

FERNDALE 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 Ferndale 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	HQ triple tube 61mm diameter core for all detailed coal analysis. Openhole rotary drilling to provide chip samples where the strata was not cored.
Drilling techniques	Rotary drilling using downhole blades or hammer bit. Wireline core drilling to retrieve 61mm diameter core. Redrilling of sites where excessive core loss was recorded. All holes were drilled essentially vertically and where possible all holes were geophysically logged to total depth.
Drill sample recovery	Core sample drilled and recovery noted by supervising geologist. Sample weights compared with estimated weights to determine sample recovery. Seam intervals with less than 95% linear recovery were not used as data points for coal assay.
Logging	Core and chip samples were logged by geologists experienced in coal resource investigation and evaluation. Where possible, geophysical logging of all drill holes has been routinely undertaken for the FD series holes for the industry standard suite of logs (calliper, gamma and density). The majority of core has been photographed. All exploration activities have been reported by the exploration managers (Geos Mining). Refer to the current annual report submitted to NSWDME dated 14 January 2013.
Sub-sampling techniques and preparation	Full cores were used for sample testing. Samples have been crushed and sub-sampled by using NATA registered laboratories following appropriate Australian Standards for coal testing.
Quality of assay data and laboratory tests	Over 8600 samples of core has been tested at NATA registered laboratories Bureau Veritas and AcTest as managed by A&B Mylec Pty Ltd.
Verification of sampling and assaying	Coal assay results have been compared with predictions from downhole geophysical logs and results from a number of NATA registered laboratories. Sample weight and sample density are compared with estimated sample weight and geophysical log response and the geologist's sample description.
Location of data points	Drillhole collars surveyed by a registered surveyor from Boardman Peasley. DTM survey by Geo-Spectrum (Australia) in 2011. Drillhole collars have been checked with the DTM and all agree to within +/- 0.5m. All coordinates are supplied in GDA 1994, MGA Zone 56.
Data spacing and distribution	Data spacing varies dependent on classification of coal resources. For Measured resources, Points of Observation are generally less than 500m apart. For Indicated resources, Points of Observation are generally less than 1000m apart. For Inferred resources, Points of Observation are generally less than 4000m apart. Drillhole spacing is sufficient to confirm coal seam continuity and identify the location of heat affected coal.
Orientation of data in relation to geological structure	Industry standard vertical drilling has been used to sample stratiform coal seams.
Sample security	All core samples obtained for coal quality analyses were kept in a locked up fridge at the Whitehaven Denman office. Core samples were then hand delivered to the laboratory in batches by the Geos Mining geological team. A rigorous chain of custody protocol was implemented.



Audits or reviews	Resource estimate and report reviewed by Tom Bradbury (GeosMining)
	and Anthony Walker (Whitehaven Coal).

Section 2	Reporting of Exploration Results
Criteria	Explanation
Mineral tenement and land tenure status	Coal resources reported are wholly within EL7430 held by Whitehaven Coal Pty Ltd. The title expires 17 December 2014.
Exploration done by other parties	Prior exploration by Bridge Oil, Joint Coal Board, Australian Oil & Gas and Department of Mines is acknowledged. 24 holes have been drilled in the area prior to 2010, and of these 17 holes contained reliable coal intersection data that has been used in the resource estimate. Seven historical holes have been excluded from the evaluation as there exact location could not be verified.
Geology	The coal is contained within the Newcastle Coal Measures and Wittingham Coal Measures in the Sydney Basin. Multiple coal seams generally dipping to the north-east at less than 5 degrees. No significant faults with throws in excess of 10m occur within the tenement. The locations of igneous intrusions are inferred.
Drill hole information	Drillhole information where relevant was utilised from 17 holes drilled prior to 2010. Drilling of 80 holes from 2010 to 2012 included over 2,700m of openhole (chip) drilling and over 15,600m HQ size core drilling to a maximum depth of 690m.
Data aggregation methods	A number of contiguous coal seam samples may have been composited on an industry standard length by density basis. Reported coal quality is for the full seam including non-coal intervals.
Relationship between mineralisation widths and intercept depths	Coal thickness quoted is for downhole vertical thickness. Coal resource modelling and estimation adjusts for seam thickness versus the apparent thickness modelled.
Diagrams	A drillhole location map and a typical section included at the end of this table.
Balanced reporting	Not applicable as no exploration results are reported in this release.
Other substantive exploration data	Field mapping has been undertaken to confirm some seam subcrops. A photogeology interpretation was undertaken to confirm strata continuity and test for any significant structures or intrusions. None were identified.
Further Work	Additional drilling will be required to test the effects of weathering for proposed opencut resources. Additional core drilling required to increase confidence in indicated and inferred category areas.



Section 3	Estimation and Reporting of Mineral Resources
Criteria	Explanation
Database integrity	Lithological logs, wireline geophysical logs, assay results and coal intersection depths were reconciled before modelling and resource estimation. Coal quality data checked against NATA laboratory reports where available prior to resource estimation.
Site visits	A site visit was undertaken by the competent person to the area in February 2011, October 2011, November 2011 and March 2012. Exploration and sample collection activities were reviewed during the site visits.
Geological interpretation	The geological interpretation is based in the integration of all drillhole and assay data and compared with previous interpretations. The current resource estimates compare favourably with earlier resource estimates.
Dimensions	The extent of the Ferndale area reported is approximately 10km in a north-south direction and 8km in an east-west direction. Potential opencut resources are reported from below the base of weathering (averaging 22m) to a maximum depth of 250m. The potential underground resource is approximately 8km NS and 6km EW to a maximum depth of 500m.
Estimation and modelling techniques	The geological model has been developed using standard coal seam grid modelling techniques using Vulcan 8. A 25m grid was developed over the model area for structure and coal thickness, while a 100m grid was developed for selected raw coal assay parameters. A base of weathering model was developed from all relevant drillhole data and all structure grids were clipped to this surface. No oxidised coal has been included in the resources estimate. Resources have been estimated by the competent person using standard Vulcan estimation tools. The resource estimates have been compared with previous resource estimates. Areas of suspected influence from igneous intrusions have been excluded from each seam. Apart from the effects of coal seam intrusions, there are no known deleterious elements of economic significance. Correlation between a number of coal properties has been undertaken (such as raw ash versus relative density).
Moisture	In situ moisture has been estimated at 9% and coal density used for resource estimation has been adjusted accordingly using the Preston & Sanders methodology. Air dried moisture averages 3.5% for coal seams in the Ferndale area.
Cut-off parameters	Cut-off parameters for potentially opencut coal include minimum 0.3m fresh coal thickness less than 45% raw ash (ad). Potential underground coal was limited to a coal thickness greater than 1.8m with a maximum raw ash of 30% (ad). No weathered coal is included, and all heat affected coal is excluded.
Mining factors or assumptions	Potential opencut coal resources were limited to less than 250m depth and less than a cutoff stripping ratio. In addition, no potential opencut coal resources were reported within 50m of the tenement boundary, within 100m of the Goulburn River and within the narrow restricted valleys. Potential underground coal resources were limited to a maximum entry level of 400m.
Metallurgical factors or assumptions	It is assumed that all coal can be mined and beneficiated to a saleable product using an industry standard coal preparation facility.



Environmental factors or assumptions	Apart from a 100m buffer to the Goulburn River, exclusion of deep valley areas and a 50m barrier to the adjacent National Park, no other environmental factors or assumptions have been considered.
Bulk density	In situ density estimated using the Preston & Sanders formula and an estimated in situ moisture of 9%.
Classification	The classification of resources into Measured, Indicated and Inferred categories is based on the 2003 Australasian Guidelines. Coal resources have been estimated only for seams that have at least three valid points of observation (raw ash and relative density as a minimum).
Audits or reviews	All resource estimates have been compared to previous estimates for coal resources within the Ferndale area.
Discussion of relative accuracy/confidence	Coal seam thickness is generally fairly consistent. Drillhole spacing is close enough to identify coal thickness variations. No geostatistical analysis has been undertaken. No previous coal mining has been undertaken within the tenement.



