Mount Thorley Warkworth Table 1

The following table provides a summary of important assessment and reporting criteria used at Mt Thorley Warkworth (MTW) for the reporting of exploration results, 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	• A combination of open hole (predominantly for structural definition) and cored (for coal quality (CQ), geotechnical and gas sampling) have been used.
Drilling techniques	• A total of 2,628 drill holes (274,585m) support the Resource estimate Cored drilling represents 45% of the total metres and open hole drilling 55%. The drill holes are up to 725m in length and average 92m. 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) and open hole drilling to an equivalent hole diameter size. In addition a limited number of large diameter (LD) holes have been drilled: seven holes at 150mm (6") and 49 holes at 200mm (8") diameter sizes.
Drill sample recovery	• 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 redrilled to ensure a representative sample is taken.
	• Ply samples are checked for representativeness against a theoretical mass after raw CQ analysis and prior to composite definition.
	Open hole chip recovery is assessed qualitatively by the rig geologist.
Logging	• Core is geologically and geotechnically logged and open hole chip samples are taken every 1m and logged for lithology changes. Logging for lithology, grainsize, 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, and sonic) – with the addition of acoustic scanner that is used for geotechnical assessment in cored holes
Sub-sampling techniques and sample preparation	• 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.
	• Prior to May 2013 samples were analysed by Australian Laboratory Services Steel River, Newcastle laboratory.
	• All samples are weighed, air-dried and then re-weighed before being crushed to an 11.2mm top size. A rotary splitter is used to divide the sample into portions available for further CQ 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 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	• Non-formalised quality assurance/quality control (QAQC) involving duplicate samples is completed and, in addition, Rio Tinto Coal Australia checks laboratory round robin and basic reproducibility tests provided by Bureau Veritas. All results are assessed via crossplots and statistics for precision and accuracy.
Verification of sampling and	 All CQ sampling and analysis is overseen and checked by other Rio Tinto personnel. Data transfer from site is covered by an agreed protocol. This system documents primary assaying data, data entry procedures, data verification, and data storage (physical and

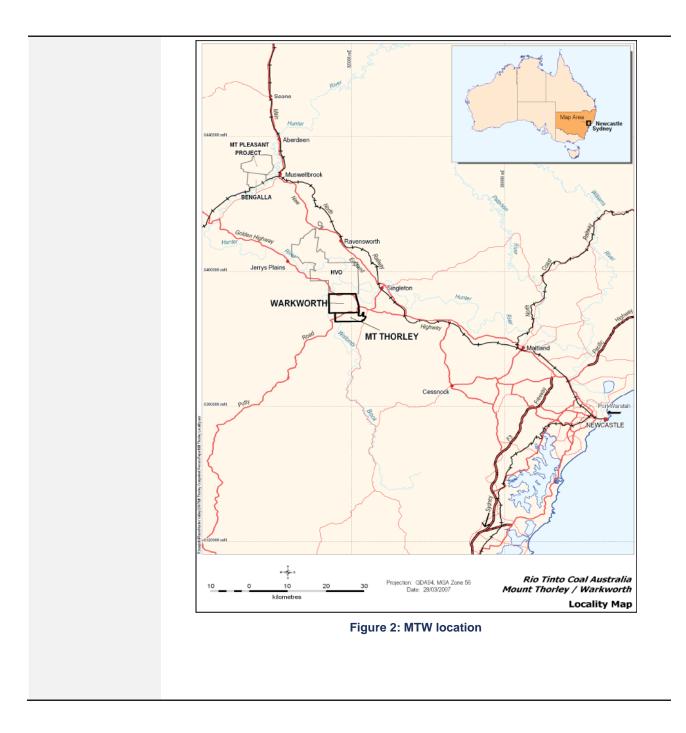
	electronic) into Ventyx/Mincom's geological database
Location of data points	• The topographic surface is derived from a combination of 2m and 5m contour data digitised from topographic maps and 10m digitised data from the Bulga 1 st edition topographic map covering the mined areas. Drill hole collars and mine survey data were also used. The digital terrain model was created with a 20m \times 20m cell size triangulation at 0.2m decimation.
	• All surveyed coordinates are within Map Grid of Australia 1994 MGA Zone 56.
	• Drill hole collars were surveyed post drilling by licensed surveyors using differential global positioning system with an accuracy of ±10mm.
	• Downhole surveying has been undertaken using downhole verticality and calliper tools since 2007, including attempted resurvey of earlier drill holes. Overall 84% of the diamond drilling metres have been surveyed downhole over the entire drill hole length but only 40% of the total open hole drilling metres have been downhole surveyed.
Data spacing and distribution	 Drill hole spacing for core holes is on an equilateral triangle grid of 250m or less. For open holes spacing is on a 125m or less equilateral triangle grid. All core samples are composited within defined seam boundaries.
	• All core samples are composited within defined seam boundaries.
Orientation of data in relation to geological structure	• 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	• Core/chip samples are taken at the drill site and then transported daily to the locked MTW core shed for storage. Once the hole has been completed the samples are stored in a refrigerated unit prior to being transported to the laboratory via a dedicated courier service.
Audits or reviews	• MTW has had one audit completed in the past five years. The audit was conducted in March 2010 by the Xstract Group (report: Resources and Reserves Internal Audit Report Executive Summary Mt Thorley Warkworth). The review concluded that the fundamental data collection techniques are appropriate.

SECTION 2 REPORTING OF EXPLORATION RESULTS

Criteria	Commentary		
Mineral tenement and land tenure status	 MTW is an amalgamation of two previously independent mines – Mt Thorley Operations and Warkworth Mining Limited. Each mine was developed at approximately the same time and combined by Coal & Allied Limited (CNA) in 2004. 		
	 MTW is operated by CNA on behalf of the joint venture (JV) participants. There are two JV partnerships – one for each of the formerly separate operations. Participants in the JVs are outlined below. 		
	 Mount Thorley Operations (MTO) Mount Thorley Operations Pty Ltd (a subsidiary of CNA) (share: 80%) Posco Australia Pty Ltd (share: 20%). 		
	 Warkworth Mining Limited (WML): CNA Resources (a subsidiary of CNA) (share: 28.750%) CNA Warkworth Australasia Pty Ltd (a subsidiary of CNA) (share: 26.824%) Mitsubishi Development Pty Ltd (share: 28.898%) Mitsubishi Materials (Australia) Pty Ltd (share: 6.000%) Nippon Steel (Australia) Pty Ltd (share: 9.528%). 		
	 MTW contains numerous leases and licences including: one consolidated coal lease covering 4192ha one coal lease covering 1992ha one exploration licence covering 1988ha three mining leases covering 29ha two mining lease applications covering 1370ha 		
	All leases containing Resources are in good Standing.		

	MTW Tenements Location: Warkworth Council: Singleton	Projection: Contour Interval: Source:	MGA Z56 N/A N/A	Date: Plan By: Version:	06/11/13 SC 10	Project: Layout: Our Ref:	HVO A3 P_UH_Tenement
	AND: OWNED BY THEFE EN TY ALASSE SUB AGE 192 ALASSE SUB AGE 192	ALAND OWNED BY OR OPERATIONS P OPERATIONS P	AL AQLIGO TY LAO IN DE TO IN DE TO IN DE IN DE TO IN DE TO IN DE TO IN DE TO IN DE TO IND IN DE TO IN DE TO IND IN DE TO IN DE TO IN DE TO IN DE TO IN DE TO IN DE TO IN DE TO IN DE TO IN DE TO IND IN DE TO IND IN DE TO IND IN DE TO IND IN DE TO IND IN DE TO IND IN DE TO IND IN DE TO IND IN DE TO IND IN DE TO IND IN DE IND IN DE IN DE IN DE IN DE IN DE IN DE IND IN DE IND IN IND IN DE IN DE IN DE IN DE IND IN IN IN IN IN IN IN IN IN IN IN IN IN		LAND OV THE OFFICE	INED BY ENTER CON ACLE TO RAN CON CON CON CON CON CON CON CON CON CO	Summary 10117.wor
Evaluation does by		Figure 1: MTW					
Exploration done by other parties	 1949–1950: Newly f boreholes (McMenar 	mins and JCB W	arkworth	n series).			
	1960s: Clutha BargoEarly 1970s: Armco	-	-		-		ial.
	• 1970-1975: Departm	nent of Mines co	onducts f	•	-		ramme (DM
	 Warkworth and DM 1976: Warkworth Co bid for Warkworth and cored, HQ-size holes 	onsortium is form rea. Commence	ned (late d explora	ation progr	amme wi	th 12 rig	s drilling fully
	• 1976: Drilling progra programme. Main co	amme started a	t Mt Tho	rley site –	similar to	Warkwo	orth drilling
	1980s & 990s: Main holing with producti	focus at Warkw	orth was	open-hole	e drilling.	Mt Thor	ley increased open

	• 2002–2005: Little drilling was undertaken.			
	 2006–2014: Pre-production and further exploration drilling was undertaken. Focus was on: improving borehole data density, testing in situ gas content, provide data for underground Resources, testing the geology of Abbey Green, and extending pre-production drilling 3yrs ahead of mining (MTO and WML). Drilling completed on both sites has been combined into a single geological database. 			
Geology	• MTW is located in the Hunter Coalfield in the northern part of the Sydney Basin which contains numerous important coal producing intervals in the Permian stratigraphy of the Vane subgroup. The main rock types of this subgroup include sandstone, siltstone and conglomerate, which occur with subordinate coal and tuffaceous claystone.			
Drill hole information	Drilling data summary since consolidation of the mines into one operation (as MTW):			
	2004 2005 2005 2007 2009 2010 2011 2011 2013 2013 2015			
	Open holes 35 11 71 75 23 62 103 39 45 6 28 5			
	Cored holes 7 1 6 19 18 17 24 47 44 31 13 3			
	• Since the previous resources upgrade in 2012 there have been an additional 422 drillholes added due to new drilling or database updates			
Data aggregation methods	• 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	• Based on drilling techniques and stratigraphy, the coal seam intercepts therefore approximate the true coal thickness.			
Diagrams				



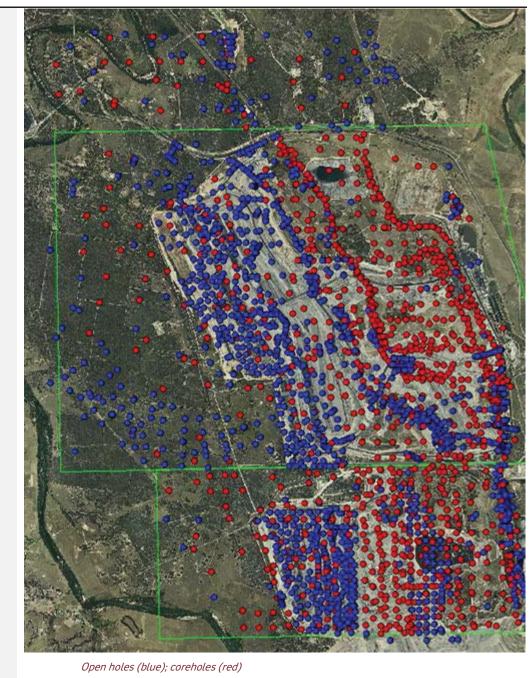
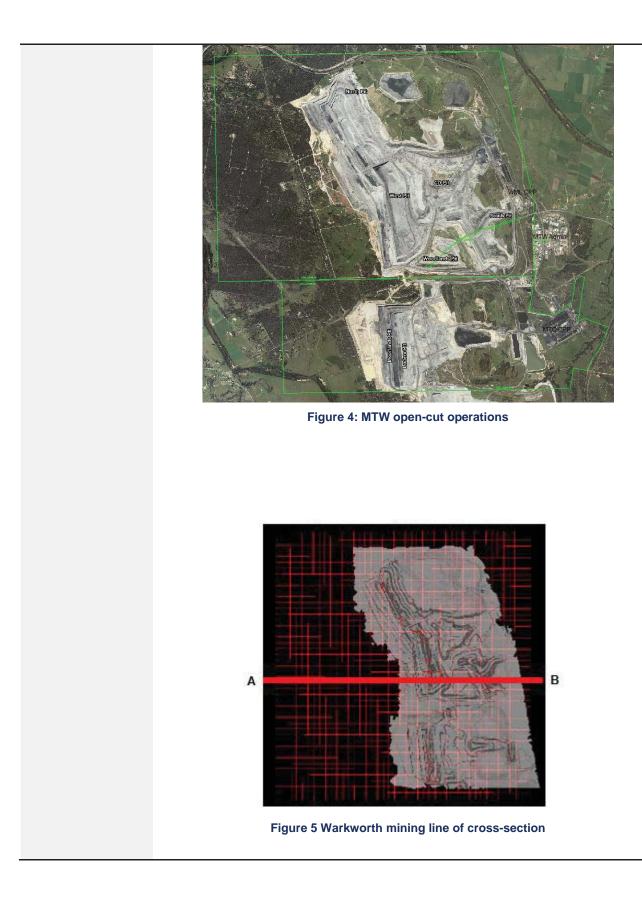
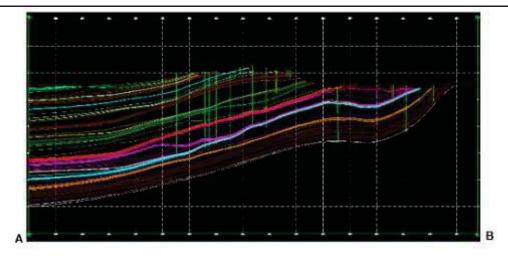


Figure 3: Drill collar locations





Cross-section A–B is west to east



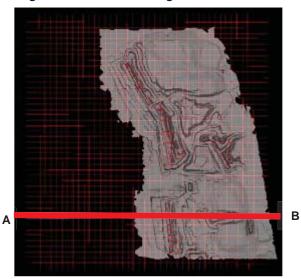
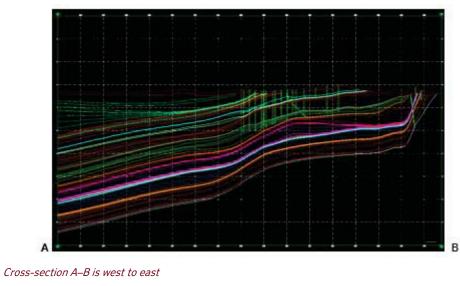


Figure 7 Mount Thorley operations line of cross section





Balanced reporting	• Not applicable. Rio Tinto Coal Australia has not specifically released exploration results for these deposits.
Other substantive exploration data	• In addition to drilling, resistivity surveys, ground and airborne magnetic and 2D seismic surveys have been completed to identify faults, dykes, and alluvial limits.
Further work	 Both pre-production drilling and strategic brownfields drilling is ongoing, and analytical (CQ, geotechnical, and gas) results will be ongoing. Brownfields exploration includes the MTW underground conceptual study. This covers the
	areas of the present open-cut pits and to the western extents of the licences shown in Figure 4: <i>MTW open-cut operations</i> .

Criteria	Commentary			
Database integrity	• All drill hole data is securely stored in a database which is duplicated on multiple servers (MTW and Singleton) and is backed up daily.			
	• Data is validated at the drill site and also prior to loading into the database by the responsible geologist.			
	• The database contains automated validation processes which are activated during data loading and prevent un-validated data being loaded.			
Site visits	• The Resources Competent Person visited MTW in 2015.			
Geological interpretation	• 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	• The deposit trends 8km northwest to southeast and is 8.5km in width. The deposit extends to a depth of 460m below the topographic surface.			
Estimation and modelling techniques	• Modelling was undertaken using resource modelling software (version 5.9). For structural modelling a proprietary fine element method (FEM) interpolator is used and for CQ an inverse distance squared interpolator is used. All surfaces and coal qualities are interpolated into grids with 20m × 20m node spacing.			
	• The model consists of the coal seams only with waste modelled by default. 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 underground estimates for the Vane sub-group are based on a separate model which spans MTW and HVO south of the Hunter River and directly adjacent to the north. Previous/existing underground resource estimates at MTW had been confined to the Jerrys Plains sub-group.			
Moisture	• All tonnages are estimated on an in situ moisture basis, which is determined as air-dried moisture content plus 4%. This offset was derived by comparing the difference between the average total moisture content of shipments of coal that have by-passed the coal plant, and the average air-dried moisture content of that coal.			
Cut-off parameters	• Nominally coal is washed to produce an export thermal product (11%–15% air-dried ash), a domestic thermal product (25% air-dried ash) and a semi-soft coking coal product at 9.0% air-dried ash. For all products, product moisture is at 9%. Air-dried is quoted at a 2.5% moisture basis.			
	• A minimum coal thickness of 0.25m and density of 1.8 g/m ³ are applied as a cut-off parameters for reporting coal.			
	 Economic resources are defined by a "break even" (\$0 margin) Lerchs-Grossman optimised shell for opencast coal – this effectively sets the maximum depth or lowermost 			

SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

	seam considered. For underground resources the limits are based on either an order of magnitude study or standard set of rules (i.e. coal below "break even" shell, less than 600m deep and greater than 1.8m thick).
Mining factors or assumptions	 Development of this Mineral Resource estimate assumes mining using standard Rio Tinto Coal Australia equipment. The assumed mining method is overburden removal via draglines, and conventional truck and shovel open pit coal mining.
	 Mining practices utilise detailed extraction plans to effectively manage grade control. These extraction plans are generated from real time blast hole drill compliance monitoring, in pit visual inspections, and survey monitoring and control.
	Conceptual underground mining will be by longwall methods.
Metallurgical factors or assumptions	 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 MTW coal.
Environmental factors or assumptions	• 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	• Certain boreholes samples have only true relative density (RD) analysis; some have both apparent relative density (ARD) and true RD, and most have ARD. Relationships between ARD and RD were determined from the paired sets of ARD and RD analyses. The relationships used to populate the ply by ply data with missing ARDs or RDs are:
	RD (ad) = 1.0003 x ARD 1.0645, and ARD = 1.0045 x RD 0.9316.
	• The in situ relative density (i.e. the density of materials at an in situ moisture basis) was calculated using the Preston and Sanders equation:
	RD2=[RD1*(100-M1)]/[100+RD1*(M2-M1)-M2]
	Where RD1 is true RD (ad), M1 is moisture (ad) and M2 is the in situ moisture.(M1 +4)
Classification	• 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 determined by consideration of the perceived and observed variability in structure and CQ for seam groups, and by examining histograms and statistics of ash content of seam groups. As there are many plies at MTW, seam groups (equivalent to the seam names) were used for categorisation.
	• 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 structural radii range 150-250m for high confidence, 300-500m for medium and 1,200-2,000m for low; and, for CQ 300-500m radii for high, 600-1,000m for medium and 1,800-3,000m for low confidence respectively. The ranges reflect variability within the fifteen seam groups modelled at MTW.
	• 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	• MTW has had one audit completed in the past five years. The audit was conducted in March 2010 by the Xstract Group (report: Resources and Reserves Internal Audit Report Executive Summary Mt Thorley Warkworth).
	• The outcome of this audit was overall a satisfactory rating with a number of recommendations made and acted upon by Rio Tinto Coal Australia.
Discussion of relative accuracy/ confidence	• Rio Tinto Coal Australia operate multiple mines in New South Wales (NSW) and Queensland (QLD). The Mineral Resource data collection and estimation techniques used for the MTW deposit are consistent with those applied at other deposits which are being mined.
	 Reconciliation of actual production with the Mineral Resource estimates for the existing operational deposits are generally within 4% for tonnes, however grade is not reconciled against. This result is indicative of a robust process.
	Accuracy and confidence of Mineral Resource estimation estimate has been accepted by

Criteria	Commentary	
Mineral Resource estimate for conversion to Ore Reserves	 A 3D gridded Resource model of topography, structure, and quality are used for in situ Resource definition. Mine design strips and blocks are applied to the in situ Resource model to generate the raw reserves used to create a separate mine schedule database. The mine schedule database also reflects working sections or seam aggregations, mining methods and associated loss and dilution impacts. The mine schedule database is used as the basis for Coal Reserves reporting. Coal Resources are in addition to Coal Reserves. Open pit ore reserves are as reported in 2014, with an adjustment for mining depletion. 	
Site visits	The Reserves Competent Person visited Mount Thorley Warkworth in 2015.	
Study status	• MTW is an operating mine project. 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	• Periodic pit optimisation work used to define pit shells is conducted using Rio Tinto economics prices and an estimate of unit operating costs and including a \$/ROMt allowance for sustaining capex. This process was conducted in 2015 at a long-term consensus view of the thermal coal price of US\$92.00/t.	
	• 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 that remain net cashflow positive.	
Mining factors or assumptions	• The MTW mine utilises dragline, truck and shovel for waste movement, while coal is loaded using a combination of loaders and excavators. Haulage to the ROM hopper is undertaken using rear dump trucks. The operations are supported by additional equipment including dozers, graders, and water carts.	
	• All pit end-walls have benched and battered designs based on the existing operation with allowances made for increasing depth of mining. The design provides for mining roadways and catch benches.	
	 Working section or seam aggregation logic pre-determines what is defined as mineable coal by applying working section tests based on minimum coal thickness of 25cm, and a maximum raw ash of 55% on an air-dried basis. 	
	• Coal loss and dilution factors are also applied and vary by the equipment type uncovering the various coal seams (excavator/truck versus dragline). Typical roof and floor coal loss thickness ranges from 8cm–25cm. Typical roof and floor waste dilution thickness ranges from 4cm–13cm.	
	• LOMs 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.	
	• MTW has 10.5% Inferred coal within the existing LOM plan.	
Metallurgical factors or assumptions	• MTW has two coal handling and preparation plants (CHPP): North CHPP and South CHPP. Both plants are operational, with North CHPP is a single product washing and South CHPP is capable of two-product washing.	
	• The processes used are standard for the coal industry and so are well tested technologies.	
	All samples are wash/cut-point tested and so the representativeness of test work	

	undertaken is implicit in the resource classification status.
	 In-seam dilution is included in sample testing.
	Coal Reserve estimation is based on existing product specifications.
Environmental	MTW has a number of current mining and exploration titles.
	 All the various mining leases across MTW are defined by a 21yr consent limit. This consent limit is particular to each mining lease, and as such leases are constantly being renewed. There is a dedicated tenements manager to ensure the application for lease renewal occurs on time.
	• An appeal of the project approval for Reserves west of Wallaby Scrub Road was upheld (disapproved) by the NSW Land and Environment Court in April 2013. A 350m modification within this area was subsequently secured in January 2014 and Rio Tinto Coal Australia management worked through a process that resulted in further approvals being granted in November 2015.
	• Coarse rejects are dumped within the mines overburden dumps, while the fines coal washery rejects are stored within dedicated tailings dams. Rejects material and completed tailings dams must be covered by at least 3m of inert waste rock material.
	Overburden waste rock has low acid forming potential.
Infrastructure	• MTW 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.
Costs	 Based on detailed Annual Operating Plan (AOP) process. Beyond AOP, sustaining capex is based on \$/ROMt plus equipment replacements and additions required to deliver the mine plan.
	• First principles estimating are aligned with AOP. Budget prices for major consumables and labour.
	Adjustments are made for energy.
	• Commodity prices are supplied by the economics and markets team, and are based on: expected demand, current supply, known expansions, and expected incentivised supply.
	Exchange rates are supplied by the economics and markets team.
	• Transport charges are obtained from the coal chain team based on existing contracts and expected tonnages.
	State Government royalties based on current NSW royalty rates.
Revenue factors	• Rio Tinto applies a common process to the generation of commodity price estimates 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 mine. 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 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.
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.
Social	• There are no claims to Native Title over the MTW lease area. No Reserves have been omitted on this basis.
	• Rio Tinto Coal Australia established the Upper Hunter Valley Cultural Heritage Working Group as a consultation and management process to negotiate cultural heritage issues with local Aboriginal communities. As part of releasing a ground disturbance permit on site, authority must be gained to destroy/remove sites of cultural interest. This involves archaeological mapping and removal of artefacts prior to ground disturbance.
	• There are no sites of European heritage within the existing area of MTW operations. No reserves have been omitted on this basis.

Other	• 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	• The Ore Reserves consist of 85% Proved Reserves and 15% Probable Reserves Mount Thorley area.
	• The Ore Reserves consist of 50% Proved Reserves and 42% Probable Reserves Warkworth area.
	• The Competent Person is satisfied that the stated Ore Reserve classification reflects the outcome of technical and economic studies.
Audits or reviews	• MTW has had one audit completed in the past six years. The audit was conducted in March 2010 by the Xstract Group (report: <i>Resources and Reserves Internal Audit Report Executive Summary Mt Thorley Warkworth</i>).
	• The review concluded that the fundamental data collection techniques are appropriate and consistent with previously audited MTW models.
Discussion of relative accuracy/ confidence	• Rio Tinto Coal Australia operates multiple mines in QLD and NSW. The Ore Reserve estimation techniques utilised for the Mount Thorley Warkworth Mine are consistent with those applied across the other operations. Reconciliation of actual ROM production with the Ore Reserve estimate for the existing operations is generally within 6% for tonnage and grade. This result is indicative of a robust Ore Reserve estimation process.
	• Accuracy and confidence of modifying factors will continue to be monitored to identify potential improvements.