

## Coal Resources and Coal Reserves for 2018

Whitehaven Coal Limited has updated its managed Coal Resources and Coal Reserves under the JORC Code 2012 as set out in the following tables. Total Coal Resources have decreased by 80Mt from 3,982Mt in August 2017 to 3,902Mt in August 2018.

Coal Reserves increased by 11Mt to 985Mt and Marketable Reserves increased by 23Mt to 885Mt from the August 2017 Coal Resources and Reserves Statement. The increase in Reserves occurred at Narrabri South Underground following additional drilling and modelling of the deposit during the year.

Key changes from the previous (August 2017) Coal Resources and Coal Reserves Statement are as follows:-

- Open cut Coal Reserves and Marketable Reserves at Maules Creek were unchanged at 500Mt and 440Mt respectively, despite mining depletion of 11Mt during the year;
- Recoverable Coal Reserves at Narrabri increased by 15Mt to 233Mt following the inclusion of additional Reserves in the southern exploration licence, while mining depletion was 6Mt for the year. Marketable Reserves increased by 27Mt to 222Mt from 195Mt the previous year. See the attached Table 1 for details of the Coal Reserves at Narrabri;
- Recoverable and Marketable Coal Reserves for Tarrawonga, Rocglen and Werris Creek decreased by 2Mt, 1Mt and 2Mt respectively, due to mining depletion since the last statement in August 2017.

Whitehaven completed the acquisition of the Winchester South project from Rio Tinto in June 2018. The Coal Resources for the project will be incorporated into Whitehaven's Coal Resources during the next year.

The Coal Resources and Reserves for active mining areas are as at the 31st of March 2018. Production for the quarter ended 30 June 2018 is detailed in the June 2018 Quarterly Report. Please see the Whitehaven Coal website (www.whitehavencoal.com.au) for the Coal Resource and Coal Reserve Table 1 details for all of Whitehaven's Coal Reserves.

Information in this report that relates to Coal Resources and Coal Reserves is based on and accurately reflects reports prepared by the Competent Person named beside the respective information. Greg Jones is a principal consultant with JB Mining Services. Phillip Sides is a senior consultant with JB Mining Services. Benjamin Thompson is a Geologist with Whitehaven Coal. Mark Benson is a Geologist with Whitehaven Coal. Doug Sillar is a full time employee of RPM Advisory Services Pty Ltd. Shaun Tamplin is a full time employee of Tamplin Resources Pty Ltd. Michael Barker is a full time employee of Palaris Australia Pty Ltd.

Named Competent Persons consent to the inclusion of material in the form and context in which it appears. All Competent Persons named are Members of the Australasian Institute of Mining and Metallurgy and/or The Australian Institute of Geoscientists and have the relevant experience in relation to the mineralisation being reported on by them to qualify as Competent Persons as defined in the Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition).



## **COAL RESOURCES**

Tenement		Measured Resource (A)	Indicated Resource (B)	Measured + Indicated (A+B)	Inferred Resource (C)	Competent Person	Report Date
		Mt	Mt	Mt	Mt		
Maules Creek Opencut*	CL375 AUTH346 ML1701 ML1719	410	200	610	10	1	Mar-18
Narrabri North Underground**	ML1609	160	180	340	-	2	Mar-18
Narrabri South Underground**	EL6243	-	300	300	5	2	Mar-18
Tarrawonga Opencut	EL5967 ML1579 ML1685 ML1693	40	18	58	13	3	Mar-18
Tarrawonga Underground	EL5967 ML1579 ML1685 ML1693	10	15	25	14	3	Apr-14
Werris Creek Opencut	ML1563 ML1672	13	2	15	-	2	Mar-18
Rocglen Opencut	ML1620	4	4	8	-	3	Mar-18
Rocglen Underground	ML1620	-	3	3	1	3	Mar-15
Vickery Opencut	CL316 EL4699 EL5831 EL7407	230	165	395	110	3	Jul-15
Vickery Underground	EL8224 ML1464 ML1471 ML1718	-	95	95	135	3	Jul-15
Gunnedah Opencut	ML1624 EL5183 CCL701	7	47	54	89	3	Jun-14
Gunnedah Underground	ML1624 EL5183 CCL701	2	138	140	24	3	Jun-14
Bonshaw Opencut	EL6450 EL6587	-	4	4	7	3	Jun-14
Ferndale Opencut	EL7430	103	135	238	134	4	Jan-13
Ferndale Underground	EL7430	-	-	-	73	4	Jan-13
Oaklands North Opencut	EL6861	110	260	370	580	3	Jun-14
Pearl Creek Opencut***	EPC862	-	14	14	38	5	Nov-12
TOTAL COAL RESOURC	1089	1580	2669	1233			

<sup>1.</sup> Shaun Tamplin, 2. Mark Benson, 3. Benjamin Thompson, 4. Greg Jones, 5. Phill Sides

<sup>\*</sup> Maules Creek Joint Venture - Whitehaven owns 75% share.
\*\* Narrabri Joint Venture - Whitehaven owns 70% share.

<sup>\*\*\*</sup> Dingo Joint Venture - Whitehaven owns 70% share.

<sup>#</sup> The Coal Resources for active mining areas are current to the pit surface as at the report date.



## **COAL RESERVES**

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Tenement -		Recoverable Reserves		Marketable Reserves		Competent	Report		
		Proved	Probable	Total	Proved	Probable	Total	Person	Date
Maules Creek Opencut*	CL375 AUTH346	360	140	500	320	120	440	1	Mar-18
Narrabri North Underground**	ML1609	107	5	112	103	5	108	2	Mar-18
Narrabri South Underground**	EL6243	-	121	121	-	114	114	2	Mar-18
Tarrawonga Opencut	EL5967 ML1579 ML1685 ML1693	28	10	38	23	8	31	1	Mar-18
Werris Creek Opencut	ML1563 ML1672	11	1	12	11	1	12	1	Mar-18
Rocglen Opencut	ML1620	0.8	0.6	1.4	0.4	0.5	0.9	1	Mar-18
Vickery Opencut	CL316 EL4699 EL7407	-	200	200	-	178	178	1	Mar-15
TOTAL COAL RESERVES		507	478	984	457	427	884		

<sup>1.</sup> Doug Sillar, 2. Michael Barker

### Marketable Reserves are based on geological modeling of the anticipated yield from Recoverable Reserves

<sup>\*</sup> Maules Creek Joint Venture - Whitehaven owns 75% share.

<sup>\*\*</sup> Narrabri Joint Venture - Whitehaven owns 70% share.

<sup>#</sup> The Coal Reserves for active mining areas are current as at report date.

<sup>##</sup> Coal Reserves are quoted as a subset of Coal Resources.



## TABLE A.1 JORC CODE, 2012 EDITION – TABLE 1 SECTION 4 ESTIMATION AND REPORTING OF ORE RESERVES

Criteria	JORC Code Explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.  Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	Reserves are based on Whitehaven Coal geological models, and the resource classification polygons and estimate of coal resources prepared by Mr. Mark Benson of Whitehaven Coal Ltd. The estimate is dated April, 2018.  The reserves are included in, and not additional to, the JORC Resources as reported by Whitehaven Coal.
Site visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.  If no site visits have been undertaken indicate why this is the case.	Mr Barker has visited NN on several occasions, and has contributed to the technical assessments conducted in the past Palaris staff have corresponded with various NN and WHC staff on various occasions to discuss geology and mining issues related to the NN site.
Study status	The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.  The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.	Underground mining has been carried out at NN since 2010, with the longwall operations commencing in 2012.  Palaris assessed the project to have complete the following areas of study to a feasibility level: Mining, Metallurgy, Economic, Marketing, Legal, Environmental, Social, Governmental, Native title and cultural heritage  This reserve estimation is based on an XPAC scheduling model provided by Whitehaven, updated in 2016, 2017 and 2018 by Palaris.  This model incorporates the current 400m wide longwall mine plan. Results from the model were used for independent economic viability testing.  Mining of the underground reserves is considered technically achievable and economically viable.  Appropriate modifying factors have been considered that take into account geological structure, seam thickness, geotechnical conditions, loss, dilution and practical mining heights
Cut-off parameters	The basis of the cut-off grade(s) or quality parameters applied.	Minimum Longwall cut height of 3.6m Coal quality with a raw ash above 14% translated to a thermal only product being produced



Criteria	JORC Code Explanation	Commentary
Mining factors or assumptions	The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).  The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.  The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc), grade control and pre-production drilling.  The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).  The mining dilution factors used.  The mining recovery factors used.  Any minimum mining widths used.  The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.  The infrastructure requirements of the selected mining methods.	The underground mining operation uses a conventional retreating longwall mining method.  Access to the North NN reserves is via drifts.  The underground mine plans address geotechnical conditions, seam gas and spontaneous combustion management, and ventilation requirements.  Allowances for roof and floor dilution have been made when estimating run of mine coal reserves.  Marketable reserve estimates are based on exploration data, down rated to reflect practical yields achieved by the coal washery.  Longwall dilution 3.5% and a loss of 0.05m  Development dilution 5% and a loss of 0.05m  The economic evaluation includes the use of inferred mineral Resources that lie in the south-west corner of the mine. The inferred resources account for 5% of the tonnages used in the economic model and do not have a material impact on the value of the project.  Minimum cut height of 3.6m for the Longwall  All infrastructure for the life of mine plan is in place and the purchase of the 400m wide longwall is complete
Metallurgical factors or assumptions	The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.  Whether the metallurgical process is well-tested technology or novel in nature.  The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.  Any assumptions or allowances made for deleterious elements.  The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.  For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?	ROM coal from the underground operation is currently bypassed or washed to PCI and thermal products.  In-situ coal tonnages are based on assumed 12.0% (in situ) moisture for the coal portion. An assumed 11.5% ROM and bypass product moisture, 11% PCI product moisture and 13.5% CHPP thermal product moisture has been used in the calculation of coal reserves and marketable reserves.  The product spilt has been divided based on the current being achieved at the mine 5.1% PCI, 61.4% Washed Thermal, and 33.5% bypass Thermal  Where ROM ash is elevated (above 14%), it is assumed that a single export thermal product would be produced and lower yields would result from the requirement to wash more coal.  The specification for the Thermal product was based on the Newcastle Benchmark 6300kcal gar specification  As large amounts of the bypass coal is passed through on size (20mm) and therefore it is difficult to estimate the amount of bypass coal from the slimcore- hence the current percentage of bypass was used for the Reserve



Criteria	JORC Code Explanation	Commentary
Environmental	The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	A reject management strategy is in place for NN.  Approvals and environmental licenses are in place for the existing mining operation on ML1609.  A Mine Operations Plan (MOP) is in place for the period ending 31 December 2017  Stage 2 Project Approval was granted in December 2015 for the 400m wide longwall panels  Mechanisms and a timetable are in place to obtain further approvals for the NS project, and it is anticipated that they will be in place as required.
Infrastructure	The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.	All necessary infrastructure to support NN is in place at the mine site. Power is supplied from the grid. Water is supplied from surface water catchments. The workforce is accommodated in the nearby communities.
Costs	The derivation of, or assumptions made, regarding projected capital costs in the study.  The methodology used to estimate operating costs.  Allowances made for the content of deleterious elements.  The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co- products.  The source of exchange rates used in the study.  Derivation of transportation charges.  The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.  The allowances made for royalties payable, both Government and private.	Expansionary CAPEX forecasts for FY18 to FY19 are based on costs supplied by WHC  CAPEX has been estimated for NN (panels south of the current mains) and NS based on factored estimates and Australian database costs and includes 4 x ventilation shafts, additional trunk conveyer and service boreholes. Financial analysis assumes that the NN MIA and surface infrastructure will be used for NS  Sustaining capital costs per tonne inclusive of LW relocation costs provided by WHC  WHC supplied FOR operating costs as per the latest Narrabri budget. Projected operating costs have been estimated based on this data  Ex-mine costs including port costs, rail, admin and other ex-mine costs per tonne were provided by WHC  Export thermal and PCI coal sale price and foreign exchange rates were determined by Palaris using data from Consensus Economics May 2018 survey. No premium or discount to the benchmarks have been applied in the model  Royalty based on NSW government royalty of 7.2% of revenue for underground coal mining. An allowance of 1.0% of revenue for private royalties has been applied in the model



Criteria	JORC Code Explanation	Commentary
Revenue factors	transportation and treatment charges, penalties, net smelter returns, etc.  The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	Export thermal and PCI coal sale price and foreign exchange rate forecasts were determined by Palaris using data from Consensus Economics May 2018 survey
		No product premium and/or discounts to benchmark pricing have been applied in the DCF model. Assumes the Newcastle Thermal Coal benchmark (6,000kcal/kg NAR) product specification is achieved for the life of mine
Market assessment	The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.  A customer and competitor analysis along with the identification of likely market windows for the product.  Price and volume forecasts and the basis for these forecasts.  For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	Australian thermal coal export volumes are expected to remain broadly steady with an annual decrease of 1.8 percent in 2018 before growing at an annual average rate of 1.7 per cent in 2019 and 0.8 percent in 2020 to 202 million tonnes. Recent thermal coal prices have been supported by strong demand from Asian countries and constrained supply. Spot price are forecast to decline from an average of US\$99 per tonne in 2018 to an average of US\$74 per tonne in 2020 (Source: Department of Industry, Innovation and Science).  Whitehaven sells thermal and coking coal products to power generators and steel producers in the premium Asian markets. At Narrabri, export thermal and PCI coal products are produced from the Hoskissons seam with the thermal coal product being a recognised brand on the Asian export thermal market.  Whitehaven believe there is still strong demand growth in their markets, with Japan, Korea and Taiwan adding new coal fired power station capacity over the coming years.  There has been a proposed restriction on the sulphur content (0.4 per cent) of coal imports into South Korea, which has the potential to change market dynamics. (Source: Department of Industry, Innovation and Science). However, this restriction if imposed would be unlikely to impact Narrabri where sulphur levels are typically 0.3 to 0.4% (ar) for the thermal product.  Whitehaven suggest and the author agrees that price premiums for high quality coal such as Narrabri are likely to increase as demand for higher quality coal grows.



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Economic	The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.  NPV ranges and sensitivity to variations in the significant assumptions and inputs.	Palaris have updated the NC (NN and NS) XPAC schedules based on Whitehaven's Life Of Mine Plan and evaluated that in a financial model. Financial model inputs included:  Schedule from updated NC (NN and NS) XPAC production models, emulating production forecast in the Whitehaven Life of Mine Plan (NB: production tonnages used in the DCF model is 100% covered by Proven and Probable Reserves)  FOR operating cost forecasts estimated by Palaris based on a review of historical data and forecast FOR cash costs supplied by WHC from their latest budget  Ex-mine operating costs and sustaining capital costs per tonne supplied by WHC  Expansionary CAPEX forecasts (FY18 to FY19) supplied by WHC  CAPEX has been estimated for NN (panels south of the current mains) and NS based on factored estimates and Australian database costs and includes 4 x ventilation shafts, additional trunk conveyer and service boreholes. Financial analysis assumes that the NN MIA and surface infrastructure will be used for NS  Royalty based on NSW government royalty of 7.2% of revenue for underground coal mining. An allowance of 1.0% of revenue for private royalties has been applied in the model  Australian company tax rate (30%) applied in the model  Palaris used thermal and PCI coal sale price forecasts and foreign exchange cross-rate forecasts based on the Consensus Economics May 2018 survey  NPV was calculated using 11.5% real discount rate and a valuation date of 1st April 2018. Based on this modelling the project showed a positive NPV and is considered economically viable  Sensitivities were conducted on several parameters and the project was most sensitive to export coal price, exchange rate, operating costs and yield  Sensitivity analysis showed no years of negative cash flow on an annual basis and all cases resulted in a positive NPV
Social	The status of agreements with key stakeholders and matters leading to social licence to operate.	Palaris are unaware of any Native Title Claims over the NC leases. No reserves have been omitted on this basis.



Criteria	JORC Code Explanation	Commentary
Other	To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:  Any identified material naturally occurring risks.  The status of material legal agreements and marketing arrangements.  The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.	Required approvals are in place for current operations, and those required for continued operation have been identified.  Mechanisms and a timetable are in place to obtain these approvals, and it is anticipated that they will be in place as required.
Classification	The basis for the classification of the Ore Reserves into varying confidence categories.  Whether the result appropriately reflects the Competent Person's view of the deposit.  The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).	Mineral Resource to Ore Reserve conversion:  Mining domains within Measured Resource have been converted to Proved Reserves  Mining domains within Indicated Resource have been converted to Probable Reserves  Mining domains within Inferred Resource areas have not been converted into Reserves  The reserve estimate consist of 66% Proved and 34% Probable Reserves (ROM). This appropriately reflects the view of the Competent Person (Michael Barker) with regard to the confidence levels for NC underground reserves.
Audits or reviews	The results of any audits or reviews of Ore Reserve estimates.	Palaris is not aware of any audits or reviews of NC reserve estimates, or production reconciliations (other than reconciliations in previous Reserve estimates).



Criteria	JORC Code Explanation	Commentary
Discussion of relative accuracy/ confidence	Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.	The confidence level determined in the Resources was estimated by Mr. Mark Benson of WHC, who also is the Competent Person signatory. Palaris considers that the resource categories are appropriate for the reserve classification. This meant that it was possible to directly transfer Measured Resources into Proved Reserves and Indicated Resources into Probable reserves for all areas with sufficient Reserves confidence.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	
	Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.	
	It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	