

Increase to Kestrel Ore Reserves

7 September 2017

Rio Tinto today increased estimates of Rio Tinto Coal Australia's coal reserves at Kestrel underground longwall mine in Queensland, Australia, compared to the previous estimate 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 ASX Listing Rules. As such, the reported increases relating to Kestrel require the additional supporting information set out in this release and its appendix.

Kestrel Ore Reserves have increased by 62 Mt, from 123 Mt to 185 Mt.

Accordingly, Kestrel Mineral Resources exclusive of Ore Reserves have decreased by 65 Mt, from 306 Mt to 241 Mt.

This increase in Ore Reserves reflects a continuation of work on Rio Tinto Coal Australia deposits previously announced on 3 March 2016. The updates are based on a rigorous examination of leases that included an updated geological model, updated mine layout, revised coal product classifications and revised loss and dilution and productivity assumptions.

Ore Reserves and Minerals Resources are quoted on a 100 per cent basis. Rio Tinto's interest is 80 per cent.

Schedule – Kestrel Ore Reserves

	Likely mining method (a)	Coal type (b)	Reserves		Marketable reserves		Marketable reserves				Rio Tinto share		
			Proved	Probable	Proved	Probable	Total		Average % yield to give marketable reserves (d)	Interest %	Marketable reserves		
			at 30 June 2017		at 30 June 2017		2017	2016 (c)				(c)	
			millions of tonnes	millions of tonnes	millions of tonnes	millions of tonnes	millions of tonnes	millions of tonnes				Calorific value MJ/kg	Sulphur content %
COAL													
Reserves at operating mines													
Rio Tinto Coal Australia													
Kestrel Coal (e)	U/G	SC + MC	20	165	16	133	149	94	32.03	0.57	81	80.0	119
Notes:													
(a) Type of mine: O/P = open pit, O/C = open cut, U/G = underground, D/O = dredging operation.													
(b) Coal type: SC: steam/thermal coal, MC: metallurgical/coking coal.													
(c) Coals have been analysed on an "air dried" moisture basis in accordance with Australian Standards and gross calorific value and sulphur content are reported here on that basis. Marketable Reserves tonnages are reported on a product moisture basis.													
(d) For coal, the yield factors shown reflect the impact of further processing, where necessary, to provide marketable coal.													
(e) The change in the Kestrel Coal Reserve tonnes follows mining depletion and updated yields to reflect calibrated plant performance.													

Schedule – Kestrel Mineral Resources

	Likely mining method (a)	Coal type (b)	Coal resources at 30 June 2017 (c)			Total resources 2017 compared with 2016		Rio Tinto interest %
			Measured millions of tonnes	Indicated millions of tonnes	Inferred millions of tonnes	2017 millions of tonnes	2016 millions of tonnes	
COAL								
Rio Tinto Coal Australia								
Kestrel Coal (d)	U/G	SC + MC	1	139	100	241	306	80.0
Notes								
(a) Likely mining method: O/P = open pit; O/C = open cut; U/G = underground; D/O = dredging operation.								
(b) Coal type: SC = steam/thermal coal, MC = metallurgical/coking coal.								
(c) Rio Tinto reports coal Resources on an in situ moisture basis.								
(d) Kestrel Resources tonnes have decreased as a result of conversion to Coal Reserves								

Summary of information to support the Mineral Resource estimate

The Kestrel Mineral Resource Estimate is supported by a JORC Table 1 (Section 1 to 3) document provided as the appendix to this release and also located at www.riotinto.com/reservesandresources

A decrease in Kestrel Mineral Resources coincides with conversion of Mineral Resources to Ore Reserves.

The following summary of information for Mineral Resource Estimates is provided in accordance with Chapter 5.8 of ASX Listing Rules.

Geology and geological interpretation

Kestrel is an underground longwall coking coal mining operation located within the Bowen Basin of central Queensland, a world-class metallurgical coal mining district.

Kestrel geology and geotechnical models are supported by a comprehensive dataset and well defined interpretations for coal quality and geological structure, including coal seam continuity and faulting. Kestrel geology model is also supported by underground panel mapping and surveying data spanning 25 years of operation in the 100, 200, 300 and 400 longwall mining series.

Drilling techniques

Open hole drilling was the preferred method for delineating coal structure. Core drilling, including 4C (100mm), HQ3 and PQ3 diameters was also completed for the purpose of coal quality, geotechnical and gas characterization. Large diameter 8C (200mm) holes have also been drilled at Kestrel for the purpose of characterizing coal quality and to support sizing studies. Downhole geophysical logging was completed for the majority of drill holes, employing a comprehensive suite of down hole tools to collect calliper, gamma, density, neutron and sonic measurements.

Sampling, sub-sampling method and sample analysis method

Sampling of drill core was completed according to a universal standard set of instructions. Samples were bagged at the drill site and then transported to an external accredited laboratory for analysis. All samples were weighed, air-dried and then re-weighed before being crushed to a nominal size. A rotary splitter was used to divide the sample into portions available for further analysis. Coal quality analysis was by a three-stage method comprising raw analysis for all plies followed by washability and product testing on composite samples. All sample treatment and analysis was conducted according to procedures which adhere to Australian or International equivalent standards in National Association of Testing Authorities certified laboratories.

Criteria used for classification

RTCA employed a standard methodology for classifying Kestrel Mineral Resources into inferred, measured and indicated confidence categories. Drill holes were assessed according to the value and reliability of contained data to contribute a point of observation to Mineral Resource classifications. Structure and coal quality confidence limits were plotted separately on a seam group basis with classification of coal inventory into areas of low, medium or high confidence. These were combined to delineate areas of Measured, Indicated and Inferred coal inventory as a basis for classifying Mineral Resource tonnage estimates.

The Kestrel Mineral Resource estimate also employed findings of recent geostatistical studies to support classification limits.

A range of drill hole spacing limits were identified to reflect the inherent variability of each seam modelled within each structural domain of the deposit. Coal classifications correspond with typical drill hole spacing distances of 500m for high, 1,000m for medium and 3,000m for low confidence limits

Estimation methodology

The geology model employs coal industry standard software. For structural modelling a Finite Element Method (FEM) interpolator was employed. For coal quality modelling an inverse distance squared interpolator was employed. All surfaces and coal qualities were interpolated into grids with 25m² node spacing. Modelling was completed on an iterative basis by checking cross sections and contours of structural and coal quality attributes. Database values were posted on contours to provide a further check. For all deposits a volume / tonnage check was completed with predecessor models to provide final validation.

Reasonable prospects for eventual economic extraction

RTCA employs a standard approach for all underground deposits to identify Mineral Resource volumes with reasonable prospects for eventual economic extraction.

For Kestrel underground resources a minimum coal thickness of 1.8m and certain depth limits provide cut-off parameters for reporting Mineral Resources. Underground Mineral Resources correspond with practical mineable coal seam volumes employing longwall or board and pillar methods. Underground Mineral Resources must support longwall mining layouts with a “break-even” or better economic result, including reasonable development capital costs.

Summary of information to support the Ore Reserve estimate

The Kestrel Ore Reserve Estimate is supported by a JORC Table 1 (section 4) document provided as the appendix to this release and located at www.riotinto.com/investors/reserves-and-resources.

An increase in Kestrel Reserves follows the completion of a Life Of Mine (LOM) extension study, which now includes underground mining of 600 series longwall panels following mining of 400 and 500 series panels.

The following summary of information for the Ore Reserve Estimate is provided in accordance with Chapter 5.9 of ASX Listing Rules.

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.

Criteria used for classification

For Kestrel deposit the stated Proved and Probable Ore Reserves directly coincide with the Measured and Indicated Mineral Resources, respectively. There are no Inferred or Unclassified resources included in the stated reserve numbers.

Mining and recovery factors

Kestrel is an underground mine that targets the German Creek Seam. It utilises continuous mining units for in-seam development to gain access to the reserve and a retreating longwall system to extract the majority of the reserve.

Mining loss and dilution factors are applied depending on the seam thickness and classification of roof and floor material properties. Reconciliation analysis of actual longwall dilution achieved has determined a range between 50-250mm depending on conditions. For development roadways, the difference between equipment cut height and seam thickness is the primary driver of dilution calculated.

The mining recovery from the area is determined by a detailed mine design and layout, which results in areas being excluded from the reserve (such as pillars & some faulted areas).

Cut-off grades

A comprehensive margin ranking exercise was carried out in 2015 to determine the economic limits of the deposit. Grade based cut offs do not limit the reserve area, which is typically constrained by physical features such as faulting or adjacent workings.

The Kestrel Longwall system has increased in width from 375m to nominal 415m wide system, which is currently in operation. This system width assumption is maintained for the remainder of the LOM. The length of longwall panels are determined by a combination of factors including faults, lease limitations and ventilation requirements.

Processing

The processes used at Kestrel are standard for the coal industry and so are well tested technologies. All samples were wash/cut-point tested and so the representativeness of test work undertaken is implicit in the Resource classification status.

Ore Reserve estimation is based on existing product specifications and reconciled processing efficiencies.

Modifying factors

Rio Tinto Coal Australia has an extensive environmental and heritage approval and compliance process. No issues are expected that would impact on the Mineral Reserve estimate. Mining operations, management of waste, and storage/discharge of any solids, liquids or gases, meet current environmental requirements. All necessary Government approvals are expected to be received within the timeframes anticipated in the Life of Mine (LOM) plan.

Kestrel is an operating site with existing infrastructure in place to support the operation, sustaining capital to maintain the existing infrastructure is accounted for in cost modelling. Replacement capital items are accounted for, as required, within the forecast.

Competent Persons Statement

The information in this report that relates to Mineral Resources is based on information compiled by Dr Richard Ruddock, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Dr Ruddock is a full-time employee of the company.

The information in this report that relates to Ore Reserves is based on information compiled by Mr Lawrence Simmonds, a Competent Persons who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Simmonds is a full-time employee of the company.

Dr Ruddock and Mr Simmonds 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 Dr Ruddock and Mr Simmonds consents to the inclusion in the report of the matters based on the information that he has compiled in the form and context in which it appears.

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Kestrel Table 1

The following table provides a summary of important assessment and reporting criteria used at Kestrel Mine for the reporting of exploration results and coal resources 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	<ul style="list-style-type: none"> A combination of open hole (predominantly for structural definition) cored (for Coal Quality (CQ), geotechnical and gas sampling) and channel sampling have been used.
Drilling techniques	<ul style="list-style-type: none"> 1,504 drill holes (349,508 metres) support the Resource estimate. Cored drill holes represent 39% of the total holes and open holes 61%. The drill holes are up to 609m in length and average 233m. The drill holes were all nominally recorded as vertical; boreholes deviated by more than 5% were to be re-drilled by contractor. Coring has predominantly been done using a HQ3-sized (63mm) bit and open hole drilling to an equivalent hole diameter size. In addition a limited number of large diameter (LD) holes have been drilled: 22 holes at 150mm (6"), and 14 holes at 200mm (8") diameter sizes.
Drill sample recovery	<ul style="list-style-type: none"> Standardised Rio Tinto Coal Australia logging systems are utilised for all drilling logging and sampling. Core recovery is recorded by the geologist while logging the drill hole. If core recovery for a coal ply is less than 95%, then that section of the hole is re-drilled to ensure a representative sample is taken. Ply samples are checked for representativeness using a theoretical mass that is determined using analysed relative density, sample thickness and core diameter prior to composite definition. Open hole chip recovery is assessed qualitatively by the rig geologist.
Logging	<ul style="list-style-type: none"> Core is geologically and geotechnically logged and open hole chip samples are taken every 1m and logged for lithology changes. Logging for lithology, grain size, weathering and hardness is conducted using standard dictionary definitions. Colour and any additional qualitative comments are also recorded. All core is photographed on both a core table (0.5m increment) and a 5m tray basis. Chips are photographed as laid out by 1m intervals. All holes are logged using a comprehensive suite of downhole geophysics tools (calliper, gamma, density, neutron, sonic), with acoustic scanner (for geotechnical assessment) also run on cored holes.
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> Core sampling is completed at the drill site and based on set of standard criteria (determined by lithology and structure). Samples are bagged at the drill site and then transported to an external accredited laboratory for analysis as a complete hole batch. All samples are weighed, air-dried and then re-weighed before being drop shattered from 2m ten times. The product is dry sized at 25, 16, 8, 4, 2, 1, 0.5 (ww) mm and weigh size fractions. The size fractions are then recombined into one whole sample and dry tumbled for three minutes. The sample then goes through wet pre-treatment, float/sink and froth flotation testing before undergoing raw coal analysis. CQ analysis is by a three stage method involving raw analysis on all plies followed by washability and product testing on composite samples as defined by the project geologist. All sample treatment and analysis is conducted according to procedures which adhere to Australian (or International equivalent) standards in a National Association of Testing Authorities certified laboratory.
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> Non-formalised quality assurance/quality control (QA/QC) involving duplicate samples is completed. In addition, Rio Tinto Coal Australia checks laboratory round robin and basic reproducibility tests provided by the primary laboratory. All results are assessed via cross-plots and statistics for precision and accuracy.

Verification of sampling and assaying	<ul style="list-style-type: none"> • All CQ sampling and analysis is overseen and checked by other suitably qualified Rio Tinto personnel. • Data transfer from site is covered by an agreed protocol. This system documents primary data, data entry procedures, data verification, and data storage (physical and electronic) into a geological database.
Location of data points	<ul style="list-style-type: none"> • The topographic surface is derived from a combination of aerial survey data and drill hole collars. • All surveyed coordinates are within Australian Geodetic Datum 1984 Zone 55. • Drill hole collars were surveyed post drilling by licensed surveyors using differential GPS with an accuracy of $\pm 10\text{mm}$. • Downhole surveying has been undertaken using downhole verticality and calliper tools.
Data spacing and distribution	<ul style="list-style-type: none"> • Drill hole spacing for core holes is on an equilateral triangle grid of 500m or less. Open holes spacing is on a 250m or less equilateral triangle grid. • All core samples are composited within defined seam boundaries.
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> • The Coal Measures show a relatively consistent layering and are not subject to steep dips. The orientation of drilling is therefore suitable for flat lying stratified deposits.
Sample security	<ul style="list-style-type: none"> • Core/chip samples are taken at the drill site and then transported daily to the refrigerated Kestrel storage area. Once the hole has been completed the samples are transported to the laboratory via a dedicated courier service, again under refrigeration.
Audits or reviews	<ul style="list-style-type: none"> • Kestrel has had four audits completed in the past seven years, they include: <ul style="list-style-type: none"> ◦ An external audit of the structural and CQ databases, and models was completed by Xenith Consulting in 2007. No material errors were noted in the model, only a few minor discrepancies were identified. The model was considered to be fit for the purposes of resource and reserve estimation and mine planning. ◦ An external audit of the CQ database was completed by McMahon Coal Quality Resources in 2007. This audit concluded that the level of errors detected unlikely to significantly affect modelled CQ values. ◦ An internal technical evaluation group (TEG) peer review of the CQ estimate of coking coal grade (fluidity and rank), and Kestrel Mine extension (KME) Project valuation in 2007 found sufficient confidence in CQ grade estimates for the KME Project to be approved in December 2007. ◦ External audit by Xstract Group on Resources and Reserves in 2016 • 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	<ul style="list-style-type: none"> • The Kestrel Mine is operated under a joint venture agreement. The joint venture partners are listed below: <ul style="list-style-type: none"> ◦ Queensland Coal Pty Ltd (80% share) ◦ Mitsui Kestrel Coal Investment Pty Ltd (20% share). • Kestrel Mine contains the following leases and licences: <ul style="list-style-type: none"> ◦ Five mining leases (ML) covering 11,974.332ha ◦ One mineral development licences (MDL182) totalling 11,619ha, renewal recently approved. • The Kestrel West Project is contained within MDL 182 and all leases are in good standing. • Previously Kestrel and Kestrel West have been reported separately for resources and reserves.

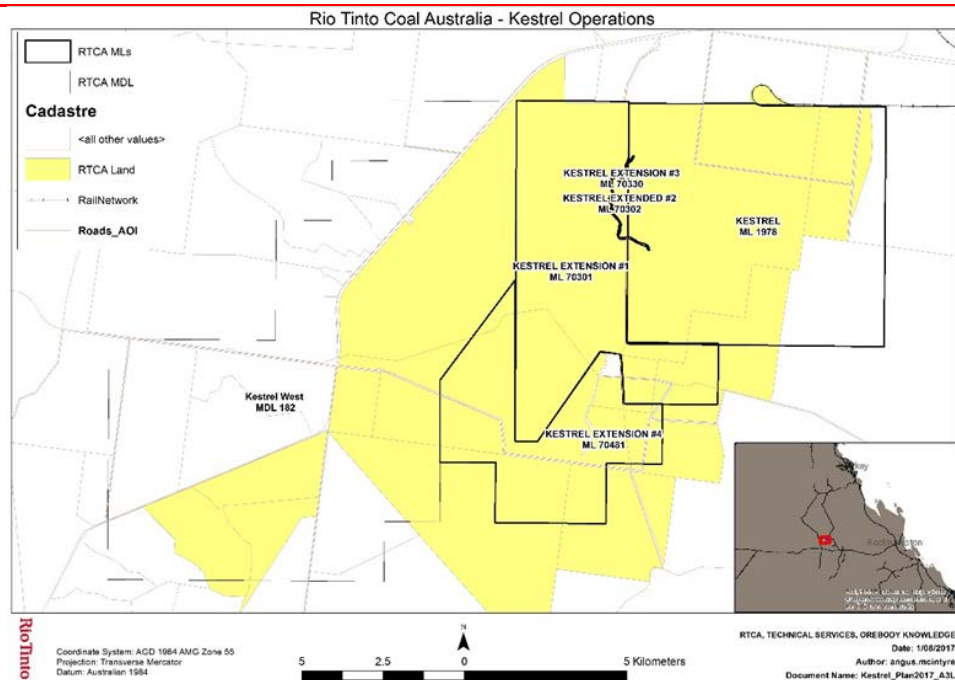


Figure 1 Kestrel tenement titles

Exploration done by other parties

- Mid to late 1960s: Regional exploration for open-cut coking coal was undertaken by the Bellambi Coal Company and Mount Isa Mines Ltd.
- 1971–1975: The Queensland Department of Mines drilled 37 holes.
- 1982: The Denham Coal Associates Joint Venture (DCAJV) was awarded tenure.
- 1982–1984: DCAJV drilled 280 drill holes.
- March 1985: A feasibility study confirmed the technical and economic feasibility of a single longwall operation.
- 1988–1990: An exploration drift was completed.
- August 1990: Mine construction commenced.

Geology

- The Kestrel deposit is located in the southwest part of the northern Bowen Basin. The northern Bowen Basin is the northernmost part of the 1800km long Bowen-Gunnedah-Sydney Basin, a meridional accumulation of Permian and Triassic sediments in eastern Queensland (QLD) and New South Wales (NSW).
- The Kestrel deposit is located on the Comet Platform on which deformation is limited to broad, low amplitude basin and dome structures. The Kestrel resource is located on the western limb of the gently south-westerly plunging Talagai Syncline which defines the prevailing southerly to south-easterly regional dip in the mine area. The sequence at the Kestrel deposit comprises the German Creek Formation overlain by the Macmillan and Fairhill Formations.
- At Kestrel, coal is mined from the German Creek Seam which is hosted in the German Creek Formation.

Drill hole information	<ul style="list-style-type: none">Drilling data summary from Rio Tinto Coal Australia drilling campaigns: note that this table includes only open vertical holes and/or cored holes <table><thead><tr><th rowspan="2">Drilling Program</th><th colspan="4">Hole Type</th><th rowspan="2">Total Holes</th></tr><tr><th>Open Hole</th><th>HQ-3 Core</th><th>Large Core (150mm/200 mm)</th><th>Wedged</th></tr></thead><tbody><tr><td>1999/2000</td><td>10</td><td>36</td><td>5</td><td>4</td><td>55</td></tr><tr><td>2000 Crinum Fault</td><td>1</td><td>11</td><td>0</td><td>0</td><td>12</td></tr><tr><td>2001</td><td>6</td><td>1</td><td>0</td><td>0</td><td>7</td></tr><tr><td>2004</td><td>36</td><td>26</td><td>0</td><td>0</td><td>62</td></tr><tr><td>2006</td><td>27</td><td>65</td><td>0</td><td>0</td><td>92</td></tr><tr><td>2007</td><td>8</td><td>0</td><td>0</td><td>0</td><td>8</td></tr><tr><td>2009</td><td>5</td><td>0</td><td>0</td><td>0</td><td>5</td></tr><tr><td>2011</td><td>1</td><td>6</td><td>0</td><td>0</td><td>7</td></tr><tr><td>2012</td><td>11</td><td>44</td><td>0</td><td>0</td><td>55</td></tr><tr><td>2013</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td></tr><tr><td>2014</td><td>2</td><td>15</td><td>0</td><td>0</td><td>17</td></tr><tr><td>2015</td><td>3</td><td>0</td><td>0</td><td>0</td><td>3</td></tr><tr><td>2016</td><td>29</td><td>2</td><td>0</td><td>0</td><td>31</td></tr><tr><td>Totals</td><td>140</td><td>206</td><td>5</td><td>4</td><td>346</td></tr></tbody></table> <ul style="list-style-type: none">Since the previous resources upgrade in 2015 there have been an additional 31 drillholes added due to new drilling or database updates	Drilling Program	Hole Type				Total Holes	Open Hole	HQ-3 Core	Large Core (150mm/200 mm)	Wedged	1999/2000	10	36	5	4	55	2000 Crinum Fault	1	11	0	0	12	2001	6	1	0	0	7	2004	36	26	0	0	62	2006	27	65	0	0	92	2007	8	0	0	0	8	2009	5	0	0	0	5	2011	1	6	0	0	7	2012	11	44	0	0	55	2013	1	0	0	0	1	2014	2	15	0	0	17	2015	3	0	0	0	3	2016	29	2	0	0	31	Totals	140	206	5	4	346
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Data aggregation methods	<ul style="list-style-type: none">Ply samples are combined to create composites (for washability and product coal analyses) representing mineable seam working sections.																																																																																														
Relationship between mineralisation widths and intercept lengths	<ul style="list-style-type: none">Based on drilling techniques and stratigraphy, the coal seam intercepts therefore approximate the true coal thickness.																																																																																														
Diagrams	<div><div><p>Rio Tinto Coal Australia - Kestrel Operations</p><p>Coordinate System: AGD 1984 AMG Zone 55 Projection: Transverse Mercator Datum: Australian 1984</p></div><div><p>RTCA, TECHNICAL SERVICES, OREBODY KNOWLEDGE Date: 2/08/2017 Author: angus.mcintyre Document Name: Kestrel_Plan2017_A3L</p></div></div>																																																																																														

Figure 2 Kestrel location

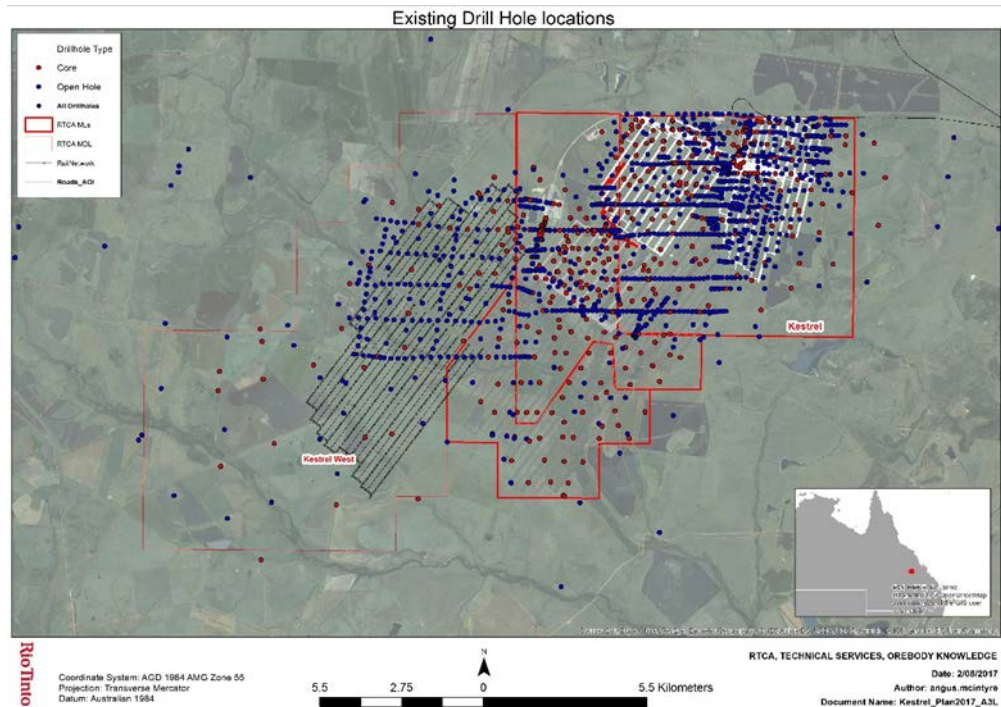
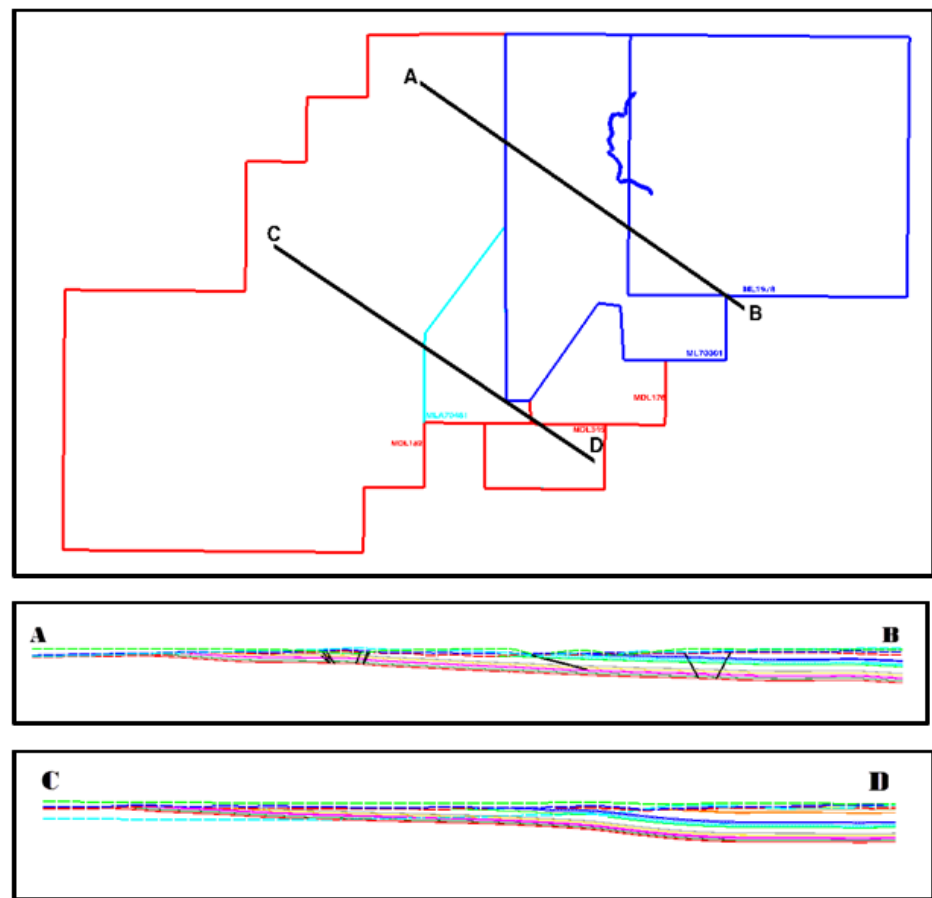


Figure 3 Drill collar locations



Cross-sections A-B and C-D are north west to south east

Figure 4 Kestrel Cross-sections

Balanced reporting	<ul style="list-style-type: none"> Not applicable. Rio Tinto Coal Australia has not specifically released exploration results for these deposits.
Other substantive exploration data	<ul style="list-style-type: none"> Apart from surface exploration drilling, data has been collected from underground drilling and channel sampling.
Further work	<ul style="list-style-type: none"> Drilling (surface and underground) for both pre-production and strategic purposes (including analytical (CQ, geotechnical, gas) sampling) will be ongoing.

SECTION 3 - ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	Commentary
Database integrity	<ul style="list-style-type: none"> All drill hole data are securely stored in a database which is stored on the Brisbane server and is backed up daily. Data are validated at the drill site and also prior to loading into the GDB database. The GDB database contains automated validation processes (load limits) which are activated during data loading and prevent un-validated data being loaded.
Site visits	<ul style="list-style-type: none"> The Resources Competent Person visited Kestrel in 2017.
Geological interpretation	<ul style="list-style-type: none"> The deposit is well known and tabular (layer-cake) with all major structures defined. Infill drilling and mining exposure and mapping has supported and refined the model. The current interpretation is thus considered to be robust.
Dimensions	<ul style="list-style-type: none"> The deposit trends 17.5km northeast to southwest and is 10km in width. The deposit extends to a depth of 490m below the topographic surface.
Estimation and modelling techniques	<ul style="list-style-type: none"> Modelling was undertaken using resource modelling software. For structural modelling a Finite Element Method (FEM) interpolator is used. For CQ an inverse distance squared interpolator with search radius of 5,000m is used. All surfaces and coal qualities are interpolated into grids with 25m × 25m node spacing. The model is of the coal seams only with waste modelled by default and not assigned any grade. Resource estimates are therefore of the coal seams only and restricted on a whole seam group basis only. Modelling is completed on an iterative basis with checking of cross-sections and contours of structural and CQ attributes. Database values are posted on contours as a further check. A volume/tonnage check between the model and its predecessor are completed as a final validation. The previous and separate (Kestrel and Kestrel West) resources upgrade was based on separate resource models – these models have been merged for this update.
Moisture	<ul style="list-style-type: none"> All tonnages are estimated on an in situ moisture basis, which is determined as 6%. This is based upon imprecise relationships between air-dried and equilibrium moisture, with in situ moisture tempered by knowledge coal rank and type, water addition during mining, and plant feed moisture.
Cut-off parameters	<ul style="list-style-type: none"> Nominally coal is washed to produce three types of products: <ul style="list-style-type: none"> a primary product 6.5% air-dried ash high volatile hard coking coal a secondary product 13% air-dried ash thermal coal 8.5% air-dried ash high volatile semi-coking coal created by blending the primary and secondary washery products.
Mining factors or assumptions	<ul style="list-style-type: none"> Development of this Mineral Resource estimate assumes mining using standard Rio Tinto Coal Australia equipment. The assumed mining method is development and longwall methods and, in addition, bord and pillar style extraction has been considered.
Metallurgical factors or assumptions	<ul style="list-style-type: none"> It is assumed that a combination of density separation (magnetite/water) and fines flocculation processes used by Rio Tinto Coal Australia will be applicable for the processing of Kestrel coal.

Environmental factors or assumptions	<ul style="list-style-type: none"> Rio Tinto Coal Australia has an extensive environmental and heritage approval and compliance process. No issues are expected that would impact on the Mineral Resource estimate.
Bulk density	<ul style="list-style-type: none"> Coal relative density is currently modelled at a 6% in situ moisture basis. Conversion to the in situ moisture basis has been carried out by applying the Preston and Sanders method using the equation: $\text{relative density (in situ)} = \frac{RD_{ad} \cdot (100 - M_{ad})}{100 + RD_{ad} \cdot (ISM - M_{ad}) - ISM}$ <p><i>Where: RD_{ad} = relative density, air-dried basis; M_{ad} = moisture, air-dried basis, ISM = in situ moisture.</i></p>
Classification	<ul style="list-style-type: none"> The classification of the Mineral Resources into varying confidence categories is based on a standardised process of utilising Points of Observation (PoO) (i.e. drill holes) according to their reliability and value in estimation. The PoO are used to categorise structure and quality continuity (or both) or support continuity. Radii of influence are then plotted around PoO maps for structure and quality. The radii of influence were based on an initial geostatistical study and moderated by consideration of the perceived and observed regional variability in structure and CQ for the German Creek Seam. Areas of confidence (low, medium, high) are produced from these plots (structure, CQ for each seam group) and these are finally combined to produce areas of Measured, Indicated and Inferred which are used to subdivide the resource tonnage estimates. In summary radii are 500m radii for high, 1,000m for medium and 3,000m for low confidence respectively. The Competent Person is satisfied that the stated Mineral Resource classification reflects the geological controls interpreted and the estimation constraints of the deposits.
Audits or reviews	<ul style="list-style-type: none"> Kestrel has had two audits completed in the past seven years on the estimation and reporting of Mineral Resources, they include: <ul style="list-style-type: none"> An external audit of the structural and CQ databases, and models was completed by Xenith Consulting in 2007. No material errors were noted in the model, only a few minor discrepancies were identified. The model was considered to be fit for the purposes of resource and reserve estimation and mine planning. An internal technical evaluation group (TEG) peer review of the CQ estimate of coking coal grade (fluidity and rank), and Kestrel Mine extension (KME) Project valuation in 2007 found sufficient confidence in CQ grade estimates for the KME Project to be approved in December 2007. An external audit of the methodology of for defining “eventual economic extraction” (via Whittle advanced economic analysis of underground mining) was completed by Xstract Mining Consultants in 2016. This considered the process to be a robust, transparent and fit for purpose methodology. These reviews validated the modelling and estimation of Resources at Kestrel to-date.
Discussion of relative accuracy/ confidence	<ul style="list-style-type: none"> Rio Tinto Coal Australia operate multiple mines in NSW and QLD. The Mineral Resource data collection and estimation techniques used for the Kestrel deposit are consistent with those applied at other deposits which are being mined and is indicative of a robust process. Accuracy and confidence of Mineral Resource estimation estimate has been accepted by the Competent Person.

SECTION 4 ESTIMATION AND REPORTING OF ORE RESERVES

Criteria	Commentary
Mineral Resource estimate for conversion to Ore Reserves	<ul style="list-style-type: none"> A 3D gridded resource model of topography, structure and quality is used for in situ resource definition. Solids/Blocks representing the mining layout are created and combined with the in situ resource model to create a mine design and scheduling model. The mine schedule is used for Coal Reserves reporting. Coal Resources are in addition to Coal Reserves. Underground ore reserves are as reported

	at June 30 2017.
Site visits	<ul style="list-style-type: none"> The Reserves Competent Person visited Kestrel in 2017.
Study status	<ul style="list-style-type: none"> Kestrel is an operating mine. The reportable Ore Reserve is based on the life of mine (LOM) plan and has determined a mine plan that is technically achievable and economically viable, and that material modifying factors have been considered.
Cut-off parameters	<ul style="list-style-type: none"> A comprehensive margin ranking exercise was carried out in 2015 to determine the economic limits of the deposit. These limits are still valid and are tested annually as part of the LOM process. For annual JORC reserves reporting purposes, detailed mine design and schedules are constructed to generate detailed cash flow schedules. This work includes identifying the mining sequence, equipment requirements, incremental and sustaining capital. A discounted cashflow analysis is conducted to re-assess under the latest economic assumptions the potential reserves remain net cashflow positive.
Mining factors or assumptions	<ul style="list-style-type: none"> Kestrel is an underground mine that targets the German Creek Seam. It utilises continuous mining units for in-seam development to gain access to the reserve and a retreat longwall system to extract the majority of the reserve. Material and personnel movement in and out of the mine is by drive in access via a dedicated inclined transport drift; and coal clearance out of the mine is via a second dedicated inclined drift. The Kestrel Longwall system has increased in width from 375m to nominal 415m wide system, which is currently in operation. This system width assumption is maintained for the remainder of the LOM. The length of longwall panels are determined by a combination of factors including faults, lease limitations and ventilation requirements. All main headings and gate-road pillars have been designed to provide the required stability with appropriate factors of safety and include appropriate barrier pillars between the longwall panel take-offs and the main headings. The plan is optimised at 037.25°/217.2° panel alignment in order to derive preferential alignment to principal horizontal stress and to maintain 90° conveyor transfer angles. Mining loss and dilution factors are applied depending on the seam thickness and classification of roof and floor material properties. Reconciliation analysis of actual longwall dilution achieved has determined a range between 50-250mm depending on conditions. For development roadways, the difference between equipment cut height and seam thickness is the primary driver of dilution calculated. LOM for strategic planning purposes may contain Inferred Resources, provided that the LOM plan would not be compromised by non-inclusion of this coal. Inferred Resources included in LOM plans retain this designation and are not to be referred to as Reserves. Neither are they to be reported in JORC or Securities and Exchange Commission compliant reserve statements. Kestrel has very limited Inferred coal within the initial mining life, with only the last mining area (700s) comprising a significant quantity of inferred material, tonnages from this area are not reported. Site infrastructure includes Coal Handling and Preparation Plant (CHPP), co-disposal dump, rail loop, mine offices, workshop, warehouse and water/sewage treatment plants.
Metallurgical factors or assumptions	<ul style="list-style-type: none"> The Kestrel CHPP consists of raw coal handling facilities and stockpile, coal preparation plant, product stockpile and train load-out facility and co-disposal area. The CHPP produces both coking and thermal products. Yield for each product is estimated from laboratory tests of exploration samples and modelled. Coal qualities modelled include volatile matter, sulphur, phosphorus, Crucible Swelling Number (CSN), fluidity, dilatation, reflectance, and thermal energy. During the annual reconciliation process, the actual plant performance is compared to model forecast. A calibration process is applied to increase alignment between modelled and actual performance, which may modify the product split and total recoveries as required.
Environmental	<ul style="list-style-type: none"> Appropriate environmental authorities and licences are in place for mining operations at Kestrel. The main impact of mining at Kestrel is subsidence of the surface as the area above the coal seam falls in mined-out area. The land management strategy centres on protecting

	<p>the soil from erosion during subsidence, and working to return affected areas to productive agricultural use.</p> <ul style="list-style-type: none"> Reject material from the CHPP is disposed of in the surface co-disposal area, which will be rehabilitated prior to mine closure.
Infrastructure	<ul style="list-style-type: none"> Kestrel is an operating site with existing infrastructure in place to support the operation. The current LOM requires sustaining capital only to maintain the existing infrastructure. Where required replacement infrastructure is captured in capital assessments.
Costs	<ul style="list-style-type: none"> Based on detailed Annual Operating Plan (AOP) process. Beyond AOP, sustaining capex based on \$/ROMt plus equipment replacements and additions required to deliver mine plan. First principles estimating and aligned with AOP. Budget prices for major consumables and labour. Commodity prices supplied by the economics and markets team, based on expected demand, current supply, known expansions, and expected incentivised supply. Exchange rates supplied by the economics and markets team. Transport charges obtained from coal chain team based on existing contracts and expected tonnages. State Government royalties are based on current QLD royalty rates.
Revenue factors	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> The supply and demand situation for coal is affected by a wide range of factors, and coal consumption changes with economic development and circumstances. Rio Tinto Coal Australia delivers products aligned with its Mineral Resources and Ore Reserves, these products have changed over time and successfully competed with coal products supplied by other companies. Price and volume forecasts are the basis for these forecasts.
Economic	<ul style="list-style-type: none"> 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.
Social	<ul style="list-style-type: none"> Kestrel is committed to making a sustained contribution to the social and economic wellbeing of Queensland's Central Highlands Region beyond providing over 350 direct jobs at the mine site. The Kestrel Mine Community Development Fund has supported many local projects since its launch in 2003. The fund works with community partners on projects addressing economic development, creation of employment and training opportunities and enhancement of industry. Local suppliers and service people are given opportunities to tender for projects related to Kestrel.
Other	<ul style="list-style-type: none"> Semi-quantitative risk assessments have been undertaken throughout the LOM and Reserve phases. No material naturally occurring risks have been identified through the above mentioned risk management processes.
Classification	<ul style="list-style-type: none"> The Ore Reserves consist of 10.8% Proved Reserves and 89.2% Probable Reserves. The competent Person is satisfied that the stated Ore Reserve classification reflects the outcome of technical and economic studies.
Audits or reviews	<ul style="list-style-type: none"> The Reserve has been subject to an independent audit and an independent review within the past 5 years. Internal Rio Tinto Coal Australia peer review processes have been completed. These reviews concluded that the fundamental data collection techniques are appropriate and consistent with previously audited Kestrel models.
Discussion of relative accuracy/ confidence	<ul style="list-style-type: none"> Rio Tinto Coal Australia operates multiple mines in QLD and NSW. The Ore Reserve estimation techniques utilised for the Kestrel Mine are consistent with those applied across the other operations.

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| | <ul style="list-style-type: none">• Reconciliation of actual production with the Ore Reserve estimate for the existing operations is generally within 5% for tonnage and grade. This result is indicative of a robust Ore Reserve estimation process.• Accuracy and confidence of modifying factors are generally consistent with the current operation. |
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