

18 AUGUST 2016

TABLE 1 – CHECKLIST OF ASSESSMENT AND REPORTING CRITERIA (THE JORC CODE, 2012 EDITION)

The following table provides a summary of important assessment and reporting criteria used for the Rocglen Mine in accordance with the Table 1 Checklist of Assessment and Reporting Criteria, in The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2012 Edition. Criteria in preceding sections apply, where applicable, to the succeeding sections.

Section 1 – Sampling Techniques and Data

Criteria	Explanation
<i>Sampling Techniques</i>	<p>Coal intervals have been determined by sinking vertical drill holes and creating systematic geological descriptions of the strata encountered by visual determination. Data from mining operations in the area were also used. Drill hole types were:</p> <ul style="list-style-type: none"> Non-cored where field geological logs are initially created by describing chip samples recovered at 1 m intervals. Coal seam intercept depths are initially estimated to within about 0.5 m. Coal seam roof and floor depths are adjusted to match downhole geophysical logs with horizon boundaries reported to 0.10 m, and non-coal bands within seams to about 0.05 m. Cored where strata is geologically logged in the field to within 0.01 m, and field logging checked against downhole geophysical logs where available. <p>Coal seams intersected by non-cored drill holes were not sampled for quality analysis. Coal seams intersected by cored drill holes were visually logged in detail by seam brightness profiling. Sample intervals within a seam were determined after examination of the geological and geophysical logs, and the sampling scheme adopted for surrounding drill holes. All coal and in-seam stone bands were sampled. The standard downhole geophysical logging suite is Calliper, Natural Gamma and Density. These logs are not used to estimate coal quality parameters for resource calculations, and are only used for the identification of coal seam roof/floor levels, the identification of stone bands within the seams or to confirm the presence of igneous intrusions in non-cored holes. All full seam intersections are considered potential working sections. Resources were determined on full seam sections. Core recovery was maximised by:</p> <ul style="list-style-type: none"> Using triple tube core barrels Using minimum HQ core diameter <p>Employing experienced coal drilling contractors</p>
<i>Drilling techniques</i>	<p>All holes are drilled vertical. Drill core was not oriented. 4C core (100 mm diameter). HQ Triple Tube (HQ TT) core (61 mm diameter). Percussion and rotary open-hole methods using air circulation.</p>
<i>Drill sample recovery</i>	<p>Chip samples were not used to assess coal quality. Recent drill core is logged in accordance with Whitehaven Coal procedure. Coal intervals are logged in detail by describing its coal brightness profile. Volumetric recoveries determined by the analysing laboratory are primarily used to assess core recoveries. Volumetric recoveries are recalculated following adjustments using downhole geophysical logs made to sample length for broken core intervals. Where volumetric core recoveries are not available (e.g. historical data), linear core recoveries are used. Core losses are recorded as a logged interval within WHC geological logs. They are estimated following adjustment against downhole geophysical logs. HQ TT wireline coring is used to maximise sample recovery. Coal quality full seam points of observation used in this report are those where:</p> <ul style="list-style-type: none"> Volumetric recoveries were 80% or more In the absence of volumetric recovery values, a linear recovery of 90% or more. <p>There is no known relationship between coal quality and sample recovery.</p>
<i>Logging</i>	<p>Core and chip samples were logged by geologists experienced in coal resource investigation and evaluation using standardised codes and WHC procedures. The standard and level of detail is considered appropriate for mineral resource estimation. Drill core has been cleaned of surface contaminants before logging by washing with clean water and a soft brush. Borehole cores are stored in core trays in a secure facility until sampled. All holes were wireline logged if possible (i.e. not blocked). The minimum suite of logs is gamma, density,</p>

Criteria	Explanation
	and calliper. All core was photographed (digitally, since 2006). Total aggregate length of cored holes in the geological model is 2 120 m, in 24 drillholes. Total aggregate length of non-cored holes in the geological model is 16 144 m, in 197 drillholes.
<i>Sub-sampling techniques and preparation</i>	Chip samples were not used to assess coal quality. Full cores were used for coal quality testing (all core taken). Laboratory sample preparation, sub-sampling and quality control procedures were ensured by using NATA accredited commercial labs employing recognised QA procedures and following Australian Standards for coal testing. No large diameter testing results are included in the coal quality database.
<i>Quality of assay data and laboratory tests</i>	Sample preparation, sub-sampling and quality control procedures ensured by using commercial labs employing recognised QA procedures and following Australian Standards for coal testing. Samples were split and reserves retained where sufficient mass remained after testing. Coal quality was not estimated from geophysical measurements. Standards, blanks, duplicates, external laboratory checks have not been used by WHC. Acceptable levels of accuracy and precision are maintained by using commercial labs that are regularly benchmarked by external auditors against ISO 17025. These labs employ regular internal and external blind proficiency programs to provide a demonstration that results are controlled (may not have occurred for historic testing).
<i>Verification of sampling and assaying</i>	Coal intersections used in the geological model were verified by geophysical measurements obtained by wireline logging, carried out by an independent contractor, and more recently by digital photographs. Coal intersection depths and seam correlations have been validated by independent reviewers/auditors and/or alternative company personnel (Database Geologist). Twinned holes are not used. Data acquisition and verification protocols include the following Whitehaven Coal procedures. Drillhole collar, lithology and coal quality data is stored in a Ventyx Minescape GDB database for modelling. Source field records, lab reports, core photographs, survey data etc. are stored in electronic form on the Whitehaven Coal network, and hard copy in borehole folders at the company's Gunnedah office. The moisture basis of coal quality data may have been adjusted. Values stored in the GDB database are on an air dried basis.
<i>Location of data points</i>	Borehole collars were surveyed by a Registered Surveyor, using either triangulation or Real Time Kinematic differential GPS methods. A few holes, mostly without seam intersections, have co-ordinates derived from handheld GPS. Surveyor's Reports are not available for some boreholes, however every effort was made to verify borehole locations from old reports etc. The grid system used is the Map Grid of Australia (MGA) Zone 56 based on the Geocentric Datum of Australia 1994 (GDA94) values. Older survey data may have been converted from ISG. Topographic control is provided by a LiDAR survey dated 31 March 2016 and the March 2016 end of month mine survey.
<i>Data spacing and distribution</i>	Many boreholes intersect only part of the sequence i.e. were spudded stratigraphically below one or more seams, or occasionally were not drilled deep enough to intersect lower seams. Borehole spacing therefore needs to be considered on a seam-by-seam basis. Cored holes (coal quality data points) are spaced at <500 m. The data spacing and distribution is considered by the Competent Person to be sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Where coal intersections have been sampled in multiple sections per seam, compositing of samples, on a length x RD basis, has been applied.
<i>Orientation of data in relation to geological structure</i>	All boreholes have been drilled vertically. The coal deposit occurs on a north trending fold system. From a central anticline that plunges to the south, the strata dip to the west at up to 10° and more steeply to the east at up to 20°. The eastern boundary of the deposit is defined by a steep upturn to subcrop. Where this is observed in the open-cut, the coal dips sub-vertically to surface. A maximum cut off for seam thickness is used for drillholes that intersect subvertical coal seams. The orientation of data in relation to geological structure has been given consideration when undertaking geological modelling methods.
<i>Sample security</i>	Drill core stored in a secure facility until sampled. Sampling completed in accordance with WHC coal quality sampling procedure. All samples delivered to NATA registered laboratories. Laboratory results are reviewed and validated against sampled intervals to check sample integrity. Historical procedures were verified by Competent Person where available.
<i>Audits or reviews</i>	WHC standards and procedures for logging and sampling were reviewed and updated in July 2015. The borehole database was independently audited in 2011. Boreholes drilled since the

Criteria	Explanation
	last resource report were audited by the Competent Person, in June 2015, and adjustments made in the database where necessary. The geological model used in this report was validated by the Competent Person, using reports, tables, contour plans and cross-sections.

Section 2 – Reporting of Exploration Results

Criteria	Explanation
<i>Mineral tenement and land tenure status</i>	The original Development Consent for the Rocglen Open Cut mine was granted on 15 April 2008. A new Project Approval, PA10_0015, was granted on 27 September 2011 and expires on 31 December 2022. Mining Lease ML1620 was granted on 10 June 2008 for 21 years. The current Mining Operations Plan expires on 28 October 2020. There are no historical sites, wilderness or national parks within the project area, and no native title claims. All property overlying the resource is owned by Whitehaven Coal.
<i>Exploration done by other parties</i>	Various prior holders of adjacent tenement CL316. McElroy Bryan Geological Services for Novacoal in EL4501 in 1993–1997.
<i>Geology</i>	The coal is contained within the Maules Creek Formation in the Maules Creek sub-basin of the Gunnedah Basin. Multiple coal seams dipping away from a NW trending anticlinal axis, plunging to the SE. Upturn to subcrop along a major NNW trending structure forming the eastern boundary of the deposit. The deposit is open to the south.
<i>Drill hole information</i>	Information from 221 drill holes has been used in the evaluation of coal resources in the project area, with information from 144 holes excluded as they are variously: <ul style="list-style-type: none"> • Inaccurate/unverified location; • No geophysical log; • abandoned/redrilled holes; • Monitoring bores.
<i>Data aggregation methods</i>	Coal intersections may have been sampled in multiple sections per seam, so compositing of samples, on a length x RD basis, has been applied. Where quoted coal quality is for the full seam. Grade cut-offs have not been applied to exploration results in the database. Where available, analyses in excess of the resource cut off of 35% may be included in modelled data.
<i>Relationship between mineralisation widths and intercept depths</i>	All drillholes were (nominally) vertical. Coal thicknesses quoted are for downhole intercept lengths, which may have been exaggerated by seam dips particularly where sub-vertical near the eastern boundary structure. Coal resource modelling and estimation generally takes this effect into account, but there has been some selective flagging out of thick intersections where they are judged to have undue impact on seam isopachs (maximum seam thickness limited to 6 m for the Lower Glenroc seam and 15 m for the Belmont seam).
<i>Diagrams</i>	Drillhole location plan is appended.
<i>Balanced reporting</i>	There is no preferential reporting of results.
<i>Other substantive exploration data</i>	Geotechnical, groundwater, ground magnetic and geochemical studies have been completed and reported elsewhere.
<i>Further Work</i>	There is an ongoing annual drilling program for each mining strip, carried out ahead of the pre-strip operation. Additional cored holes will be required to increase confidence in grade continuity for areas in the north and west at depth. Additional LOX line and structure definition drilling will be required in some areas.

Section 3 – Estimation and Reporting of Mineral Resources

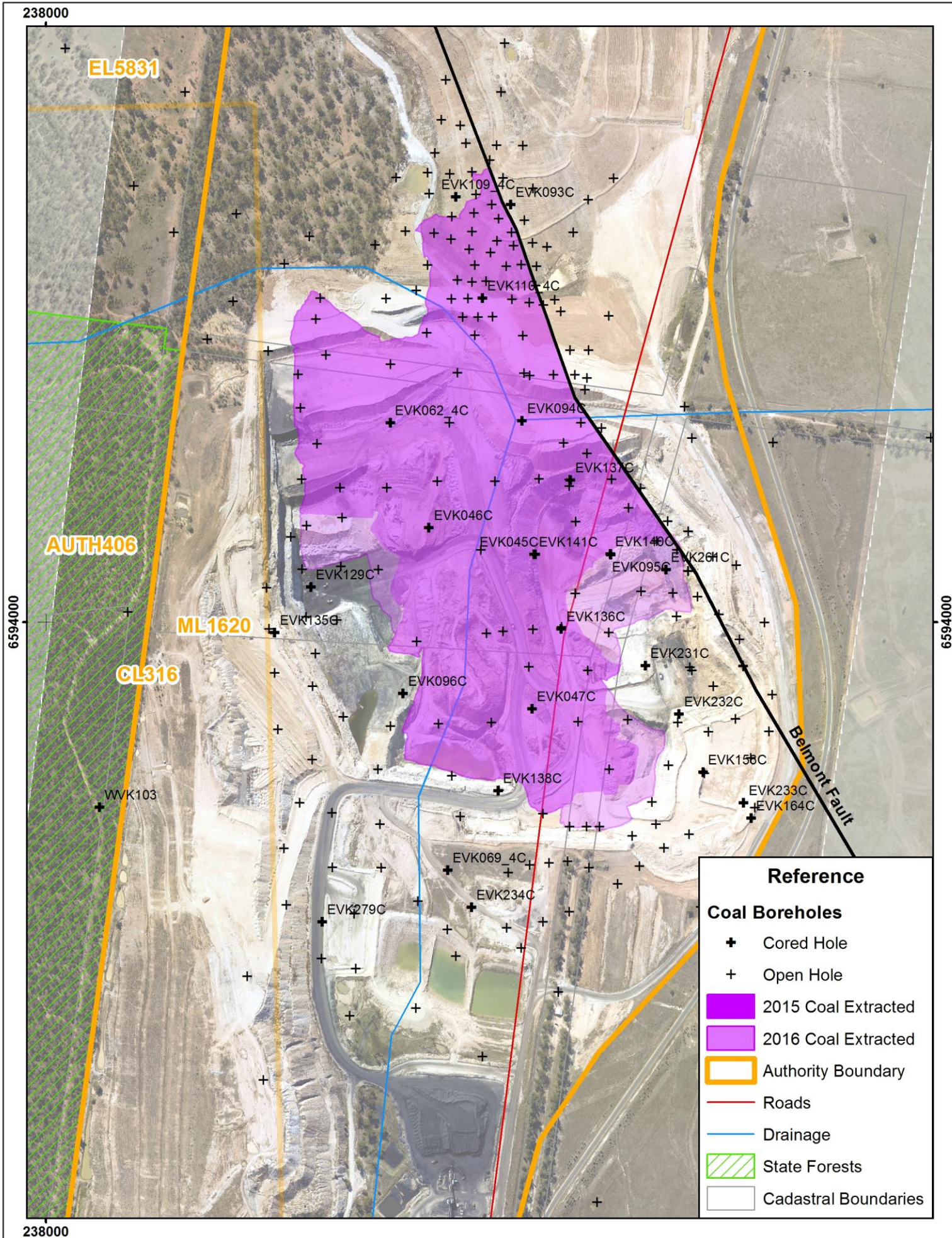
Criteria	Explanation
<i>Database integrity</i>	Borehole collar locations and RL's were checked against surveyors' reports, field records (handheld GPS) and the DTM. Lithological logs and coal intersection depths were reconciled with wireline logs. Coal quality data were cross-checked against lab reports and sample depths were correlated with the lithological database. Acquisition, validation and entry of data is per WHC Procedures (refer to Section 1 above). All survey, lithological and quality data are compiled in a LogCheck database.
<i>Site visits</i>	The Competent Person has made frequent visits to the site, and has regular consultations with the Mine Geologist and other technical staff. The most recent visit was on the 6 th of April 2016.
<i>Geological interpretation</i>	The geological interpretation is based on reports from the mine, surface mapping of outcrop, and borehole data. The drillhole database is extensive and an alternative interpretation is highly unlikely. The main factor affecting coal seam continuity is the interplay of seam dip, depth of weathering and surface topography which determines seam subcrop. The main geological feature affecting seam continuity is the eastern boundary structure, the geometry of which is now clear from exposure in the pit. It is assumed that this geometry continues to the south. Dummy survey data has been used to control the geometry of this structure in the geological model. Thickening of the coal seams to the east is now known to be attributable to depositional factors. Continuity of grade is affected by locally developed stone lenses which are mainly responsible for the bullseyes in the ash contours.
<i>Dimensions</i>	The maximum length of the resource is ~2.2 km, maximum width is ~1.5 km, and maximum depth approximately 170 m.
<i>Estimation and modelling techniques</i>	The geological model was developed by the Competent Person, using Ventyx Minescape software. The current estimate is an update to the previous Report dated August 2015. There is a history of resource reports for Rocglen dating back to 2002. There are no known deleterious elements of economic significance. There is no assumption of selective mining. Full coal thickness roof to floor is modelled for all seams. The deposit is sufficiently characterised by drilling to allow the chosen modelling parameters to operate freely except for the dummy survey data that has been used to control the geometry of the eastern boundary structure. The resource model is cut by either the base of weathering grid or the mined surface. A maximum raw ash content of 35% (ad) has been imposed as a resource cut off. ROM coal that does not meet product specifications is washed at WHC's Gunnedah CHPP. Acquisition, validation and entry of data is per WHC Procedures (refer to Section 1 above). The geological model is validated by generating and inspecting reports, tables, cross sections, contour plans and comparisons with posted drillhole values.
<i>Moisture</i>	The basis of the tonnage estimate is in situ moisture (Mis). Mis is based on estimates for coals of similar rank and properties on adjacent tenements, and on Total Moisture (as received) values for bypass coal. There is insufficient analytical data to make a determination using industry standard methods.
<i>Cut-off parameters</i>	Coal tenement boundaries, Coal tenement depth restriction, Coal extraction boundaries as at 31 March 2016, Subcrop against base of weathering, Minimum coal thickness for open cut coal in the upper seams is 0.3 m, where underlain by Belmont seam, Minimum coal thickness for open cut resources in the Belmont seam in the south where it crops is 4 m, Minimum coal thickness for underground (auger) coal is 1.0 m, An arbitrary southern limit, to constrain extrapolation to a maximum of 200 m in the south. Maximum raw ash for all coal resources is ~35% (air dried).
<i>Mining factors or assumptions</i>	It is planned that the resource continues to be mined by open cut methods, in a similar configuration and using similar equipment to the current operation. Underground (auger) mining is approved in the project approval but there is no technical/financial study.
<i>Metallurgical factors or assumptions</i>	Raw and washed coal variables are modelled. It is assumed that the coal will be mined cleanly and/or blended and/or washed to a saleable specification.
<i>Environmental factors or assumptions</i>	The entire deposit is covered by an Environmental Assessment. Required Project Approval and Mining Operations Plan (refer to Section 2 above), and the necessary environmental licences are in place (refer to the Whitehaven Coal website whitehavennews.com.au for details).

Criteria	Explanation
<i>Bulk density</i>	Air dried relative density (Standard RD) was gridded, using SRD values determined for each core sample and composited on a seam-by-seam basis. For each seam average SRD was adjusted to an in situ basis (RDis) by applying the “Preston-Sanders” (Preston & Sanders, 1993) equation, using a global estimate for in situ moisture. The estimate has not been adjusted for void spaces, in so far as the “Meyers” (Meyers et al. 2003) equation estimates moisture at the time of sampling, when the coal is assumed to be partly dewatered and some voids may be air-filled. There is no industry standard method of estimating empty void spaces.
<i>Classification</i>	<p>Resource classification confidence categories have been determined through an assessment of geological features, seam structure, mining activities, and Point of Observation (PoO) spacing. The minimum criteria for coal quality PoO are:</p> <ul style="list-style-type: none"> • Minimum analysis RD and ash; • Geophysical log • Linear core recovery >90%; • Volumetric core recovery >80%. <p>The minimum criteria for coal structural PoO are:</p> <ul style="list-style-type: none"> • Validated seam floor and thickness; • Geophysical log. <p>Classification categories have been determined using specific criteria for each seam. The result reflects the Competent Person’s view of the deposit.</p>
<i>Audits or reviews</i>	This resource estimate update is based on the geological model used for the 2015 resource estimate. No changes were made to the geological model, or estimation and reporting criteria, with the exception of accounting for depletion of the resource by production in the twelve months since the previous report.
<i>Discussion of relative accuracy/confidence</i>	An informed but qualitative judgement of the accuracy of the global resource estimate, is that it is generally within +/-15% confidence limits.

Section 4 – Estimation and Reporting of Ore Reserves

Criteria	Explanation
<i>Mineral Resource estimate for conversion to Ore Reserves</i>	The Mineral Resource estimate used as the basis for this Coal Reserves Statement is described in the document “Coal Resource Report for the Rocglen Open Cut Coal Mine, ML1620, Gunnedah Coalfield, NSW, Australia”, prepared by Mr. Benjamin Thompson, Whitehaven Coal Limited, August 2016. The Competent Person, Mr. Thompson, has sufficient expertise that is relevant to the style of mineralisation and type of deposit and activity to qualify as a Competent Person as specified under the JORC Code and is a member of the Australian Institute of Mining and Metallurgy. The Resources Statement was compiled in accordance with The JORC Code 2012 Edition. The Coal Resources reported are inclusive of the Coal Reserves.
<i>Site visits</i>	A site visit to the Rocglen Mine was undertaken by the Reserves Competent Person (“CP”) in 2015. The outcome of this visit was observation of the Project area to better understand location, environmental, social, groundwater and existing infrastructure. The CP visited the nearby WHC-owned Mines and the existing Gunnedah CHPP and train loading facility. A site visit was not undertaken in 2016 as part of the preparation of this Report as the CP believed there had been no material change in site conditions since the 2015 site visit.
<i>Study status</i>	Rocglen is an operating mine and the Modifying Factors have been informed by operational experience. As such, the level of confidence in the data and assumptions exceed those of a Prefeasibility Study. The mine is at a mature stage of operation with an estimated 3 years of operation prior to closure. WHC last completed a Life of Mine Plan for the mine in 2013. WHC have undertaken considerable work in resource reconciliation, the results of which have been reflected in this estimate.
<i>Cut-off parameters</i>	A 35% (ad) ash cut off has been applied to the Resource model, no additional cut off has been applied based on ROM ash.
<i>Mining factors or assumptions</i>	<p>Margin Ranking, pit design and LOM planning have been used as the basis of converting Coal Resources to Coal Reserves.</p> <p>The mining method is a conventional truck and excavator mining method with primarily in-pit dumping of waste. This method is proven at the mine and considered appropriate for future planning based upon geology and strip ratio.</p> <p>WHC have received geotechnical advice regarding the stable slope design criteria for the Rocglen Pit.</p> <p>RPM completed a breakeven strip ratio analysis and reviewed the LOM pit shell against this. The pit shell is unchanged from the 2015 Reserves pit shell.</p> <p>The mining factors used were:</p> <ul style="list-style-type: none"> - Minimum coal mining thickness of 0.2 m; - Minimum parting mining thickness of 0.2 m; - Overall geological loss of 13% and mining loss of 7%; - For coal >1.0m in thickness: <ul style="list-style-type: none"> • Mineable coal section roof loss of 0.1 m; • Mineable coal section floor loss of 0.1 m; • Mineable coal section roof dilution of 0.08 m; • Mineable coal section floor dilution of 0.08 m; - For coal ≤1.0m in thickness: <ul style="list-style-type: none"> • Mineable coal section roof loss of 0.05 m; • Mineable coal section floor loss of 0.05 m; • Mineable coal section roof dilution of 0.04 m; • Mineable coal section floor dilution of 0.04 m; - The quality of diluting material is relative density of 2.4 t/bcm, and ash of 73% (ar); and - In situ moisture assumed to be 8%. ROM moisture is assumed to be 8%. <p>There is no Inferred coal within the JORC pit shell.</p> <p>All necessary infrastructure is in place and operational.</p>
<i>Metallurgical factors or assumptions</i>	<p>Gunnedah CHPP is currently operating and processing Rocglen coal. The metallurgical process is appropriate for the project</p> <p>Processing logic based on WHC Gunnedah plant performance data as outlined below:</p> <ul style="list-style-type: none"> - 87% of coal washed - Average yield of 72% to achieve a 12% ash coal

Criteria	Explanation
	<ul style="list-style-type: none"> - Remaining 13% of ROM is bypassed <p>There are no deleterious elements at Rocglen that may impact on Marketable tonnage estimates. Last dot point is not applicable for coal</p>
<i>Environmental</i>	Rocglen has the necessary environmental approvals in place for the current operations. Waste rock characterisation results indicate that it does not require special placement requirements or procedures in the dumps.
<i>Infrastructure</i>	All necessary infrastructure is in place and operational for the current operation.
<i>Costs</i>	<p>All major infrastructure is in place at Rocglen. Mine Closure costs are the other key capital cost item and this has been included in the economic model.</p> <p>All operating costs were based on the 2015 actuals and 2016 Rocglen 3 year budget estimates provided by WHC and include allowances for royalties, commissions, mining costs, ship loading and administration</p> <p>Current long-term exchange rate assumptions were provided by WHC.</p> <p>Transport charges based on actual contracted prices.</p> <p>Product Coal Benchmark specifications were provided by WHC and logic for penalties for failure to meet specification confirmed.</p> <p>RPM reviewed all costs and they are considered reasonable.</p>
<i>Revenue factors</i>	The long term thermal coal price based on the April 2016 Consensus Forecast. These assumptions are considered reasonable for the purposes of estimating Reserves.
<i>Market assessment</i>	<p>A detailed Market Study has not been carried out specifically for Rocglen however markets are well established for the mine's product coal blends. WHC blend product coal from its mines in the Gunnedah region to meet product specifications prior to shipment through the Port of Newcastle. This allows WHC a lot of flexibility in preparing shipments. WHC typically produce three main products:</p> <ul style="list-style-type: none"> - Thermal at approx. 11-15% ash (ad); - PCI at approx. 6-8% ash (ad); and - SSCC at approx. 6% ash (ad). <p>Based upon these products and specifications, RPM anticipates no foreseeable issues in demand for these products.</p>
<i>Economic</i>	<p>The inputs to the economic analysis of the Rocglen Mine are derived capital and operating cost estimates outlined in the "Costs" section of Table 1. The source of the inputs is real and the confidence satisfactory. The economic modelling is in real terms and a range of discount rates between 6% and 10% have been used in assessing NPV.</p> <p>The NPV results produced from economic modelling generated a small positive and acceptable NPV's for all discount rates and the Project is considered economic from an NPV stand-point.</p> <p>The NPV at 8% discount rate has been assessed for variations of +/- 20% in the key value drivers of revenue, operating costs, exchange rate and capital costs. In a number of instances the NPV becomes negative and the Project is highly sensitive to changes in exchange rate, revenue and operating costs.</p>
<i>Social</i>	WHC has key stakeholder agreements in place.
<i>Other</i>	<p>All mining projects operate in an environment of geological uncertainty. RPM is not aware of any other potential factors, legal, marketing or otherwise, that could affect the operations viability.</p> <p>The Rocglen mine is at a mature stage of operation and will need to work towards an approved mine closure plan.</p>
<i>Classification</i>	<p>Classification of Ore Reserves has been derived by considering the Measured and Indicated Resources and the level of mine planning. Measured Coal Resources are classified as Proved Coal Reserves and Indicated Resources classified as Probable Coal Reserves, as the mine is currently operating and the level of mine planning is considered adequate to support this level of certainty in the Reserves estimate.</p> <p>The result reflects the Competent Persons view of the deposit.</p>
<i>Audits or reviews</i>	Internal peer review and reconciliation by RPM of the Reserves estimate has been completed.
<i>Discussion of relative accuracy/ confidence</i>	<p>The pit shell is supported by approximately 80% of Measured Coal Resources.</p> <p>The basis of the estimate is the 2015 actual operating costs and 3 year budget forecasts. CHPP and infrastructure are in place and operating</p>



ROCGLLEN PROJECT

ML1620

DRILLHOLES, TENURE AND
COAL EXTRACTION LIMITS



0 500

Metres

Coordinates: GDA 1994 MGA Zone 56 Scale: 1:10,000

Author: ABT

Date: 09-Aug-16



WHITEHAVEN COAL