

OAKLANDS PROJECT – JORC RESOURCE

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 Oaklands Project 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	Explanation
Sampling Techniques	Wireline and conventional drill cores (from 133 holes). The coal seams are sampled roof to floor. All interseam stone bands are included. Intercept lengths and linear recovery are confirmed by wireline logging, where available.
Drilling techniques	4C core (100mm diameter), HQ Triple Tube core (61mm diameter), PQ Triple Tube core (83mm diameter) and Rotary mud open hole methods.
Drill sample recovery	Linear core recoveries are estimated with reference to wireline logs and results of seam samples with less than 80% recovery were excluded from the model. Volumetric recoveries estimated by the analysis laboratory are also used to assess core recoveries. Chip samples were not used to assess coal quality. 4C, PQ and HQ coring was used. There is no known relationship between coal quality and sample recovery.
Logging	Core and chip samples were logged by geologists experienced in coal resource investigation and evaluation. The standard and level of detail is considered appropriate for mineral resource estimation. All holes were wireline logged if possible (ie not blocked). The minimum suite of logs is gamma, density, and calliper. All core was photographed. Total aggregate length of cored holes in the geological model is 13,000m, in 85 drillholes. Total aggregate length of non-cored holes is 2,000m, in 16 drillholes.
Sub-sampling techniques and preparation	Full cores were used for coal quality testing. Core samples were taken and analysed prior to ownership by WHC. Coal sampling techniques were discussed and verified with the contract geology company who undertook the exploration work on site. Chip samples were not used to assess coal quality. HQ, PQ & 4C coring used to ensure sample is representative, and that sufficient material is available for sub-samples. Sample preparation, sub-sampling and quality control procedures ensured by using NATA accredited commercial labs employing recognised QA procedures and following Australian Standards for coal testing Samples were wrapped on site prior to dispatch to ensure total moisture values were representative of the deposit.
Quality of assay data and laboratory tests	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 were used by Coalworks. 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).
Verification of sampling and assaying	Coal intersections used in the geological model were verified by geophysical measurements obtained by wireline logging carried out by an independent contractor, volumetric core recovery and by digital photographs. Coal intersection depths and seam correlations have been validated by independent reviewers/auditors and/or alternative company personnel. Twinned holes are not used. Data acquisition and verification protocols include the following Whitehaven Coal procedures: Drillhole collar, lithology and basic raw coal quality data is stored in a Logcheck



	database and exported to Ventyx Minescape 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.
Location of data points	Borehole collars were surveyed by a Registered Surveyor, using triangulation or dGPS RTK 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 1994 (MGA94) based on the Geocentric Datum of Australia 1994 (GDA94) values. Historical survey data has been converted from ISG coordinates. Topographic control is provided by a photogrammetric survey undertaken during 2009. A 25m digital terrain model was derived using this photogrammetry.
Data spacing and distribution	Cored holes (coal quality data points) are spaced at <500m in the north of the tenement to >2000m in the central part and southern parts of the tenement. 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. The criteria described in the Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves (2003) have been used. Where coal intersections have been sampled in multiple sections per seam, compositing of samples, on a length x RD basis, has been applied.
Orientation of data in relation to geological structure	The orientation of data in relation to geological structure is not believed to have introduced any sampling bias.
Sample security	Core samples were either delivered to the lab by the field geologist or couriered.
Audits or reviews	An entirely new drillhole database (Logcheck) was created and validated by independent consultants and WHC geological personnel. The borehole database was independently audited in 2014 by GEOS Mining employees. The geological model was validated by the Competent Person, using reports, tables, contour plans and cross-sections.

Section 2	Reporting of Exploration Results
Criteria	Explanation
Mineral tenement and land tenure status	Exploration Licence 6861 is held by Coalworks Limited a subsidiary of Whitehaven Coal Limited. The licence expires on 28 August 2015, before which renewal can be sought. There is no development consent or coal mining title over this area, and none has been sought to date. Two Kaolin mining leases overly an immaterial amount of the tenement. Land is freehold in the area and is owned by private individuals or farming companies. The author is not aware of any native title claims in the Oaklands area
Exploration done by other parties	Anglo American undertook initial exploration in the 1960's. Coalworks drilled 92 mostly cored holes from 2008 to 2010.



Geology	The Oaklands Basin is structurally controlled by the Ovens Valley Graben, which commenced subsiding in the Early Permian and terminated in the Triassic. Sub-bituminous coal is contained within the Permian Coorabin Coal Measures, which are concealed by sediments of Triassic and Cenozoic age.
Drill hole information	There are 133 drillholes listed in the Oaklands Project database. Of these, 101 drillholes were used for geological modelling and 58 drillholes were used for coal quality points of observation. Notwithstanding the inclusion of these data, the CP does not believe that exclusion would detract from the understanding of this report given the level of information provided.
Data aggregation methods	Coal intersections 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 cutoffs have not been applied to exploration results in the database. Generally, carbonaceous material in excess of $40 - 50\%$ ash is recognised in the field and sampled as part of the full seam. Where available, analyses in excess of the resource cutoff of 35% may be included in modelled data.
Relationship between mineralisation widths and intercept depths	All drillholes were (nominally) vertical. Coal thicknesses are for downhole intercept lengths, which may have been exaggerated slightly by seam dips. Coal resource modelling and estimation takes this effect into account.
Diagrams	Maps are included at the end of this table.
Balanced reporting	There is no preferential reporting of results.
Other substantive exploration data	Geotechnical, groundwater and seismic studies have been completed.
Further Work	Additional cored holes will be required to increase confidence in coal quality continuity for areas in the south of the deposit. Additional loxline drilling and seismic acquisition will be required in some areas.

Section 3	Estimation and Reporting of Mineral Resources
Criteria	Explanation
Database integrity	Borehole collar locations and RL's were checked against surveyors' reports 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. 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.
Site visits	The Competent Person's most recent visit was on 18 October 2013.
Geological interpretation	The geological interpretation is based on previous reports and borehole data. The drillhole database and regional structural knowledge are extensive and an alternative interpretation is highly unlikely. The main factor affecting coal seam continuity is faulting and the interplay of seam dip and depth of weathering. The Lanes Shaft Coal shows particularly good continuity of thickness and quality.
Dimensions	The dimensions of the resource are clearly shown in the plans accompanying the statement. The maximum length of the resource is ~15km, maximum width is ~7km, and maximum depth approximately 220m.



Estimation and modelling techniques	The geological model was developed by the Competent Person, using Ventyx Minescape software. A full description of the modelling process and parameters is included in the main body of the Report. The current estimate supersedes a previous report completed in 2010. 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 without interpreted geological controls such as dummy boreholes or extrapolated survey data. The resource model is cut by the base of weathering grid. A maximum raw ash content of 35% (ad) has been imposed as a resource cutoff. Validation and
	geological model is validated by generating and inspecting reports, tables, cross sections, contour plans and comparisons with posted drillhole values.
Moisture	In situ moisture has been estimated at 26% and coal density used for resource estimation has been adjusted accordingly using the Preston & Sanders methodology. The basis of the tonnage estimate is in situ moisture (Mis). Moisture Holding capacity testing and total moisture tests on wrapped core were undertaken.
Cut-off parameters	Coal tenement boundary. Subcrop against base of weathering. Minimum coal thickness for open cut coal is 0.4m for Coreen Creek and Lower Lane Shaft seam and 6m for the Lanes Shaft seam. Maximum overburden ratio cutoff, Maximum raw ash for all coal resources is ~35% (air dried).
Mining factors or assumptions	Open cut mining studies completed to date are of a conceptual nature only.
Metallurgical factors or assumptions	Only raw coal variables are modelled for this resource report. It is not anticipated by the author that the coal will be beneficiated.
Environmental factors or assumptions	There is no Development Approval or mining title over this area, and none has been sought to date. Two kaolin mining leases overly an immaterial amount of the tenement. Land is freehold in the area and is owned by private individuals or farming companies. The author is not aware of any native title claims in the Oaklands area. Alluvium associated with Billabong Creek overlies the deposit. An estimated 610Mt of coal resources occur beneath this alluvium.
Bulk density	Air dried relative density (Standard RD) was gridded, using SRD values determined for each core sample and composited on a seam-by-seam basis. Average SRD was adjusted to an in situ basis (RDis) by applying the "Preston-Sanders" (Preston & Sanders, 1993) equation, using a global value for in situ moisture (Mis) derived from Moisture holding capacity and total moisture laboratory tests.
Classification	The basis for classification of resources are the maximum distances from a coal quality point of observation recommended in the Australian Guidelines For Estimating And Reporting Of Inventory Coal, Coal Resources And Coal Reserves (2003). The use of these distances is moderated by factors such as geological continuity as discussed in the report text. The result reflects the Competent Person's view of the deposit.
Audits or reviews	The geological model and resource estimate was reviewed by Mr John Rogis.
Discussion of relative accuracy/confidence	An informed but qualitative judgement of the accuracy of the global resource estimate, is that it is generally within +/-20% confidence limits.







