Changes to Pilbara Ore Reserves and Mineral Resources

2 March 2018

Rio Tinto's 2017 annual report, released to the market today, includes significant changes in estimates of Ore Reserves and Mineral Resources for four Pilbara iron ore deposits in Western Australia, compared to the previous estimates in the 2016 annual report.

The updated Ore Reserves and Mineral Resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 (JORC Code) and the ASX Listing Rules. Supporting information relating to the changes is set out in this release and its appendices. Ore Reserves and Mineral Resources are quoted on a 100 per cent basis. Rio Tinto's interests are listed on pages 6, 10, 14 and 17.

Rio Tinto's Ore Reserves and Mineral Resources are set out in full in its 2017 annual report. Ore Reserves are reported as dry product tonnage, Mineral Resources are reported as dry in-situ tonnages in addition to Ore Reserves.

During 2017, estimated iron Ore Reserves increased by 165 Mt after depletion from mining. The increases have been delivered as part of the ongoing resource development drilling programs, with associated technical, social and economic studies, designed to maintain Ore Reserves coverage ahead of mining depletion rates. During the same period, estimated Mineral Resources increased by 508 Mt.

This release and its appendices set out the following significant changes in Ore Reserves and Mineral Resources:

	Ore Reserves	**Mineral Resources**
Brockman South Marra Mamba	First reporting of Ore Reserves for Brockman South Marra Mamba Deposits O, Q, & R has added 55 Mt to Brockman 4.	
Robe Valley	First reporting of Ore Reserves for Mesa B, C, & H has added 253 Mt to the Robe River JV Robe Valley Pisolite ore.	
West Angelas	First reporting of Ore Reserves for West Angelas Deposit C and Deposit D has added 100 Mt of Robe River JV West Angelas Marra Mamba ore.	
Howard's Well		First reporting of Mineral Resources for Howard's Well has added to the Robe River JV: • 332 Mt of Brockman ore; • 286 Mt of Brockman Process ore; and • 13 Mt of Detrital ore.

The locations of the deposits involved are shown in Figure 1. Changes in Ore Reserves between 2016 and 2017 are shown in Table A. Changes in Mineral Resources between 2016 and 2017 are shown in Table B.

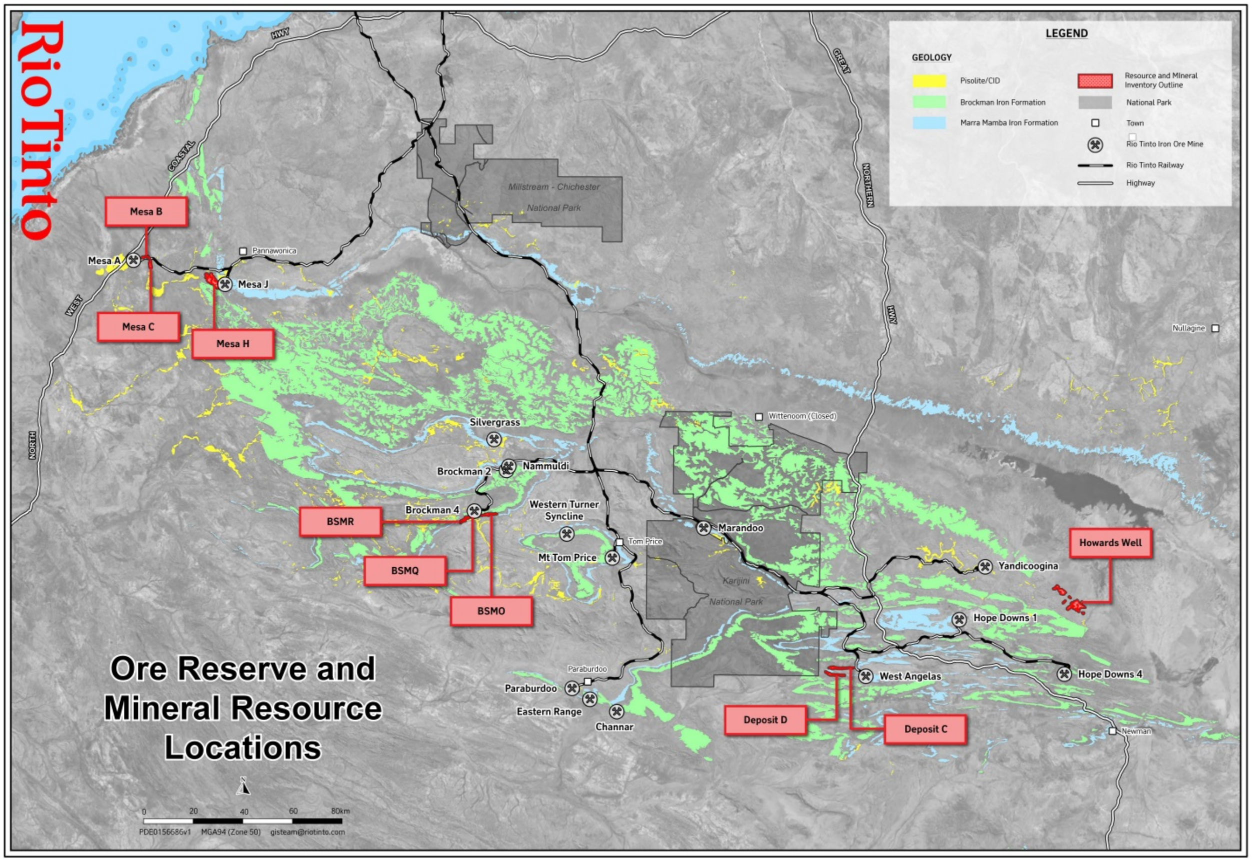

Figure 1 Deposit Location Map

Table A Aggregate changes to Ore Reserve estimates between 31 Dec 2016 and 31 Dec 2017

	Dry Product (Mt)
2016 Ore Reserves	**3,515**
Brockman South Marra Mamba increases	55
Robe Valley Mesa B, C, and H increases	253
West Angelas Deposit C and Deposit D increases	100
Net amount of other changes (including depletions of 317 Mt due to production and minor increases)	-243
2017 Ore Reserves	**3,680**

Table B Aggregate changes to Mineral Resource estimates between 31 Dec 2016 and 31 Dec 2017

	Tonnage (Mt)
2016 Mineral Resources	**22,030**
Howard's Well increases	631
Net amount of other changes (including conversion to Ore Reserves)	-123
2017 Mineral Resources	**22,538**

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Summary of information to support the Ore Reserve and Mineral Resource estimates

Brockman South Marra Mamba

First time reporting of Ore Reserves for the Brockman South Marra Mamba Deposit O, Q, & R at Brockman 4 are supported by the information set out in Appendix 1 to this release and located at www.riotinto.com/JORC in accordance with the Table 1 checklist in the JORC Code. The following summary information is provided in accordance with rules 5.8 and 5.9 of the ASX Listing Rules.

The information under the headings below only pertains to Brockman South Marra Mamba Deposit O, Q, & R as these are the deposits for which there was significant change in 2017.

Geology, drilling techniques, and geological interpretation

The Brockman South Marra Mamba deposits are located within the Hamersley Basin of Western Australia, the host to some of the most significant iron ore deposits in the world. Mineralisation is primarily hosted by the Marra Mamba Iron Formation although detrital mineralisation is also present.

Drilling at the deposits was carried out using reverse circulation and diamond drilling rigs. In total, 753 holes were drilled at Deposit O, 1,098 holes were drilled at Deposit Q and 523 holes were drilled at Deposit R. Geophysical logging was completed for the majority of the drill holes employing a suite of down-hole tools to obtain calliper, natural gamma, and other data to assist in the interpretation of the stratigraphy.

Geological interpretation was performed by Rio Tinto Iron Ore geologists. The method involved interpretation of stratigraphy and mineralisation using surface geological mapping, lithological logging data, down-hole natural gamma data, and assay data.

Sampling, sub-sampling method and sample analysis method

For the reverse circulation drilling, sub-sampling at the drill rig was carried out using static or rotary splitters. An 'A' and 'B' sub-sample each representing 8% of the mass was collected at 2 m intervals from the rotary cone splitter. For diamond drilling, 1 m samples were passed through a jaw crusher with a top size of 2 cm. A rotary splitter is then used to create an 'A' sub-sample with 40% of the sample by mass.

The sub-sample was then sent to independent and certified laboratories for analysis. At the laboratory, the sample was oven dried at 105 degrees Celsius for a minimum of 24 hours. The sample was then crushed to less than 3 mm using a jaw crusher and split to produce a sub-sample. The sub-sample was pulverised to 95 per cent of weight passing 150 µm. Fe, SiO_2, Al_2O_3, P, Mn, MgO, TiO_2, CaO and S were assayed using industry standard X-Ray Fluorescence (XRF) analysis. Loss on Ignition (LOI) was determined using industry standard Thermo-Gravimetric Analyser.

Estimation methodology

Modelling was completed using the Rio Tinto Iron Ore Pilbara geological modelling and estimation standards. Ordinary kriging and inverse distance weighting to the first power methods were used to estimate grades through the deposits.

Criteria used for classification

The Mineral Resource for Brockman South Marra Mamba Deposit O, Q and R has been classified into the categories of Measured, Indicated and Inferred. The determination of the applicable category has considered the relevant factors (geological complexity, mineralisation continuity, sample spacing, data quality, and others as appropriate).

The Ore Reserve is the economically mineable part of a Mineral Resource. Ore Reserves include modifying factors such as, for example, mining and processing recoveries. For this deposit economically mineable Measured Mineral Resources convert to Proved Ore Reserves and the economically mineable Indicated Mineral Resources convert to Probable Ore Reserves.

Economic assumptions

Rio Tinto applies a common process to the generation of commodity prices across the group. This involves generation of long-term price curves based on current sales contracts, industry capacity analysis, global commodity consumption and economic growth trends. In this process, a price curve rather than a single price point is used to develop estimates of mine returns over the life of the project. The detail of this process and of the price point curves is commercially sensitive and is not disclosed.

Mining and recovery factors

A suitable Selective Mining Unit (SMU) size was determined through technical work and analysis. The Mineral Resource was regularised, a process by which the model was re-blocked to the SMU size. This process models expected dilution/recovery factors in the mining process.

Metallurgical models were applied to the regularised model in order to model product tonnage, grades and yields.

Pit optimisation utilising the Lerchs-Grosmann algorithm was undertaken applying applicable cost, revenue and geotechnical inputs. The resultant pit shells were used to develop detailed pit designs with due consideration of geotechnical, geometric and access constraints.

These pit designs were used as the basis for production scheduling and economic evaluation. Conventional mining methods (truck and shovel) similar to other Rio Tinto Iron Ore mines were selected.

The geotechnical parameters have been applied based on geotechnical studies informed by assessments of diamond drill holes, specifically drilled for geotechnical purposes in the surrounding host rock.

Cut-off grades

- The Ore Reserves are reported using variable cut-off grade (VCoG) in line with a number of other Pilbara deposits. Application of VCoG allows the varying of the head grade across the life of the deposit, to achieve desired product grades. At Brockman South Marra Mamba Deposit O, Q and R this approximates to a cut-off of 58% Fe over the mine life.
- The cut-off grade for Marra Mamba Mineral Resources is greater than or equal to 58% Fe.

Processing

Brockman South Marra Mamba ore is planned to be processed through the existing Brockman 4 dry crushing and screening plant simultaneously with Brockman 4 Brockman ores.

Modifying factors

The Brockman 4 operation is well established with central administration and workshop facilities. The workforce currently operates on a Fly in Fly out (FIFO) model using the existing Rio Tinto owned Boolgeeda airport. Additional communications infrastructure will be required to provide adequate communications to the Brockman 4 Marra Mamba mine area. Water will be sourced from existing bores to

support construction works. Existing Rio Tinto port and railway networks will have sufficient capacity to accommodate the ore supply scheduled from the deposits.
The deposits are located within Mineral Lease 4SA Section 123, 124, 125, 162, 163, 164, 244 and 246.

The projects are located in the Hamersley Range, which has a rich history of Aboriginal occupation. Ethnographic and archaeological surveys of the project footprint have been completed with Traditional Owner representatives, and all known sites have been located, recorded and considered during mine planning and engineering activities. State environmental considerations have also been taken into account.

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2017 Annual Report Ore Reserves table, showing line items relating to Brockman South Marra Mamba

Note that depletions from a new model (with a different dilution applied), cut-off grade changes, and mining account for an overall depletion at Brockman 4.

		Proved Ore Reserves at end 2017		Probable Ore Reserves at end 2017		Total Ore Reserves 2017 compared with 2016					
	Type of mine (a)	Tonnage	Grade	Tonnage	Grade	Tonnage		Grade		Interest %	Recoverable metal
						2017	2016	**2017**	2016		
IRON ORE (b)(c)		millions of tonnes	%Fe	millions of tonnes	%Fe	**millions of tonnes**	millions of tonnes	**%Fe**	%Fe		**Marketable product millions of tonnes**
Reserves at Operating Mines											
Hamersley Iron (Australia)											
- Brockman 4 (Brockman and Marra Mamba ore) (d)	O/P	295	62.3	115	61.1	**410**	446	**62.0**	61.9	100.0	**410**

(a) Type of mine: O/P = open pit, O/C = open cut, U/G = underground, D/O = dredging operation.
(b) Australian iron ore Reserves tonnes are reported on a dry weight basis. As Rio Tinto only markets blended iron ore products from multiple mine sources, a detailed breakdown of constituent elements by individual deposit is not reported.
(c) Reserves of iron ore are shown as recoverable Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
(d) Brockman 4 (Brockman and Marra Mamba ore) was previously reported as Brockman 4 (Brockman ore). Brockman South Marra Mamba Reserves are reported here for the first time and a JORC Table 1 in support of these changes will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/JORC. The decrease in Brockman 4 (Brockman and Marra Mamba ore) Reserve tonnes is due to cut-off grade changes and mining depletion.

Robe Valley Mesa B, C, & H

Increases in the Ore Reserve for Robe Valley (Pisolite Ore) in 2017 are supported by the information set out in Appendix 2 to this release and located at www.riotinto.com/JORC in accordance with the Table 1 checklist in the JORC Code. The following summary information is provided in accordance with rules 5.8 and 5.9 of the ASX Listing Rules.

The information under the headings below only pertains to Robe Valley Mesa B, C, & H deposits as these are the deposits for which there was significant change in 2017.

Geology, drilling techniques, and geological interpretation

The Robe Valley Mesa B, C, & H deposits are located within the Hamersley Basin of Western Australia, the host to some of the most significant iron ore deposits in the world. Mineralisation occurs as pisolitic ores forming a channel iron deposit (CID).

Drilling at the deposits was carried out using reverse circulation and diamond drilling rigs. In total, 485 holes were drilled at Mesa B, 651 holes were drilled at Mesa C and 3,420 holes were drilled at Mesa H. Geophysical logging was completed for the majority of the drill holes post-2000 employing a suite of down-hole tools to obtain calliper, natural gamma, and other data to assist in the interpretation of the stratigraphy.

Geological interpretation was performed by Rio Tinto Iron Ore geologists. The method involved interpretation of stratigraphy and mineralisation using surface geological mapping, lithological logging data, down-hole natural gamma data, and assay data.

Sampling, sub-sampling method and sample analysis method

For the reverse circulation drilling, sub-sampling at the drill rig was carried out using a three stage riffle splitter or a rotary splitter. An ‘A’ and ‘B’ sub-sample each representing 8% of the mass was collected at 2 m intervals from the rotary cone splitter. For diamond drilling, 1 m samples were passed through a jaw crusher with a top size of 2 cm. A rotary splitter was then used to create an ‘A’ sub-sample with 40% of the sample by mass.

The sub-sample was then sent to independent and certified laboratories for analysis. At the laboratory, the sample was oven dried at 105 degrees Celsius for a minimum of 24 hours. The sample was then crushed to less than 3 mm using a jaw crusher and split to produce a sub-sample. The sub-sample was pulverised to 95 per cent of weight passing 150 µm. Fe/Fe_Calc, SiO_2, Al_2O_3, P, Mn, MgO, TiO_2, CaO and S were assayed using industry standard X-Ray Fluorescence (XRF) analysis. Loss on Ignition (LOI) was determined using an industry standard Thermo-Gravimetric Analyser.

Estimation methodology

Modelling was completed using the Rio Tinto Iron Ore Pilbara geological modelling and estimation standards. Ordinary kriging and inverse distance weighting to the first power methods were used to estimate grades through the deposits.

Criteria used for classification

The Mineral Resource for Robe Valley Mesa B, C, & H deposits has been classified into the categories of Measured, Indicated and Inferred. The determination of the applicable category has considered the relevant factors (geological complexity, mineralisation continuity, sample spacing, data quality, and others as appropriate).

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The Ore Reserve is the economically mineable part of a Mineral Resource. Ore Reserves include modifying factors such as, for example, mining and processing recoveries. For this deposit economically mineable Measured Mineral Resources convert to a combination of Proved and Probable Ore Reserves dependent on processing assumptions and the economically mineable Indicated Mineral Resources convert to Probable Ore Reserves.

Economic assumptions

Rio Tinto applies a common process to the generation of commodity prices across the group. This involves generation of long-term price curves based on current sales contracts, industry capacity analysis, global commodity consumption and economic growth trends. In this process, a price curve rather than a single price point is used to develop estimates of mine returns over the life of the project. The detail of this process and of the price point curves is commercially sensitive and is not disclosed.

Mining and recovery factors

A suitable Selective Mining Unit (SMU) size was determined through technical work and analysis. The Mineral Resource was regularised, a process by which the model was re-blocked to the SMU size. This process models expected dilution/recovery factors in the mining process.

Metallurgical models were applied to the regularised model in order to model product tonnage, grades and yields.

Pit optimisation utilising the Lerchs-Grosmann algorithm was undertaken applying applicable cost, revenue and geotechnical inputs. The resultant pit shells were used to develop detailed pit designs with due consideration of geotechnical, geometric and access constraints.

These pit designs were used as the basis for production scheduling and economic evaluation. Conventional mining methods (truck and shovel) similar to other Rio Tinto Iron Ore mines were selected.

The geotechnical parameters have been applied based on geotechnical studies informed by assessments of diamond drill holes, specifically drilled for geotechnical purposes in the surrounding host rock.

Cut-off grades

- The cut-off grade for CID Mineral Resources is determined based on geological units;
- The Ore Reserves are reported using the following cut-off grades:

Deposit	*Cut-off grade*
Mesa B and C	Fe > 50% $Al_2O_3 \leq 6\%$ $SiO_2 \leq 8\%$
Mesa H	Fe > 52% $Al_2O_3 \leq 4.5\%$ $SiO_2 \leq 8\%$

Processing

A planned new wet processing facility at the existing Mesa A mine site will process the ore from Mesa B and C. Existing wet and dry processing facilities will process the Mesa H ore with upgrades planned to reduce the cut-point to -0.5 mm.
The ore from Mesa B, C, & H will be blended with other Robe Valley mine sites to produce a saleable product.

Modifying factors

The Robe Valley operations have significant infrastructure in place including rail and road access, and camp facilities, central workshops and administrations buildings.

The Mesa B and C deposits are located within Mineral Lease 248SA Section 101, and Exploration License E08/01148. The Mesa H deposit lies within Mineral Lease 248SA Section 103 Pt and Section 104.

The projects are located in the Hamersley Range, which has a rich history of Aboriginal occupation. Ethnographic and archaeological surveys of the project footprint have been completed with Traditional Owner representatives, and all known sites have been located, recorded and considered during mine planning and engineering activities. State and Commonwealth environmental considerations have also been taken into account.

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2017 Annual Report Ore Reserves table, showing line items relating to Robe Valley Mesa B, C, & H

		Proved Ore Reserves at end 2017		Probable Ore Reserves at end 2017		Total Ore Reserves 2017 compared with 2016					
	Type of mine (a)	Tonnage	Grade	Tonnage	Grade	Tonnage		Grade		Interest %	
						2017	2016	**2017**	2016		
IRON ORE (b)(c)		millions of tonnes	%Fe	millions of tonnes	%Fe	**millions of tonnes**	millions of tonnes	**%Fe**	%Fe		**Marketable product millions of tonnes**
Reserves at Operating Mines											
Robe River JV (Australia)											
- Robe Valley (Pisolite ore) (d)	O/P	206	56.8	206	56.1	**412**	190	**56.5**	56.5	53.0	**218**

(a) Type of mine: O/P = open pit, O/C = open cut, U/G = underground, D/O = dredging operation.
(b) Australian iron ore Reserves tonnes are reported on a dry weight basis. As Rio Tinto only markets blended iron ore products from multiple mine sources, a detailed breakdown of constituent elements by individual deposit is not reported.
(c) Reserves of iron ore are shown as recoverable Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
(d) Robe Valley (Pisolite ore) Reserve tonnes increased due to the addition of Mesa B, Mesa C and Mesa H deposits. A JORC Table 1 in support of these changes will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/JORC.

West Angelas Deposit C and Deposit D

Increases for the Robe River JV – West Angelas Ore Reserves are supported by the information set out in Appendix 3 to this release and located at www.riotinto.com/JORC in accordance with the Table 1 checklist in the JORC Code. The following summary information is provided in accordance with rules 5.8 and 5.9 of the ASX Listing Rules.

The information under the headings below only pertains to West Angelas Deposit C and Deposit D as these are the deposits for which there was significant change in 2017.

Geology, drilling techniques, and geological interpretation

West Angelas Deposit C and Deposit D are located within the Hamersley Basin of Western Australia, the host to some of the most significant iron ore deposits in the world. Mineralisation is primarily hosted by the Marra Mamba Iron Formation although detrital mineralisation is also present.

Drilling at the deposits was carried out using reverse circulation and diamond drilling rigs. In total, 948 holes were drilled at Deposit C and 1,063 holes were drilled at Deposit D. Geophysical logging was completed for the majority of the drill holes employing a suite of down-hole tools to obtain calliper, natural gamma, and other data to assist in the interpretation of the stratigraphy.

Geological interpretation was performed by Rio Tinto Iron Ore geologists. The method involved interpretation of stratigraphy and mineralisation using surface geological mapping, lithological logging data, down-hole natural gamma data, and assay data.

Sampling, sub-sampling method and sample analysis method

For the reverse circulation drilling, sub-sampling at the drill rig was carried out using static or rotary splitters. An ‘A’ and ‘B’ sub-sample each representing 8% of the mass was collected at 2 m intervals from the rotary cone splitter. For diamond drilling, 1 m samples were passed through a jaw crusher with a top size of 2 cm. A rotary splitter was then used to create an ‘A’ sub-sample with 40% of the sample by mass.

The sub-sample was then sent to independent and certified laboratories for analysis. At the laboratory, the sample was oven dried at 105 degrees Celsius for a minimum of 24 hours. The sample was then crushed to less than 3 mm using a jaw crusher and split to produce a sub-sample. The sub-sample was pulverised to 95 per cent of weight passing 150 µm. Fe, SiO_2, Al_2O_3, P, Mn, MgO, TiO_2, CaO and S were assayed using industry standard X-Ray Fluorescence (XRF) analysis. Loss on Ignition (LOI) was determined using an industry standard Thermo-Gravimetric Analyser.

Estimation methodology

Modelling was completed using the Rio Tinto Iron Ore Pilbara geological modelling and estimation standards. Ordinary kriging and inverse distance weighting to the first power methods were used to estimate grades through the deposits.

Criteria used for classification

The Mineral Resource for West Angelas Deposit C and Deposit D have been classified into the categories of Measured, Indicated and Inferred. The determination of the applicable category has considered the relevant factors (geological complexity, mineralisation continuity, sample spacing, data quality, and others as appropriate).

The Ore Reserve is the economically mineable part of a Mineral Resource. Ore Reserves include modifying factors such as, for example, mining and processing recoveries. For this deposit economically mineable Measured Mineral Resources convert to Proved Ore Reserves and the economically mineable Indicated Mineral Resources convert to Probable Ore Reserves.

Economic assumptions

Rio Tinto applies a common process to the generation of commodity prices across the group. This involves generation of long-term price curves based on current sales contracts, industry capacity analysis, global commodity consumption and economic growth trends. In this process, a price curve rather than a single price point is used to develop estimates of mine returns over the life of the project. The detail of this process and of the price point curves is commercially sensitive and is not disclosed.

Mining and recovery factors

A suitable Selective Mining Unit (SMU) size was determined through technical work and analysis. The Mineral Resource was regularised, a process by which the model was re-blocked to the SMU size. This process models expected dilution/recovery factors in the mining process.

Metallurgical models were applied to the regularised model in order to model product tonnage, grades and yields.

Pit optimisation utilising the Lerchs-Grosmann algorithm was undertaken applying applicable cost, revenue and geotechnical inputs. The resultant pit shells were used to develop detailed pit designs with due consideration of geotechnical, geometric and access constraints.

These pit designs were used as the basis for production scheduling and economic evaluation. Conventional mining methods (truck and shovel) similar to other Rio Tinto Iron Ore mines were selected.

The geotechnical parameters have been applied based on geotechnical studies informed by assessments of diamond drill holes, specifically drilled for geotechnical purposes in the surrounding host rock.

Cut-off grades

- The cut-off grade for Marra Mamba Mineral Resources is greater than or equal to 58% Fe;
- The cut-off grade for Ore Reserves is greater than or equal to 58% Fe and Al_2O_3 less than 3.5%.

Processing

The ore from West Angelas Deposit C and Deposit D will be processed through the West Angelas dry crush and screen plant.

Modifying factors

The West Angelas operation is well established with processing, central administration and workshop facilities. The workforce currently operates on a Fly in Fly out (FIFO) model using the West Angelas airport. Existing Rio

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Tinto port and railway networks will have sufficient capacity to accommodate the ore supply scheduled from the deposits.

The deposits are located within Mineral Lease 248SA Section 77, 78, 79, 80 and 82.

The projects are located in the Hamersley Range, which has a rich history of Aboriginal occupation. Ethnographic and archaeological surveys of the project footprint have been completed with Traditional Owner representatives, and all known sites have been located, recorded and considered during mine planning and engineering activities. State and Commonwealth environmental considerations have also been taken into account.

2017 Annual Report Ore Reserves table, showing line items relating to West Angelas Deposit C and Deposit D

	Type of mine (a)	Proved Ore Reserves at end 2017		Probable Ore Reserves at end 2017		Total Ore Reserves 2017 compared with 2016				Interest %	
		Tonnage	Grade	Tonnage	Grade	Tonnage		Grade			
						2017	2016	**2017**	2016		
IRON ORE (b)(c)		millions of tonnes	%Fe	millions of tonnes	%Fe	**millions of tonnes**	millions of tonnes	**%Fe**	%Fe		**Marketable product millions of tonnes**
Reserves at Operating Mines											
Robe River JV (Australia)											
- West Angelas (Marra Mamba ore) (d)	O/P	181	62.1	81	61.1	**262**	182	**61.8**	61.6	53.0	**139**

(a) Type of mine: O/P = open pit, O/C = open cut, U/G = underground, D/O = dredging operation.
(b) Australian iron ore Reserves tonnes are reported on a dry weight basis. As Rio Tinto only markets blended iron ore products from multiple mine sources, a detailed breakdown of constituent elements by individual deposit is not reported.
(c) Reserves of iron ore are shown as recoverable Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
(d) West Angelas (Marra Mamba ore) Reserve tonnes increased following geological model updates and the addition of West Angelas Deposit C and Deposit D. A JORC Table 1 in support of these changes will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/JORC.

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Howard's Well

Initial Mineral Resource estimates for the Howard's Well deposit are supported by the information set out in Appendix 4 to this release and located at www.riotinto.com/JORC in accordance with the Table 1 checklist in the JORC Code. The following summary information is provided in accordance with rule 5.8 of the ASX Listing Rules.

Geology, drilling techniques, and geological interpretation

The Howard's Well deposit is located within the Hamersley Basin of Western Australia, the host to some of the most significant iron ore deposits in the world. Howard's Well mineralisation is primarily hosted by the Brockman Iron Formation although detrital and channel iron mineralisation is also present.

Reverse circulation (RC) drilling was carried out between 2013 and 2016 and a total of 130 holes were completed for 14,235 m. Geophysical logging was completed for most drill holes employing a suite of down hole tools to obtain calliper, natural gamma and other data to assist in the interpretation of the stratigraphy.

Geological modelling was performed by Rio Tinto Iron Ore geologists. The method involved interpretation of stratigraphy and mineralisation using surface geological mapping, lithological logging data, down-hole gamma data, and assay data.

Sampling, sub-sampling method and sample analysis method

Reverse circulation holes have been sub-sampled using rotary splitters. An 'A' and 'B' sub-sample each representing 8% of the mass was collected at 2 m intervals from the rotary cone splitter. Samples were then sent for analysis by independent assay laboratories. At the laboratory the sample was dried at 105 degrees Celsius for a minimum of 24 hours. The sample was then crushed to less than 3 mm using a jaw crusher and riffle split to produce a 1 – 2.5 kg sub-sample. The sub-sample was pulverised to 95% of weight passing 150 µm. Fe, SiO_2, Al_2O_3, P, Mn, MgO, TiO_2, CaO and S were assayed using industry standard X-Ray Fluorescence (XRF) analysis. Loss on Ignition (LOI) was determined using an industry standard Thermo-Gravimetric Analyser (TGA).

Estimation Methodology

Modelling was completed using the Rio Tinto Iron Ore Pilbara geological modelling and estimation standards. Ordinary kriging and inverse distance weighting to the first power methods were used to estimate grades through the deposits.

Criteria used for classification

The Mineral Resource has been classified into the category of Inferred. The determination of the applicable category has considered the relevant factors (geology complexity, mineralisation continuity, sample spacing, data quality, and others as appropriate). At this deposit the data spacing is typically 700 m x 200 m with infill at 700 m x 100 m in some areas and approximately 600 m x 200 m in the north-west part of the deposit.

Note that the same spacing may result in different classification depending on other factors such as, but not limited to, geological complexity and mineralisation continuity.

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Cut-off grades

At Howard's Well:

- The cut-off for Brockman Mineral Resources is greater than or equal to 60% Fe;
- The cut-off for Brockman Process Ore Mineral Resources is material 50% ≤ Fe < 60% and ≥ 3% Al_2O_3 < 6% (geology domain must be Dales Gorge, Joffre or Footwall Zone).

Mining and Metallurgical Methods and Parameters

Development of this Mineral Resource assumes mining using standard Rio Tinto Iron Ore equipment and methods similar to other Rio Tinto Iron Ore operations. The assumed mining method is conventional truck and shovel, open pit mining at an appropriate bench height. Mining practices will include grade control utilising blast hole data.

It is assumed that standard crushing and screening processes used by Rio Tinto Iron Ore will be applicable for the processing of Howard's Well.

It is planned to blend ore from Howard's Well with ore from other Rio Tinto Iron Ore mine sites to make a saleable ore product. Howard's Well ore will not be marketed directly. This plan is in line with current Rio Tinto Iron Ore practices where ore from multiple mines is combined to produce the Pilbara Blend product.

No other significant modifying factors have yet been identified.

The Howard's Well deposit lies on Exploration Licence E47/02141.

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2017 Annual Report Mineral Resources table, showing line items relating to Howard's Well changes

	Likely Mining Method (a)	Measured resources at end 2017		Indicated resources at end 2017		Inferred resources at end 2017		Total resources 2017 compared with 2016				
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage		Grade		Rio Tinto Interest %
								2017	2016	**2017**	2016	
IRON ORE (b)		millions of tonnes	%Fe	millions of tonnes	%Fe	millions of tonnes	%Fe	**millions of tonnes**	millions of tonnes	**%Fe**	%Fe	
Robe JV (Australia)												
- Brockman (c)	O/P					489	61.3	**489**	107	**61.3**	62.6	53.0
- Brockman Process Ore (d)	O/P					359	56.7	**359**	71	**56.7**	56.5	53.0
- Detrital	O/P			23	59.5	72	61.0	**95**	99	**60.7**	60.6	53.0

(a) Likely mining method: O/P = open pit; O/C = open cut; U/G = underground; D/O = dredging operation.
(b) Iron ore Resources tonnes are reported on a dry weight basis. As Rio Tinto only markets blended iron ore products from multiple mine sources, a detailed breakdown of constituent elements by individual deposit is not reported.
(c) Robe JV (Brockman) Resource tonnes have increased as a result of the inclusion of the Howard's Well deposit. A JORC Table 1 in support of these changes will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/JORC.
(d) Robe JV (Brockman Process Ore) Resource tonnes have increased as a result of the inclusion of the Howard's Well deposit. A JORC Table 1 in support of these changes will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/JORC.

Competent Persons' Statement

The material in this report that relates to Mineral Resources is based on information prepared by Mr Bruce Sommerville, a Competent Person who is a Fellow of The Australasian Institute of Mining and Metallurgy.

The material in this report that relates to Ore Reserves is based on information prepared by Mr Rishi Verma, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy.

Mr Sommerville and Mr Verma are both full-time employees of Rio Tinto.

Mr Sommerville and Mr Verma have sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Each of Mr Sommerville and Mr Verma consents to the inclusion in the report of the material based on information prepared by him in the form and context in which it appears.

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Brockman South Marra Mamba – Deposit O, Q & R: JORC Table 1

The following table provides a summary of important assessment and reporting criteria used at the Brockman south Marra Mamba deposits for the reporting of Mineral Resources and Ore Reserves in accordance with the Table 1 checklist in *The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition)*. Criteria in each section apply to all preceding and succeeding sections.

SECTION 1 SAMPLING TECHNIQUES AND DATA

Criteria	Commentary
Sampling techniques	• Samples for geological logging, assay, geotechnical, metallurgical and density test work were collected via drilling. • Geological logging and assay samples were collected at 2 m intervals from reverse circulation drilling. • Diamond core drilling used double and triple-tube techniques and samples were taken at 1 m intervals. • Geotechnical samples were collected from diamond core drilling of HQ-3 core. • Density samples were collected from diamond core drilling of HQ-3 and PQ-3 core. • Metallurgical samples were collected from diamond core drilling of PQ-3 core. • Dry bulk density was derived from accepted gamma-density data collected at 10 cm intervals from down-hole geophysical sondes. • Mineralisation boundaries were interpreted from a combination of geological logging and geochemical assay results. • 2004 – 2016 drilling programmes were conducted on a 351° azimuth grid at 50 m × 50 m collar spacing utilising reverse circulation and diamond drilling. All intervals were sampled. • Reverse circulation drilling utilised a static or rotary cone splitter beneath a cyclone return system to obtain a primary and secondary sample, with particular attention on samples collected being of comparable weights. An 'A' and 'B' sub-sample each representing 8% of the mass was collected at 2 m intervals from the rotary cone splitter.
Drilling techniques	• Drilling was predominantly reverse circulation with a lesser portion of diamond core and percussion techniques. • The majority of drilling was oriented vertically. • Reverse circulation drilling utilised a 140 mm diameter face sampling bit with sample shroud, attached to a pneumatic piston hammer used to penetrate the ground and deliver sample up 6 m drill rod inner tubes (4 m starter rod) through to the cyclone static and rotary cone splitter with the aid of rig and auxiliary booster compressed air. • Wet drilling was implemented for all drillholes to mitigate the risks associated with fibrous mineral intersections. • Geotechnical diamond drill core was oriented using the ACE orientation tool, which marks the bottom of core at the end of each run. • Acoustic and optical televiewer images were used in specific reverse circulation and diamond drill core holes throughout the deposit to acquire additional structural orientation data. • Diamond drilling was a combination of HQ and PQ core sizes using double and triple tube techniques. • Refer to Section 2, Drill hole Information, for a detailed breakdown of drilling by method and year for each deposit.
Drill sample recovery	• No direct recovery measurements of reverse circulation samples were performed; however a qualitative estimate of sample loss at the rig was made. Sample weights were recorded at the laboratory upon receipt. • Diamond core recovery was maximised via the use of triple-tube sampling and additive drilling muds. • Diamond core recovery was recorded using rock quality designation (RQD) measurements with all cavities and core loss recorded in the Rio Tinto Iron Ore acQuire™ database (RTIODB). • Sample recovery in some friable mineralisation may be reduced; however it was unlikely to have a material impact on the reported assays for these intervals. • Thorough analysis of duplicate sample performance does not indicate any chemical bias as a result of inequalities in sample weights.
Logging	• All drillholes were geologically logged utilising standard Rio Tinto Iron Ore Material Type Classification Scheme (RTIO MTCS) logging codes and entered into the RTIODB package on field Toughbook laptops. • Internal training and validation of logging includes RTIO MTCS identification and calibration workshops, peer reviews and validation of logging against assay results.

	• Geological logging was performed on 2 m intervals for all reverse circulation drilling, and either 1 m or 2 m intervals for diamond holes, depending on the level of detail required. • Magnetic susceptibility readings were taken using a Kappameter for each interval. • All diamond drill core was photographed digitally and files stored on Rio Tinto Iron Ore network servers. • Since 2001, all drillholes have been geophysically logged using downhole tools for gamma trace, calliper, gamma density, resistivity, and magnetic susceptibility. • Open-hole acoustic and optical televiewer image data have been collected in specific reverse circulation and diamond drill core holes throughout the deposit for structural analyses. • Data collected from pre-2000 campaigns was recorded on paper logs, and mineral constituents resolved predominantly to 5%, with 1% resolutions also used (rarely) for minor or trace constituents.

Sub-sampling techniques and sample preparation	• A nominal 2 m sample interval was used for reverse circulation drilling.
	
	Sub-sampling techniques:
	• Pre-1995: Reverse circulation drilling program samples collected from a rig-mounted, multi-level riffle with a split ratio of 7.5% with an 85% reject.
	• 1995-1999: Reverse circulation samples were collected in calico bags using a four tier Jones riffle splitter producing two samples with a split ratio of 7.5% with an 85% reject.
	• 2009 - 2016: Samples were collected using a static or rotary cone splitter beneath a cyclone return system, producing approximate splits of:
	  ▪ 'A' Split – Analytical sample – 8%
	  ▪ 'B' Split – Retention sample - 8%
	  ▪ Bulk Reject - 84%.
	Sample preparation:
	• 2009 – 2016:
	  o 'A' split sample dried at 105° C.
	  o Sample crushed to -3 mm using Boyd Crusher and split using a linear and rotary sample divider to capture 1 – 2.5 kg samples.
	  o Robotic and Manual LM5 used to pulverise total sample (1 – 2.5 kg) to 90% of weight passing 150 micrometers (μm) sieve.
	  o A 100 gram sub sample collected for analysis.
	  o Diamond drill core samples were crushed to -6 mm particle size (whole core sample) and follow reverse circulation sample preparation if they were to be assayed.

Quality of assay data and laboratory tests	Assay methods:
	• Fe, SiO_2, Al_2O_3, TiO_2, Mn, CaO, P, S, MgO, K_2O, Zn, Pb, Cu, Ba, V, Cr, Cl, As, Ni, Co, Sn, Sr, Zr, Na were assayed using industry standard X-Ray Fluorescence (XRF) analytical techniques. The XRF fusion utilised a 12:22 flux (35.3% lithium tetraborate and 64.7% metaborate).
	• Loss on Ignition (LOI) was determined using an industry standard Thermo-Gravimetric Analyser (TGA) and was measured at three steps of temperatures:
	  ▪ 2004-2007: 110° - 371°C, 371° - 538°C, 538° - 1000°C.
	  ▪ 2008-2016: 140° - 425°C, 425° - 650°C, 650° - 1000°C.
	• Samples were dispatched to Perth for preparation and analytical testing:
	  o Pre-2005: Samples were submitted to AAL and SGS Laboratories.
	  o 2010-2011: Samples were submitted to both Bureau Veritas Minerals Pty Ltd (formerly Ultratrace Laboratories) and SGS Laboratories.
	  o 2012-2015: Samples were submitted to ALS Laboratories
	  o 2016: Samples were submitted to Bureau Veritas Minerals Pty Ltd (formerly Ultratrace Laboratories).
	
	Quality assurance measures include:
	• Insertion of coarse reference standard by Rio Tinto Iron Ore geologists at a rate of one in every 30 samples in mineralised zones and one in every 60 samples in waste zones with a minimum of one standard per drillhole. Reference material was prepared and certified by Rio Tinto Iron Ore following ISO 3082:2009 (Iron Ores – Sampling and sample preparation procedures) and ISO 9516-1:2003 (Iron Ores – Determination of various elements by X-ray fluorescence spectrometry – Part 1: Comprehensive procedure).
	• Coarse reference standards contain a trace of strontium carbonate that was added at the time of preparation for ease of identification.
	• Field duplicates were collected by sacrificing a 'B' split retention sample directly from the rig splitter. Duplicate insertion occurred at a frequency of one in 20. Trace zinc was included in the duplicate sample for later identification.
	• At a frequency of one in 20, -3 mm splits and pulps were collected as laboratory splits and repeats respectively. These sub-samples were analysed at the same time as the original sample to identify grouping, segregation and delimitation errors.

	• Internal laboratory quality assurance and quality control measures involve the use of blanks, duplicates and laboratory standards using certified reference material in the form of pulps. • Random re-submission of pulps at an external laboratory was performed following analysis. • Chemical Analysis Testing (CAT) and Analytical Precision Testing (APT) samples were collected one per batch and submitted to third party (Geostats) as part of Rio Tinto Iron Ore quality assurance and quality control procedures to attained analytical precision and accuracy. • Analysis of the performance of certified standard and field duplicates has indicated an acceptable level of accuracy and precision with no significant bias. Pre-2005 quality assurance measures: • Prior to 1992: Drilling was via open-hole percussion and as a result sample quality was generally at a lower standard than that in subsequent reverse circulation programs. Overall the work conducted over this period was at an acceptable standard; however where uncertainty exists, that data has been excluded. • 1992-1996: QA/QC practices and results were variably documented and some quality issues have been identified. • 1997 – 1998: Drilling and sample processing utilised industry standard QA/QC practices and data was considered to be of an acceptable quality with low confidence.
Verification of sampling and assaying	• Comparison of reverse circulation and twinned diamond drill core assay data distributions showed that the drilling methods have similar grade distributions verifying the suitability of reverse circulation samples in the Mineral Resource estimate. • Field data was logged directly onto field Toughbook laptops using pre-formatted and validated logging templates, with details uploaded to the RTIODB on a daily basis. • All assaying of samples used in Mineral Resource estimates have been performed by independent, National Association of Testing Authorities (NATA) certified laboratories. • Assay data was returned electronically from the laboratory and uploaded into the RTIODB. • 2012-2016 assay data were only accepted in the RTIODB once the quality control process had been undertaken utilising the Batch Analysis tool. • Written procedures outline the processes of geological logging and data importing, quality assurance and quality control validation and assay importing. A robust, restricted-access database is in place to ensure that any requests to modify existing data go through appropriate channels and approvals, and that changes are tracked by date, time, and user.
Location of data points	• Collar location data was validated by checking actual versus planned coordinate discrepancies. Once validated, the survey data is uploaded into the RTIODB. • Drillhole collar reduced level (RL) data was compared to detailed topographic maps and shows that the collar survey data was accurate. • Down-hole surveys were conducted on nearly every hole, with the exception of collapsed or otherwise hazardous holes; any significant, unexpected deviations were investigated and validated. Holes greater than 100 m depth were generally surveyed with an in-rod gyroscopic tool to accurately measure downhole deviation. • The pre-mining topographic surface for the BS4MM Deposit O area utilised a mix of Light Detecting and Ranging data (LiDAR), which covered the drilled area, aerial Digital Terrain Model (DTM) and 30 m Shuttle Radar Topographic Mission (SRTM) data. A 10 m complete coverage grid was combined with high accuracy Differential Global Positioning System (DGPS) surveyed collar locations to generate the topographic surface as the collar survey data was considered most reliable. • The pre-mining topographic surface for the BS4MM Deposit Q area utilised node extrapolation of mapped contour data, this was appended to high accuracy DGPS surveyed collar locations to generate the topographic surface as the collar survey data was considered most reliable. • The pre-mining topographic surface for the BS4MM Deposit R area utilised a combination of LiDAR, which covered the drilled area, aerial DTM and 30 m SRTM data. These were compiled into a 5 m complete coverage grid and appended to high accuracy DGPS surveyed collar locations to generate the topographic surface as the collar survey data was considered most reliable.
Data spacing and distribution	• Drillhole spacing was predominately 50 m × 50 m over the entire deposit. • The drill spacing was deemed appropriate for sufficient deposit knowledge by the Competent Person for the Mineral Resource classification applied. • The mineralised domains have demonstrated sufficient continuity in both geology and grade to support the definition of Mineral Resources, and the classifications applied under the 2012 JORC Code guidelines.
Orientation of data in relation	• Drill lines were oriented north-northwest to south-southeast (NNW-SSE).

to geological structure	• The majority of drilling was completed vertically due to restrictions commonly encountered with ground conditions. • The deposit is generally north dipping (ranging from 20-60˚) however it exhibits some zones of flatter or south dipping stratigraphy. This results in a range of orientations being intersected during drilling. • While mineralisation was frequently intersected at an angle, the orientation of mineralisation relevant to drilling was not considered likely to have introduced any material sampling bias.
Sample security	• The sample chain of custody is managed by Rio Tinto Iron Ore. • Analytical samples (‘A’ splits) were collected by field assistants, placed onto steel sample racks and delivered to Perth by a recognised freight service and then to the assay laboratory by a Perth-based courier service. Whilst in storage the samples were kept in a locked yard. • Retention samples (‘B’ splits) were collected and stored in drums at on-site facilities. • 150 grams of excess pulps from primary samples is retained indefinitely at laboratories and external storage facilities at CTI Logistics Ltd in Perth, Western Australia.
Audits or reviews	• No external audits have been performed specifically on sampling techniques or data. • Inter-lab checks were performed in 2014 and 2015. A collection of coarse retentions from randomly distributed drillholes across BS4MM deposits were sent by ALS Laboratory Services Pty Ltd to Genalysis Laboratory Services Pty Ltd and Bureau Veritas Minerals Pty Ltd (formerly Ultratrace Laboratories). Results of the re-analysed coarse retentions were sent by electronic distribution to Rio Tinto Iron Ore geologists for analysis. No conflicting results were identified. • Due to poor QC results, ‘B’ Split samples from the 2010-2011 programmes processed at SGS Laboratory were re-sampled and assayed at Bureau Veritas Minerals Pty Ltd (formerly Ultratrace Laboratories). No bias was identified in the ‘B’ split sample results. The ‘B’ split samples have replaced the ‘A’ split samples for use in the Mineral Resource estimate, and have been flagged accordingly in the RTIODB. • Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques were appropriate.

SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary
Mineral tenement and land tenure status	• 100% owned by Hamersley Iron Proprietary Limited (100% Rio Tinto Limited). • The deposits lie across multiple sections of the same lease, Mineral Lease ML4SA: ▪ ML4SA_Sec123 ▪ ML4SA_Sec124 ▪ ML4SA_Sec125 ▪ ML4SA_Sec162 ▪ ML4SA_Sec163 ▪ ML4SA_Sec164 ▪ ML4SA_Sec244 ▪ ML4SA_Sec246 • There are currently no known or anticipated impediments to developing the resources on this tenure.
Exploration done by other parties	• No exploration has been completed by other parties at the Brockman South Marra Mamba deposits.
Geology	• Deposits O, Q & R are located on the southern limb of the Brockman Syncline regional fold structure, hosting northward dipping (20º - 60º) units of the Marra Mamba Iron Formation and Wittenoom Formation. • Deposits O, Q & R are separated by large NNW-SSE trending normal fault structures. • The iron mineralisation consists of hematite-goethite enrichment, broadly subdivided into the iron formation-hosted "bedded" mineralisation style and weathering/re-deposition products termed "detrital". • Mineralisation commonly penetrates down through the entire Marra Mamba sequence as far as the Macleod and into the Nammuldi adjacent to zones of deformation and faulting. • The deposit is generally north dipping (ranging from 20-60˚) however it exhibits some zones of flatter or south dipping stratigraphy. • The deposit contains both detrital and bedded-hosted iron mineralisation. • A regional scale fold structure exists within Deposit O. Mineralisation associated with this feature is more extensive than that observed for other areas of the deposit. • Approximately 11% of the Mineral Resource for Deposits O and R lies above the water table. At Deposit Q, approximately 8% of the Mineral Resource lies above the water table.

Drill hole Information

Deposit O

- Summary of drilling data used for the Brockman South Marra Mamba Deposit O Mineral Resource estimate:

Year	Diamond Holes		Dual Rotary		Reverse Circulation		Percussion (Open hole)	
	# Holes	Metres	# Holes	Metres	# Holes	Metres	# Holes	Metres
2009	-	-	-	-	63	5,850	-	-
2010	-	-	-	-	30	3,410	-	-
2011	-	-	-	-	70	9,034	-	-
2012	5	291	-	-	-	-	-	-
2013	-	-	-	-	70	5,703	-	-
2014	1	80	-	-	175	21,218	-	-
2015	3	146	-	-	149	18,465	-	-
2016	-	-	-	-	187	18,991	-	-
Total	**9**	**517**	**0**	**0**	**744**	**82,671**	**0**	**0**

- An additional 62 drillholes were used for geological interpretation only.
- A total of 62 drillholes were excluded from the dataset, due to unreliable, incomplete or no assay and/or collar survey data. Excluded holes include:
  - 54 percussion holes for 3,307 m
  - 8 reverse circulation holes for 204 m

Deposit Q

- Summary of drilling data used for the Brockman South Marra Mamba Deposit Q Mineral Resource estimate:

Year	Diamond Holes		Dual Rotary		Reverse Circulation		Percussion (Open hole)	
	# Holes	Metres	# Holes	Metres	# Holes	Metres	# Holes	Metres
2009	-	-	-	-	113	7,994	-	-
2010	-	-	-	-	97	5,380	-	-
2011	-	-	-	-	111	7,922	-	-
2012	5	198	-	-	564	40,098	-	-
2013	-	-	-	-	152	9,776	-	-
2014	7	528	-	-	38	2,756	-	-
2015	10	567	-	-	1	181	-	-
Total	**22**	**1,293**	**0**	**0**	**1,076**	**74,107**	**0**	**0**

- An additional 77 drillholes were used for geological interpretation only.
- A total of 57 drillholes were excluded from the dataset, due to unreliable, incomplete or no assay and/or collar survey data. Excluded holes include:
  - 43 percussion holes for 2,914 m
  - 8 reverse circulation holes for 270 m
  - 6 diamond holes for 671 m

Deposit R

Summary of drilling data used for the Brockman South Marra Mamba Deposit R Mineral Resource estimate:

Year	Diamond Holes		Dual Rotary		Reverse Circulation		Percussion (Open hole)	
	# Holes	Metres	# Holes	Metres	# Holes	Metres	# Holes	Metres
2010	-	-	-	-	109	5,678	-	-
2011	-	-	-	-	139	6,862	-	-
2012	8	350	-	-	144	6,126	-	-
2013	-	-	-	-	27	1,536	-	-
2015	1	71	-	-	61	6,138	-	-
2016	-	-	-	-	34	3,688	-	-
Total	**9**	**421**	**0**	**0**	**514**	**30,028**	**0**	**0**

- An additional 37 drillholes were used for geological interpretation only.
- A total of 16 drillholes were excluded from the dataset, due to unreliable, incomplete or no assay and/or collar survey data. Excluded holes include:
  - 15 percussion holes for 912 m
  - 1 reverse circulation hole for 52 m

Data aggregation methods

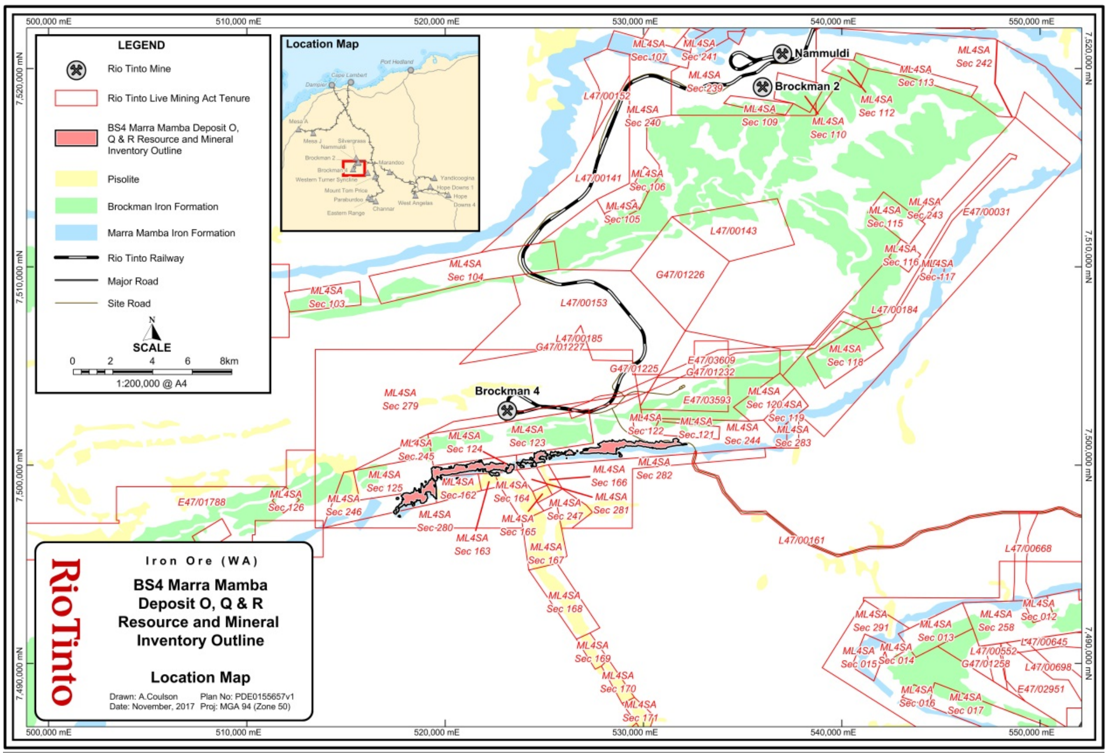
- All assay, geology, and density data have been composited to 2 m for Mineral Resource modelling and estimation.
- No grade truncations were performed.

Relationship between mineralisation widths and intercept lengths

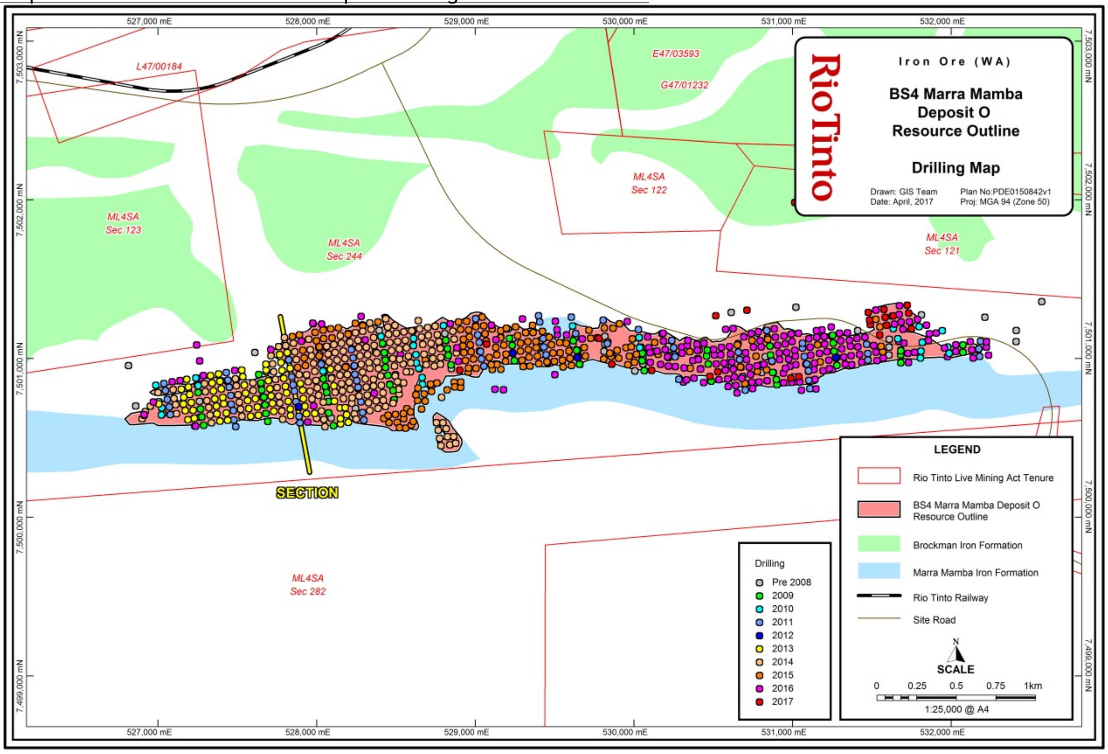
- Drilling programs have used angled and vertical holes so as to intersect mineralisation as close to perpendicular as possible. Given the dip and variable folding of the strata and mineralisation this often results in down-hole intercepts significantly greater than true widths.
- The difference between down-hole and true thickness was resolved graphically via sectional and three dimensional interpretation of mineralisation boundaries based on the prevailing bedding, stratigraphic and structural controls.

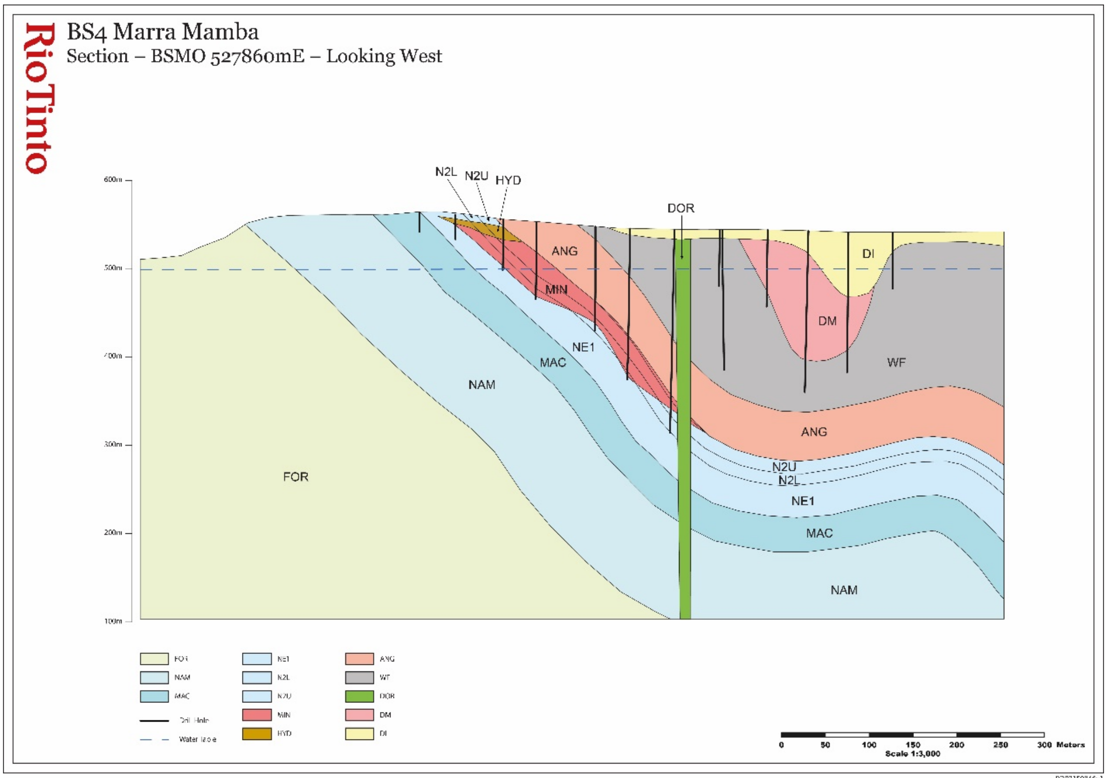
Diagrams

Location Map O, Q, R

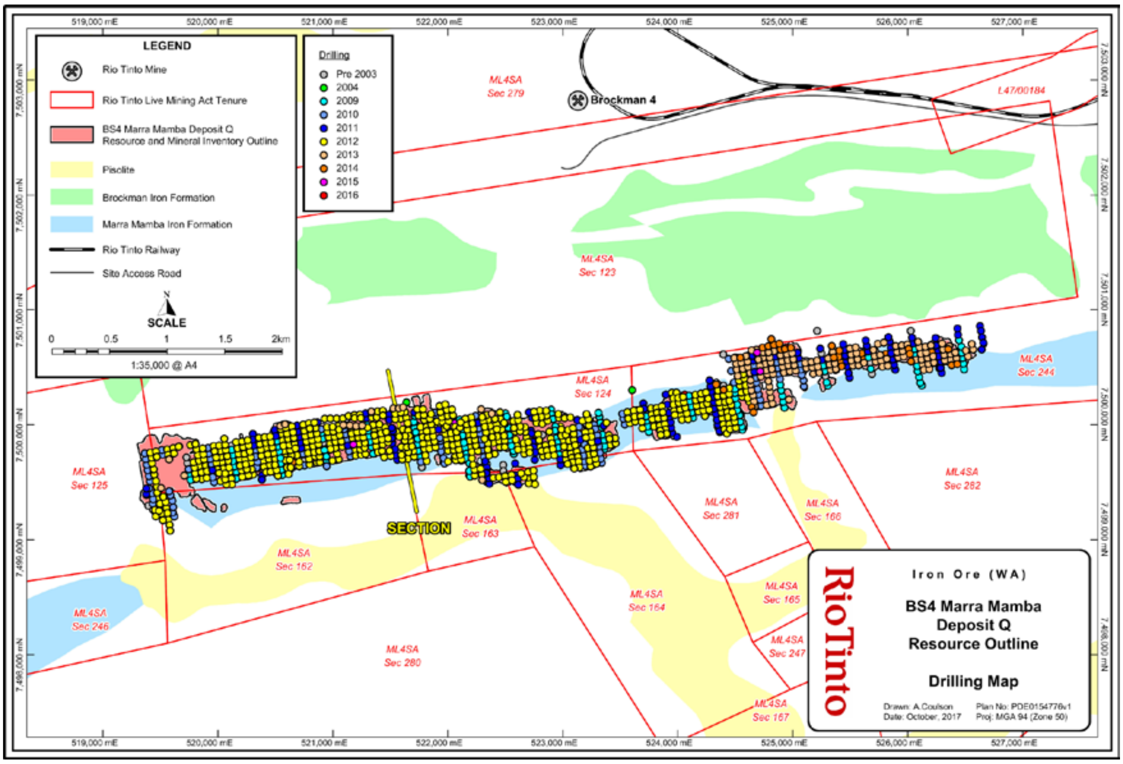


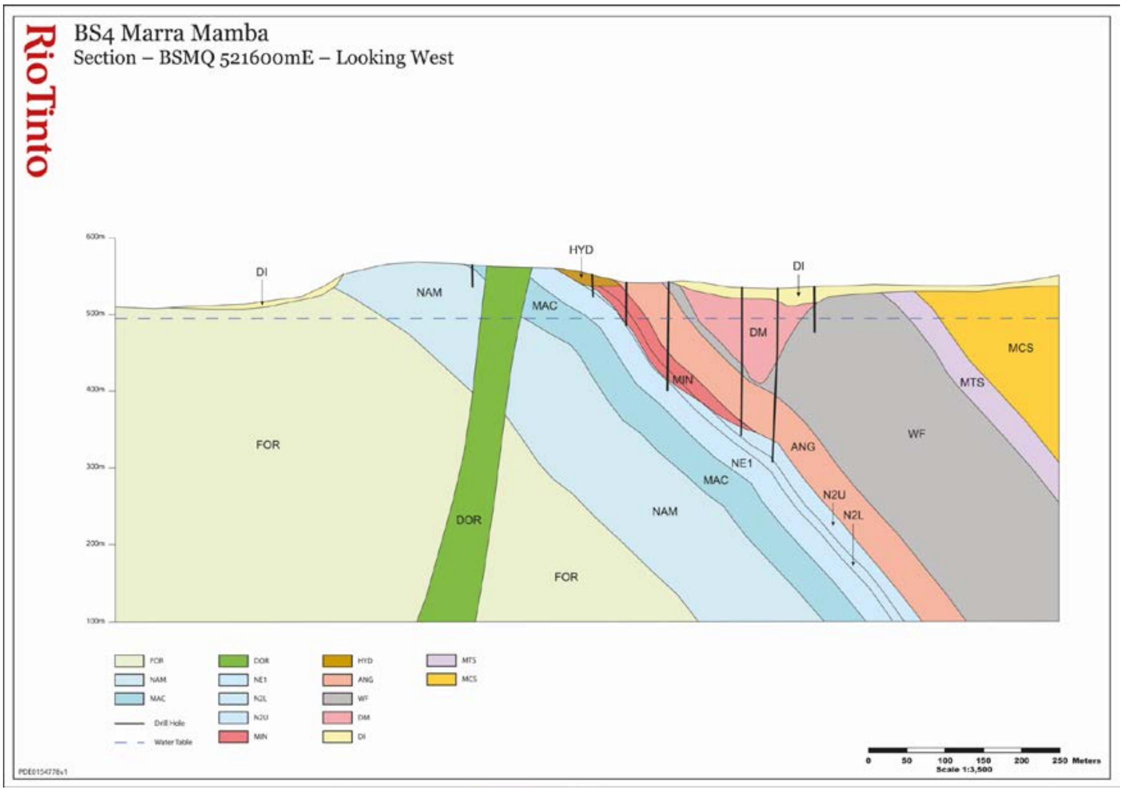
Deposit O Drillhole Locations Map & Geological Cross-Section



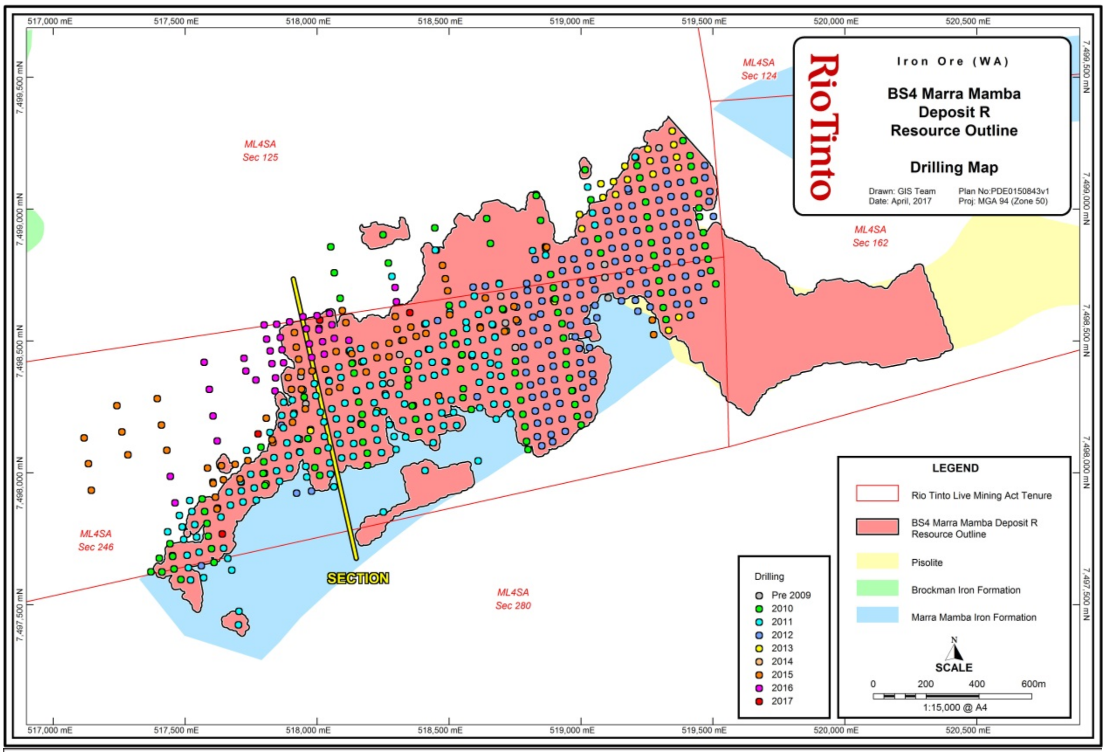


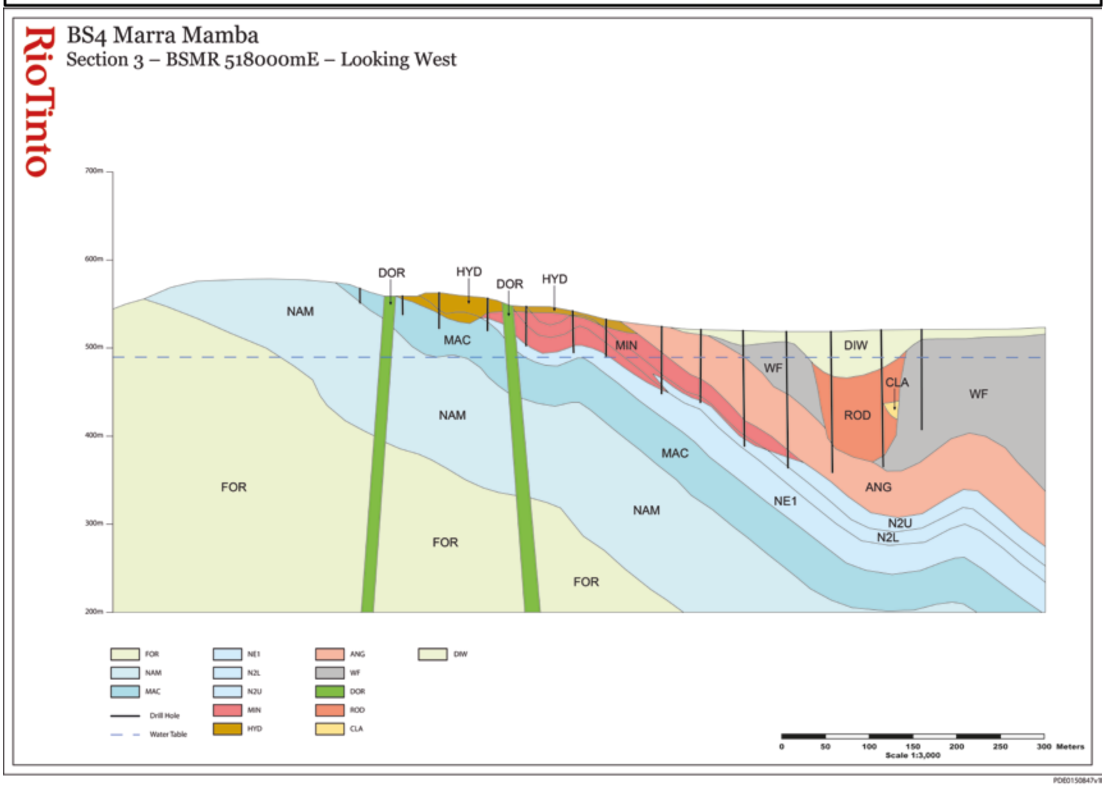
Deposit Q Drillhole Locations Map & Geological Cross-Section





Deposit R Drillhole Locations Map & Geological Cross-Section





Balanced reporting	• Not applicable as Rio Tinto has not specifically released exploration results for these deposits.
Other substantive exploration data	• Detailed geological surface mapping has been collected across the Brockman South Marra Mamba Iron Formation in 2002 and 2005 at 1:10,000 scale. • Geological surface mapping data has been collected across the Brockman 4 Brockman Iron Formation area in 2004 at a scale of 1:5,000. • Metallurgical test work has been carried out on diamond holes that were drilled as part of the 2009 - 2016 campaigns.
Further work	• At Deposit O, further reverse circulation drilling is planned to test open extensions to portions

	of the detrital mineralisation down to final infill spacing of 50 m x 50 m.

SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	Commentary
Database integrity	• All drilling data is securely stored in the Rio Tinto Iron Ore acQuire™ database (RTIODB), managed by dedicated personnel within Rio Tinto Iron Ore. The system is backed up nightly on servers located in Perth, Western Australia. The backup system was tested in January 2017, demonstrating that the system is effective. • The import/exporting process requires limited keyboard transcription and has multiple built-in safeguards to ensure information is not overwritten or deleted, these include: o Data is imported and exported through automated interfaces, with limited manual input; o Inbuilt validation checks ensure errors are identified prior to import; o Once within the RTIODB, editing is very limited and warning messages ensure accidental changes were not made; o Audit trail records updates and deletions should an anomaly be identified; o Export interface ensures the correct tables, fields and format are selected. • The drillhole database used for Mineral Resource estimation has been internally validated. Methods include checking: o acQuire™ scripts for relational integrity, duplicates, total assay and missing / blank assay values; o Grade ranges in each domain; o Domain names; o Survey data down-hole consistency; o Null and negative grade values; o Missing or overlapping intervals; o Duplicate data. • Drillhole data was also validated visually by domain and compared to the geological model.
Site visits	• The Competent Person has regularly visited the Brockman South Marra Mamba deposits between 2011-2017. There were no outcomes as a result of the most recent visit.
Geological interpretation	• Overall the Competent Person's confidence in the geological interpretation of the area is good, based on the quantity and quality of data available, and the continuity and nature of the mineralisation. • Geological modelling was performed by Rio Tinto Iron Ore geologists. The method involves interpretation of stratigraphy using surface geological mapping, lithological logging data, down-hole gamma data, and assay data. • Cross-sectional interpretation of each stratigraphic unit was performed followed by interpretation of mineralisation boundaries. Three-dimensional wireframes of the sectional interpretations were created to produce the geological model. • The geological model was subdivided into domains and both the composites and model blocks were coded with these domains. • Mineralisation is continuous. It is affected by stratigraphy, structure and weathering. The drillhole spacing is sufficient to capture density, grade and geology variation for Mineral Resource reporting.
Dimensions	• Deposit O strikes approximately east/west with an along strike extent of approximately 8.5 km and a width of up to 1.1 km. The mineralisation extends from surface to a depth of approximately 300 m. • Deposit Q strikes approximately east/west with an along strike extent of approximately 7.3 km and a width of up to 400 m. The mineralisation extends from surface to a depth of approximately 280 m. • Deposit R strikes approximately north-east/south-west (NE-SW) with an along strike extent of approximately 2.6 km and a width of up to 800 m. The mineralisation extends from surface to a depth of approximately 230 m.
Estimation and modelling techniques	• Ten grade attributes (Fe, SiO_2, Al_2O_3, P, Mn, LOI, S, TiO_2, MgO, and CaO), and density were estimated for input into Mine Planning and Marketing assessments. • Statistical analysis was carried out on data from all domains. • The grade estimation process was completed using Maptek™ Vulcan™ software. • Mineralised domains were predominantly estimated by ordinary kriging however those domains where robust semi-variograms were not able to be created employed inverse

	distance weighting to the first power. Non-mineralised domains were estimated by inverse distance weighting to the first power. These methods were deemed appropriate by the Competent Person for estimating the tonnes and grade of the reported Mineral Resources. • The individual domains within the Newman Member were estimated using soft boundaries, where samples from one domain can be used to inform another domain. All other domains were estimated using hard boundaries, that is domains were estimated using samples coded with a matching domain code. • A 'high yield limit' or grade dependent restriction on a sample's range of influence was used for P and Mn for the mineralised domains and Mn and S for the non-mineralised domains. The limits differed for different domains and were selected based on histograms and the spatial distribution of the respective assay values. • A block size of 50 m (X) × 50 m (Y) × 5 m (Z) was used for parent blocks for Deposits Q and R. For Deposit O, a block size of 25 m (X) × 25 m (Y) × 5 m (Z) was used for parent blocks. Parent blocks were sub-celled to the geological boundaries to preserve volume. • The block model was rotated to align with the orientation of the deposit. • The block model was validated using a combination of visual, statistical, and multivariate global change of support techniques.
Moisture	• All Mineral Resource tonnages are estimated and reported on a dry basis.
Cut-off parameters	• The cut-off grade for high-grade ore is greater than or equal to 58% Fe.
Mining factors or assumptions	• Development of this Mineral Resource assumes mining using standard Rio Tinto Iron Ore equipment and methods similar to other Rio Tinto Iron Ore operations. The assumed mining method is conventional truck and shovel, open pit mining at an appropriate bench height. Mining practices will include grade control utilising blast hole data. • It is planned to blend ore from Brockman South Marra Mamba Deposits O, Q and R with ore from other Rio Tinto Iron Ore mine sites to make a saleable ore product. This plan is in line with current Rio Tinto Iron Ore practices where ore from multiple mines is combined to produce the Pilbara Blend product.
Metallurgical factors or assumptions	• It is assumed that standard crushing and screening processes used by Rio Tinto Iron Ore will be applicable for the processing of Brockman South Marra Mamba Deposits O, Q and R. • Technical work has also been completed to better predict the spatial variability of problematic ore types for processing.
Environmental factors or assumptions	• Rio Tinto Iron Ore has an extensive environmental approval process. A detailed review of these requirements was undertaken as part of a recent Pre-feasibility Study and based on this work, the proposal was determined to require formal State environmental assessment and approval. • Mapping of oxidised shales, black carbonaceous shales, lignite, and the location of the water table, is used in prediction and planning for the treatment of potential environmental impacts. This process is in accordance with Rio Tinto's Chemically Reactive Mineral Waste Standard.
Bulk density	• Dry bulk density was derived from accepted gamma-density data collected at 10 cm intervals from down-hole geophysical sondes. • Accepted gamma-density data was corrected for moisture using diamond drill core specifically drilled throughout the deposit. • Dry core densities are generated via the following process: o The core volume was measured in the split and the mass of the core was measured and recorded. o Wet core densities were calculated by the split and by the tray. o Core recovery was recorded. o The core was then dried and dry core masses were measured and recorded. o Dry core densities were then calculated. • Accepted gamma-density values were estimated using ordinary kriging or inverse distance weighting to the first power in mineralised zones and inverse distance weighted to the first power in non-mineralised zones.
Classification	• The Mineral Resource has been classified into the categories of Measured, Indicated and Inferred. The determination of the applicable resource category has considered the relevant factors (geology, mineralisation continuity, sample spacing, data quality, and others). • The Competent Person is satisfied that the stated Mineral Resource classification reflects the relevant factors of the deposits.
Audits or	• All stages of Mineral Resource estimation have undergone an internal peer review process,

reviews		which has documented all phases of the procedure. The Mineral Resource estimate has been accepted by the Competent Person.
Discussion of relative accuracy/ confidence		• Rio Tinto Iron Ore operates multiple mines in the Pilbara region of Western Australia. The Mineral Resource data collection and estimation techniques used for Brockman South Marra Mamba Deposits O, Q and R are consistent with those applied at other deposits which are being mined. Reconciliation of actual production with the Mineral Resource estimates for individual deposits is generally accurate to within ten percent for tonnes on an annual basis. This result is indicative of a robust process. • The accuracy and confidence of the Mineral Resource estimate is consistent with the current level of study (Pre-feasibility Study).

SECTION 4 ESTIMATION AND REPORTING OF ORE RESERVES

Criteria	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• Generation of the modifying factors for this Ore Reserve estimate were based on Mineral Resource estimates for the Brockman South Marra Mamba Deposits O, Q and R that were completed in June 2017. • The most recent Mineral Resource estimate together with the latest update of pit designs were used for reporting Ore Reserves. • The declared Ore Reserves are for the Brockman South Marra Mamba Deposits O, Q and R. • Mineral Resources are reported additional to Ore Reserves.
Site visits	• The Competent Person visited Brockman 4 mine site in 2014.
Study status	• Brockman 4 is an existing operation. The Brockman South Marra Mamba Deposits O, Q and R are an extension to the existing operation. • The Pre-Feasibility Study was completed in Q2 2017
Cut-off parameters	• The Brockman South Marra Mamba Deposits O, Q and R are reported using variable cut-off grade (VCoG) in line with a number of other Pilbara deposits. Application of VCoG allows the varying of the head grade across the life of the deposit, to achieve desired product grades. At BS4MM this approximates to a cut-off of 58% Fe over the mine life.
Mining factors or assumptions	• The Mineral Resource models for the Brockman South Marra Mamba Deposits O, Q and R were regularised to a block size of 25 m E × 12.5 m N × 5 m RL which was determined to be the selective mining unit following an analysis of a range of selective mining units. • Metallurgical models were applied to the regularised model in order to model product tonnages, grades and yields. • Pit optimisations utilising the Lerch-Grossmann algorithm with industry standard software were undertaken. This optimisation utilised the regularised Mineral Resource model together with cost, revenue, and geotechnical inputs. The resultant pit shells were used to develop detailed pit designs with due consideration of geotechnical, geometric and access constraints. These pit designs were used as the basis for production scheduling and economic evaluation. • During the above process, Inferred Mineral Resources were excluded from mine schedules and economic valuations utilised to validate the economic viability of the Ore Reserves. • Conventional mining methods (truck and shovel) similar to other Rio Tinto Iron Ore operating mines were selected. • The geotechnical parameters have been applied based on geotechnical studies informed by assessments of 95 drillholes drilled between 2012 and 2016, specifically drilled for geotechnical purposes on the surrounding host rock. The resultant inter-ramp slope angles vary between 27° and 38° depending on the local rock mass and structural geological conditions.
Metallurgical factors or assumptions	• Ore from the Brockman South Marra Mamba Deposits O, Q and R will be processed through the existing Brockman 4 dry crushing and screening plant. Product prediction regressions for dry processing routes have assumed a nominal 6.3mm separation cut size between lump and fines products, based on the most appropriate available metallurgical data generated from PQ core and production data. The regressions were last updated in Q4 2016. • There have been metallurgical drill programs in 2010/11, 2015 and 2016. Additional density core was obtained in 2014. All programs (total of 1,294m) went through the standard Marra Mamba dry crushing and screening mimic at Metallurgical Evaluation. Data obtained from these programs formed the basis for metallurgical test work which informed site operations on suitability of the Brockman South Marra Mamba Deposits O, Q and R.
Environmental	• The Brockman Syncline 4 Iron Ore mine Marra Mamba Deposits Proposal will be referred to the Environmental Protection Authority (EPA) under s38 of the *Environmental Protection Act 1986* (WA) (EP Act) in the first half of 2018. • The current Brockman Syncline 4 operations are approved under Ministerial Statement 1000. The original operation was also referred to the Commonwealth under the *Environment Protection and Conservation Protection Act 1999* (EPBC Act) and determined not to be a controlled action. • Assessment of the potential for impact of the Marra Mambas Proposal on Matters of National Environmental Significance (MNES) will be undertaken during 2018 to determine if the proposal requires referral to the Commonwealth under the EPBC Act. • A geochemical risk assessment has been completed for the project. The assessment encompasses all material types present at the site, and tests have been conducted in accordance with industry standards. Mining of the BS4MM deposits poses a low to moderate

	Acid and Metalliferous Drainage (AMD) risk based on current pit designs and the assessment of samples from within the proposed pit locations.

Infrastructure	• Brockman South Marra Mamba Deposits O, Q and R will utilise existing facilities:
	  ◦ Access to the site is via White Quartz Road through the existing Brockman 4 mine site gate.
	  ◦ No additional buildings, workshops or related facilities are required for the Marra Mamba deposits.
	  ◦ The existing Brockman 4 Explosive Facility will be utilised for the storage of explosives for the Marra Mamba operations until mining commences in Marra Mamba pit O5 (2022). The existing AN facility will then need to be relocated to a location approximately 5km south west of the existing facility.
	  ◦ Additional communications infrastructure will be required to provide adequate communications to the mine area.
	  ◦ Water will be sourced from existing bores and turkey's nests for construction works. New dewatering bores will be utilised as each Marra Mamba pit is mined below water table (BWT mining expected to commence in 2025).
	  ◦ Ore will be railed to Rio Tinto Iron Ore's ports at Dampier and Cape Lambert. The existing port and railway networks will have sufficient capacity to accommodate ore supply from the Brockman South Marra Mamba Deposits.

Costs	• Operating costs were benchmarked against similar operating Rio Tinto Iron Ore mine sites. • The capital costs for the Brockman South Marra Mamba Deposits O, Q and R are based on the Pre-Feasibility Study utilising experience from the construction of existing similar Rio Tinto Iron Ore projects in the Pilbara, Western Australia. • Exchange rates were forecast by analysing and forecasting macro-economic trends in the Australian and world economy. • Transportation costs were based on existing operating experience at Rio Tinto Iron Ore mine sites in the Pilbara, Western Australia. • Allowances have been made for royalties to the Western Australian government and other private stakeholders.
Revenue factors	• Rio Tinto applies a common process to the generation of commodity prices across the group. This involves generation of long-term price curves based on current sales contracts, industry capacity analysis, global commodity consumption and economic growth trends. In this process, a price curve rather than a single price point is used to develop estimates of mine returns over the life of the project. The detail of this process and of the price point curves is commercially sensitive and is not disclosed.
Market assessment	• It is planned to blend ore from Brockman South Marra Mamba Deposits O, Q and R with ore from other Rio Tinto Iron Ore mine sites to make a saleable ore product. Brockman South Marra Mamba Deposits O, Q and R ore will not be marketed directly. This plan is in line with current Rio Tinto Iron Ore practices where ore from multiple mines is combined to produce the Pilbara Blend product. • Blending of iron ore from Brockman and Marra Mamba sources results in a high Fe product, whilst reducing both the average values, and variability, of SiO_2, Al_2O_3, and P. This product attracts a market premium and accounts for annual sales in excess of 150 Mt/a. • The supply and demand situation for iron ore is affected by a wide range of factors, and as iron and steel consumption changes with economic development and circumstances. Rio Tinto Iron Ore delivers products aligned with its Mineral Resources and Ore Reserves, these products have changed over time and successfully competed with iron ore products supplied by other companies.
Economic	• Economic inputs such as foreign exchange rates, carbon pricing, and inflation rates are also generated internally at Rio Tinto. The detail of this process is commercially sensitive and is not disclosed. • Sensitivity testing of the Brockman South Marra Mamba Deposits O, Q and R Ore Reserves using both Rio Tinto long-term prices and a range of published benchmark prices demonstrates a positive net present value for the project sufficient to meet Rio Tinto investment criteria.
Social	• The BS4MM Deposits are located within existing Mining Lease AML70/00004 Sec 123, Sec 124, Sec125, Sec 162, Sec 163, Sec 164, Sec 244 & Sec 246 (ML4SA), which was granted under the *Iron Ore (Hamersley Range) Agreement Act 1963*. • The Brockman 4 mine and associated infrastructure falls within the area of the Eastern Guruma (EG) and Puutu Kunti Kurrama and Pinkikura (PKKP) group's native title detrmination. • The project is located in the Hamersley Range, which has rich history of Aboriginal

	occupation. Ethnographic and archaeological surveys of the project footprint have been completed with Traditional Owner representatives, and all known heritage sites have been located, recorded and considered during mine planning and engineering activities. • Rio Tinto Iron Ore has undertaken environmental surveys across the project area to support the development of Brockman South Marra Mamba deposits including flora and vegetation and vertebrate fauna surveys, troglofauna sampling and an assessment of bat colonies and aquatic habitats. • The BS4MM deposits and associated infrastructure is located within the Shire of Ashburton. Rio Tinto Iron Ore has established engagement frameworks with the Shire of Ashburton which includes scheduled meetings and project updates.
Other	• Semi-quantitative risk assessments have been undertaken throughout the BS4MM study phases, and no material naturally occurring risks have been identified through the above mentioned risk management processes.
Classification	• The Ore Reserves for BS4MM consist of 88% Proved Reserves and 12% Probable Reserves. • The Competent Person is satisfied that the stated Ore Reserve classification reflects the outcome of technical and economic studies.
Audits or reviews	• No external audits have been performed. • Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques are appropriate.
Discussion of relative accuracy/ confidence	• Rio Tinto Iron Ore operates multiple mines in the Pilbara region of Western Australia. The Ore Reserve estimation techniques utilised for the Brockman South Marra Mamba deposit are consistent with those applied at the existing operations. Reconciliation of actual production with the Ore Reserve estimate for individual deposits is generally within 10 percent for tonnes on an annual basis. This result is indicative of a robust Ore Reserve estimation process. • For the Brockman South Marra Mamba Deposits O, Q and R, accuracy and confidence of modifying factors are generally consistent with the current level of study (Pre-Feasibility Study).

Robe Valley Mesa B, C, and H - Table 1

The following table provides a summary of important assessment and reporting criteria used at the Robe Valley Mesa B, C, and H deposits for the reporting of Mineral Resources and Ore Reserves, in accordance with the Table 1 checklist in *The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition)*. Criteria in each section apply to all preceding and succeeding sections.

SECTION 1 SAMPLING TECHNIQUES AND DATA

Criteria	Commentary
Sampling techniques	• Samples for geological logging, assay, geotechnical, metallurgical and density test work were collected via drilling. • Geological logging and assay samples were collected at predominantly 2 m intervals from reverse circulation drilling. • Diamond core drilling used double and triple-tube techniques and samples were taken at 1 m intervals. • Density, geotechnical and metallurgical samples were collected from diamond core drilling of PQ-3 core. • Dry bulk density was derived from accepted gamma-density data collected at 10 cm intervals from down-hole geophysical sondes. • Mineralisation boundaries were interpreted from a combination of geological logging and geochemical assay results. • Drilling was predominantly at a 50 m x 50 m collar spacing utilising reverse circulation and diamond drilling. All intervals were sampled. • Reverse circulation drilling utilises a static or rotary cone splitter beneath a cyclone return system to obtain a primary and secondary sample, with particular attention on samples collected being of comparable weights. An 'A' and 'B' sub-sample each representing 8% of the mass was collected at 2 m intervals from the rotary cone splitter. • Diamond core samples were collected at intervals up to 2 m in length based on lithological contacts pre -2003 and at 2 m for all drilling afterwards. Samples were crushed in a jaw crusher and split through a splitter to produce a 4-5 kg sample.
Drilling techniques	• Drilling was predominantly reverse circulation with a lesser portion of diamond core and dual rotary techniques. • The majority of drilling was oriented vertically. • Reverse circulation drilling utilised 140 mm diameter face sampling bit with a sample shroud, attached to a pneumatic piston hammer used to penetrate the ground and deliver samples up 6 m drill rod inner tubes (4 m starter rod) through to the cyclone and rotary cone splitter. • Diamond drilling was a combination of HQ and PQ core sizes using double and triple tube techniques. • Wet drilling for every drillhole was implemented in 2014 to mitigate the risks associated with fibrous mineral intersections. Prior to 2014 all holes were drilled dry. • Geotechnical diamond drill core was oriented using the ACE orientation tool, which marks the bottom of core at the end of each run. • Refer to Section 2, Drill hole Information, for a detailed breakdown of drilling by method and year for each deposit.
Drill sample recovery	• No direct recovery measurements of reverse circulation samples were performed; however a qualitative estimate of sample loss at the rig was made. Dried sample weights were recorded at the laboratory. • Diamond core recovery was maximised via the use of triple-tube sampling and additive drilling muds. • Diamond core recovery was recorded using rock quality designation (RQD) measurements with all cavities and core loss recorded in the Rio Tinto Iron Ore acQuire™ database (RTIODB). • Sample recovery in some friable mineralisation may be reduced; however, it was unlikely to have a material impact on the reported assays for those intervals. • Thorough analysis of duplicate sample performance did not indicate any chemical bias as a result of inequalities in sample weights.
Logging	• All drillholes were geologically logged utilising standard Rio Tinto Iron Ore Material Type Classification Scheme (RTIO MTCS) logging codes and entered into the RTIODB package on field Toughbook laptops. • Internal training and validation of logging includes RTIO MTCS identification and calibration workshops, peer reviews and validation of logging verses assay results.

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Geological logging was performed on 2 m intervals for all reverse circulation drilling, and either 1 m or 2 m intervals for diamond drillholes, depending on the level of detail required.
All diamond drill core was photographed digitally and files stored on Rio Tinto Iron Ore network servers.
Magnetic susceptibility readings were taken using a Kappameter for each interval.
Drillholes have been geophysically logged using downhole tools for gamma trace, calliper, gamma density, resistivity, and magnetic susceptibility (post-2000 at Mesa B and Mesa C post-2011 at Mesa H).

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<td>Sub-sampling techniques and sample preparation</td>
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A nominal 2 m sample interval was used for reverse circulation drilling.

Sub-sampling techniques:

Diamond core samples were crushed in a jaw crusher and passed through either a four tier riffle splitter or a rotary splitter to obtain a 4-5 kg subsample.
Pre-2000: Reverse circulation drilling program samples passed through a cyclone to a three stage cascade riffle splitter and was collected in calico bags.
Post-2003: Reverse circulation drilling samples were collected using a rotary cone splitter beneath a cyclone return system, producing approximate splits of:

'A' Split – Analytical sample – 8%
'B' Split – Retention sample – 8%
Bulk Reject – 84%.

Sample preparation:

Cape Lambert Laboratory

1-2 kilogram sample split down to a 100 gram subsample
Subsample dried and then pulverised in a rotary mill until 95% of the sample passed 100 mesh (0.15 mm).
Fine pulverised dried subsample
0.75 gram aliquot of the pulverized subsample was fused into a glass disk at 1050°C

Bureau Veritas Laboratory (formerly Ultratrace)

'A' split sample dried at 105° C.
Sample crushed to -3 mm using Boyd Crusher and split using a linear sample divider to capture 1 – 2.5 kg samples.
Robotic LM5 used to pulverise total sample (1 – 2.5 kg) to 90% of weight passing 150 micrometers (μm) sieve.
A 100 gram sub sample collected for analysis.
Diamond drill core samples were jaw crushed to -6 mm particle size (whole core sample) and follow reverse circulation sample preparation if they were to be assayed.

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<td>Quality of assay data and laboratory tests</td>
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Assay methods:

An X-Ray Fluorescence (XRF) analysis was conducted to determine:

Cape Lambert Laboratory: Fe_Calc, SiO_2, Al_2O_3, TiO_2, MnO, CaO, P, S, MgO, K_2O, Zn, Pb, Cu
Bureau Veritas Minerals Pty Ltd (formerly Ultratrace Laboratories): Fe, SiO_2, Al_2O_3, TiO_2, Mn, CaO, P, S, MgO, K_2O, Zn, Pb, Cu, Ba, V, Cr, Cl, As, Ni, Co, Sn, Sr, Zr, Na. The XRF fusion utilised a 12:22 flux (35.3% lithium tetraborate and 64.7% metaborate).

Loss on Ignition (LOI) was determined using industry standard Thermo-Gravimetric Analyser (TGA)

Cape Lambert Laboratory: LOI was measured as single LOI at 1000^{o}C
Bureau Veritas Minerals Pty Ltd (formerly Ultratrace Laboratories): LOI was measured at three steps of temperatures: 140° - 425°C, 425° - 650°C, 650° - 1000°C.

Samples were dispatched to Perth for preparation and analytical testing:

Cape Lambert Laboratory: Mesa B and Mesa C (1998-1999), Mesa H (1987-2008).
Bureau Veritas Minerals Pty Ltd (formerly Ultratrace Laboratories): Mesa B and C (post-1999), Mesa H (post-2008).

Quality Assurance measures:
1987-1999:

A field duplicate sample was collected for every 1 in 20 samples.
This generally consists of a 50:50 split of the B portion, or if the sample is small, the whole of the B portion. The original samples, for which a duplicate sample was to be collected, were from a randomly generated sample number list, which was created in Perth office prior to the drilling program. A separate sample number range was assigned to the duplicate samples for ease of extraction from the database.
Coarse standard samples were introduced for every 1 in 50 samples.

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	2000-2016: • Insertion of coarse reference standard by Rio Tinto Iron Ore geologists at a rate of one in every 30 samples in mineralised zones and one in every 60 samples in waste zones with a minimum of one standard per drillhole. Reference material was prepared and certified by Rio Tinto Iron Ore following ISO 3082:2009 (Iron Ores – Sampling and sample preparation procedures) and ISO 9516-1:2003 (Iron Ores – Determination of various elements by X-ray fluorescence spectrometry – Part 1: Comprehensive procedure). • Coarse reference standards contain a trace of strontium carbonate that was added at the time of preparation for ease of identification. • Field duplicates were collected by sacrificing a 'B' split retention sample directly from the rig splitter. Duplicate insertion occurred at a frequency of one in 20. Trace zinc was included in the duplicate sample for later identification. • At a frequency of one in 20, -3 mm splits and pulps were collected as laboratory splits and repeats respectively. These sub-samples were analysed at the same time as the original sample to identify grouping, segregation and delimitation errors. • Internal laboratory quality assurance and quality control measures involve the use of blanks, duplicates and laboratory standards using certified reference material in the form of pulps. • Random re-submission of pulps at an external laboratory was performed following analysis. • Chemical Analysis Testing (CAT) and Analytical Precision Testing (APT) samples were collected one per batch and submitted to third party (Geostats) as part of quality assurance and quality control procedures to attained analytical precision and accuracy. • Analysis of the performance of certified standard and field duplicates has indicated an acceptable level of accuracy and precision with no significant bias.
Verification of sampling and assaying	• Comparison of reverse circulation and twinned diamond drill core assay data distributions show that the drilling methods have similar grade distributions verifying the suitability of reverse circulation samples in the Mineral Resource estimate. • At Mesa C, a comparison of five diamond drillholes twinned to reverse circulation drillholes showed that the drilling methods produced very similar grade distributions verifying the suitability of the reverse circulation samples. An evident bias in Al_2O_3 values greater than 10% was observed; with the reverse circulation samples underestimating the Al_2O_3 values. This was within waste material but could highlight the effect of wet drilling in clay rich domains. The effect on the estimation confidence is assessed as low risk. • Field data was logged directly onto field Toughbook laptops using pre-formatted and validated logging templates, with details uploaded to the RTIODB on a daily basis. • All assaying of samples used in Mineral Resource estimates have been performed by independent, National Association of Testing Authorities (NATA) certified laboratories. • Assay data was returned electronically from the laboratory and uploaded into the RTIODB. • Post 2011, assay data were only accepted in the RTIODB once the quality control processes undertaken utilising the Batch Analysis tool. • Written procedures outline the processes of geological logging and data importing, quality assurance and quality control validation and assay importing. A robust, restricted-access database is in place to ensure that any requests to modify existing data go through appropriate channels and approvals, and that changes were tracked by date, time, and user.
Location of data points	• Drillhole collar reduced level (RL) data was compared to detailed topographic maps and shows that the collar survey data was accurate. • Down-hole surveys were conducted on nearly every drillhole (post 1999 at Mesa B and C and post 2011 at Mesa H), with the exception of collapsed or otherwise hazardous drillholes; any significant, unexpected deviations were investigated and validated. • At Mesa B and C, the pre-2000 drilhole collar survey pickups were completed by Robe River Ltd. using a Trimble 4000SSE Dual frequency Global Positioning System (GPS)in Australia Map Grid (AMG) coordinates applied in Australian Height Datum 1984 (AHD84). This method was used until 2002 at Mesa H. • Post-2000 drillhole collar survey pickups at Mesa B and C were completed by Rio Tinto Iron Ore surveyors using Real Time Kinematic (RTK) in Mine Grid of Australia 1994 (MGA94) zone 50. The various grids utilized at Mesa B and C were later projected to the Map Grid of Australia 1994 (MGA94) zone 50. • Post-2002 drillhole collar survey pickups at Mesa H were completed by Rio Tinto Iron Ore surveyors using Differential Global Positioning Survey (DGPS) equipment with 10 centimetre horizontal and vertical accuracy. The data collected at Mesa H was subsequently translated to the Mesa J Mine Grid (MJMG). • Collar location data was validated by checking actual versus planned coordinate discrepancies. Once validated, the survey data was uploaded into the drillhole database. • All drillholes interpreted and used in the resource model have surveyed coordinates. Drillholes with suspect collar coordinates were excluded from the data set.

	• The topographic surface has been derived from a 5 m resolution composite surface developed from surface mapping and Light Detecting and Ranging (LiDAR) data from 2015-2016.
Data spacing and distribution	• Drillhole spacing was predominately 50 m x 50 m over the deposits. There were areas of 100 m x 100 m drill spacing in Mesa C and H, extending out to 200 m x 200 m in some areas of Mesa H. • The drill spacing was deemed appropriate for sufficient deposit knowledge by the Competent Person for the Mineral Resource classification applied. • The mineralised domains for Mesa B, C, and H have demonstrated sufficient continuity in both geology and grade to support the definition of Mineral Resources, and the classifications applied under the 2012 JORC Code guidelines.
Orientation of data in relation to geological structure	• The drill lines were oriented perpendicular to the individual deposits strike as follows: o North-South orientation at Mesa B; o East-West orientation at Mesa C and Mesa H. • The vertical drillholes intersect the stratigraphy at perpendicular angle. The geological structures are simple undulating stratigraphy, no folds or faulting are present.
Sample security	• The sample chain of custody is managed by Rio Tinto Iron Ore. • Analytical samples ('A' splits) were collected by field assistants, placed onto steel sample racks and delivered to Perth by a recognised freight service and then to the assay laboratory by a Perth-based courier service. Whilst in storage the samples were kept in a locked yard. • Retention samples ('B' splits) were collected and stored in drums at on-site facilities. • 150 grams of excess pulps from primary samples was retained indefinitely at laboratories and external storage facilities at CTI Logistics Ltd in Perth, Western Australia.
Audits or reviews	• No external audits have been performed specifically on sampling techniques or data. • Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques were appropriate.

SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary

Mineral tenement and land tenure status	• The Mesa B and Mesa C deposits lie within Mineral Lease (ML) 248SA Sec 101 and Exploration License E08/01148. Exploration License E08/01148 will be converted to ML248SA prior to development of the Mesa B and Mesa C Deposits
	• The Mesa H deposit lies within ML248SA Sec 103 Pt and Sec 104.
	• Mineral Lease ML248SA is held by Robe River Limited, and sub-leased to the Robe River Joint Venture. Exploration Licence E08/01148 is held by the Robe River Joint Venture.
	• The Robe River Joint Venture is managed on behalf of the participants by Robe River Mining Co Pty Limited. The particpants of the joint venture are :
	  o Robe River Mining Co. Pty Limited,
	  o Mitsui Iron Ore Development Pty Limited,
	  o North Mining Limited,
	  o Cape Lambert Iron Associates,
	  o Pannawonica Iron Associates.
	• There are currently no known or anticipated impediments to converting E08/01148 to ML248SA or to developing the resources within this tenure.

Exploration done by other parties	• Exploration drilling was conducted by Broken Hill Propriety in the 1960s across multiple deposits in the area including Mesa B, C, and H.
	• Robe River Ltd. conducted the following work:
	  o Drilling at Mesa B (13 RC drillholes) and Mesa C (27 RC drillholes) in 1999 and at Mesa H between 1987-1999 (341 drillholes – various drilling methods).
	  o 1:10,000 scale mapping based on aerial photographs.

Geology	• The Mesa B, C, and H deposits are Channel Iron Deposits (CID). • The deposits are a part of a series of flat topped hills, defining the paleochannel of the Robe River. They consist of pisolite infilling the paleochannel, which cuts across the Cretaceous to Proterozoic stratigraphy. • Mineralisation is confined to the Tertiary Pisolite. • A hydrated hardcap overlies the mineralised pisolite. • Non-mineralised clay layers and pods have been domained separately. • The entire Mesa B Mineral Resource lies above the water table. Approximately 20% of the Mesa C and 54% of the Mesa C Mineral Resources lie below the water table.

Drill hole Information	

Drill hole Information

Mesa B

- Summary of drilling data used for the Mesa B Mineral Resource estimate:

Year	Diamond Holes		Reverse Circulation	
	# Holes	Metres	# Holes	Metres
1999	-	-	13	500
2004	-	-	12	534
2006	-	-	56	2,514
2014	5	169	149	6,164
2015	-	-	250	11,152
Total	**5**	**169**	**480**	**20,864**

- An additional 39 Diamond drillholes were used for geological interpretation only due to unreliable or incomplete assay and/or collar survey data.

Mesa C

- Summary of drilling data used for the Mesa C Mineral Resource estimate:

Year	Diamond Holes		Reverse Circulation	
	# Holes	Metres	# Holes	Metres
1999	-	-	27	1,224
2006	-	-	55	3,488
2007	-	-	77	4,722
2014	5	298	-	-
2015	-	-	218	14,107
2016	-	-	269	16,362
Total	**5**	**298**	**646**	**39,903**

- An additional 30 drill holes (26 Diamonds and 4 RCs) were used for geological interpretation only due to unreliable or incomplete assay and/or collar survey data.

Mesa H

- Summary of drilling data used for the Mesa H Mineral Resource estimate:

Year	Diamond Holes		Unknown Drilling Method		Reverse Circulation	
	# Holes	Metres	# Holes	Metres	# Holes	Metres
UNKNOWN	-	-	9	223	-	-
1988	-	-	1	19	-	-
1990	2	81	-	-	-	-
1998*	37	1,592	-	-	-	-
1999*	118	4,920	1	52	25	534
2000*	267	12,272	1	40	11	265
2001	44	2,202	-	-	67	2,580
2002	26	864	-	-	-	-
2012	-	-	-	-	244	14,522
2013	9	438	-	-	178	9,204
2014	-	-	-	-	392	20,664
2015	-	-	-	-	634	26,219
2016	-	-	-	-	1,354	56,043
Total	**503**	**22,369**	**12**	**334**	**2,905**	**130,031**

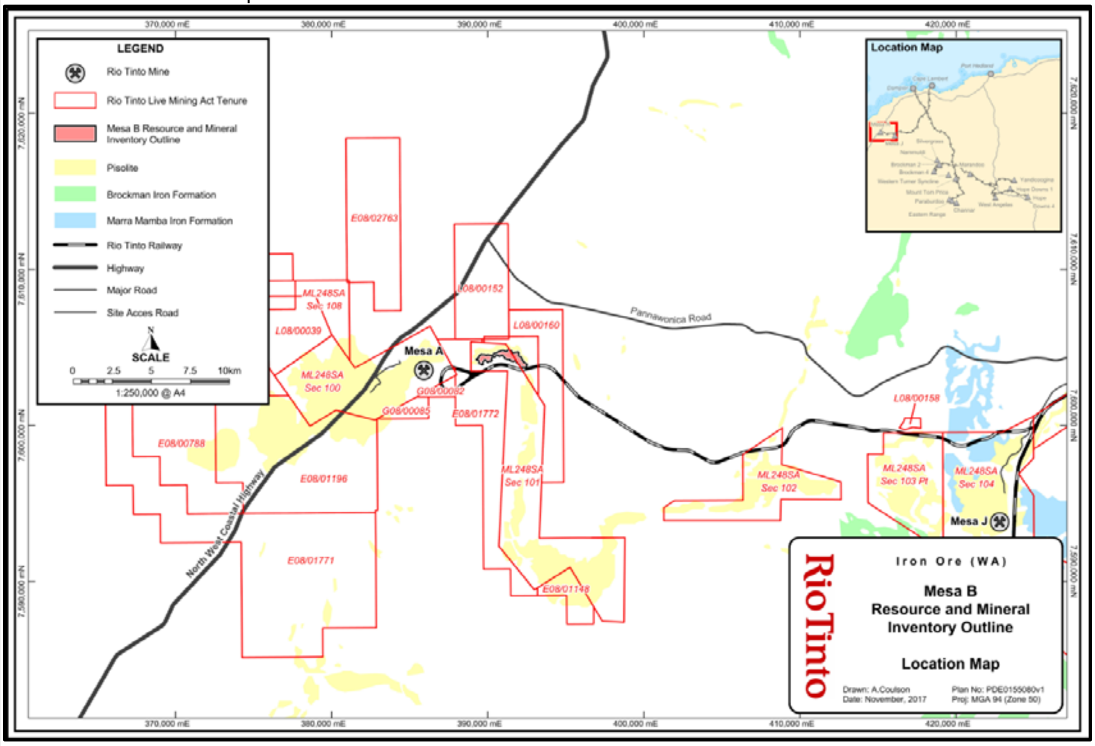
*including Dual Rotary

- An additional 173 drill holes (121 of unknown drilling method) were used for geological interpretation only due to unreliable or incomplete assay and/or collar survey data.

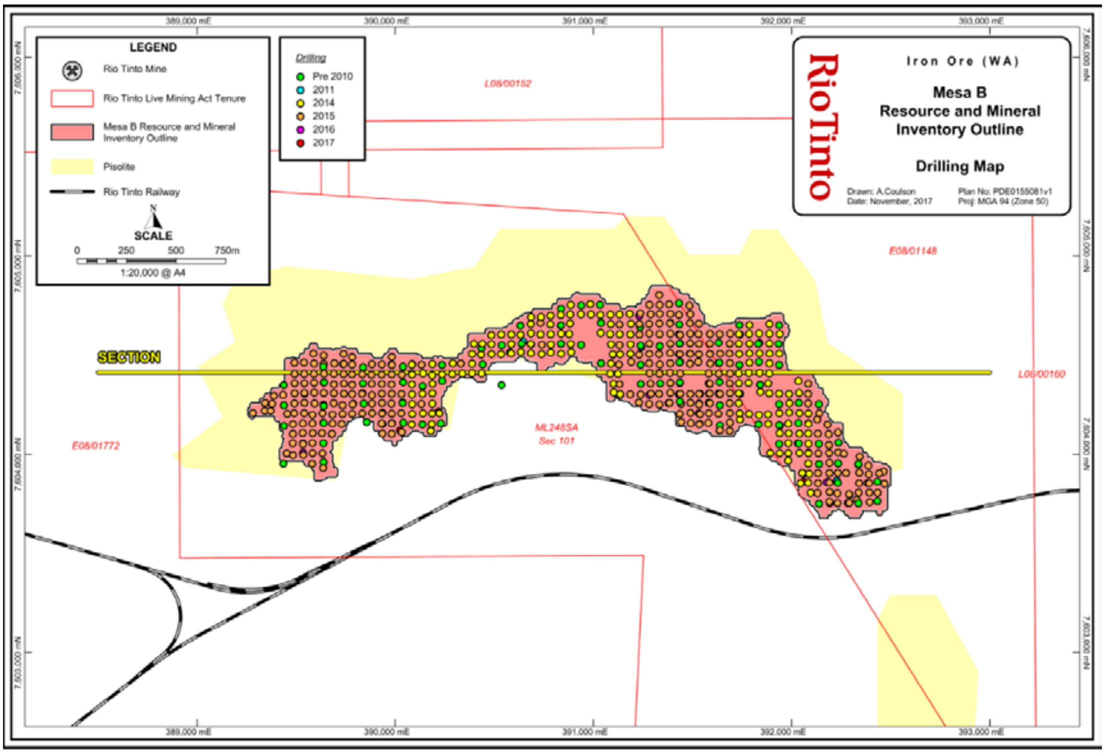
Data aggregation methods	• All assay, geology, and density data have been composited to 2 m for Mineral Resource modelling and estimation. • Analysis of the determination of the composite length and residual composite length undertaken as part of the estimation process. • No grade truncations were performed.
Relationship between mineralisation widths and intercept lengths	• Down-hole sample lengths reported are essentially true width due to predominantly vertical drilling and simple undulating stratigraphy. No folds or faulting are present.

Diagrams	Mesa B

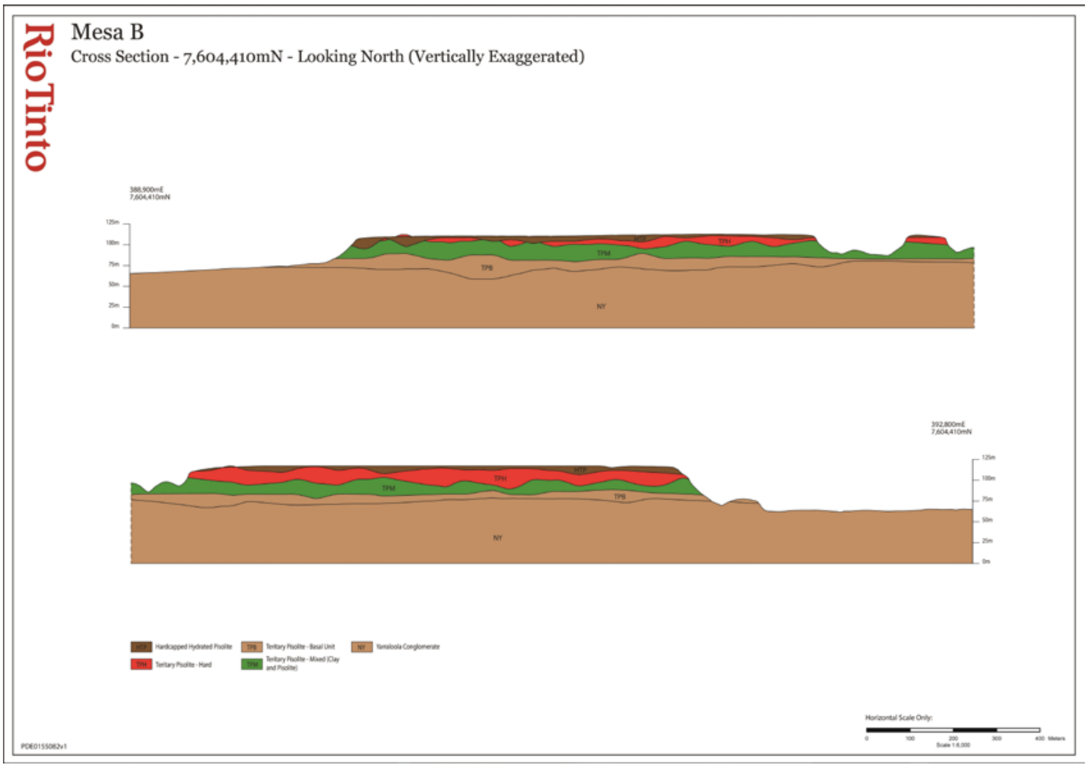
Mesa B Location Map :



Mesa B Drillhole Locations :

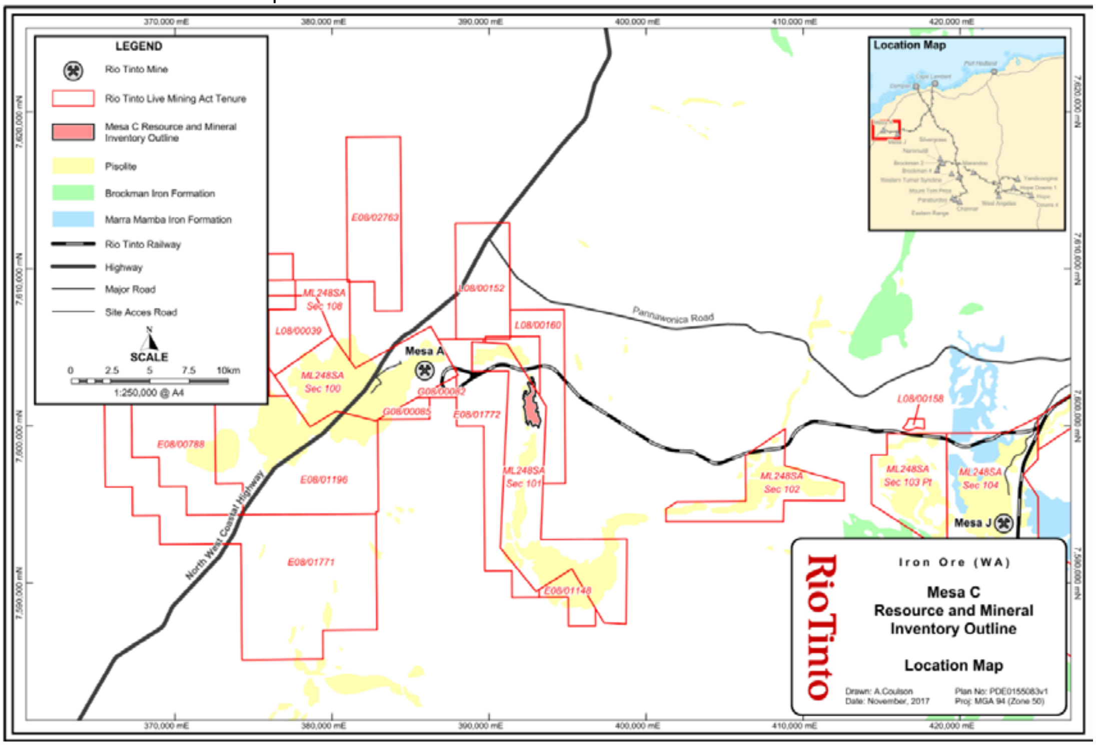


Mesa B Geological Cross Section :

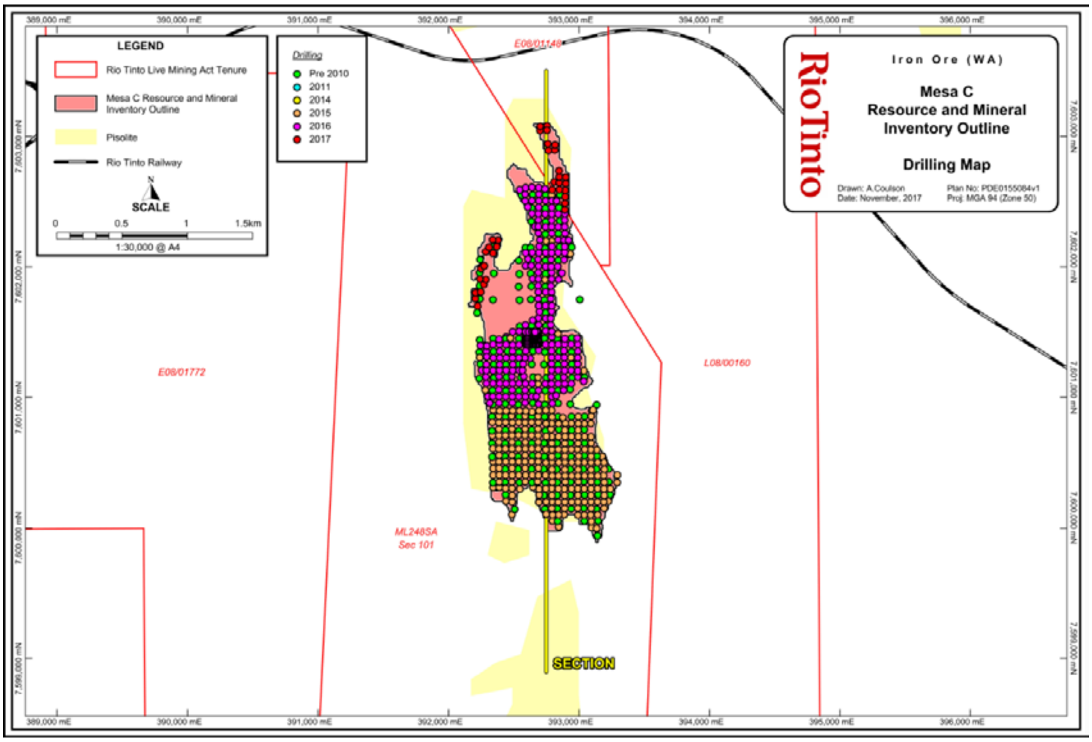


<u>Mesa C</u>

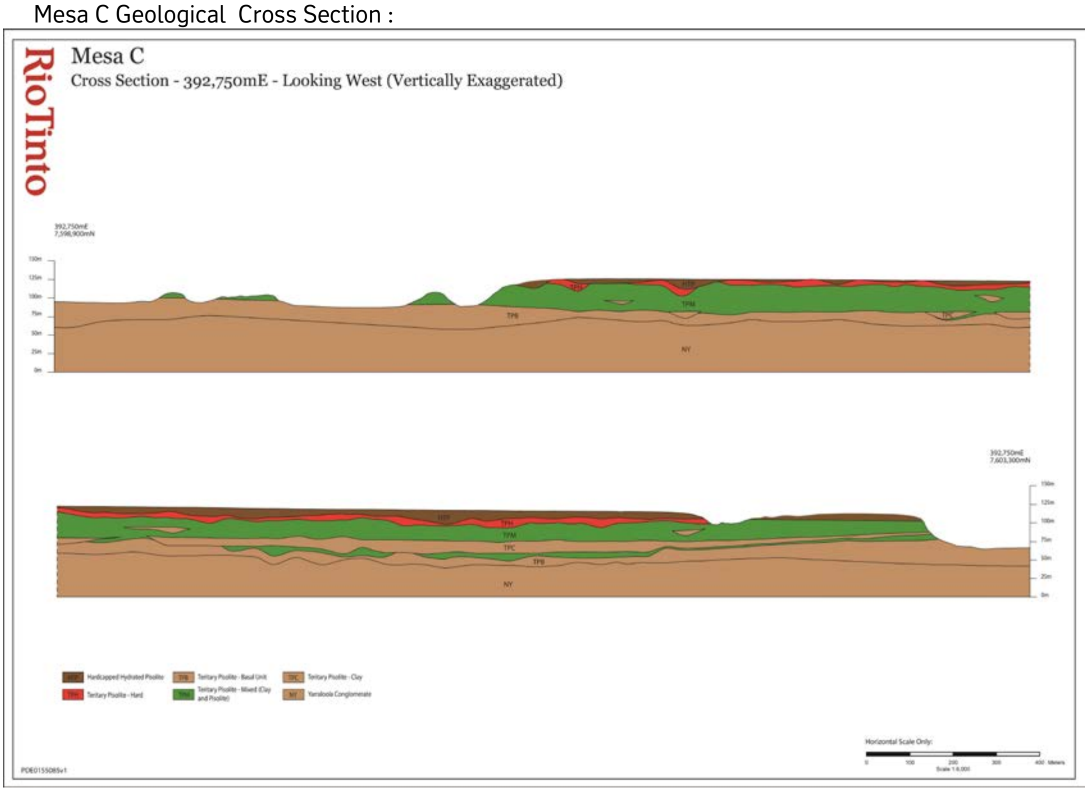
Mesa C Location Map :



Mesa C Drillhole Location :

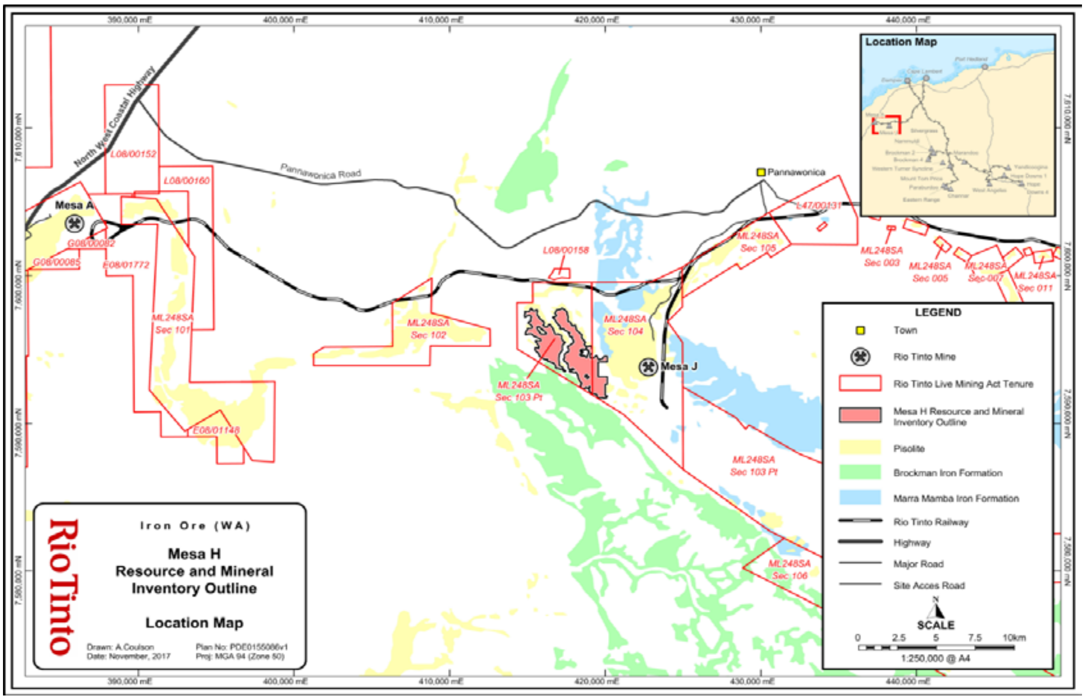


Mesa C Geological Cross Section :

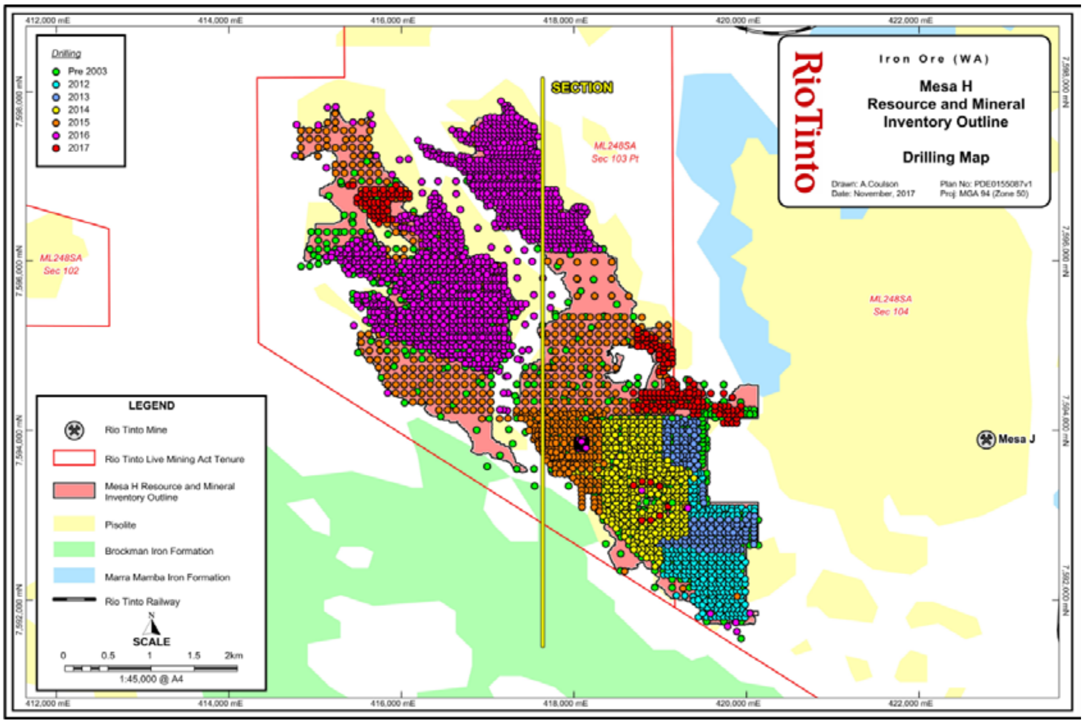


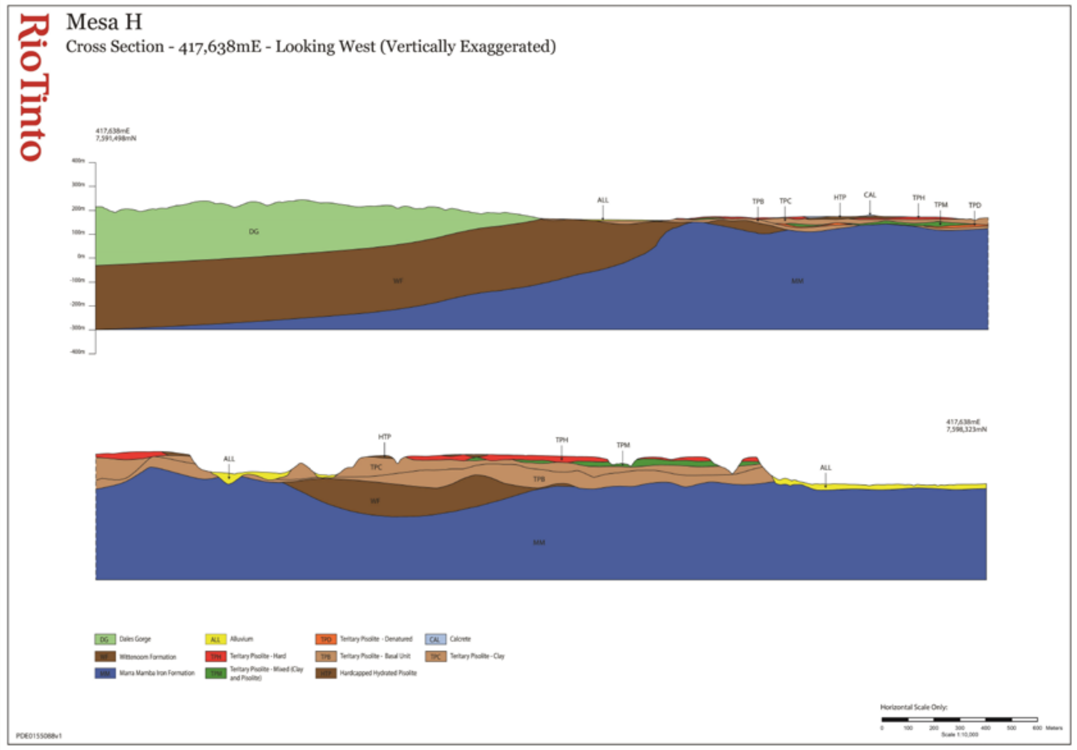
Mesa H

Mesa H Location Map :



Mesa H Drillhole Location :



	Mesa H Geological Cross Section : 
Balanced reporting	• Not applicable as Rio Tinto has not specifically released exploration results for these deposits.
Other substantive exploration data	• The Robe Valley was mapped at a scale of 1:10,000 using aerial photographs in 1999 to delineate the pisolite within the mesas, identify the outcropping basement and any clay rich areas.
Further work	• At Mesa C and H, further reverse circulation drilling is planned to reach a final infill spacing of 50 m x 50 m.

SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	Commentary
Database integrity	• All drilling data is securely stored in the Rio Tinto Iron Ore acQuire™ database (RTIODB). managed by dedicated personnel within Rio Tinto Iron Ore. The system is backed up nightly on servers located in Perth, Western Australia. The backup system was tested in January 2017, demonstrating that the system is effective. • The import/exporting process requires limited keyboard transcription and has multiple built-in safeguards to ensure information is not overwritten or deleted. These include: o Data is imported and exported through automated interfaces, with limited manual input; o Inbuilt validation checks ensure errors are identified prior to import; o Once within the RTIODB, editing is very limited and warning messages ensure accidental changes were not made; o Audit trail records updates and deletions should an anomaly be identified; o Export interface ensures the correct tables, fields and format are selected. • The drillhole database used for Mineral Resource estimation has been internally validated. Methods include checking: o acQuire™ scripts for relational integrity, duplicates, total assay and missing / blank assay values; o Grade ranges in each domain; o Domain names; o Survey data down-hole consistency; o Null and negative grade values; o Missing or overlapping intervals; o Duplicate data. • Drillhole data was also validated visually by domain and compared to the geological model.
Site visits	• The Competent Person has regularly visited the Robe Valley Mesa deposits between 2011-2017. There were no outcomes as a result of the most recent visit.
Geological interpretation	• Overall the Competent Person's confidence in the geological interpretation of the area is good, based on the quantity and quality of data available, and the continuity and nature of the mineralisation. • Geological modelling was performed by Rio Tinto Iron Ore geologists. The method involves interpretation of stratigraphy using surface geological mapping, lithological logging data, down-hole gamma data, and assay data. • Cross-sectional interpretation of each stratigraphic unit was performed followed by interpretation of mineralisation boundaries. Three-dimensional wireframes of the sectional interpretations were created to produce the geological model. • The geological model was subdivided into domains and both the composites and model blocks were coded with these domains. • Mineralisation is continuous. It is affected by stratigraphy and weathering. The drillhole spacing is sufficient to capture density, grade and geology variation for Mineral Resource reporting.
Dimensions	<u>Deposit Specific Statements</u> <u>Mesa B</u> • The Mesa B deposit strikes east-west with an along strike length of approximately 3.6 km and a width between 450 m and 950 m. The mineralisation extends from surface to a depth of 30 m in the centre of the channel, thinning towards the margins of the paleochannel. <u>Mesa C</u> • The Mesa C deposit strikes north-south with an along strike length of approximately 3.3 km and a width up to 1.0 km. The mineralisation extends from surface to a maximum depth of 100 m below surface (averaging 75 m in depth), thinning towards the margins of the paleochannel. <u>Mesa H</u> • The Mesa H deposit strikes approximately north-west/south-east with an along strike extent of approximately 7.8 km and a width of up to 3 km. The mineralisation extends from surface to a depth of 70 m, thinning towards the margins of the paleochannel.
Estimation and modelling	• Ten grade attributes (Fe, SiO_2, Al_2O_3, P, Mn, LOI, S, TiO_2, MgO, and CaO), and density were estimated for input into Mine Planning and Marketing assessments. • The grade estimation process was completed using Maptek™ Vulcan™ software.

techniques	• The block model was rotated to align with the orientation of the deposit. • Statistical analysis was carried out on data from all domains. • The block model was validated using a combination of visual, statistical, and multivariate global change of support techniques. • A block size of 25 m (X) × 25 m (Y) × 4 m (Z) was used for parent blocks. Parent blocks were split into sub-blocks along geological boundaries to preserve volume. • Mineralised domains were predominantly estimated by ordinary kriging. Non-mineralised domains were estimated by inverse distance weighting to the first power. These methods were deemed appropriate by the Competent Person for estimating the tonnes and grade of the reported Mineral Resources. • All domains were estimated using samples from the same domain. • Grades were extrapolated to a maximum distance of approximately 200 m – 500 m from data points. • High yield limits were applied when deemed appropriate.
Moisture	• All Mineral Resource tonnages are estimated and reported on a dry basis.
Cut-off parameters	• The cut-off grade for Mineral Resource material is determined based on geological units.
Mining factors or assumptions	• Development of this Mineral Resource assumes mining using standard Rio Tinto Iron Ore equipment and methods similar to other Rio Tinto Iron Ore operations. The assumed mining method is conventional truck and shovel, open pit mining at an appropriate bench height. Mining practices will include grade control utilising blast hole data. • It is planned to blend ore from Mesa B, C, and H with ore from other Robe Valley mine sites to make a saleable product. This plan is in line with current Rio Tinto Iron Ore practices where ore from multiple mine sites is combined to produce the Robe Valley product.
Metallurgical factors or assumptions	• It is assumed that a mixture of dry and wet crush and screening processes used by Rio Tinto Iron Ore will be applicable for the processing of Mesa B, C, and H.
Environmental factors or assumptions	• Rio Tinto Iron Ore has an extensive environmental approval process. A detailed review of these requirements was undertaken as part of a Pre-Feasibility Study, and based on this work; the proposal was determined to require formal State and Commonwealth environmental assessment and approval. • Mapping of oxidised shales, black carbonaceous shales, lignite, and the location of the water table, is used in prediction and planning for the treatment of potential environmental impacts. This process is in accordance with Rio Tinto's Chemically Reactive Mineral Waste Standard.

Bulk density	• Dry bulk density was derived from accepted gamma-density data collected at 10 cm intervals from down-hole geophysical sondes.
	• Dry core densities were generated via the following process:
	  o The core volume was measured in the split and the mass of the core was measured and recorded.
	  o Wet core densities were calculated by the split and by the tray.
	  o Core recovery was recorded.
	  o The core was then dried and dry core masses were measured and recorded.
	  o Dry core densities were then calculated.
	• Accepted gamma-density values were estimated using ordinary kriging or inverse distance weighting to the first power in mineralised zones and inverse distance weighted to the first power in non-mineralised zones.
	• Estimated gamma-density values were corrected for moisture using diamond drill core twinned with reverse circulation drilling.

Classification	• The Mineral Resource has been classified into the categories of Measured, Indicated, and Inferred. The determination of the applicable resource category has considered the relevant factors (geology, mineralisation continuity, sample spacing, data quality, and others). • The Competent Person is satisfied that the stated Mineral Resource classification reflects the relevant factors of the deposits.
Audits or reviews	• All stages of Mineral Resource estimation have undergone a documented internal peer review process, which has documented all phases of the process. The Mineral Resource estimate has been accepted by the Competent Person.
Discussion of relative	• Rio Tinto Iron Ore operates multiple mines in the Pilbara region of Western Australia. The

accuracy/ confidence	Mineral Resource data collection and estimation techniques used for Mesa B, C, and H are consistent with those applied at other deposits which are being mined. Reconciliation of actual production with the Mineral Resource estimates for individual deposits is generally accurate to within ten percent for tonnes on an annual basis. This result is indicative of a robust process. • The accuracy and confidence of the Mineral Resource estimate is consistent with the current level of study (Pre-Feasibility).

SECTION 4 ESTIMATION AND REPORTING OF ORE RESERVES

Criteria	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• The modifying factors for this Ore Reserve estimate were based on Mineral Resource estimates completed in May 2017 (Mesa B), March 2017 (Mesa C) and May 2016 (Mesa H). • The most recent Mineral Resource estimate together with the latest update of pit designs were used for reporting Ore Reserves. • The declared Ore Reserves are for Mesa B, C, and H. • Mineral Resources are reported additional to Ore Reserves.
Site visits	• The Competent Person visited the Robe Valley operations in 2017.
Study status	• The Robe Valley is an existing operating hub with production currently from Mesa J, Mesa A and Warramboo. • Mesa B, C, and H are proposed new operating areas and a Pre-Feasibility Study for these was completed in 2017. • A Feasibility study is in progress.
Cut-off parameters	• For Mesa B and C, the cut-off grade for high-grade ore is greater than 55% Fe, Al_2O_3<= 4% and SiO_2 <= 8%, whilst for LG feed it is >50% Fe, Al_2O_3<= 6% and SiO_2 <= 8%. • For Mesa H, the cut-off grade for high-grade ore is greater than 55% Fe, Al_2O_3<= 3.5% and SiO_2 <= 6%, whilst for blendable and LG feed it is Fe > 52%, Al_2O_3<= 4.5% and SiO_2 <= 8%.
Mining factors or assumptions	• The Mineral Resource models were regularised to a block size of 25 m E × 25 m N × 4 m RL for all deposits. These were determined to be the selective mining unit following an analysis of a range of selective mining units. Dilution and mining recovery were modelled by applying the regularisation process to the sub-block geological model. • Metallurgical models were applied to the regularised model in order to model products tonnage, grades and yields. • Pit optimisations utilising the Lerchs-Grosmann algorithm with industry standard software were undertaken. This optimisation utilised the regularised Mineral Resource model together with cost, revenue, and geotechnical inputs. The resultant pit shells were used to develop detailed pit designs with due consideration of geotechnical, geometric and access constraints. These pit designs were used as the basis for production scheduling and economic evaluation. • During the above process, Inferred Mineral Resources were excluded from mine schedules and economic valuations utilised to validate the economic viability of the Ore Reserves. • Conventional mining methods (truck and shovel) similar to other Rio Tinto Iron Ore operating mines are utilised. • The geotechnical design recommendations have been applied based on geotechnical studies informed by assessment of diamond drillholes drilled during the 1999, 2013 and 2016 drilling programmes, specifically drilled for geotechnical purposes on the surrounding host rock.
Metallurgical factors or assumptions	• Mesa B and C ore will be processed through a planned new wet processing facility located at the existing Mesa A site. The Mesa A wet processing plant will scrub and screen the ore to produce a washed coarse ore product. The wet processing facility will be a modification of the existing Mesa A process plant and is due to be commissioned in 2021. • Mesa H ore will be processed through the existing dry and wet processing facilities at the Mesa J site, which will be modified with the increase of ore coming from the Mesa J hub. A new screening plant is to be installed to reduce the cut point to -0.5 mm cut point, compared to the existing -1 mm cut point. This ore will be combined with dry processed ore before being railed to Cape Lambert. • Product prediction regressions were assigned to the designated domains, based on the most

	appropriate available metallurgical data generated from PQ drill core. • The regressions assume a cut size of approximately 9.5 mm between lump and fines and a cut size of approximately 500 µm between the fines product and tails. • Product moisture assumptions were based on a combination of data from operating sites with similar ore type and results from bench to pilot scale product dewatering test work. • The product will be railed to Cape Lambert to generate a lump and fines product. Conversion of railed products to shipped products is based on the results of test work that estimates the conversion during rail and port handling process. • The regressions prediction confidence is relatively high for Mesa B, C, and H. The regressions were derived from test work performed on metallurgical PQ drill samples that were selected to represent the ore bodies both spatially and with depth. Existing operating knowledge of Mesa A and J also provides a good indication of expected process plant performance and product grades.
Environmental	• Robe River Mining Co. Pty Ltd. has undertaken environmental surveys across the Proposal Areas to support the development of the Mesa A Hub and Mesa H Proposals. Surveys included flora and vegetation, terrestrial fauna, aquatic fauna and subterranean fauna. • Robe River Mining Co. Pty. Limited. referred the Mesa A Hub Proposal (including Mesas B and C) to the Environmental Protection Authority (EPA) in November 2016 and to the Commonwealth Department of the Environment and Energy (DotEE) in December 2016. The level of assessment for the Mesa A Hub Proposal was set at Environmental Review under the Environmental Protection Act (EP Act) and the Proposal was considered by the DotEE to be a Controlled Action under the Environment Protection and Biodiversity Conservation Act 1986 (EPBC Act) for threatened listed species (Section 18 and 18A) and will be assessed as an accredited assessment under the EP Act process. • The Mesa A Hub Proposal includes the development of resources at Mesa B (above water table) and Mesa C (above and below water table), management of abstracted water, installation and operation of a wet processing plant, and disposal of waste fines material. The EPA prepared an Environmental Scoping Document (ESD) which identified the following key environmental factors relevant to the Proposal: *Flora and Vegetation*; *Terrestrial Fauna; Subterranean Fauna*; *Hydrological Processes; Inland Waters Environmental Quality; Landforms* and *Social Surroundings.* • The Mesa H Proposal (Revision to Mesa J) was referred to the Environmental Protection Authority in June 2017 and to the Commonwealth Department of the Environment and Energy (DotEE) in August 2017. The level of assessment for the Mesa H Proposal was set as a Public Environmental Review (2 week review) under the Environmental Protection Act (EP Act) and the Proposal was considered by the DotEE to be a Controlled Action under the Environment Protection and Biodiversity Conservation Act 1986 (EPBC Act) for threatened listed species (Section 18 and 18A) and will be assessed as an accredited assessment under the EP Act process. • The Mesa H Proposal includes the development of above and below water table resources, management of abstracted water, management of surface water, management of mineral waste, disposal of waste fines material and integration with Mesa J wet processing and rail facilities. The Proponent prepared an Environmental Scoping Document (ESD) which identified the following key environmental factors relevant to the Proposal: *Flora and Vegetation*; *Terrestrial Fauna; Subterranean Fauna*; *Hydrological Processes; Inland Waters Environmental Quality; Social Surroundings; Landforms* and *Air quality.* • Studies of potential environmental impacts of the proposed mining and processing operations for the Mesa A Hub and for Mesa H are well progressed. • A geochemical risk assessment has been completed for Mesa B, C, and H (Robe Valley AMD Risk Assessment (October 2016, RTIO-PDE-0061933), as well as recent updates to support the Section 38 Referrals (RTIO-PDE-0154172; RTIO-PDE-0154270)). All rock types associated with the project areas have been assessed, and geochemical tests have been conducted in accordance with industry standards. Mining in these areas poses a low acid and metalliferous drainage (AMD) risk. Rock types that pose an AMD risk (e.g., sulfidic black shale of the Wittenoom Formation or Nanutarra Formation) are unlikely to be encountered during mining, or if minimal exposures do occur with updated mine plans, potentially acid forming (PAF) material will be managed via the Iron Ore (WA) Spontaneous Combustion and ARD (SCARD) Management Plan for Operations.
Infrastructure	• Mesa B and Mesa C will utilise a new wet processing plant, whilst Mesa H utilises the existing Mesa J facilities. • Ore will be railed to Rio Tinto Iron Ore's existing ports. The port and railway networks will have sufficient capacity to accommodate ore supply from Mesa B, C and H.
Costs	• Operating costs were benchmarked against similar operating Rio Tinto Iron Ore mine sites. • Exchange rates were forecast by analysing and forecasting macro-economic trends in the

	Australian and world economy. • Transportation costs were based on existing operating experience at Rio Tinto Iron Ore mine sites in the Pilbara, Western Australia. • Allowances have been made for royalties to the Western Australian government and other private stakeholders.
Revenue factors	• Rio Tinto applies a common process to the generation of commodity prices across the group. This involves generation of long-term price curves based on current sales contracts, industry capacity analysis, global commodity consumption and economic growth trends. In this process, a price curve rather than a single price point is used to develop estimates of mine returns over the life of the project. The detail of this process and of the price point curves is commercially sensitive and is not disclosed.
Market assessment	• The supply and demand situation for iron ore is affected by a wide range of factors, and as iron and steel consumption changes with economic development and circumstances. Rio Tinto Iron Ore delivers products aligned with its Mineral Resources and Ore Reserves; these products have changed over time and successfully competed with iron ore products supplied by other companies.
Economic	• Economic inputs such as foreign exchange rates, carbon pricing, and inflation rates are also generated internally at Rio Tinto. The detail of this process is commercially sensitive and is not disclosed. • Sensitivity testing of the Mesa B, C, and H Ore Reserves using both Rio Tinto long-term prices and a range of published benchmark prices demonstrates a positive net present value for the project sufficient to meet Rio Tinto investment criteria.
Social	• The Mesa B & C deposits are located within Mining Lease (ML) 248SA section 101 and Mesa H is located within Mining Lease (ML) 248SA section pt103, which have been granted pursuant to the Iron Ore (Robe River) Agreement Act 1964. • The Mesa B, C, and H mines and proposed associated infrastructure falls wholly within the area of the Kuruma Marthudunera groups' registered native title determination. • Ethnographic and archaeological surveys of the project area have been completed with representation by Traditional Owner representatives, and all known sites have been located, recorded and considered during mine planning and engineering activities. • Rio Tinto Iron Ore has an extensive heritage approval process. A review of these requirements was undertaken during a PFS and the current FS study. Prior to the construction of Mesa B, Mesa C and Mesa H comprehensive archaeological and ethnographic surveys were undertaken. These surveys resulted in the identification of a large number of heritage sites. The locations of these sites are considered during the planning process. Section 18 approvals are currently being sought for those sites that cannot be avoided. These sites will also need to be salvaged in accordance with any section 18 conditions and in consultation with Kuruma Marthudunerai people. A number of heritage sites will remain within the project area. These sites are being managed in situ.
Other	• Semi-quantitative risk assessments have been undertaken throughout study phases, no material naturally occurring risks have been identified through the above mentioned risk management processes.
Classification	• The Ore Reserves for Mesa B consist of 45% and 55% and for Mesa C of 36% and 64% and for Mesa H of 49% and 51% Proved Reserves and Probable Reserves respectively. • The Competent Person is satisfied that the Ore Reserve classification reflects the outcome of technical and economic studies.
Audits or reviews	• No external audits have been performed. • Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques are appropriate.
Discussion of relative accuracy/ confidence	• Rio Tinto Iron Ore operates multiple mines in the Pilbara region of Western Australia. The Ore Reserve estimation techniques utilised for Mesa B, C, and H are consistent with those applied at the existing operations. Reconciliation of actual production with the Ore Reserve estimate for individual deposits is generally within 10 percent for tonnes on an annual basis. This result is indicative of a robust Ore Reserve estimation process. • For Mesa B, C, & H, accuracy and confidence of modifying factors are generally consistent with the current level of study (Pre-Feasibility Study).

West Angelas Deposit C and Deposit D - Table 1

The following table provides a summary of important assessment and reporting criteria used at the West Angelas Deposit C and Deposit D (WACD) for the reporting of Mineral Resources and Ore Reserves, in accordance with the Table 1 checklist in *The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition)*. Criteria in each section apply to all preceding and succeeding sections.

SECTION 1 SAMPLING TECHNIQUES AND DATA

Criteria	Commentary
Sampling techniques	• Samples for geological logging, assay, geotechnical, metallurgical and density test work were collected via drilling. • Geological logging and assay samples were collected at 2 m intervals from reverse circulation drilling. • Diamond core drilling used double and triple-tube techniques and samples were taken at 1 m intervals. • Geotechnical samples were collected from diamond core drilling of HQ-3 core. • Density samples were collected from diamond core drilling of HQ-3 and PQ-3 core. • Metallurgical samples were collected from diamond core drilling of PQ-3 core. • Dry bulk density was derived from accepted gamma-density data collected at 10 cm intervals from down-hole geophysical sondes. • Mineralisation boundaries were interpreted from a combination of geological logging and geochemical assay results. • Drilling was conducted on a north-south grid at 50 m x 50 m collar spacing utilising reverse circulation and diamond drilling. All intervals were sampled. • Reverse circulation drilling utilises a static or rotary cone splitter beneath a cyclone return system to obtain a primary and secondary sample, with particular attention on samples collected being of comparable weights. An 'A' and 'B' sub-sample each representing 8% of the mass was collected at 2 m intervals from the rotary cone splitter.
Drilling techniques	• The majority of drilling was oriented at a dip of -80°; with some vertical holes. • Reverse circulation drilling utilised 140 mm diameter face sampling bit with a sample shroud, attached to a pneumatic piston hammer used to penetrate the ground and deliver samples up 6 m drill rod inner tubes (4 m starter rod) through to the cyclone and rotary cone splitter. • Wet drilling was implemented for all drillholes to mitigate the risks associated with fibrous mineral intersections. • Geotechnical diamond drill core was oriented using the ACE orientation tool, which marks the bottom of core at the end of each run. • Acoustic and optical televiewer images were used in specific reverse circulation and diamond drill core holes throughout the deposit to acquire additional structural orientation data. • Diamond drilling was a combination of HQ and PQ core sizes using double and triple tube techniques. • Drilling was predominantly reverse circulation with a lesser proportion of dual rotary and diamond drill core • Refer to Section 2, Drill hole Information, for a detailed breakdown of drilling by method and year.
Drill sample recovery	• No direct recovery measurements of reverse circulation samples were performed; however a qualitative estimate of sample loss at the rig was made. Dried sample weights were recorded at the laboratory. • Diamond core recovery was maximised via the use of triple-tube sampling and additive drilling muds. • Diamond core recovery was recorded using rock quality designation (RQD) measurements with all cavities and core loss recorded in the Rio Tinto Iron Ore acQuire™ database (RTIODB). • Sample recovery in some friable mineralisation may be reduced; however, it was unlikely to have a material impact on the reported assays for those intervals. • Thorough analysis of duplicate sample performance does not indicate any chemical bias as a result of inequalities in samples weights.
Logging	• All drillholes are geologically logged utilising standard Rio Tinto Iron Ore Material Type Classification Scheme (RTIO MTCS) logging codes and entered into the RTIODB package on field Toughbook laptops.

	• Internal training and validation of logging includes RTIO MTCS identification and calibration workshops, peer reviews and validation of logging versus assay results. • Geological logging was performed on 2 m intervals for all reverse circulation drilling, and either 1 m or 2 m intervals for diamond holes, depending on the level of detail required. • All diamond drill core was photographed digitally and files stored on Rio Tinto Iron Ore network servers. • Magnetic Susceptibility readings were taken using a Kappameter for each interval. • 2012-2016, all drillholes have been geophysically logged using downhole tools for gamma trace, calliper, gamma density, resistivity, and magnetic susceptibility. • Open-hole acoustic and optical televiewer image data have been collected in specific reverse circulation and diamond drill core holes throughout the deposit for structural analyses. • Data collected from pre-2000 campaigns was recorded on paper logs, and mineral constituents resolved predominantly to 5%, with 1% resolutions also used (rarely) for minor or trace constituents.
Sub-sampling techniques and sample preparation	• A nominal 2 m sample interval was used for reverse circulation drilling. Sub-sampling techniques: • Pre-2000: Reverse circulation drilling program samples collected from a rig-mounted, multi-level riffle with a split ratio of 7.5% with an 85% reject. • 1998-1999: Reverse circulation drilling samples were collected in calico bags using a four tier Jones riffle splitter producing two samples with a split ratio of 7.5% with an 85% reject. • 2012-2016: Reverse circulation drilling samples were collected using a rotary cone splitter beneath a cyclone return system, producing approximate splits of: ▪ 'A' Split – Analytical sample – 8% ▪ 'B' Split – Retention sample – 8% ▪ Bulk Reject – 84%. Sample preparation: • 1998-1999: o Samples were sorted and booked into the laboratory LIMS and allocated a laboratory number. Barcoded labels were generated for each sample. o The whole sample was dried at 105°C in gas-fired ovens. o If required the sample will be crushed using a Jacques Jaw Crusher to approximately -5 mm. o The entire sample was pulverised for samples 3.5 kg and under. Samples over 3.5 kg were split in half and one half pulverised. Samples containing greater than 2.5% combined water were pulverised to 90% passing 150µm. All other samples were pulverised to 95% passing 106 µm. • 2012-2016: o 'A' split sample dried at 105° C. o Sample crushed to -3 mm using Boyd Crusher and split using a linear sample divider to capture 1 – 2.5 kg samples. o Robotic LM5 used to pulverise total sample (1 – 2.5 kg) to 90% of weight passing 150 µm sieve. o A 100 gram sub sample collected for analysis. o Diamond drill core samples were jaw crushed to -6 mm particle size (whole core sample) and follow Reverse Circulation sample preparation if they were to be assayed.
Quality of assay data and laboratory tests	Assay methods: • An X-Ray Fluorescence (XRF) analysis was conducted to determine: o 1998-1999: Fe_Calc, SiO_2, Al_2O_3, TiO_2, MnO, CaO, P, S, MgO, K2O, Zn, Pb, Cu o 2012-2016: Fe, SiO_2, Al_2O_3, TiO_2, Mn, CaO, P, S, MgO, K_2O, Zn, Pb, Cu, Ba, V, Cr, Cl, As, Ni, Co, Sn, Sr, Zr, Na. The XRF fusion utilised a 12:22 flux (35.3% lithium tetraborate and 64.7% metaborate). • Loss on Ignition (LOI) was determined using industry standard Thermo-Gravimetric Analyser (TGA) o 1998-1999: LOI was measured as single LOI at 1000°C o 2008 - 2016: LOI was measured at three steps of temperatures: 140° - 425°C, 425° - 650°C, 650° - 1000°C. • Samples were dispatched to Perth for preparation and analytical testing: o 1998-1999: Samples were submitted to Cape Lambert and SGS Laboratory. o 2012 - 2016: Samples were submitted to Bureau Veritas Minerals Pty Ltd (formerly Ultra trace Laboratories). 2012-2016 quality assurance measures:

	• Insertion of coarse reference standard by Rio Tinto Iron Ore geologists at a rate of one in every 30 samples in mineralised zones and one in every 60 samples in waste zones with a minimum of one standard per drillhole. Reference material was prepared and certified by Rio Tinto Iron Ore following ISO 3082:2009 (Iron Ores – Sampling and sample preparation procedures) and ISO 9516-1:2003 (Iron Ores – Determination of various elements by X-ray fluorescence spectrometry – Part 1: Comprehensive procedure). • Coarse reference standards contain a trace of strontium carbonate that was added at the time of preparation for ease of identification. • Field duplicates were collected by sacrificing a 'B' split retention sample directly from the rig splitter. Duplicate insertion occurred at a frequency of one in 20. Trace zinc was included in the duplicate sample for later identification. • At a frequency of one in 20, -3 mm splits and pulps were collected as laboratory splits and repeats respectively. These sub-samples were analysed at the same time as the original sample to identify grouping, segregation and delimitation errors. • Internal laboratory quality assurance and quality control measures involve the use of blanks, duplicates and laboratory standards using certified reference material in the form of pulps. • Random re-submission of pulps at an external laboratory was performed following analysis. • Chemical Analysis Testing (CAT) and Analytical Precision Testing (APT) samples were collected one per batch and submitted to a third party as part of quality assurance and quality control procedures to attained analytical precision and accuracy. • Analysis of the performance of certified standard and field duplicates has indicated an acceptable level of accuracy and precision with no significant bias. 1998-1999 quality assurance measures: • QA/QC practices and results were variably documented and some quality issues have been identified. • This data has therefore been used solely in geological interpretation as the survey information is reliable.
Verification of sampling and assaying	• Comparison of reverse circulation and twinned diamond drill core assay data distributions show that the drilling methods have similar grade distributions verifying the suitability of reverse circulation samples in the Mineral Resource estimate. • All assaying of samples used in Mineral Resource estimates have been performed by independent, National Association of Testing Authorities (NATA) certified laboratories. • Field data was logged directly onto field Toughbook laptops using pre-formatted and validated logging templates, with details uploaded to the RTIODB on a daily basis. • Assay data was returned electronically from the laboratory and uploaded into the RTIODB. • 2012-2016 assay data were only accepted in the RTIODB once the quality control processes undertaken utilising the Batch Analysis tool. • Written procedures outline the processes of geological logging and data importing, quality assurance and quality control validation and assay importing. A robust, restricted-access database is in place to ensure that any requests to modify existing data go through appropriate channels and approvals, and that changes are tracked by date, time, and user.
Location of data points	• Drillhole collar reduced level (RL) data was compared to detailed topographic maps and shows that the collar survey data was accurate. • Down-hole surveys were conducted on nearly every hole, with the exception of collapsed or otherwise hazardous holes; any significant, unexpected deviations were investigated and validated. Holes greater than 100 m depth were generally surveyed with an in-rod gyro tool. • Pre-2000 holes were surveyed in Australian Map Grid 1984 (AMG84) co-ordinates which were subsequently translated to Geocentric Datum of Australia 1994 (GDA94). Visual field checks on a number of these holes were carried out by the geomodeller ensuring they were robust for use in geological interpretation. • During the 2012-2016 drilling campaigns, all drillhole collar locations have been surveyed to GDA94 grid by qualified surveyors using Differential Global Positioning System (DGPS) survey equipment, accurate to 10 cm in both horizontal and vertical directions. • Collar location data was validated by checking actual versus planned coordinate discrepancies. Once validated, the survey data was uploaded into the drillhole database. • All holes interpreted and used in the resource model have surveyed coordinates. Holes with suspect collar coordinates were excluded from the data set. • The topographic surface has been derived from a 10 m resolution composite surface developed from surface mapping and Light Detecting and Ranging (LiDAR) data from 1995-2014. Accuracy of the topographic surface was further enhanced by incorporation of additional spot height data including the validated DGPS hole collar points generated in each successive drilling campaign.

Data spacing and distribution	• Drillhole spacing was predominately 50 m x 50 m over the deposit • The drill spacing was deemed appropriate for sufficient deposit knowledge by the Competent Person for the Mineral Resource classification applied. • The mineralised domains for Deposit C and Deposit D have demonstrated sufficient continuity in both geology and grade to support the definition of Mineral Resources, and the classifications applied under the 2012 JORC Code guidelines.
Orientation of data in relation to geological structure	• Drill lines were oriented north-south, perpendicular to the deposit strike. • Deposit C is located on the north western end of a regional anticline, and the general stratigraphic dip is to the North. • Deposit D is located on the south western end of a regional anticline, and the general stratigraphic dip is to the South. • Reverse circulation drilling was a combination of angled and vertical holes and intersects the undulating stratigraphy approximately at right angles. • Angled holes have been drilled to better intersect the stratigraphy at closer to right angles as well as giving a more reliable optical and acoustic downhole televiewer image.
Sample security	• The sample chain of custody is managed by Rio Tinto Iron Ore. • Analytical samples ('A' splits) were collected by field assistants, placed onto steel sample racks and delivered to Perth by a recognised freight service and then to the assay laboratory by a Perth-based courier service. Whilst in storage the samples were kept in a locked yard. • Retention samples ('B' splits) were collected and stored in drums at on-site facilities. • 150 grams of excess pulps from primary samples was retained indefinitely at laboratories and external storage facilities at CTI Logistics Ltd in Perth, Western Australia.
Audits or reviews	• No external audits have been performed specifically on sampling techniques or data. • Inter-lab checks were performed in 2015 and 2016. A collection of coarse retentions from randomly distributed drillholes across West Angelas Deposit C and Deposit D were sent by Bureau Veritas Minerals Pty Ltd (formerly Ultra Trace Laboratories) to Genalysis Laboratory Services Pty Ltd and to Australian Laboratory Services Pty Ltd. Results of the re-analysed coarse retentions were sent by electronic distribution to Rio Tinto Iron Ore geologists for analysis. Original sample results compared well to the audit results; and were deemed fit for use in the Mineral Resource estimation. • Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques are appropriate.

SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary
Mineral tenement and land tenure status	• The deposits lie within multiple sections of the same lease, Mineral Lease ML248SA: o ML248SA_Sec077 o ML248SA_Sec078 o ML248SA_Sec079 o ML248SA_Sec080 o ML248SA_Sec082 • Mineral Lease 248SA is held by Robe River Limited, and sub-leased to the Robe River Joint Venture that is managed on behalf of the participants by Robe River Mining Co Pty Limited. The participants of the joint venture are : o Robe River Mining Co. Pty Limited, o Mitsui Iron Ore Development Pty Limited, o North Mining Limited, o Cape Lambert Iron Associates, o Pannawonica Iron Associates. o The deposits • There are currently no known or anticipated impediments to developing the resources within these tenures.
Exploration done by other parties	• Exploration was completed by Cliffs International Drilling Pty Ltd during various programs between 1973 and 1977 and by Robe Exploration Pty Ltd between 1998 and 1999. • The 1973-1977 phase of exploration by Cliffs International included: o 135 percussion holes (Deposit C) and 121 percussion holes (Deposit D); • The 1998-1999 phase of exploration by Robe Exploration Pty Ltd included: o 57 reverse circulation holes (Deposit C) and 75 reverse circulation holes (Deposit D) o 2 dual rotary holes (Deposit C) and 1 dual rotary hole (Deposit D) o 2 diamond holes (Deposit D)
Geology	• The deposit is a bedded iron deposit hosted in the Marra Mamba Iron Formation. The mineralisation occurs primarily with the Mount Newman Member with minor mineralisation within the West Angela Member, MacLeod Member and Nammuldi Member. • The bedded mineralisation is generally overlain by a variable thickness zone of alluvium/colluvium. • Deposit C and Deposit D are located in the eastern part of the Ophthalmia Fold Belt. Deposit C sits on the western closure on the northerly limb of the west plunging, east west trending Wonmunna Anticline, whereas Deposit D sits on the southerly limb of the same anticline. It is classified as a Marra Mamba Iron Formation hosted deposit. The iron mineralisation consists of hematite-goethite enrichment, broadly subdivided into the iron formation-hosted “bedded” mineralisation style and weathering/re-deposition products termed “detrital”. • Approximately 65% of the Mineral Resource for Deposit C lies above the water table. At Deposit D, approximately 60% of the Mineral Resource lies above the water table.

Drill hole Information

Deposit C

- Summary of drilling data used for the Deposit C Mineral Resource estimate:

Year	Diamond Holes		Reverse Circulation	
	# Holes	Metres	# Holes	Metres
2014	-	-	181	15,735
2015	5	302	447	37,457
2016	-	-	315	22,324
Total	**5**	**302**	**943**	**75,516**

- An additional 58 diamond dril holes were used for geological interpretation only.
- A total of 202 drillholes were excluded from the estimation dataset, due mainly to unreliable or incomplete assay and/or collar survey data. Excluded holes include:
  - 179 percussion holes for 10,651 m;
  - 21 reverse circulation holes for 1,212 m;
  - 2 dual rotary holes for 82 m

Deposit D

- Summary of drilling data used for the Deposit D Mineral Resource estimate:

Year	Diamond Holes		Reverse Circulation	
	# Holes	Metres	# Holes	Metres
2012	-	-	135	10,734
2013	-	-	151	13,821
2014	-	-	327	29,495
2015	-	-	201	19,270
2016	-	-	249	19,243
Total	**0**	**0**	**1,063**	**92,563**

- An additional 120 drillholes (44 Diamond, 18 RC and 58 Percussion) were used for geological interpretation only.
- A total of 121 drillholes (all 1973-1977 percussion) for 5,849 m were excluded from the dataset, due to unreliable or incomplete assay and/or collar survey data.

Data aggregation methods

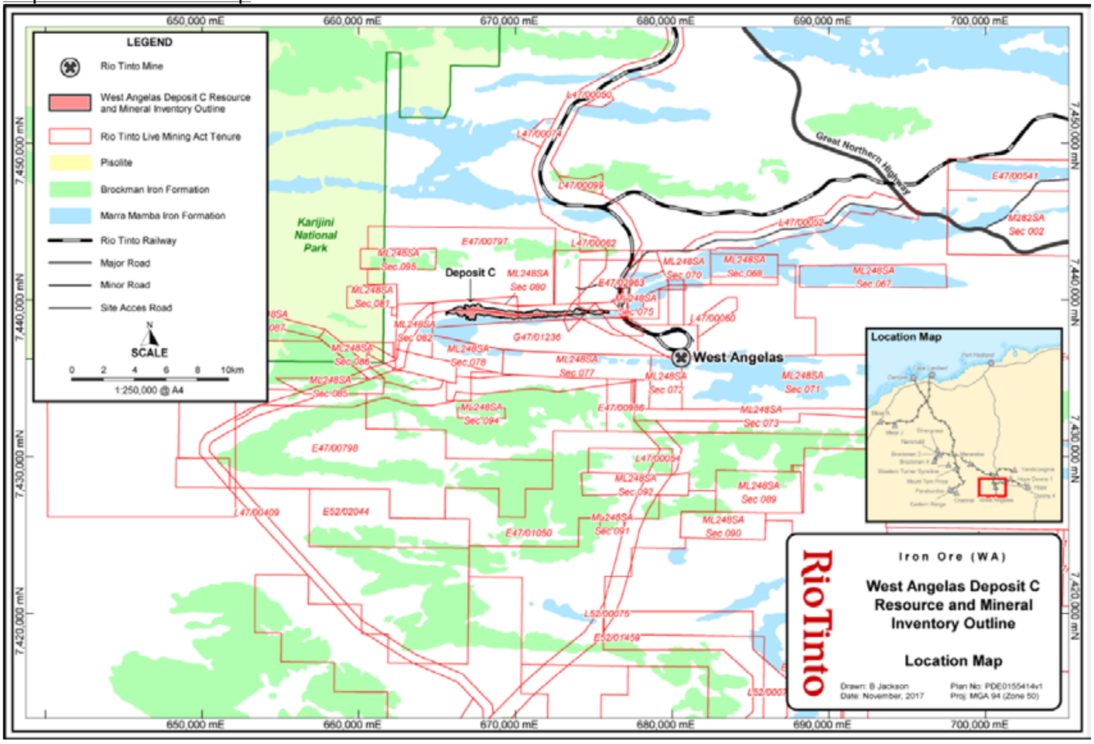
- All assay, geology, and density data have been composited to 2 m for Mineral Resource modelling and estimation.
- No grade truncations are performed.

Relationship between mineralisation widths and intercept lengths

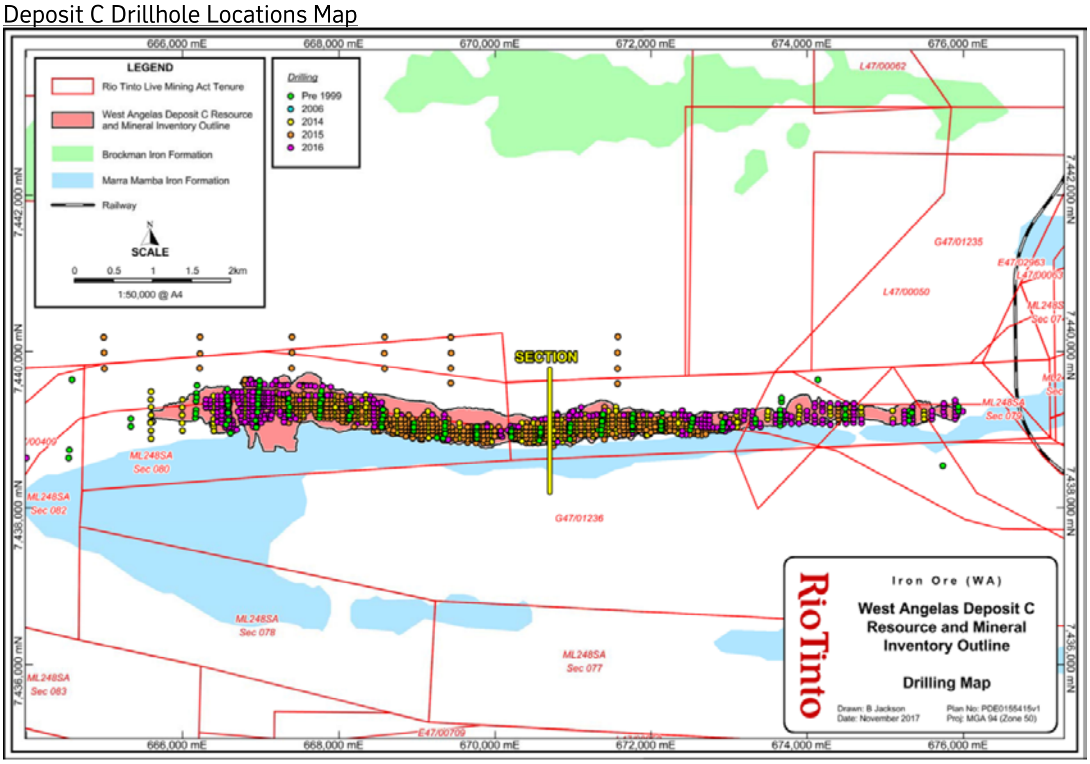
- Drilling programs have been designed to intersect dipping mineralised sequences as close as practically possible to perpendicular with the use of perpendicular and angled drilling techniques.
- In general down-hole intercept lengths are deemed to provide an acceptable representation of true mineralisation widths at Deposit C and Deposit D due to vertical or near-vertical drilling and predominance of gently dipping to moderately undulating strata.
- The difference between down-hole and true thickness was resolved graphically via sectional and three dimensional interpretation of mineralisation boundaries based on the prevailing bedding, stratigraphic and structural controls.

Diagrams

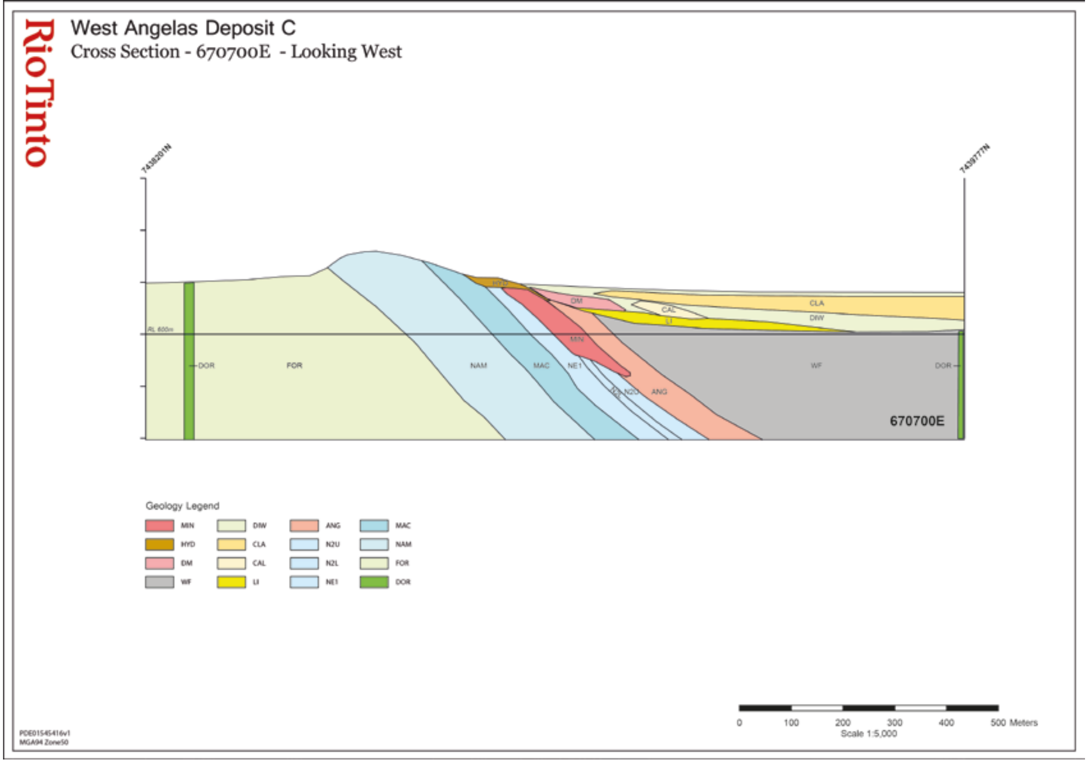
Deposit C Location Map



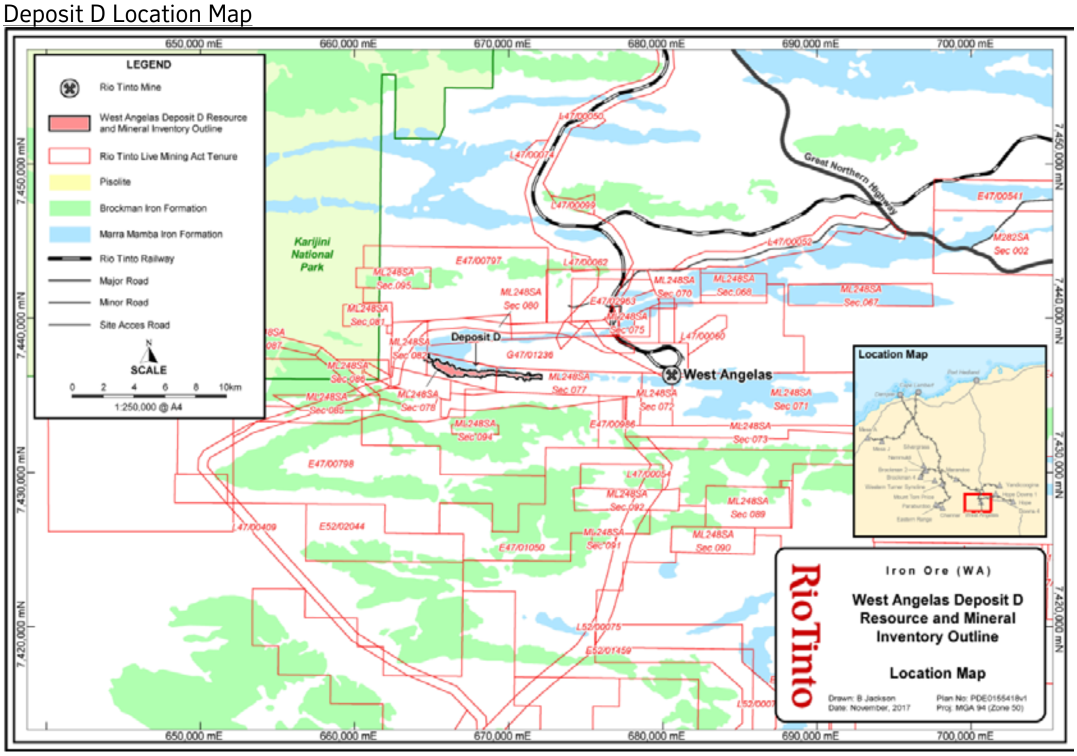
Deposit C Drillhole Locations Map



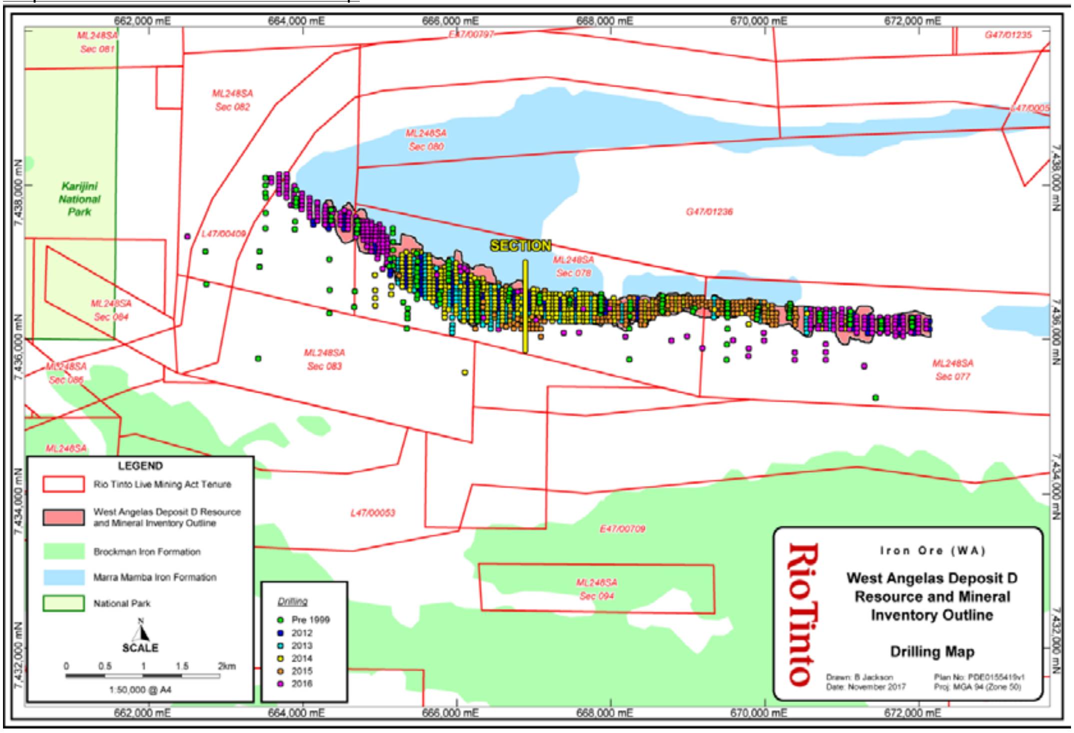
Deposit C Geological Cross Section



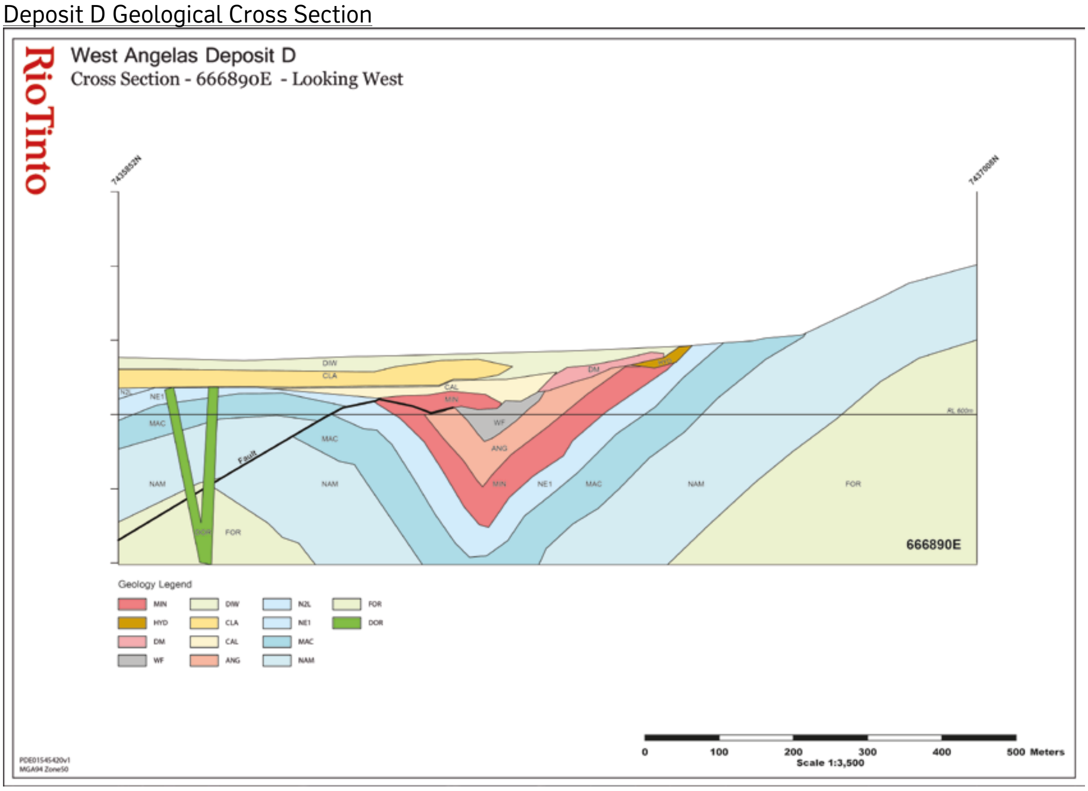
Deposit D Location Map



Deposit D Drillhole Locations Map



Deposit D Geological Cross Section



Balanced reporting	• Not applicable as Rio Tinto has not released exploration results for this deposit.
Other substantive exploration data	• Detailed geological surface mapping has been collected across the Deposit C and Deposit D areas in 2014, at 1:5,000 scale. This replaced the previous Robe Valley geological mapping of the area. • West Angelas district 1VD gravity image, West Angelas district electromagnetic "SkyTEM" survey and GSWA Ashburton Magnetics survey geophysical data has been used where necessary to aid interpretation of stratigraphy • Metallurgical test work at Deposit C was carried out on 6 diamond holes that were drilled as

	part of the 2014 drill campaign. Metallurgical test work at Deposit D was carried out on 8 diamond holes that were collected as part of the 2012 and 2013 drill campaigns
Further work	• Minor drilling to infill small gaps in drilling coverage

SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	Commentary
Database integrity	• All drilling data is securely stored in the Rio Tinto Iron Ore acQuire™ database (RTIODB), managed by dedicated personnel within Rio Tinto Iron Ore. The system is backed up nightly on servers located in Perth, Western Australia. The backup system was tested in January 2017, demonstrating that the system is effective. • The import/exporting process requires limited keyboard transcription and has multiple built in safeguards to ensure information is not overwritten or deleted, these include: o Data is imported and exported through automated interfaces, with limited manual input; o Inbuilt validation checks ensure errors are identified prior to import; o Once within the RTIODB, editing is very limited and warning messages ensure accidental changes were not made; o Audit trail records updates and deletions should an anomaly be identified; o Export interface ensures the correct tables, fields and format are selected. • The drillhole database used for Mineral Resource estimation has been internally validated. Methods include checking: o acQuire™ scripts for relational integrity, duplicates, total assay and missing / blank assay values; o Grade ranges in each domain; o Domain names; o Survey data down-hole consistency; o Null and negative grade values; o Missing or overlapping intervals; o Duplicate data. • Drillhole data was also validated visually by domain and compared to the geological model.
Site visits	• The Competent Person visited West Angelas Deposit C and Deposit D in 2017. There were no outcomes as a result of these visits.
Geological interpretation	• Overall the Competent Person's confidence in the geological interpretation of the area is good, based on the quantity and quality of data available, and the continuity and nature of the mineralisation. • Geological modelling was performed by Rio Tinto Iron Ore geologists. The method involves interpretation of stratigraphy using surface geological mapping, lithological logging data, down-hole gamma data, and assay data. • Cross-sectional interpretation of each stratigraphic unit is performed followed by interpretation of mineralisation boundaries. Three-dimensional wireframes of the sectional interpretations are created to produce the geological model. • The geological model is sub-divided into domains and both the composites and model blocks are coded with these domains. • Mineralisation is continuous. It is affected by stratigraphy, structure and weathering. The drillhole spacing is sufficient to capture density, grade and geology variation for Mineral Resource reporting.
Dimensions	• West Angelas Deposit C strikes approximately east/west with an along strike extent of approximately 10 km and a width of up to 800 m. The mineralisation extends from surface to a depth of 270 m. • West Angelas Deposit D strikes approximately east/west with an along strike extent of approximately 8.5 km and a width of up to 1 km. The mineralisation extends from surface to a depth of 300 m.
Estimation and modelling techniques	• Ten grade attributes (Fe, SiO_2, Al_2O_3, P, Mn, LOI, S, TiO_2, MgO, and CaO), and density were estimated for input into Mine Planning and Marketing assessments. • Statistical analysis was carried out on data from all domains. • The grade estimation process was completed using Maptek™ Vulcan™ software. • Mineralised domains were predominantly estimated by ordinary kriging however those

	domains where robust semi-variograms were not able to be created were estimated using inverse distance weighting to the first power or moving average. Non-mineralised domains were estimated by inverse distance weighting to the first power, moving average or a scripted average. These methods are deemed appropriate by the Competent Person for estimating the tonnes and grade of the reported Mineral Resources. • All domains were estimated using only samples from the corresponding domain. • Grades were extrapolated to a maximum distance of approximately 300 - 400 m from data points. • A 'high yield limit' or grade dependent restriction on a sample's range of influence was used for Mn and S for selected domains. The limits differed for different domains and were selected based on histograms and the spatial distribution of the respective assay values. • A block size of 25 m (X) × 10 m (Y) × 4 m (Z) was used for parent blocks. Parent blocks are sub-celled to the geological boundaries to preserve volume. • The block model was validated using a combination of visual, statistical, and multivariate global change of support techniques in the absence of any production data.
Moisture	• All Mineral Resource tonnages are estimated and reported on a dry basis.
Cut-off parameters	• The cut-off grade for Marra Mamba Mineral Resource is material greater than or equal to 58% Fe.
Mining factors or assumptions	• Development of this Mineral Resource assumes mining using standard Rio Tinto Iron Ore equipment and methods similar to other Rio Tinto Iron Ore operations. The assumed mining method is conventional truck and shovel, open pit mining at an appropriate bench height. Mining practices will include grade control utilising blast hole data. • It is planned to blend ore from West Angelas Deposit C and Deposit D with ore from other Rio Tinto Iron Ore mine sites to make a saleable ore product. This plan is in line with current Rio Tinto Iron Ore practices where ore from multiple mines is combined to produce the Pilbara Blend product.
Metallurgical factors or assumptions	• It is assumed that standard crushing and screening processes used by Rio Tinto Iron Ore will be applicable for the processing of West Angelas Deposits C and D. • Further work has also been completed to better predict the spatial variability of problematic ore types for processing.
Environmental factors or assumptions	• Rio Tinto Iron Ore has an extensive environmental approval process. A review of these requirements was undertaken as part of a recent Pre-feasibility Study and based on this work the proposal was determined to require formal State environmental assessment and approval. Environmental approval is being sought on the basis that the proposal is considered to meet the objectives set by the Environmental Protection Authority (EPA) for the relevant environmental factors. • Mapping of oxidised shales, black carbonaceous shales, lignite, and the location of the water table, is used in prediction and planning for the treatment of potential environmental impacts. This process is in accordance with Rio Tinto's Chemically Reactive Mineral Waste Standard.
Bulk density	• Dry bulk density is derived from accepted gamma-density data collected at 10 cm intervals from down-hole geophysical sondes. • Accepted gamma-density data is corrected for moisture using diamond drill core specifically drilled throughout the deposit. • Dry core densities are generated via the following process: o The core volume is measured in the split and the mass of the core is measured and recorded. o Wet core densities are calculated by the split and by the tray. o Core recovery is recorded. o The core is then dried and dry core masses are measured and recorded. o Dry core densities are then calculated. • Accepted gamma-density values at Deposit C were estimated using ordinary kriging or inverse distance to the first power in mineralised zones and inverse distance weighted to the first power in waste zones. • Accepted gamma-density values at Deposit D were estimated using ordinary kriging or scripted averages in mineralised zones and moving average or scripted average in non-mineralised zones. • Below water table dry bulk densities for Deposit D were scripted using specific dry core density values from West Angelas Deposit D and West Angelas Deposit A West within corresponding domains.

Classification	• The Mineral Resource has been classified into the categories of Measured, Indicated and Inferred. The determination of the applicable resource category has considered the relevant factors (geology, mineralisation continuity, sample spacing, data quality, and others). • The Competent Person is satisfied that the stated Mineral Resource classification reflects the relevant factors of the deposit.
Audits or reviews	• All stages of Mineral Resource estimation have undergone a documented internal peer review process, which has documented all phases of the process. • The Mineral Resource estimates for Deposit C and Deposit D underwent an internal audit conducted by AMC Consultants Pty Ltd (AMC) in 2017. Based on the review AMC considers the Resource estimate for Deposit C and Deposit D as reasonable and fit for purpose. The Mineral Resource estimate has been accepted by the Competent Person.
Discussion of relative accuracy/ confidence	• Rio Tinto Iron Ore operates multiple mines in the Pilbara region of Western Australia. The Mineral Resource data collection and estimation techniques used for West Angelas Deposit C and Deposit D are consistent with those applied at other deposits which are being mined. Reconciliation of actual production with the Mineral Resource estimates for individual deposits is generally accurate to within ten percent for tonnes on an annual basis. This result is indicative of a robust process. • The accuracy and confidence of the Mineral Resource estimate is consistent with the current level of study (Pre-Feasibility Study).

SECTION 4 ESTIMATION AND REPORTING OF ORE RESERVES

Criteria	Commentary
Mineral Resource estimate for conversion to Ore Reserves	• The modifying factors for this Ore Reserve estimate were based on the Mineral Resource estimates for West Angelas Deposit C and Deposit D completed in 2017. • The most recent Mineral Resource estimates together with the Pre-Feasibility Study pit designs were used for reporting Ore Reserves. • The declared Ore Reserves are for West Angelas Deposit C and D. • Mineral Resources are reported additional to Ore Reserves.
Site visits	• The Competent Person visited West Angelas in 2014.
Study status	• West Angelas is an existing operation, with production currently from Deposit A, B, E and F. • A Pre-Feasibility Study for West Angelas Deposit C and Deposit D was completed in 2017. • A Feasibility study is in progress.
Cut-off parameters	• The cut-off grade for high-grade Marra Mamba ore at West Angelas Deposit C and Deposit D is greater than or equal to 58% Fe and Al_2O_3 less than 3.5%.
Mining factors or assumptions	• The Mineral Resource models for both West Angelas Deposit C and Deposit D were regularised to a block size of 25 m E × 10 m N × 8 m RL which was determined to be the selective mining unit following an analysis of a range of selective mining units. Dilution and mining recovery were modelled by applying the regularisation process to the sub-block geological model. • Metallurgical models were applied to the regularised model in order to model products tonnage, grades and yields. • Pit optimisations, utilising the Lerchs-Grosmann algorithm with industry standard software, were undertaken. This optimisation utilised the regularised Mineral Resource model together with cost, revenue, and geotechnical inputs. The resultant pit shells were used to develop detailed pit designs with due consideration of geotechnical, geometric and access constraints. These pit designs were used as the basis for production scheduling and economic evaluation. • During the above process, Inferred Mineral Resources were excluded from mine schedules and economic valuations utilised to validate the economic viability of the Ore Reserves. • Conventional mining methods (truck and shovel) similar to other Rio Tinto Iron Ore operating mines are utilised. • Geotechnical design recommendations for the West Angelas Deposit C (WAC) Feasibility Study have been supplied based on geotechnical studies informed by the assessment of 38 fully cored and geotechnically logged diamond drillholes (totalling 3,133 m) drilled from 2015 to 2017. The resultant design recommendations produce inter-ramp slope angles varying between 26 and 59 degrees depending on the local rock mass, hydrogeology, and structural

	geological conditions. • Geotechnical design recommendations for the West Angelas Deposit D (WAD) Feasibility Study have been supplied based on geotechnical studies informed by the assessment of 25 fully cored and geotechnically logged diamond drillholes (totalling 2,889 m) drilled from 2014 to 2016. The resultant design recommendations produce inter-ramp slope angles varying between 26 and 52 degrees depending on the local rock mass, hydrogeology, and structural geological conditions.
Metallurgical factors or assumptions	• West Angelas ore is processed through the West Angelas dry crush and screen plant. Product prediction regressions for dry processing routes are assigned to the designated domains assuming a nominal 6.3 mm separation cut size between lump and fines products, based on the most appropriate available metallurgical data generated from PQ core and corrected with production data as required. The regressions were last updated in Q1 2017. • During drill campaigns from 2012 to 2015 a total of 1,790 m of metallurgical diamond drill core (PQ-3 core) was obtained from across the two deposits. Data obtained from this core formed the basis for the metallurgical test work, which informed the study for the design of the processing facility and operational suitability of the West Angelas processing facility and product prediction. • The map below shows the location of these drillholes.  • The diamond drill core test results were utilised to develop metallurgical models representing different metallurgical domains, which were considered representative of the ore body. The metallurgical models predict the product tonnage and grade parameters for lump and fines products.
Environmental	• The Deposit C and Deposit D Proposal was formally referred to the Environmental Protection Authority (EPA) under section 38 of the *Environmental Protection Act 1986* (EP Act) on 11 July 2017. • The EPA determined that the Proposal warrants assessment at the level of Public Environmental Review with an eight week public review period (EPA Assessment No. 2132) on 23 August 2017. • The Proponent prepared an Environmental Scoping Document (ESD) in October 2017. The ESD identified the following key environmental factors relevant to the Proposal: *Flora and Vegetation*; *Terrestrial Fauna; Subterranean Fauna*; *Hydrological Processes; Air quality; Inland Waters Environmental Quality* and *Social Surroundings.* The Environmental Review document was submitted in December 2017. • The Environmental Review document provides assessment of the potential impacts of this Proposal on the key environmental factors to enable the EPA to determine the environmental acceptability of this Proposal. • The Proposal is currently undergoing formal environmental assessment by the EPA. The proposal identifies that dewatering during mining is likely to result in propagation of groundwater drawdown beneath potentially groundwater dependent vegetation. Environmental approval is being sought on the basis that the proposal is considered to meet the objectives set by the EPA for the relevant environmental factors. • A geochemical risk assessment has been completed for the West Angelas deposits including Deposit C and Deposit D. The assessment encompasses all material types present at the site, and tests have been conducted in accordance with industry standards. West Angelas deposits pose a low acid mine drainage risk.
Infrastructure	• West Angelas Deposit C and Deposit D are approximately 15 km from the existing West Angelas mining operations. • Operation of West Angelas Deposit C and Deposit D will utilise the existing processing and non-processing infrastructure that are used to operate the West Angelas mine.

	• Proposed infrastructure amendments to support mining at West Angelas Deposit C and Deposit D include: o A crusher and conveyor from the Deposit C and Deposit D back to the Deposit A facilities o Haul roads and light vehicle roads o Production hub and support facilities • Ore will be railed to Rio Tinto Iron Ore's ports at Dampier and Cape Lambert. The port and railway networks will have sufficient capacity to accommodate ore supply from West Angelas Deposit C and D.
Costs	• Operating costs were benchmarked against similar operating Rio Tinto Iron Ore mine sites. • The capital costs for West Angelas Deposit C and Deposit D are based on a Pre-Feasibility Study, utilising experience from the construction of existing similar Rio Tinto Iron Ore projects in the Pilbara, Western Australia. • Transportation costs were based on existing operating experience at Rio Tinto Iron Ore mine sites in the Pilbara, Western Australia. • Allowances have been made for royalties to the Western Australian government and other private stakeholders.
Revenue factors	• Rio Tinto applies a common process to the generation of commodity prices across the group. This involves generation of long-term price curves based on current sales contracts, industry capacity analysis, global commodity consumption and economic growth trends. In this process, a price curve rather than a single price point is used to develop estimates of mine returns over the life of the project. The detail of this process and of the price point curves is commercially sensitive and is not disclosed.
Market assessment	• It is planned to blend ore from West Angelas Deposit C and Deposit D with ore from other Rio Tinto Iron Ore mine sites to make a saleable ore product. This plan is in line with current Rio Tinto Iron Ore practices where ore from multiple mines is combined to produce the Pilbara Blend product. • Blending of iron ore from Brockman and Marra Mamba sources results in a high Fe product, whilst reducing both the average values, and variability, of SiO_2, Al_2O_3, and P. This product attracts a market premium and accounts for annual sales in excess of 150 Mt/a. • The supply and demand situation for iron ore is affected by a wide range of factors, and as iron and steel consumption changes with economic development and circumstances. Rio Tinto Iron Ore delivers products aligned with its Mineral Resources and Ore Reserves, these products have changed over time and successfully competed with iron ore products supplied by other companies.
Economic	• Economic inputs such as foreign exchange rates, carbon pricing, and inflation rates are also generated internally at Rio Tinto. The detail of this process is commercially sensitive and is not disclosed. • Sensitivity testing of the West Angelas Deposit C and Deposit D Ore Reserves using both Rio Tinto long-term prices and a range of pricing scenarios demonstrates a positive net present value for the project sufficient to meet Rio Tinto investment criteria.
Social	• West Angelas Deposit C and Deposit D are located within an existing mining lease granted to Robe River Ltd. in 1976 (53% Rio Tinto Ltd.), held under Mining Lease (ML) 248SA. Deposit C and Deposit D are within Sections 77 to 82. Infrastructure is also contained within Robe River General Purpose Leases G47/01236 granted in 2008, G47/01235 granted in 2008, Miscellaneous Licence L47/709, and L47/050. Tenements were granted pursuant to the Iron Ore (Robe River) Agreement Act. • The West Angelas Deposit C and Deposit D expansion and proposed associated infrastructure falls within the area of the Yinhawangka Native Title determination. • Heritage surveys have largely been completed over the project footprint. Further consultation and investigation is required to progress formal approval under the *Aboriginal Heritage Act 2006* (WA). • One site of specific significance is located approximately 150 metres to the west of the proposed Deposit D pit, which is being managed by the project team. • Following the submission and approval of a licence amendment, the prescribed activities associated with the West Angelas Deposit C and Deposit D will be regulated under West Angelas Iron Ore Part V Operating Licence (L7774/2000/6), as defined by Schedule 1 of the Environmental Protection Regulations 1987. • Groundwater abstraction and quality would be managed in accordance with the existing West Angelas Groundwater Licences and associated Groundwater Operating Strategy, and any amendments as required. • A Mining Proposal will be required for mechanical ground disturbance located within Robe River

	General Purpose Leases. • The West Angelas Deposit C and Deposit D and associated infrastructure are located within the Shire of East Pilbara. Rio Tinto Iron Ore has established an ongoing engagement with the Shire of East Pilbara, which includes scheduled meetings and project updates.
Other	• Semi-quantitative risk assessments have been undertaken throughout the West Angelas Deposit C and Deposit D study phases, no material naturally occurring risks have been identified through the above mentioned risk management processes. •
Classification	• The Ore Reserves for West Angelas Deposit C consist of 68% and 32% and for Deposit D of 30% and 70% Proved Reserves and Probable Reserves respectively. • The Competent Person is satisfied that the stated Ore Reserve classification reflects the outcome of technical and economic studies.
Audits or reviews	• No external audits have been performed. • Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques are appropriate.
Discussion of relative accuracy/ confidence	• Rio Tinto Iron Ore operates multiple mines in the Pilbara region of Western Australia. The Ore Reserve estimation techniques utilised for West Angelas Deposit C and Deposit D are consistent with those applied at the existing operations. Reconciliation of actual production with the Ore Reserve estimate for individual deposits is generally within 10 percent for tonnes on an annual basis. This result is indicative of a robust Ore Reserve estimation process. • For West Angelas Deposit C and Deposit D, accuracy and confidence of modifying factors are generally consistent with the current level of study (Pre-Feasibility Study).

Howard's Well: JORC Table 1

The following table provides a summary of important assessment and reporting criteria used at the Howard's Well deposit for the reporting of Mineral Resources and Ore Reserves in accordance with the Table 1 checklist in *The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition)*. Criteria in each section apply to all preceding and succeeding sections.

SECTION 1 SAMPLING TECHNIQUES AND DATA

Criteria	Commentary
Sampling techniques	• Samples for geological logging and assay were collected via drilling. • Geological logging and assay samples were collected at 2 m intervals from reverse circulation drilling. • The reverse circulation drill programs were conducted on a south-southwest to north-northeast (SSW-NNE) at mostly 700 m x 200 m collar spacing. All intervals were sampled. • Mineralisation was determined by a combination of geological logging and geochemical assay results. • Reverse circulation drilling utilised a rotary cone splitter beneath a cyclone return system to obtain a primary and secondary sample, with particular attention on samples collected being of comparable weights. An 'A' and 'B' sub-sample, each representing 8% of the mass, were collected at 2 m intervals from the rotary cone splitter.
Drilling techniques	• All drilling was oriented vertically. • Reverse circulation drilling utilised a 140 mm diameter face sampling bit with sample shroud, attached to a pneumatic piston hammer used to penetrate the ground and deliver the sample up 6 m drill rod inner tubes (4 m starter rod) through to the cyclone static or rotary cone splitter. • Wet drilling was implemented for all drillholes from 2014 onwards to mitigate the risks associated with fibrous mineral intersections. Prior to 2014 dry drilling was conducted.
Drill sample recovery	• No direct recovery measurements of reverse circulation samples were performed; however a qualitative estimate of sample loss at the rig was made. Sample weights were recorded at the laboratory upon receipt. • Sample recovery in some friable mineralisation may be reduced; however this was unlikely to have a material impact on the reported assays for these intervals. • Thorough analysis of duplicate sample performance does not indicate any chemical bias as a result of inequalities in sample weights.
Logging	• All drillholes were geologically logged utilising standard Rio Tinto Iron Ore Material Type Classification Scheme (RTIO MTCS) logging codes and entered into the Rio Tinto Iron Ore acQuire™ database (RTIODB) on field Toughbook laptops. • Internal training and validation of logging includes RTIO MTCS identification and calibration workshops, peer reviews and validation of logging verses assay results. • Geological logging was performed on 2 m intervals for all reverse circulation drilling. • Magnetic susceptibility readings were taken using a Kappameter for each interval. • 2013-2014: All drillholes were geophysically logged using downhole tools for gamma trace, calliper, gamma density, resistivity, and magnetic susceptibility. • 2015: Drillholes only had in-rod gamma trace surveys completed • 2016: Drillholes recorded in-rod gamma trace surveys and deviation with calliper, density, resistivity, and magnetic susceptibility also captured for selected holes. • Open-hole acoustic and optical televiewer image data have been collected in specific reverse circulation holes throughout the deposit for structural analyses.
Sub-sampling techniques and sample preparation	Sub-sampling techniques: • Reverse circulation drilling was sampled at 2 m intervals. Sub sampling was carried out using a rotary cone splitter beneath a cyclone return system, producing approximate splits of: o 'A' split – Analytical sample – 8% o 'B' split – Retention sample – 8% o Bulk Reject – 84%. Sample preparation: • 'A' sub-sample sample dried at 105° C. • Sample crushed to -3 mm using Boyd Crusher and split using a rotary sample divider to capture 1 – 2.5 kg samples. • Manual LM5 used to pulverise total sample (1 – 2.5 kg) to 90% of weight passing 150

	micrometers (µm) sieve. • A 100 gram sub-sample collected for analysis.
Quality of assay data and laboratory tests	Assay methods: • Fe, SiO_2, Al_2O_3, TiO_2, Mn, CaO, P, S, MgO, K_2O, Zn, Pb, Cu, Ba, V, Cr, Cl, As, Ni, Co, Sn, Sr, Zr, Na were assayed using industry standard lithium tetraborate and lithium metaborate fusion and X-Ray Fluorescence (XRF) analytical technique. The XRF fusion utilised a 12:22 flux (35.3% lithium tetraborate and 64.7% metaborate). • Loss on Ignition (LOI) was determined using industry standard Thermo-Gravimetric Analyser (TGA) and was measured at three steps of temperatures: 140° - 425° C, 425° - 650° C, 650° - 1000° C. • Samples were dispatched to Perth for preparation and analytical testing at Genalysis Laboratory Services Pty Ltd. Quality assurance measures include: • Insertion of coarse reference standard by Rio Tinto Iron Ore geologists at a rate of one in every 30 samples in mineralised zones and one in every 60 samples in waste zones with a minimum of one standard per drillhole. Reference material was prepared and certified by Rio Tinto Iron Ore following ISO 3082:2009 (Iron Ores – Sampling and sample preparation procedures) and ISO 9516-1:2003 (Iron Ores – Determination of various elements by X-ray fluorescence spectrometry – Part 1: Comprehensive procedure). • Coarse reference standards contain a trace of strontium carbonate that was added at the time of preparation for ease of identification. • Field duplicates were collected by sacrificing a 'B' split retention sample directly from the rig splitter. Duplicate insertion occurred at a frequency of one in 20. Trace zinc was included in the duplicate sample for later identification. • At a frequency of one in 20, -3 mm splits and pulps were collected as laboratory splits and repeats respectively. These sub-samples were analysed at the same time as the original sample to identify grouping, segregation and delimitation errors. • Internal laboratory quality assurance and quality control measures involve the use of blanks, duplicates and laboratory standards using certified reference material in the form of pulps. • Random re-submission of pulps at an external laboratory was performed following analysis. • Chemical Analysis Testing (CAT) and Analytical Precision Testing (APT) samples were collected one per batch and submitted to third party (Geostats) as part of Rio Tinto Iron Ore quality assurance and quality control procedures to attain analytical precision and accuracy. • Analysis of the performance of certified standard and field duplicates has indicated an acceptable level of accuracy and precision with no significant bias.
Verification of sampling and assaying	• No twinned holes were used. • Field data was logged directly onto field Toughbook laptops using pre-formatted and validated logging templates, with details uploaded to the RTIODB on a daily basis. • All assaying of samples used in Mineral Resource estimates have been performed by independent, National Association of Testing Authorities (NATA) certified laboratories. • Assay data was returned electronically from the laboratory and uploaded into the RTIODB. • Assay data were only accepted in the RTIODB once the quality control assessment had been undertaken utilising the Batch Analysis tool. • Written procedures outline the processes of geological logging and data importing, quality assurance and quality control validation and assay importing. A robust, restricted-access database was in place to ensure that any requests to modify existing data go through appropriate channels and approvals, and that changes are tracked by date, time, and user.
Location of data points	• Collar location data was validated by checking actual versus planned coordinate discrepancies. Once validated, the survey data was uploaded into the RTIODB database. • The drillholes were surveyed in Mine Grid of Australia 1994 (MGA94) Zone 50 coordinates using Differential Global Positioning System (DGPS) survey equipment, accurate to 10 cm in both horizontal and vertical directions. Upon receipt of the coordinate data it was validated against the planned drillhole coordinates, and then uploaded to the drillhole database. All holes were picked up by qualified surveyors. • Drillhole collar reduced level (RL) data was compared to detailed topographic maps and shows that the collar survey data was accurate. • Down-hole surveys were conducted on nearly every hole, with the exception of collapsed or otherwise hazardous holes; any significant, unexpected deviations were investigated and validated. Holes greater than 100 m depth were generally surveyed with an in-rod gyro tool. • All holes interpreted and used in the Mineral Resource estimate had surveyed coordinates. • The topographic surface was created from 30 m Shuttle Radar Topography Mission (SRTM) grid data, and combined with the surveyed drill collar locations. These two sets of points were

	then triangulated to produce the current topographic surface.
Data spacing and distribution	• The drill spacing across the deposit was mostly 700 m x 200 m with some areas in-filled to 700 m x 100 m. Drilling in the north-west part of the deposit was variable but approaching 600 m x 200 m. • The drill spacing was deemed appropriate for sufficient deposit knowledge by the Competent Person for the Mineral Resource classification applied. • The mineralised domains have demonstrated sufficient continuity in both geology and grade to support the definition of Mineral Resources, and the classifications applied under the 2012 JORC Code guidelines.
Orientation of data in relation to geological structure	• Drill lines were oriented south-southwest to north-northeast (SSW-NNE), approximately perpendicular to the deposit strike. • Drilling was predominantly vertical with specific holes angled at -85° to allow for collection of televiewer data. • While mineralisation was frequently intersected at an angle, the orientation of mineralisation relevant to drilling was not considered likely to have introduced any material sampling bias.
Sample security	• The sample chain of custody is managed by Rio Tinto Iron Ore. • Analytical samples ('A' splits) were collected by field assistants, placed into bulk bags and delivered to Perth by a recognised freight service and then to the assay laboratory by a Perth-based courier service. Whilst in storage the samples were kept in a locked yard. • Retention samples ('B' splits) were collected and stored in drums at on-site facilities. • 150 grams of excess pulps from primary samples was retained indefinitely at laboratories and external storage facilities at CTI Logistics Ltd in Perth, Western Australia.
Audits or reviews	• No external audits have been performed specifically on sampling techniques or data. • Internal Rio Tinto Iron Ore peer review processes and internal Rio Tinto technical reviews have been completed. These reviews concluded that the fundamental data collection techniques were appropriate.

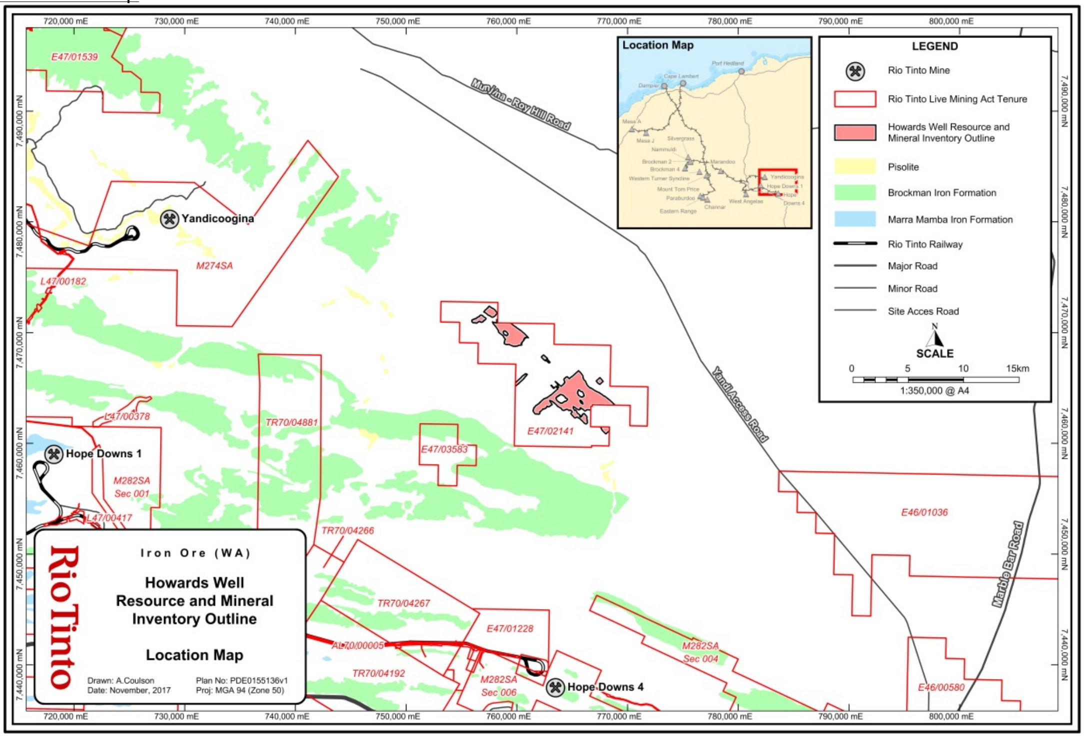
SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary
Mineral tenement and land tenure status	• The Howard's Well deposits lie on Exploration License E47/02141. • The tenement on which the deposits are located is held under the Robe River Joint Venture that is managed on behalf of the participants by Robe River Mining Co Pty Limited. The participants of the joint venture are : o Robe River Mining Co. Pty Limited, o Mitsui Iron Ore Development Pty Limited, o North Mining Limited, o Cape Lambert Iron Associates, o Pannawonica Iron Associates. • There are currently no known or anticipated impediments to obtaining the required mining lease for developing the resources.
Exploration done by other parties	• BHP Billiton Iron Ore Pty Ltd conducted exploration drilling programs in 1997. None of this data has been used for the Mineral Resource estimate.
Geology	• The iron mineralisation consists of hematite-goethite enrichment, broadly subdivided into the iron formation hosted 'bedded' mineralisation style and weathering/re-deposited products termed 'detrital'. Additionally there is a Channel Iron Deposit that sits on the bottom of the Cainozoic cover. • Mineralisation is concentrated in localised synclines. • Approximately 94% of the Mineral Resource for Howard's Well lies below the water table.
Drill hole Information	• Summary of drilling data used for the Howard's Well Mineral Resource estimate: (see table below)
Data aggregation methods	• No compositing has been performed as samples were collected almost exclusively at 2 m intervals. • No grade truncations have been performed.
Relationship between mineralisation widths and intercept lengths	• Geometry of the mineralisation with respect to the drillhole angle is well-defined in most areas of the deposit. Strata are generally gently undulating and perceived true width was held consistent during geological interpretations.

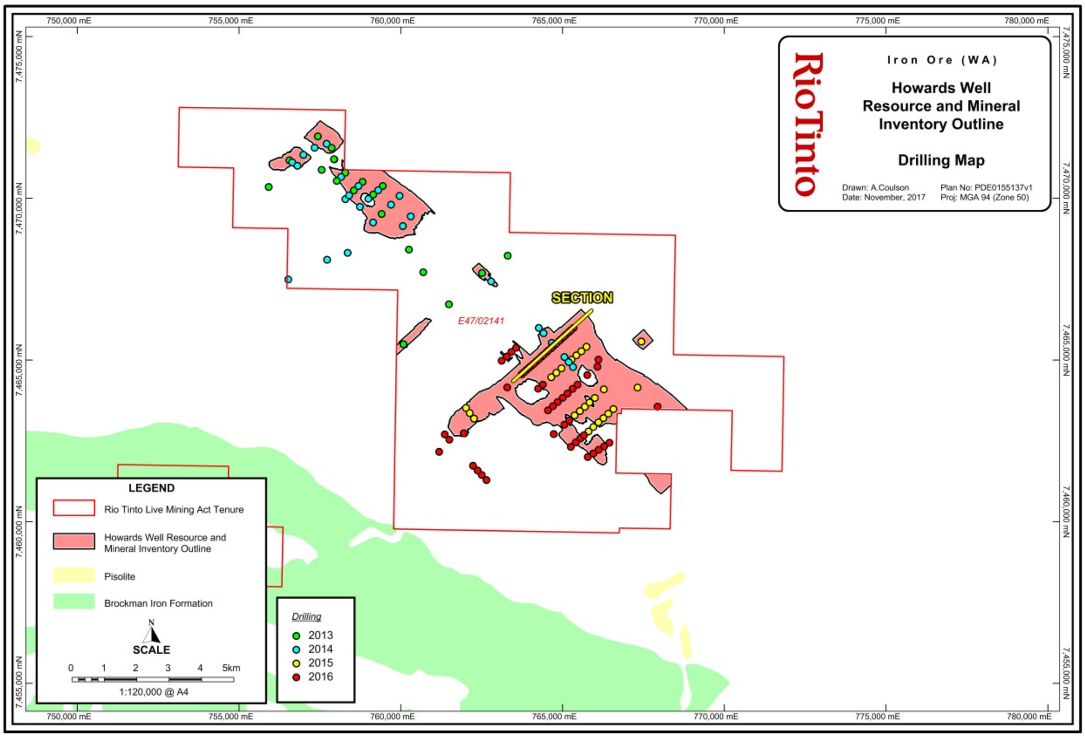
Year	Reverse Circulation	
	# Holes	Metres
2013	19	2,200
2014	27	2,534
2015	28	3,130
2016	56	6,371
Total	**130**	**14,235**

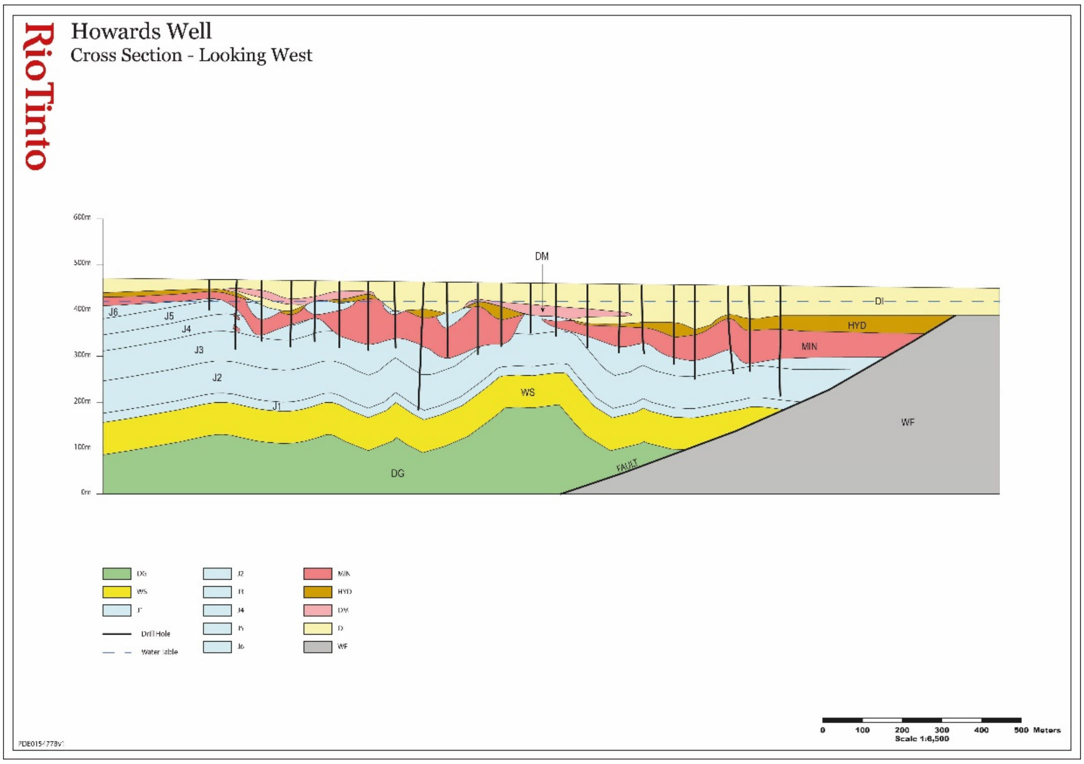
Diagrams

Location Map



Drillhole Locations Map



	Geological Cross-section 
Balanced reporting	• Not applicable as Rio Tinto has not specifically released exploration results for this deposit.
Other substantive exploration data	• Geological surface mapping data has been collected across the Howard's Well deposit in 2015 at the 1:10,000 scale.
Further work	• Further work at Howard's Well is required to better define the orebody and improve structural understanding. Additional staged infill grade reverse circulation drilling is required across the deposit. • Diamond drilling for metallurgical, density, and geotechnical purposes is required across the deposit.

SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	Commentary
Database integrity	• All drilling data is securely stored in the Rio Tinto Iron Ore acQuire™ database (RTIODB) managed by dedicated personnel within Rio Tinto Iron Ore. The system is backed up nightly on servers located in Perth, Western Australia. The backup system was tested in January 2017, demonstrating that the system is effective. • The import/exporting process requires limited keyboard transcription and has multiple built in safeguards to ensure information is not overwritten or deleted. These include: o Data is imported and exported through automated interfaces, with limited manual input; o Inbuilt validation checks ensure errors are identified prior to import; o Once within the RTIODB, editing is very limited and warning messages ensure accidental changes are not made; o Audit trail records updates and deletions should an anomaly be identified; o Export interface ensures the correct tables, fields and format are selected. • The drillhole database used for Mineral Resource estimation has been internally validated. Methods include checking: o acQuire™ scripts for relational integrity, duplicates, total assay and missing / blank assay values; o Grade ranges in each domain; o Domain names; o Survey data down-hole consistency; o Null and negative grade values; o Missing or overlapping intervals; o Duplicate data. • Drillhole data was also validated visually by domain and compared to the geological model.
Site visits	• The Competent Person visited Howard's Well in 2017. There were no outcomes as a result of this visit.
Geological interpretation	• Overall the Competent Person's confidence in the geological interpretation of the area is moderate, based on the quantity and quality of data available, and the continuity and nature of the mineralisation. • Geological modelling was performed by Rio Tinto Iron Ore geologists. The method involves interpretation of stratigraphy using surface geological mapping, lithological logging data, down-hole gamma data, and assay data. • Cross-sectional interpretation of each stratigraphic unit was performed followed by interpretation of mineralisation boundaries. Three-dimensional wireframes of the sectional interpretations were created to produce the geological model. • Mineralisation is continuous. It is affected by stratigraphy, structure and weathering. The drillhole spacing is sufficient to capture grade and geology variation for Mineral Resource reporting. • The geological model was sub-divided into domains and both the composites and geological model blocks were coded with these domains.
Dimensions	• The Howard's Well deposit extends approximately 13 km along strike in a northwest to southeast (NW-SE) direction, up to 3 km across strike in a northeast to southwest (NE-SW) direction and to a maximum depth of 200 m below the current topographical surface.
Estimation and modelling techniques	• Ten grade attributes (Fe, SiO_2, Al_2O_3, P, Mn, LOI, S, TiO_2, MgO, and CaO), and density were estimated for input into Mine Planning and Marketing assessments. • Statistical analysis was carried out on data from all domains. • The grade estimation process was completed using Maptek™ Vulcan™ software. • Mineralised domains were predominantly estimated by ordinary kriging; however those domains where robust semi-variograms could not be created employed inverse distance weighting to the first power, or were assigned average grades via scripting. Non-mineralised domains were estimated by inverse distance weighting to the first power or assigned average grades via scripting. These methods were deemed appropriate by the Competent Person for estimating the tonnes and grade of the reported Mineral Resources. • All domains were estimated with hard boundaries applied. • Grades were extrapolated to a maximum distance of approximately 200 m from data points. • No 'high yield limit' was applied. • No other grade capping or cutting was applied.

	• Block models were rotated to align with the orientation of the deposit. • A block size of 350 m (X) × 25 m (Y) × 5 m (Z) was used for parent blocks. Parent blocks were split into sub-blocks near geological boundaries to preserve volume. • The estimated model was validated using a combination of visual, statistical, and global change of support techniques in the absence of any production data for reconciliation.
Moisture	• All Mineral Resource tonnages are estimated and reported on a dry basis.
Cut-off parameters	• The cut-off grade for Brockman and Detrital Mineral Resource is material greater than or equal to 60% Fe. • The cut-off for Brockman Process Ore is material 50% ≤ Fe < 60% and ≥ 3% Al_2O_3 < 6%.
Mining factors or assumptions	• Development of this Mineral Resource assumes mining using standard Rio Tinto Iron Ore equipment and methods similar to other Rio Tinto Iron Ore operations. The assumed mining method is conventional truck and shovel, open pit mining at an appropriate bench height. Mining practices will include grade control utilising blast hole data. • It is planned to blend ore from Howard's Well with ore from other Rio Tinto Iron Ore mine sites to make a saleable ore product. This plan is in line with current Rio Tinto Iron Ore practices where ore from multiple mines is combined to produce the Pilbara Blend product.
Metallurgical factors or assumptions	• It is assumed that standard crushing and screening processes used by Rio Tinto Iron Ore will be applicable for the processing of Howard's Well.
Environmental factors or assumptions	• Rio Tinto Iron Ore has an extensive environmental approval process, and environmental studies will be completed during the project study phases to determine if the project requires formal State and Commonwealth environmental assessment and approval. • Mapping of oxidised shales, black carbonaceous shales, lignite, and the location of the water table, is used in prediction and planning for the treatment of potential environmental impacts. This process is in accordance with Rio Tinto's Chemically Reactive Mineral Waste Standard.
Bulk density	• Dry bulk density has been assigned from domain specific average dry core densities collected across other Pilbara deposits. • The Competent Person has considered this appropriate for the assigned Mineral Resource classification.
Classification	• The Mineral Resource has been classified into the Inferred category. The determination of the applicable resource category has considered the relevant factors (geology, mineralisation continuity, sample spacing, data quality, and others). • The Competent Person is satisfied that the stated Mineral Resource classification reflects the relevant factors of the deposit.
Audits or reviews	• All stages of Mineral Resource estimation have undergone an internal peer review process, which has documented all phases of the process. The Mineral Resource estimate has been accepted by the Competent Person.
Discussion of relative accuracy/ confidence	• Rio Tinto Iron Ore operates multiple mines in the Pilbara region of Western Australia. The Mineral Resource data collection and estimation techniques used for Howard's Well are consistent with those applied at other deposits which are being mined. Reconciliation of actual production with the Mineral Resource estimates for individual deposits is generally accurate to within 10% for tonnes on an annual basis. This result is indicative of a robust process.