of all relevant factors (ie 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).	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised envelopes and to support the definition of an Inferred Mineral Resource under the 2012 JORC code once all other modifying factors have been addressed.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person supports the reported Mineral Resource classification.

Criteria	JORC Code explanation	Commentary
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	No audits or reviews of the Mineral Resource estimate have carried out.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	Resource Estimation is qualitative in nature and based on the general approach used by resource estimation practitioners to indicate in relative terms the level of risk or uncertainty that may exist with respect to resource estimation which have cumulative effects on project outcome.
	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.	The Mineral Resource statement relates to global estimates of tonnes and grade.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Reconciliation could not be conducted as the project is not in production.

CHAMELEON DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	All sampling has been carried out in accordance with the Polaris RC Sampling Procedure (described in detail below).
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.
	Aspects of the determination of mineralisation that are Material to the Public Report. *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*	The RC drilling provides consecutive 2m representative samples of the intersected geological formations. Each sample weighs approximately 4kg.

Criteria	JORC Code explanation	Commentary
	commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	
Drilling techniques	*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).*	All 132 drill holes were completed using reverse circulation (120mm to 140mm diameter) for 15,347m.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Sample recovery was assessed visually by a field geologist present at the drill site at the time of drilling and noted in the database. In rare instances where a single sample is not of sufficient weight, it is combined with a second identically collected sample for the interval and sent for analysis.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Beyond the standard drilling procedures, it is not known what additional measures were taken to maximise sample recovery and ensure sample representivity at the drill rig.
	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.	Sample bias due to preferential loss/gain of fine/coarse material is considered to be within acceptable limits.
Logging	*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.*	All RC chip samples have been retained and geologically logged for each 2m sample interval for the entire length of drilling. The geological logging has been validated using geochemical lab results. Geological logging was carried out by Polaris geologists with recording of major and minor lithological codes and colours, together with weathering and hardness codes.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	All logging is qualitative.

Criteria	JORC Code explanation	Commentary
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	No core was drilled
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	RC samples were cone split. A proportion of the drilling intercepts are below the water table.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	When the RC rig is producing dry cuttings (6,107 sample intervals), the sample passes directly from the rig into a cyclone and cone splitter. The cone splitter splits off two equivalent samples of approximately 4 kg for each 2m interval drilled. These samples are placed directly into 2 identical pre-numbered calico bags. The remainder of the drill cuttings (~30kg) are collected and placed as a pile directly onto the ground, with the piles usually laid out in rows of ten. The two samples in calico bags are then placed with their respective piles. After completion of drilling, 1 of the samples from each pile is collected to be sent for analysis. The other sample remains at the drill site as back-up and for later QA/QC work. Very rarely, a single sample is not of sufficient weight, in which case both samples are combined to be sent for analysis. Where the RC rig is producing wet, clay-rich drill cuttings the samples are collected directly from the cyclone and left to dry in perforated plastic bags and then riffle-split into 2 identical pre-numbered calico bags (1,155 sample intervals), or collected directly from the cyclone and placed in a pile on the ground to be representatively scoop-sampled wet at the time of drilling and left to dry in their respective calico bags (267 sample intervals).

Criteria	JORC Code explanation	Commentary
		Sample sizes are considered appropriate for the grain size of the material generated from the RC drilling.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Field RC duplicates were taken within the mineralisation and waste rock zones. Drill intervals selected for duplicates were collected from a secondary sample chute on the cone-splitter allowing the duplicate and main sample to be the same size and sampling technique. Field duplicates were taken every 25th sample.
	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.	Duplicate results confirmed acceptable reproduction of sample grades across all analytes.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample weights generated using 4.75 – 5.5 inch (RC) face sampling hammers per 2 m sample interval are considered appropriate in size to accurately represent the iron mineralisation style (bedded iron).
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Assaying was carried out in line with the procedures set down by the ALS commercial laboratory in Perth. The technique is consider a total analysis with measured analyte oxides summing to approximately 100%.
	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.	Samples were analyzed using X-Ray Spectrometers. LOI was determined Gravimetrically at 950ºC via thermos-gravimetric analysis (TGA). XRF analysis is industry standard for iron mineralization and considered appropriate. As such, the competent person considers XRF and TGA analysis suitable for Resource estimation studies.

Criteria	JORC Code explanation	Commentary
	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.	Lab duplicates were run on the sample pulps. Lab repeats were run every 20th sample. Certified Reference Material (CRM or standards) were inserted within the lab batches to assess the assaying accuracy of each lab. Seven types of standards were used and alternately inserted into lab batches every 50th sample. QAQC sampling results are considered to be within acceptable limits for both accuracy and precision.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	Significant intersections are not highlighted or selectively sampled.
	The use of twinned holes.	There are no twinned holes.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	All drilling-related data was captured using Log Chief software operated on Toughbook laptops in the field and via paper logs. Toughbook laptops and paper logs were uploaded to the Polaris Datashed database monthly.
	Discuss any adjustment to assay data.	No adjustments were made to raw data.
Location of data points	*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.*	All drill hole collars were surveyed by MHR Surveyors or Kingston Surveyors using a Real Time Kinetic (RTK) Global Positioning System(GPS). The majority of the drill holes (92 out of 132) have been down-hole surveyed using one or two of the following techniques: North Seeking Gyro, Non-North Seeking Gyro, Eastman Survey Camera. The down hole surveys were carried out by Leon Marsh Drilling Pty Ltd with the aid of Polaris Geologists, ABIM Solutions Pty Ltd and Pilbara Wireline Services Pty Ltd.

Criteria	JORC Code explanation	Commentary
	Specification of the grid system used.	The grid system used is MGA Zone 50 (GDA 94) for surveying pickups, as well as for all modelling work.
	Quality and adequacy of topographic control.	AAM Pty Ltd was contracted to produce a topographic profile of the Chamaeleon area using a LiDAR survey on a fixed wing aircraft.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	Drill hole spacing over the deposit is nominally 40m along strike by 40m across strike, with a few sections at 80m by 40m spacing.
	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.	The data spacing and distribution is sufficient to demonstrate spatial and grade continuity of the mineralised domains to support the definition of Inferred and Indicated Mineral Resources under the 2012 JORC code once all other modifying factors have been addressed.
	Whether sample compositing has been applied.	No sample compositing has been applied at the raw data stage.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	Drill holes are drilled approximately at right angles to the strike of the mineralisation and are angled to cut across the dip of the mineralisation.
	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.	It is not believed that drilling orientation has introduced a sampling bias.
Sample security	*The measures taken to ensure sample security.*	Samples from RC drilling are collected and bagged at the drill site during the drilling operation. All samples are then catalogued and sealed prior to dispatch to Laboratory by Polaris staff.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	Sampling audits were carried out in 2008 by Maxwell Geoservices and Hellman& Schofield at the Carina deposit, which was using the same

Criteria	JORC Code explanation	Commentary
		drilling and sampling techniques contemporaneously with the Chamaeleon drilling. No serious adverse comments were made, but suggestions to improve wet sampling were made and implemented. An in-house audit by Polaris staff was carried out in 2009 and found satisfactory repeatability of field duplicates

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*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.*	The Chameleon Deposit is located on R 77/4, located approximately 110km north east of Southern Cross. The current registered holder of the tenements is Polaris Metals Pty Ltd. There are no agreements or material issues with third parties.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	No previous exploration has been carried out by third parties.
Geology	*Deposit type, geological setting and style of mineralisation.*	The deposit is stratigraphically situated within the basalt sequence of the Yendilberin Hills Greenstone Belt. Polaris geologists believe that Chamaeleon is a residual volcanogenic massive sulphide deposit. The deposit is deeply oxidised resulting in a

Criteria	JORC Code explanation	Commentary
		gossanous goethite cap that extends to the depth of current drilling without encountering substantial sulphides. The goethite cap is consistently impregnated with non-shear related clay and minor manganese replacement. The deposit is closed-off by structural faulting to the south and remains open to the north where the mineralisation is pinching off and becoming more silicified.
Drill hole Information	*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:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.*	Exploration results are not being reported for the Mineral Resource area. Drill hole information is provided in the resource estimation section.
	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.	Not applicable as there are no exploration results reported as part of this statement.
Data aggregation methods	*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.*	Not applicable as there are no exploration results reported as part of this statement.
	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.	Not applicable as there are no exploration results reported as part of this statement.

Criteria	JORC Code explanation	Commentary
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable as there are no exploration results reported as part of this statement.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	Orientation of drilled section lines is at right angles to the strike of the geology and mineralisation domains. Drill holes are angled to cross the sub-vertical dip of the geological domains.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	Not applicable as there are no exploration results reported as part of this statement.
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.*	No other material exploration data to report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Further work will be undertaken prior to mining.

Criteria	JORC Code explanation	Commentary
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The deposit is closed-off by structural faulting to the south and remains open to the north where the mineralisation is pinching off and becoming more silicified.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	Polaris maintains a centralised database for its various operations. Database administration is based in Polaris' head office in Perth and under the supervision of the company's Database Administrator.
	Data validation procedures used.	All drill hole data was validated during data entry and data import. The following checks were run: - Checks for duplicate collars (Log Chief, Datashed, Micromine). - Checks for missing samples (Datashed). - Checks for down hole from-to interval consistency (Log Chief, Datashed, Micromine). - Checks for overlapping samples (Log Chief, Datashed, Micromine). - Checks for samples beyond hole depth (Log Chief, Datashed, Micromine). - Checks for inexistent or misspelt log items (Log Chief). - Checks for missing assays (Datashed) - Checks for down-hole information beyond hole depth (Datashed,

Criteria	JORC Code explanation	Commentary
		Micromine). - Checks for missing down-hole information (Micromine). - Checks for missing or erroneous collar survey (manual).
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	Mr L Widenbar (the Competent Person) visited site on 11th-12th March 2013. No drilling was viewed, but a thorough review of surface geology and site location was made with the assistance of Polaris geologists.
	If no site visits have been undertaken indicate why this is the case.	Not Applicable.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	Knowledge of the local geology is presently limited.
	Nature of the data used and of any assumptions made.	Initial sectional interpretation was done using combinations of geological logging (mainly the occurrence of the various goethite and hematite-goethite codes) and Fe grade cutoffs.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	Preliminary alternative interpretations were done use 40% Fe, 50% Fe and 45% Fe+Mn. Final interpretation was based on a nominal 40% Fe envelope. Two major mineralised areas were identified in the North West and South East of the deposit.
	The use of geology in guiding and controlling Mineral Resource estimation.	Geology logging in combination with a nominal 40% Fe envelope were used to derive the sectional interpretations.
	The factors affecting continuity both of grade and geology.	The deposit is closed-off by structural faulting to the south and remains open to the north where the mineralisation is pinching off and becoming more silicified.

Criteria	JORC Code explanation	Commentary
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 North West zone is approximately 350m in strike length with a width typically of 20m. It extends from surface to 175m below surface. The Eastern zone consists of two zones of 280m and 210m strike length. The major, North West plunging domain typically has a width of 40m and extends from surface to 225m below surface. The minor sub-vertical domain is typically 20m thick and extends from surface to approximately 190m in depth.
Estimation and modelling techniques	*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.*	Ordinary Kriging (OK) interpolation was selected as the estimation method. OK allows the measured spatial continuity to be incorporated into the estimate and is appropriate for the nature of the mineralisation. Three separate geological/mineralisation domains were used to control estimation: a north-west zone and two south-east zones. Analysis of sample lengths indicated that no compositing was necessary. Variography was carried out for each domain to determine kriging interpolation parameters. Search ellipse sizes for the estimation were based on a combination of drill spacing and variogram ranges. Northwest zone primary search ellipse was 30m along strike, 5m across strike and 50m down dip with a strike of 040° and variable dip. A minimum of 4 samples and a maximum of 16 samples were required in the search pass; a minimum of two drill holes was required. A maximum of 4 samples per drill hole was used. Where blocks were not informed in the first pass, a second search was used with radii of 60m along strike, 15m across strike

Criteria	JORC Code explanation	Commentary
		and 150m down dip. A minimum of 2 samples and a maximum of 16 samples were required in this search pass. For the major south east zone the primary search ellipse had radii of 50m along strike, 10m across strike and 75m down plunge. Strike was at 280° and dip of 65° and a plunge of 45° towards 307°. (These directions are in Micromine format, geological plunge mode and have been verified by 3D visualisation). A minimum of 4 samples and a maximum of 16 samples were required in the search pass; a minimum of two drill holes was required. A maximum of 4 samples per drill hole was used. Where blocks were not informed in the first pass, a second search was used with radii of 100m along strike, 20m across strike and 150m down plunge. A minimum of 1 sample and a maximum of 16 samples were required in this search pass. For the minor south east zone the primary search ellipse had radii of 30m along strike, 10m across strike and 50m down plunge. The ellipse plunges at 40° towards 130°. A minimum of 4 samples and a maximum of 16 samples were required in the search pass; a minimum of two drill holes was required. A maximum of 4 samples per drill hole was used. Where blocks were not informed in the first pass, a second search was used with radii of 90m along strike, 20m across strike and 150m down plunge. A minimum of 1 sample and a maximum of 16 samples were required in this search pass. Fe, SIO2, Al2O3, P, LOI, Mn and S were estimated. Block size was 10m (E-W) by 10m (N-S) by 5m (Vertical) with sub-cells to 1m x 1m x12m. This corresponds to approximately one-quarter of the typical drill spacing. No previous estimates have been published.

Criteria	JORC Code explanation	Commentary
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	An Inverse Distance Squared estimate was carried out as a check. Check estimates produced confirmation of primary OK results.
	The assumptions made regarding recovery of by-products.	No by-products are present or modelled.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	Along with SiO_2, Al_2O_3, P, LOI and Mn, S has been modelled and can be used to inform acid mine drainage characterisation.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	Block size was 10m (E-W) by 10m (N-S) by 5m (Vertical) with sub-cells to 1m x 1m x1m. This corresponds to approximately one-quarter of the typical drill spacing.
	Any assumptions behind modelling of selective mining units.	Block size was chosen to align with mine planning requirements.
	Any assumptions about correlation between variables.	No assumptions were made regarding the correlation between variables. The variograms for Fe were used to inform all estimated variables.
	Description of how the geological interpretation was used to control the resource estimates.	The geological interpretation in conjunction with geochemistry was used to define the mineralisation domain. The mineralisation domain was used to constrain composite data and model blocks during the resource estimation process.
	Discussion of basis for using or not using grade cutting or capping.	Top-cuts were not applied. This decision was informed through examination of histograms and probability plots of the composite data, and by considering the spatial location of the outliers within the mineralisation domain.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	Validation of the final resource has been carried out in a number of ways, including: Drill Hole Section Comparison

Criteria	JORC Code explanation	Commentary
		Comparison by Mineralisation Zone Swathe Plot Validation Model versus Declustered Composites by Domain All modes of validation have produced acceptable results. As there has been no mining to date, no reconciliation data is available.
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.*	A 50% Cut-off grade is used, which is industry standard. While the resulting Fe grade is low, the elevated Mn and LOI mean that the important SiO2 and Al2O3 grades are better than they would otherwise be. The intention is to blend Chameleon with higher Fe from Polaris' other deposits.
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.*	Mining method is expected to be open pit. Dilution from blast movement and during digging is expected. Further work is required.
Metallurgical factors or assumptions	*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*	Further work is required. Current assumption is for a DSO product to be blended with material sourced from other deposits.

Criteria	JORC Code explanation	Commentary
	metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	
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.*	Waste storage is expected to occur on flat stable ground in the form of waste dumps. Any potential acid forming (PAF) material is expected to be correctly stored within the waste dump landform.
Bulk density	*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.*	Bulk density values for the mineralisation are assumed. There is no density information currently available as drilling is RC.
	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.	Bulk density values for the mineralisation are assumed. There is no density information currently available as drilling is RC.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	A bulk density of 2.6 t/m3 has been used for all mineralised material. The density used is considered reasonable for the rock types, mineralogy and degree of weathering.

Criteria	JORC Code explanation	Commentary
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	The Chamaeleon Mineral Resource has been classified in the Indicated and Inferred categories, in accordance with the 2012 Australasian Code for Reporting of Mineral Resources and Ore Reserves (JORC Code).
	Whether appropriate account has been taken of all relevant factors (ie 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).	A range of criteria has been considered in determining this classification including: - Geological continuity - Data quality - Drill hole spacing - Modelling technique - Estimation properties including search strategy, number of informing data and average distance of data from blocks The above parameters were used in combination to guide the manual digitising of strings to control classification.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Competent Person endorses the final results and classification.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	No external audits have been carried out. The resource estimate has been internally reviewed by Polaris staff.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of*	Relative accuracy and confidence has been assessed by review of block kriging variance and variability statistics of individual block estimates.

Criteria	JORC Code explanation	Commentary
	the factors that could affect the relative accuracy and confidence of the 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.	The resource estimate includes material in the Indicated and Inferred categories and is considered to reflect local estimation of grade.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	No production data is yet available for comparison.

MT CAUDAN DEPOSIT

JORC Code 2012 Edition – Table 1

Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	*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.*	17 diamond drill holes (DD) and 201 reverse circulation (RC) drill holes for a total of 22,033m have been used for the purposes of the resource estimate. The entire drill database compiled by Cazaly Resources Ltd (CAZ) for the Parker Range Project consists of 24 diamond drill holes (DD), 13 reverse circulation/diamond tail drill holes (RD) and 281 reverse circulation drill holes (RC) for a total of 24,754m. Data was checked against hard copy company and laboratory reports. All sampling was conducted using Cazaly Resources Ltd (CAZ) protocols including industry best practice, QAQC procedures including duplicates and standards.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	No measurement tools were used by the geology team at the drill rig.
	Aspects of the determination of mineralisation that are Material to the Public Report. *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.*	DD (PQ) core was split and 1m half core intervals submitted from ore zones for analysis. RC samples were collected in 1 metre intervals from a rig mounted cyclone with attached cone or riffle splitter. The dry samples were split into a bulk sample (green bag) and a representative 3kg split (calico). All 1 metre samples were lined up in rows of 20 beside the hole. Damp or wet samples were collected in green bags and spear/scoop sampled. RC composite samples through un-mineralized hanging wall and footwall zones were collected from each 1 metre bulk green bag using a sample spear to ensure a representative sample was combined from 4-6 metre

Criteria	JORC Code explanation	Commentary
		intervals, depending on the geologist's instructions. In ore zones 1 metre split representative samples were collected for analysis.
Drilling techniques	*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).*	PQ triple tube diamond drilling with mechanical core orientation and single shot camera or gyro tools were utilized for hole core and hole orientation at the project RC drilling utilized a face sampling percussion hammer bit 4.25" and 4.75" diameter. No 'cross over' sampling percussion style bits were used. RC drilling utilized single shot camera or gyro tools for hole orientation. No AC or RAB drilling methods were used.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	DD and RC drill recoveries are recorded/logged in the data sets. RC and DD drilling had good recovery with minimal sample loss.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	PQ triple tube diamond drilling was used to maximise core recovery. RC drill cyclones were cleaned regularly in line with good industry practices and a face sampling hammer was used.
	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.	No relationship was found between sample recovery and grade. No sample bias is seen in relation to core/sample loss and grade.
Logging	*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.*	DD core and RC drill chips were geologically logged on site or in the core yard by geologists. Logging recorded depth, colour, lithology, texture, mineralogy, mineralization, alteration, sample recovery and other features.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging is both qualitative and quantitative, depending on the field being logged. Core was photographed subsequent to logging.
	The total length and percentage of the relevant intersections logged.	All holes were logged in full and to the total length of each drill hole. 100% of each relevant intersection is logged in detail.

Criteria	JORC Code explanation	Commentary
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	DD core has been cut through the mineralised zones and half core sampled/submitted for analysis. Confirmation of ore zones was facilitated by a hand held XRF machine.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	Dry RC drill samples have been split using riffle or rotary splitters. Samples were appropriately recorded. Wet RC samples were spear sampled from the bulk residue bags.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	Appropriate sampling protocols were used during DD and RC sampling to maximize representivity.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Appropriate QAQC measures were used and documented during sampling as per industry standards.
	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.	Duplicate field sample composites were collected from RC and DD drilling at site at regular intervals as appropriate.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Sample collection, intervals and size are appropriate for the material being sampled.
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	Sample were analysed by Kalassay Laboratories and Genalysis Laboratories in Perth (Industry approved and accredited laboratories) Analysis for Fe, Al2O3, P, SiO2, LOI, Mn and S was completed using XRF. The analytical method is considered a total method, is appropriate for this mineralisation style and is of industry standard.
	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.	A hand-held XRF instrument was used only for confirmation of logged ore zones which were subsequently assayed by the XRF method.

Criteria	JORC Code explanation	Commentary
	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.	An appropriate level of field duplicate samples, laboratory inserted standards, blanks, repeats, checks and laboratory duplicate samples were included in batch reports. Results were within tolerable limits. External laboratory checks were submitted to Genalysis laboratories and results were within tolerable limits.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	All data has been checked internally by CAZ staff.
	The use of twinned holes.	CAZ have completed 4 twin holes on PKRC0001, PKRC0157, PKRC0159 and PKRC0178. In all 4 occasions the twins were drilled within 10m of the original hole and the results of the original hole matched closely the results of the later twin with no significant variation in lithology or grade evident.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Primary data in electronic form does not vary from hard copy and is stored in Datashed and Micromine software. This data is maintained by the CAZ database administrator.
	Discuss any adjustment to assay data.	No adjustment to assay data has been made.
Location of data points	*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.*	All location points were collected using handheld GPS in MGA 94 – Zone 50 coordinate system. Finalised drill hole collar surveys were completed by MHR Surveys using an RTK GPS instrument. Down hole surveys have been conducted at regular intervals using industry-standard equipment.
	Specification of the grid system used.	All location points were surveyed in MGA 94 – Zone 50 coordinate system.

Criteria	JORC Code explanation	Commentary
	Quality and adequacy of topographic control.	The topographic survey was completed by MHR and is considered of acceptable quality and adequate for the Mineral Resource.
Data spacing and distribution	*Data spacing for reporting of Exploration Results.*	A nominal drill spacing of 60 x 20m has been used over most of the deposit.
	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.	This spacing is acceptable for the style and type of mineralization defined for using in the Mineral Resource estimation processes and classifications applied.
	Whether sample compositing has been applied.	A composite length of 1m was selected after studying the raw sample lengths. All CAZ RC drilling has been sampled on 1m sample lengths within the wireframes.
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	DD and RC drilling is generally at -60 degrees towards grid east. This is appropriate for intercepting and sampling the ore zones interpreted to be dipping ~45° to the west thus minimizing lithological bias.
	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.	No sampling bias is identified in the DD/RC drill data.
Sample security	*The measures taken to ensure sample security.*	RC and DD samples were delivered by CAZ staff or reputable freight companies to the laboratories in Perth.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	Data was audited and reviewed by CAZ using DataShed and Micromine. Audits revealed no validation errors or discrepancies in data sets. RPM reviewed original laboratory assay files and compared them with the database. No errors were found. Total assay calculation was completed for all assays in the database. This highlighted the need for only two samples to be selected for follow-up analysis.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	*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.*	All drilling is located within granted tenure M77/764, M77/741 and M77/742 which are beneficially held Polaris Metals Pty Ltd.
	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.	The tenements are in good standing with no known impediments.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	Historical holders of the Project area include Geopeko Limited Exploration, CRA Exploration Pty Ltd, Eclipse Ridge Pty Ltd, Sons of Gwalia and Gondwana Resources. Most of this previous exploration work has been reviewed by CAZ and was for gold, base metals and nickel.
Geology	*Deposit type, geological setting and style of mineralisation.*	The deposit is a Goethite-Hematite-Martite enriched SIF (Sedimentary Iron Formation) and associated detrital mineralisation. The deposit sits within a metasedimentary sequence on the western side of the Parker Dome granitoid.
Drill hole Information	*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:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.*	All RC and DD holes reported in the resource estimation have been included in previous CAZ ASX announcements.

Criteria	JORC Code explanation	Commentary
	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.	There has been no exclusion of information.
Data aggregation methods	*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.*	No new exploration results are reported. Intercepts reported may vary from original reports as they are only for resource estimation purposes.
	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.	No aggregate intercepts were reported. Grades are reported as down hole length weighted average grades across the full width of the mineralized domains The drill angle generates and approximation of the true width intersection.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values are reported.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* *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').*	Mineralisation intersected in RC/DD drilling dips at approximately 450 to the west. The general drill direction is 600 to 1150 and is approximately perpendicular to the host stratigraphy and mineralization and is a suitable direction to reduce directional bias. Geometry of the mineralisation with respect to the drill hole angle is known as discussed above.
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.*	Not applicable as there are no exploration results reported as part of this statement.

Criteria	JORC Code explanation	Commentary
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.*	Exploration results have been reported in a balanced way in previous ASX announcements released by CAZ.
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.*	All meaningful and material information has been previously reported in ASX announcements by CAZ and in this Mineral Resource report.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Mineralisation is not adequately closed off along strike. Extension and infill drilling is planned upon commencement of production at the project.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Refer to Maps, Figures and Diagrams in this Mineral Resource report.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	*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.*	RPM reviewed over 2,500 records from the field sample data sheets during the PFS study. A further 1,000 sample data sheet records were checked during the DFS and compared against the assay table within the database. No errors were found.

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		Assay data for almost 1,200 samples were checked by comparing the KAL assay file against the database. As with the PFS study when 2,000 records were checked, no errors were found. RPM performed a total assay validation check for all samples within the mineralisation wireframes. Total assay validation involves summing the analyte assay multiplied by each atomic weight. The sum of these major elements should be close to 100%. A total of 15 samples did not fall between the accepted range of 98% to 102% and RPM recommended CAZ re-assay two of these samples.
	Data validation procedures used.	The database is routinely maintained by CAZ. During a site visit in 2009, drill hole locations were checked by RPM by locating selected drill holes collars with a hand-held GPS. The recorded positions were compared with the surveyed co-ordinates in the database. Results indicated that although the handheld GPS lacks precision, the holes were located correctly in relation to each other and that no data entry mix-ups had occurred when loading collar co-ordinates into the database. RPM completed systematic data validation steps after receiving the database. Checks completed by RPM included verifying that: Down-hole survey depths did not exceed the hole depth as reported in the collar table; Hole dips were within the range of 0° and -90°; Visual inspection of drill hole collars and traces in Surpac; Assay values did not extend beyond the hole depth quoted in the collar table, and Assay and survey information was checked for duplicate records. The database was well organised with no errors.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	A site visit was conducted in August 2009 by Aaron Green and Robert Williams of RPM (formerly known as Runge) to review the project and

Criteria	JORC Code explanation	Commentary
		deposit geology, drilling and site procedures. No material changes have taken place to the underlying Mineral Resource dataset since the site visit.
	If no site visits have been undertaken indicate why this is the case.	A site visit was conducted, therefore not applicable.
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	RPM updated previous wireframes constructed by RPM for the June 2010 DFS resource estimate. The resource outlines were based on both lithological and mineralisation envelopes. CAZ provided interpreted cross-sections where the four material-types had been interpreted. A broad SIF envelope was wireframed using the interpretations coupled with lithological codes as logged by CAZ. Adjacent to the SIF, CAZ interpreted both hanging wall supergene and footwall supergene domains using a combination of geological logging and Fe grade. A wireframe representing the base of the detrital material was also constructed. The material-type wireframes were used to code the "material_type" table within the Project database.
	Nature of the data used and of any assumptions made.	Geochemistry and geological logging has been used to assist identification of lithology, oxidation and mineralization boundaries.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	The geological interpretation of the deposit is relatively simple and well-defined. Areas of the Mineral Resource that could have alternative interpretations have been classified as Inferred Resources. RPM considers any alternative interpretations would only have a material impact on local estimates and not the global estimate.
	The use of geology in guiding and controlling Mineral Resource estimation.	The modelled lithological and mineralisation domains were used to determine domains for the Mineral Resource estimate.
	The factors affecting continuity both of grade and geology.	Down-dip the grade is affected by the depth of weathering/oxidation, but it is assumed the lithology is consistent. Along strike, the grade is affected

Criteria	JORC Code explanation	Commentary
		by the quality of the SIF (impurities, silica quantities, etc) and any weathering/oxidation.
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 Mt Caudan Fe deposit extends for approximately 4.5km in a NNE-SSW direction. The mineralisation extends from surface outcrops to a depth of between 30m and 175m below the surface. True width of the mineralisation varies from approximately 10m in the Rainmaker prospect up to 70m around 6,499,000mN, but is commonly in the order of 30m.
Estimation and modelling techniques	*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.*	The deposit was domained based on material type and weathering, with all domains applied as hard boundaries in the estimate. Statistical analysis was carried out on data from each of the domains. The main zones for Detrital (comp1.str), High Grade SIF (comp5101.str) and High Grade hanging wall supergene (comp5104.str) were used to prepare variogram models which were applied to all other domains as appropriate. High grade cuts were only applied to Mn. Ordinary Kriging was used to estimate average block grades in 3 passes using Surpac software. A parent block size of 30m NS by 12.5m EW by 5m vertical with sub-cells of 7.5m by 3.125m by 1.25m. The parent block size was selected on the basis of 50% of the average drill hole spacing. Validation was conducted on both the Detrital, SIF and Supergene domains globally and locally by elevation and northing. Validation plots showed good correlation between the composite grades and the block model grades.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	No check estimates were available however validation comparison with original sample data was completed (global and local validation).

Criteria	JORC Code explanation	Commentary
	The assumptions made regarding recovery of by-products.	No recovery of by-products is anticipated and no assumptions have been made.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	The estimation of deleterious elements (Al2O3, Mn, P, SiO2 and S) was completed using the same methodology as the Fe as described above.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	A parent block size of 30m NS by 12.5m EW by 5m vertical with sub-cells of 7.5m by 3.125m by 1.25m. The parent block size was selected on the basis of 50% of the average drill hole spacing. An orientated anisotropic 'ellipsoid' search was used to select data for interpolation. The ellipsoid was oriented to the average strike and dip of the mineralised zones. The first pass radius (120m) was based on the variogram range for each of the zones. For the second pass (250m) the search distance was expanded to two times the variogram range. Greater than 99% of the blocks were filled in the first two passes, with the remainder filled in the third pass (500m). Minimum samples of 10, 10 and 3 were used for the first, second and third passes, respectively. A maximum of 40 samples and 5 samples per drill hole was applied for each estimation pass. For all zones in the deposit, the material_type and resource wireframe objects were used as hard boundaries in the interpolation. That is, only grades inside each zone as outlined by the two wireframes were used to interpolate the blocks inside that zone.
	Any assumptions behind modelling of selective mining units.	No assumptions were made on selective mining units.
	Any assumptions about correlation between variables.	No assumptions were made regarding the correlation between variables. The variograms for Fe were used to inform all estimated variables.
	Description of how the geological interpretation was used to control the resource estimates.	Mineralisation wireframes were generated for the detrital domain, and the underlying Hanging wall Supergene/SIF/Footwall Supergene domain

Criteria	JORC Code explanation	Commentary
		using a 50% Fe cut-off grade. For all zones in the deposit, the material_type and resource wireframe objects were used as hard boundaries in the interpolation. That is, only grades inside each zone as outlined by the two wireframes were used to interpolate the blocks inside that zone.
	Discussion of basis for using or not using grade cutting or capping.	The low coefficient of variations in the summary statistics indicated that the use of a high grade cut was not necessary for most elements in the Mt Caudan deposit. A high grade cut was, however, necessary for Mn for which a global high grade cut of 20% was applied.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	A three-step process was used to validate the estimate of the Mt Caudan Project. Firstly, a local qualitative assessment was completed by slicing sections through the block model in positions coincident with drilling. Overall the assessment indicated that the trend of the modelled grade was consistent with the drill holes grades. A quantitative assessment of the global estimate was completed by comparing the average grades of the sample file input with the block model output for all domains. The results indicate a good overall outcome with the OK estimate close to the composite grades and smoothing of the grade associated with the OK algorithm. To check that the interpolation of the block model correctly honoured the drilling data, a local validation was carried out by comparing the interpolated blocks to the sample composite data. The validation plots show good correlation between the composite grades and the block model grades for the comparison by elevation and northing. The trends shown by the raw data are honoured by the block model.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	Tonnages and grades were estimated on a dry in situ basis. No moisture values were reviewed.

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Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	Overall the mineralisation displays good continuity above 50% Fe. RPM has reported the Mineral Resource at a 50% Fe cut-off which accounts for blending of various grade materials. RPM has selected a cut-off grade of 50.0% Fe which is lower than the Ore Reserves cut-off and would still result in an average grade of 55% to 56% Fe, higer than the planned feed grade.
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.*	RPM has assumed that the deposit would be mined using open pit techniques as per the options examined in the DFS.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	No assumptions have been made regarding metallurgy beyond what is outlined in the DFS document based on metallurgical test work to date.
Environmen-tal 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*	No assumptions have been made regarding waste and process residue disposal options beyond what is outlined as the preferred option in the latest DFS document.

Criteria	JORC Code explanation	Commentary
	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.	
Bulk density	*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.*	The in situ bulk density was assigned to various domains based on results obtained from representative drill core using the Water Immersion method
	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.	Bulk density has been measured at a laboratory using a wax-coated immersion method according to international best practice. Moisture is accounted for in the measuring process and measurements were made for four different material types.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	RPM assumes the logging of the oxidation was correct for each measurement as the applied averages rely on this assumption.
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	Mineral Resources were classified in accordance with the Australasian Code for the Reporting of Identified Mineral Resources and Ore Reserves (JORC, 2004). The classification of the Mineral Resource was completed by Rob Williams of RPM and reviewed by David Allmark of RPM. The classification of Measured, Indicated and Inferred was made on the basis of continuity of structure, drill spacing and surface mapping.
	Whether appropriate account has been taken of all relevant factors (ie 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).	The Measured portion of the resource was defined where the drill spacing was closed in to approximately 60m by 20m and continuity in both grade and geological structure was demonstrated. The Indicated portion of the resource was defined where the drill spacing was less than 200m by 40m and lode continuity was good. The Inferred Resource included areas of the resource where sampling was greater than

Criteria	JORC Code explanation	Commentary
		200m by 40m or was represented by isolated, discontinuous zones of mineralisation.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	The Mineral Resource estimate appropriately reflects the view of the Competent Person.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	Internal audits have been completed by RPM which verified the technical inputs, methodology, parameters and results of the estimate.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The mineralisation geometry and continuity has been adequately interpreted to reflect the applied level of Measured, Indicated and Inferred Mineral Resource. The data quality is good and the drill holes have detailed logs produced by qualified geologists. A recognised laboratory has been used for all analyses.
	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.	The Mineral Resource statement relates to global estimates of tonnes and grade. To satisfy the criteria of reasonable prospects for eventual economic extraction, the Mineral Resources have been reported within an optimised pit shell defined by the key input parameters of an overall metal price of AUD75.54/t, recovery between 96% and 100%, a processing and handling cost of AUD40.50/ dry tonne of product and variable mining costs.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	Reconciliation could not be conducted as the project is not in production.