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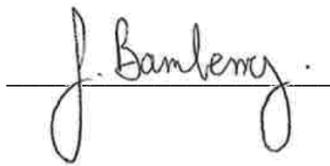
National Instrument 43-101 Technical Report on Narrabri North Mine and Narrabri South, Gunnedah Basin

New South Wales

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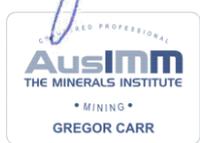
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APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources. However, Palaris has taken all reasonable care to ensure that the information contained in this report is, to the best of their knowledge, in accordance with the facts and contains no omission likely to affect its import.

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- variations in cost elements
- market conditions and global demand
- industry development
- regulatory and policy changes

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1 Item 1: Summary

1.1.1 Property Description and Ownership

Narrabri North Mine (“the mine”) and Narrabri South (“the project”), collectively referred to as “the property” are situated in the Gunnedah Coalfield, in the Gunnedah Basin of New South Wales, Australia. The mine is centred on Mining Lease No. 1609 (ML1609), whereas the project is based on Exploration Licence No. 6243 (EL6243).

The mine is operated by Narrabri Coal Pty Ltd, through a joint venture consisting of:

- Whitehaven Coal Limited (70%)
- Electric Power Development Co. Ltd (J-Power) (7.5%)
- EDF Trading (7.5%)
- Upper Horn Investments Limited (wholly owned subsidiary of China’s Guangdong Yudean Group Co. Ltd) (7.5%) and
- Daewoo International Corporation and Korea Resources Corporation (7.5%)

The property is located approximately 25 km south to south-east of the town of Narrabri and lies adjacent to the North-Western Branch Railway and the Kamilaroi Highway, as shown in Figure 1.1. The property is 382 km by rail to the Port of Newcastle.

1.1.2 Geology & Mineralisation

The mine currently produces coal by underground mining methods from the Hoskissons seam; a thick, dull coal containing a basal working section of ~4.2 m thickness. The seam is of formation status within the Late Permian Black Jack Group, which dips gently westwards within the lease. Overlap of the seam by a low angle unconformity at the base of the Digby Formation (conglomerate) causes thinning and wedging out of the seam in the eastern parts of the property. Several normal and reverse faults with up to 5 m throw have a northwest-southeast structural trend, but do not severely impact on the coal resource. No igneous intrusions within the target seam have been identified to date. The seam is also the target of exploration in the project area.

1.1.3 Status of Exploration

Exploration in the mine area is at an advanced stage with sufficient data captured to understand the variation in seam thickness and quality. In the project area, less exploration has occurred. However, sufficient data has been collected to enable layout of a conceptual mine plan.

1.1.4 Status of Development and Operations

The mine first produced coal in June 2010 when development commenced after the establishment of drifts into the coal seam. Since that time, production from longwall mining has produced coal for export as thermal coal and for use as Pulverised Coal Injection (PCI) feed in steel making. The maximum Run of Mine (ROM) production per quarter has been 2,082 kt of coal (quarter ending Sep. 2014). The mine is consented to produce no more than 8.0 Mt of ROM Coal per calendar year.

1.1.5 Coal Resources

Coal resources occur in the Hoskissons seam only at the project. Coal resources have been reported to a minimum seam thickness of 1.8 m, using a cut-off ash grade for the lower working section of 35% (ad), and no ash cut off for the upper section of the seam to allow longwall top coal caving assessment. A summary of the resources for the property is shown in Table 1.1 and is reported to in situ moisture basis of 12%.

Table 1.1 Narrabri coal resources (at 12% in situ moisture) as at end August, 2014

| Titles | Measured (Mt) | Indicated (Mt) | Inferred (Mt) | Measured plus Indicated (Mt) |
|----------------|---------------|----------------|---------------|------------------------------|
| ML1609, EL6243 | 180 | 380 | 180 | 560 |

Source: Whitehaven, 2014: Mr Mark Dawson is CP for the Narrabri Coal Resources, under the JORC Code, (2012)

No coal qualities of the resources have been reported by Whitehaven Coal, although this now an implicit requirement of the JORC Code (2012 Edition). Indicative quality, as reported in the NSW 2013 Coal Industry Profile, is shown in Table 1.2

Table 1.2 Narrabri coal quality

| Narrabri Coal Quality | Thermal |
|---|---------|
| Moisture % (ad) | 5.0 |
| Moisture % (ar) | 11.0 |
| Ash % (ad) | 12.0 |
| Volatile matter % (ad) | 28.5 |
| Sulphur % (ad) | 0.5 |
| Specific energy (kcal / kg) (gross air dried) | 6850 |

Source: 2013 NSW Coal Industry Profile

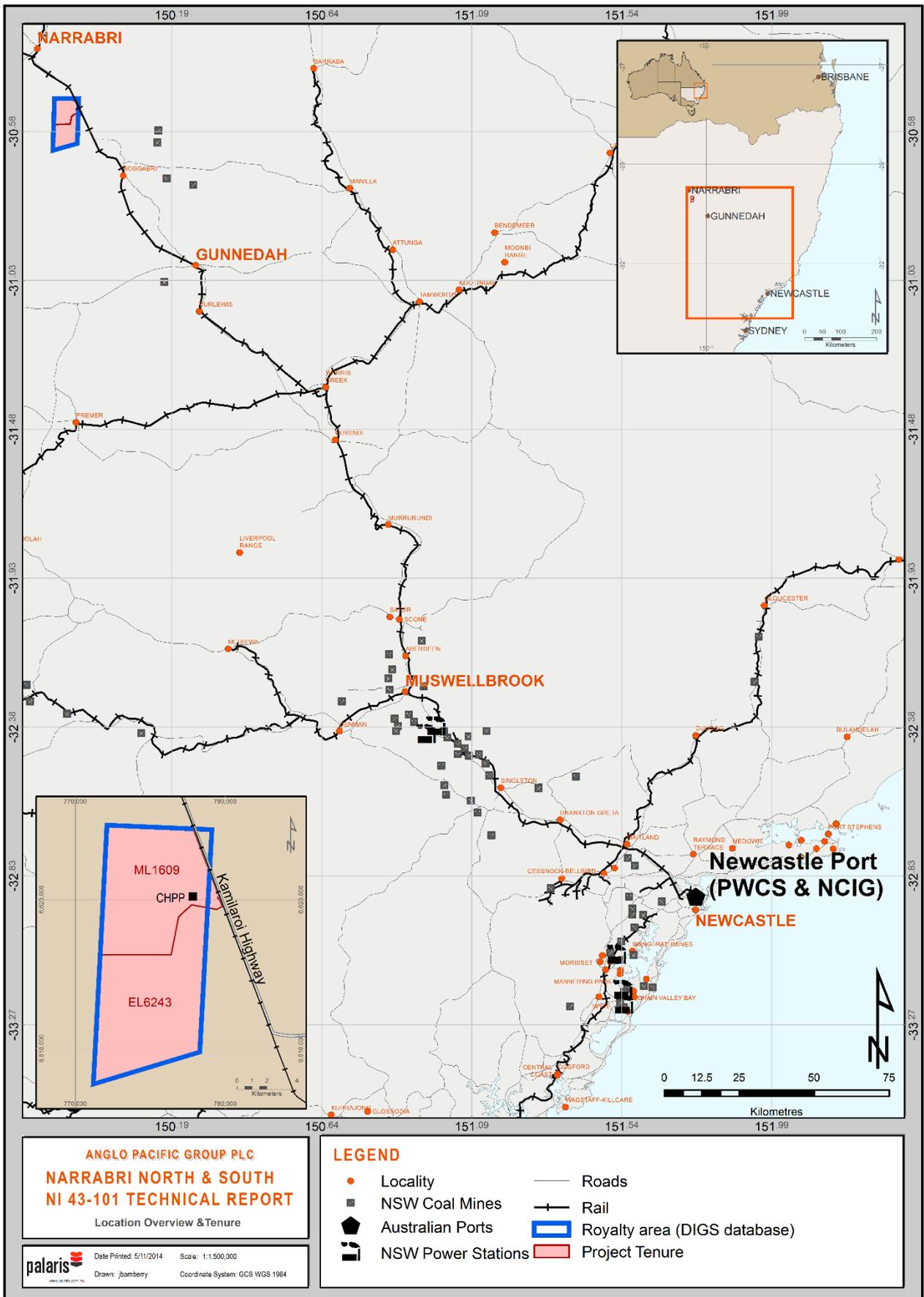


Figure 1.1 Property location overview

1.1.6 Coal Reserves

Coal reserves occur in the Hoskissons seam only at the property. The Coal Reserve estimate was undertaken by Mr Graeme Rigg of RungePincockMinarco Ltd, in compliance with the JORC Code (2012 Edition). A summary of the recoverable coal reserves for the property is shown in Table 1.3 and is reported to a Run of Mine (ROM) moisture basis of 12%.

Table 1.3 Narrabri recoverable coal reserves as at end August, 2014

| Titles | Proved (Mt) | Probable (Mt) | Total(Mt) |
|-------------------------|-------------|---------------|-----------|
| Narrabri North (ML1609) | 57 | 83 | 140 |
| Narrabri South (EL6243) | - | 94 | 94 |
| Total | 57 | 177 | 234 |

Source: Whitehaven, 2014: Mr Mark Dawson is CP for the Narrabri Coal Reserves, under the JORC Code, (2012)

A summary of the marketable coal reserves for the property are shown in Table 1.4 and is reported to a marketable moisture basis of 11% for PCI product and up to 13% for thermal/bypass product. No coal qualities have been reported.

Table 1.4 Narrabri marketable coal reserves as at end August, 2014

| Titles | Proved (Mt) | Probable (Mt) | Total(Mt) |
|-------------------------|-------------|---------------|-----------|
| Narrabri North (ML1609) | 54 | 79 | 133 |
| Narrabri South (EL6243) | - | 75 | 75 |
| Total | 54 | 154 | 208 |

Source: Whitehaven, 2014: Mr Graeme Rigg is CP for the Narrabri Coal Reserves, under the JORC Code, (2012)

1.1.7 Conclusions and Recommendations

Resources and Reserves

The geology of the site is well understood, and the continuity of the coal is demonstrated by drill hole data inside the property, and from drill hole data from regional drilling and coal seam gas wells. Geological hazards affecting the property include faulting which is at a scale that is considered not to severely impact on the development of the resources.

The quantity of coal reported as Resources reflects a significant amount of coal, and encompasses the full Hoskissons seam. The resources are not differentiated between the working section or for the North and South properties. The resource statement is supported by a "Table 1" checklist, as prescribed by the JORC Code (2012 Edition), and most information provided in this report adequately describes the sampling and estimation procedures. The classification of coal resources for the property is not described in a clear and transparent manner; Palaris cannot validate the resource categories, and subsequently reserve categories, as the distribution of all borehole data and seismic surveys is not publicly available.

The Narrabri project Resources and Reserves have been reported under the JORC Code (2012). The defined terms used in the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves, 2014 are referenced in NI 43-101. The definition of the terms Mineral Resource and the categories (Measured, Indicated and Inferred) are identical to those defined in the JORC Code (2012 Edition). CIM definitions of Mineral Reserves, and the sub categories Proven and Probable Mineral Reserves, align with the JORC Code definitions for Ore Reserves and the subcategories Proven and Probable Ore Reserves. No material differences exist between the two codes. The Competent Persons who prepared the Resource and Reserves estimates both satisfy the requirements of the JORC Code.

Operations

As an operating longwall mine, there is no large capital expenditure required for existing operations. Potential expansion projects will require additional capital, with the 400 m face extension project estimated to cost A\$70M (\$50M on longwall equipment and \$20M for additional belts and drives). No data is publicly available for future sustaining capital requirements, however, A\$4 to \$6 per tonne of ROM coal can be estimated for ongoing operations

No public data is available to estimate forward looking operating costs. Narrabri is currently producing at an FOB cost of AUD\$67/t, and is in a very competitive position in relation to the global cost curve for thermal coal and coking coal. Narrabri is expected to improve FOB operating costs in FY2015 but the extent of cost reduction is unclear. Whitehaven has provided cost guidance of A\$59-62/t for FY 2015, however, it is unclear if this includes Government and private royalty payments.

Full economic analysis is not possible due to insufficient public information being available to construct a detailed production schedule and coal quality analysis. Whitehaven currently describe the Narrabri product type as being 80% thermal and 20% PCI, however in the past it has been described as up to 30% PCI.

The ROM production target of 6.5 Mt for FY2015 is considered achievable given recent quarterly results. Significant upside exists to expand production by optimising longwall change-outs, increase in future longwall block lengths and the plan to widen the longwall face. Palaris consider that there is potential to increase Narrabri output by 10-15% above that forecast by Whitehaven for FY2015 without infrastructure expansion.

Narrabri South has a similar coal resource to Narrabri North. Subject to sufficient infrastructure capacity, a second longwall mine could be developed in this area. This would require amended approvals, and construction of second CHPP similar to the existing plant servicing Narrabri North if both longwalls were to be operated concurrently. Alternatively, a second longwall mine could provide a reserves based mine life extension of ~14 years at a production rate of 6.5 Mtpa ROM by transferring coal mining operations to the south once Narrabri North has been depleted.

Marketing

Whitehaven sells thermal and coking coal to power generators and steel producers in the premium Asian markets, but data is unavailable to determine specific contracts and destination for Narrabri coal.

Two recent developments in Chinese coal policy – import tariffs and the restriction on low quality coal – are expected to have a limited impact. According to company reports, Whitehaven sells

approximately 7% of total product to China (8% of thermal coal and no coking coal) however, information on specific contracts for Narrabri coal are not publicly available. The coal quality restrictions are not expected to impact Narrabri due to the high quality of thermal coal.

The global thermal coal market is currently oversupplied which is expected to lead to mine closures and production cut-backs as many producers are reportedly unprofitable at current spot prices. The downward pressure on prices is expected to ease as supply normalises in the medium term. On the demand side, coal continues to remain a dominant source of energy due to cost and reliability advantages, with most of the growth in world energy demand coming from non-OECD emerging countries and expected to drive growth in seaborne thermal coal trade by 2 per cent per annum to 2019 (Source: BREE).

The global coking coal market has seen price reductions due to a slowdown in the Chinese property sector and oversupply of steel. At current spot prices, a large portion of coking coal producers are unprofitable and this is expected to lead to a market re-balancing through cut-backs and closures. On the demand side, the main drivers of coking coal consumption growth are expected to be China and India with seaborne coking coal trade forecast to grow at 1 per cent per annum to 2019 (Source: BREE).

Consensus price forecasts for thermal coal are for a slight recovery with nominal prices rising from US\$75/t in 2014 to US\$101/t in 2020. Similarly for PCI, nominal prices are forecast to rise from US\$89/t in 2014 to US\$132/t in 2020. Coal price forecasts are sourced from Consensus Economics, August 2014.

2 Item 2: Introduction

This technical report has been prepared for Anglo Pacific Group PLC (APG), a publicly listed company traded on both the London Stock Exchange (LSE) and the Toronto Stock Exchange (TSX).

APG's strategy is to build a diversified portfolio of royalties, focusing on accelerating income growth through acquiring royalties in cash or near-term cash producing assets. It is an objective of the company to provide shareholders with a long term cash flow by paying a substantial portion of these royalties as dividends.

Palaris Australia Pty Ltd (Palaris) was requested by APG to prepare on their behalf as the issuer, an Independent Technical Report in relation to the Narrabri North Mine and the planned Narrabri South Mine (currently at project status), located in New South Wales, Australia. This Technical Report has been prepared to support a prospectus to be issued by APG seeking capital to acquire the Narrabri royalty stream.

This Technical Report was prepared in accordance with the following documents published by the Canadian Securities Administrators (CSA):

- National Instrument 43-101 – Standards of Disclosure for Mineral Projects
- Form NI 43-101F1 – Technical Report (Form 43-101F1)

This Technical Report was also prepared in accordance with "Prospectus Rules" made by the UK Financial Conduct Authority, the "Prospectus Directive" (2003/71/EC), the "Prospectus Regulations" (809/2004) and the "European Securities and Markets Authority recommendations for the consistent implementation of the European Commission's Regulation on Prospectuses No. 809/2004" (as updated by the European Securities and Market Authority on 23 March 2011).

Although Palaris and APG attempted to gain access to Narrabri property data (through a formal request for information process) and to undertake a site visit, Whitehaven Coal declined both requests. Consequently, this report is based solely on a review of publically available information about the Narrabri property.

Whitehaven Coal has recently reported estimated Resources and Reserves for Narrabri North Mine/Narrabri South Project in accordance with The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition).

Whitehaven Coal's reporting is governed by ASX listing rules, under which there is no requirement for disclosure of any technical reports which support Resource or Reserve estimates. As such reports have been deemed commercially sensitive by Whitehaven Coal, Palaris is unable to directly comment upon the key parameters, assumptions, and methodology used in the conversion of estimated Mineral Resources to Mineral Reserves as set out in NI 43-101.

2.1 Source Material

This Technical Report has been prepared utilising data that is available in the public domain. The primary sources of data include:

- Whitehaven Coal's website (<http://www.whitehavencoal.com.au/>)

- NSW Division of Resources and Energy DIGS® document database and MinView Geographic Information system (<http://www.resourcesandenergy.nsw.gov.au/>)
- NSW Planning & Environment Major Projects Assessment database (<http://majorprojects.planning.nsw.gov.au/>)

Item 27 of this Technical Report contains a list of reference material used in the preparation of this report. Footnotes have also been used to refer to specific data sources.

3 Item 3: Reliance on Other Experts

3.1 Limitations and Cautionary Statement

In accordance with the requirements of National Instrument 43-101 surrounding disclosure of technical information in respect of mineral projects, the information contained within this Technical Report, pertaining to the Narrabri project has been sourced from publically available information.

This information has included technical, financial and legal material which has been taken in good faith as dependable.

Data verification and detailed analysis of information underlying the reported Mineral Resources and Mineral Reserves has not been possible. Exemptions

This Technical Report has been prepared on the basis of the exemption allowable under Part 9, Section 9.2 of National Instrument 43-101 Standards of Disclosure for Mineral Projects.

Section 9.2 exempts a royalty holder, who has requested but not received access to the necessary data and is not able to obtain the information from the public domain, from the requirement to perform a personal inspection on the property and to complete those items under Form 43-101F1 that require data verification, inspection of documents, or personal inspection of the property.

Palaris and APG requested, but did not receive access to the mine site, key personnel, and data used in the estimation of the published Resources and Reserves from Whitehaven during September 2014 and is not able to obtain all the necessary information from the public domain. A response to this request was received denying a site visit and refusing data access.

The Qualified Persons have therefore relied exclusively upon general information available in the public domain in preparation of this Technical Report.

Palaris have not received access to the following data:

Item 4 Property Description and Location

- The terms of any royalties, back-in rights, payments, or other agreements and encumbrances to which the property is subject

Item 5 Accessibility, Climate, Local Resources, Infrastructure and Physiography

- The sufficiency of surface rights for the mining operations, availability and sources of power, water, mining personnel, or waste disposal requirements

Item 7 Geological Setting and Mineralisation

- The presence of any faulting or intrusions in the coal seam

Item 9 Exploration other than Drilling

- The procedures and parameters relating to surveys and investigations
- Sampling methods and sample quality, including comment on whether samples are representative or biased
- Information on location, number, type, nature and spacing or density of samples collected and the area recovered
- The status of exploration, in addition to the nature and extent of all relevant exploration work other than drilling

Item 10 Drilling

- The type and extent of drilling, procedures followed, and summary and presentation of results
- Any drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results
- Drill hole information, such as collar location, azimuth, dip and depth
- Relationship between sample length and true seam thickness

Item 11 Sample Preparation, Analyses and Security

- Sample preparation methods and quality control measures employed
- Details of the testing laboratories and their sample preparation, assaying and analytical procedures, and whether the laboratories are certified by an standards association
- A summary of the quality control and quality assurance actions undertaken to provide adequate confidence in data collection and processing

Item 12 Data Verification

- The data verification procedures applied by the competent persons estimating the JORC resources

Item 13 Mineral Processing and Metallurgical Testing

- The nature and extent of testing and analytical procedures
- Basis for any assumptions or predictions regarding recovery estimates
- The extent to which test samples are representative of the coal deposit as a whole
- Any processing factors or deleterious elements that could have a significant effect on potential economic extraction

Item 14 Mineral Resource Estimates

- Sample preparation methods and quality control measures employed
- Sufficient discussion of the key assumptions, parameters, and methods used to estimate the Mineral Resources, for a reasonably informed reader to understand the basis for the estimate and how it was generated
- General discussion on the extent to which the Mineral Resource estimates could be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors

Item 15 Mineral Reserve Estimates

- Sufficient discussion and detail of the key assumptions, parameters, and methods used for a reasonably informed reader to understand how the Competent Person converted the Mineral Resources to Ore Reserves
- The extent to which the Ore Reserve estimates could be materially affected by mining, metallurgical, infrastructure, permitting, and other relevant factors

Item 16 Mining Methods

- Geotechnical, hydrological, and other parameters relevant to development of mine plans

Item 17 Recovery Methods

- Available information on test or operating results relating to the recoverability of the coal and amenability to the processing methods
- Requirements for energy, water and process materials

Item 19 Market Studies and Contracts

- Identification of any contracts that are required for property development, including mining, concentrating, smelting, refining, transportation, handling, sales and hedging, and forward sales contracts or arrangements and their status

Item 21 Capital and Operating Costs

- A summary of capital and operating cost estimates, with the major components set out in tabular form

Item 22 Economic Analysis

- An economic analysis for the project, addressing annual costs, revenue, and cash flow forecasts to determine net present value and other valuation parameters
- Sensitivity analysis of the economic robustness of the project

3.2 Effective Date

This Technical Report relies upon the most recent Resources and Reserves estimates reported by Whitehaven. The estimates were announced to the ASX on 27 August 2014. The most recent subsequent announcement, *Whitehaven Coal December 2014 Quarterly Production Report*, was made on 14th January 2015 and this has been taken as the effective date of this Technical Report.

Readers of this report should take into consideration that, since the announcement of the Resources and Reserves estimate, the estimates will have been depleted through continued mining. Readers should also take into account that further work may have been undertaken which may result in updated estimates or reclassification of resource and/or reserve confidence.

3.3 Reliance on Other Experts

This document references the public release of the Whitehaven Resources and Reserves Statement for the period ending August, 2014. The public release includes two companion documents being:-

- Whitehaven Coal Ltd, 2014 – Coal Resources and Coal Reserves; ASX Release dated 27th August, 2014
- Whitehaven Coal Ltd, 2014 – Narrabri North Mine/ Narrabri South Project – Resources and Reserve: Table 1 Checklist of Assessment and Reporting Criteria (The JORC Code, 2012 Edition); ASX Release dated 27th August, 2014

The Qualified Persons named in this report have relied on this documentation for the official source of resource and reserve numbers, the description of the sampling and analytical methods, the description of resource and reserve estimates, and the assumptions behind those estimates.

In relying on these documents, the Qualified Persons are reliant on the information provided by the Competent Persons named in the Whitehaven statements as being factual and correct.

Whitehaven's 2014 published Resources for the Narrabri project was signed off by Mr Mark Dawson. Mr Dawson is not a member of the Australian Institute of Geoscientists – he is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM) however he has not attained Chartered Professional (CP) standing, and does not appear to have the necessary membership of an Accepted Foreign Association to be considered as a Qualified Person for authorising Mineral Resources as defined in NI 43-101.

Whitehaven's 2014 published Reserves for the Narrabri project was signed off by Mr Graeme Rigg. Mr Rigg is a member of the AusIMM and also has Chartered Professional (CP) standing and would be eligible to be considered as a Qualified Person for authorising Mineral Reserves.

This Technical Report has been prepared by employees of Palaris, including Dr John Bamberry and Mr Gregor Carr who share overall responsibility for this report and who both satisfy the requirements of a Qualified Person as defined in National Instrument 43-101.

4 Item 4: Property Description and Location

4.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

In preparing this part of the report Technical Report, Palaris has solely relied on publically available documents and on-line databases, and has endeavoured to use the most up to date information available in these domains.

Palaris are unable to comment on details of:

- the terms of any royalties, back-in rights, payments, or other agreements and encumbrances to which the property is subject

4.2 Location

The Narrabri North Mine and Narrabri South Project are contiguous properties, located in the Shire of Narrabri, in the State of New South Wales of Australia. The plan area of all the tenements covering the property is 11,289 ha¹. The mine is located at latitude: 30° 21' 08" S and longitude: 149° 48' 58" E; and is approximately 25 km south to south-east of the town of Narrabri and 10 km north to north-west of the village of Baan Baa (Figure 1.1). The surface elevation of the project site is approximately 200 m to 400 m above sea level.²

Access to the Narrabri North Mine and adjacent Narrabri South Project is provided by the Kamilaroi Highway, which connects Narrabri and Baan Baa (Figure 4.1). A rail loop constructed at Narrabri North connects to the North-Western Branch Railway, which parallels the Kamilaroi Highway and eventually connects to the Main North Line leading to the Port of Newcastle (Gunnedah Basin Line).

The nearest operating mines, Maules Creek and Boggabri, are located approximately 20-25 km to the east and are open cut coal mines working coal seams of the Maules Creek Formation. No other underground coal mines operate in the Gunnedah Basin.

The former Gunnedah and Preston Collieries, which operated for most of the 1900's are located 60 km south-east and worked the Hoskissons and Melvilles seams by bord and pillar methods. BHP Billiton's Caroonia proposed underground coal mine, which plans to mine Hoskissons seam by longwall methods, is located 110 km to the south-east.

¹ The exploration licence and mining lease associated with the property partially overlap

² Google Earth imagery data

4.3 Tenure

In New South Wales, mineral tenure is administered by the Division of Resources and Energy of the NSW Department of Trade and Investment. The tenure is granted under the authority of the Mining Act 1992. Information regarding tenements and their status has been obtained from the Division of Resources and Energy DIGS® (Digital Imaging Geological Systems) and MinView databases.

The Narrabri tenure consists of two mineral tenure types, which are both held in the name of Narrabri Coal Pty Ltd, a wholly owned subsidiary of Whitehaven Coal Ltd (Table 4.1).

The project commenced with the granting of Exploration Licence No. 6243 (EL6243), which, when first granted on 21 May, 2004, had an area of 113.4 km². This licence area was excised from the Government held Authorisation No. 216; the tenure under which the Government had undertaken the regional exploration to prove the potential of the Gunnedah Basin.

The Narrabri North Mine is developed within the Mining Lease No. 1609 (ML1609). This licence was granted on 18 January 2008 and covers an area of 5,298 ha. Parts of EL6243 were excised when ML1609 was granted and has subsequently been reduced to 6,942 ha.

Table 4.1 Project tenure summary

| Title Code | Title Number | Owner | Area | Grant Date | Expiry Date | Status |
|------------|--------------|-----------------------|---------|-------------|-------------|----------------|
| ML | 1609 | NARRABRI COAL PTY LTD | 5298 HA | 18 Jan 2008 | 18 Jan 2029 | Mining |
| EL | 6243 | NARRABRI COAL PTY LTD | 8251 HA | 21 May 2004 | 20 May 2014 | Renewal Sought |

Source: New South Wales Trade & Investment – Resources & Energy October 2014
(<http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/services/online-services/minview>)

At the time of writing, the status of EL6243 was still in the process of renewal. Delays in the processing of tenement renewals by the NSW Government authority administering the Mining Act (1992) are commonplace and Palaris are of the view that the delay in this renewal is not a specific issue related to the tenement.

4.4 Datum

All figures are presented, unless otherwise stated, using the Universal Transverse Mercator (UTM) based Geocentric Datum of Australia 1994 (GDA94), and the Map Grid Australia (MGA) Zone 55 projection. Heights are given relative to the Australian Height Datum (AHD).

4.5 Project Ownership

Narrabri Coal Pty Ltd manages the Narrabri North Mine in a Joint Venture made up of the following:

- 70% - Whitehaven Coal Limited
- 7.5% - Electric Power Development Co. Ltd (J-Power)

- 7.5% - EDF Trading
- 7.5% - Upper Horn Investments Limited (wholly owned subsidiary of China's Guangdong Yudean Group Co. Ltd)
- 7.5% - Daewoo International Corporation and Korea Resources Corporation

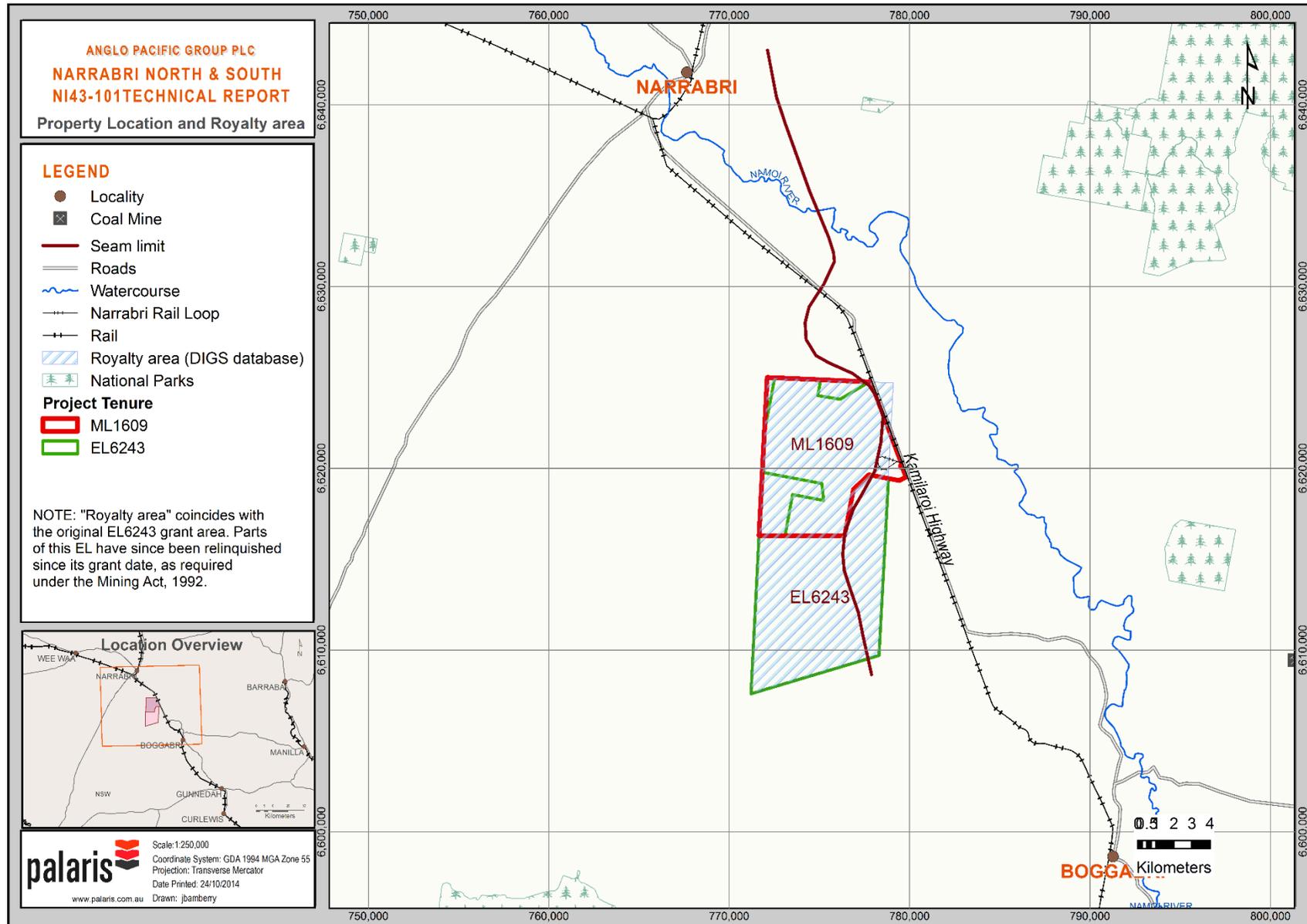


Figure 4.1 Location of the Narrabri North mine and Narrabri South project

4.6 Environmental

The mine operates under Environmental Protection Licence (EPL) 12789, granted to Narrabri Coal Pty Ltd on 20 February 2008 by the then Department of Environment and Climate Change (DECC). The licence was issued in accordance with the provisions of the *Protection of the Environment Operations Act 1997* for the scheduled activities of coal mining and coal works.

A detailed outline of environmental licences and requirements is provided in Section 20.

4.7 Royalties and Payments

In NSW, lease holders are required to lodge monthly returns and payment on or before the 21st day of each month following extraction of coal. Royalties are levied on all coal recovered in New South Wales, and the two types of coal royalties are outlined below. While most royalty rights are held by the state government, some are held privately. APG have the opportunity to purchase private royalty rights for the Narrabri project.

4.7.1 Ad Valorem Royalty

Royalty for coal is charged as a percentage of the value of production (total revenue less allowable deductions). The coal ad valorem royalty rates are 6.2% for deep underground mines (coal extracted below 400 metres), 7.2% for underground mines and 8.2% for open cut mines.

4.7.2 Coal Reject Royalty

Royalty is payable on coal mine reject if the coal reject is used or disposed of for the purpose of producing energy. Coal reject is defined as a by-product of the mining or processing of coal that has energy value of less than 16 gigajoules per dry tonne or contains more than 35% ash by dry weight. The rate of royalty on coal in coal reject is no more than half the rate applicable to coal.

4.8 Operating Policies

The following overarching licences, approvals and policies are required and have been obtained for the Narrabri Project to operate:

- Department of Environment and Climate Change (*Protection of the Environment Operations Act 1997*) - Environment Protection Licence 12789
- Department of Primary Industries (Mineral Resources) (*Mining Act, 1992*) - Mining Licence 1609
- Department of Planning and Environment (*Environmental Planning and Assessment Act, 1979*) - Project Approval (PA 05_0102)

For a more comprehensive list of licences and approvals held by the Narrabri Project, refer to Table 20.2 Narrabri North mine permit and approvals status. The project approval allows extraction of up to eight million tonnes of ROM coal per calendar year.

4.9 Native Title

The project area is subject to native title with the Narrabri Local Aboriginal Land Council (Narrabri LALC) and Narrabri Gomeroi Traditional Owner Group (Gomeroi) consulted.

Palaris is of the view that given ML1609 has been granted for the Narrabri North Mine, if a Native Title (NT) was made over an area of the ML an appropriate NT Agreement would have been agreed between the two parties. Given the highly confidential nature of NT agreements, Palaris is unaware of the status of any NT agreements associated with Narrabri North. Given ML1609 has been granted there is no material business risk from Native Title for the Narrabri North Mine. In determining whether Native Title remains a risk to a Mining Lease application over the Narrabri South Project, a 'Native Title Extinguishment Assessment' would be required. Palaris is unable to comment or provide further advice on whether Native Title is likely to pose a risk to the Narrabri South Project without an Extinguishment Assessment.

5 Item 5: Accessibility, Climate, Local Resources, Infrastructure and Physiography

5.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- the sufficiency of surface rights for the mining operations, details of availability and sources of power, water, mining personnel, or waste disposal requirements

5.2 Physiography and Vegetation

The physiography of the region is dominated by the open plains of the Namoi River Valley and the elevated and dissected country of the Nandewar, Warrumbungle and Liverpool Ranges, located to the east and northeast of the project. Local topography is generally flat to undulating with mine site variations between 240-370 m AHD.

Vegetation of the region consists of six broad natural communities, and one artificial community. The artificial community consists of cleared/semi-cleared or cultivated land. Natural communities include:

- Sandstone Slopes Woodland
- Lower flats and Floodplain Woodlands
- Riparian Forest
- White Cypress Forest
- River Red Gum Riparian Open Forest/Woodland
- Weeping Myall Woodland

The western parts of the property coincide with areas of the Pilliga East State Forest. This land is owned by the Crown and exploration in this area is likely to require preparation of Review of Environmental Factors for each phase of exploration.

5.3 Access

The property is located 28 km south of the town of Narrabri and is accessed by the Kamilaroi Highway from Narrabri or from the south via Boggabri (Figure 4.1). The nearest township of Baan Baa is 10 km to the south, with a small community of 525 residents³. The largest regional centre is

³ Australian Bureau of Statistics, 2011 Census, http://www.censusdata.abs.gov.au/census_services/getproduct/census/2011/, accessed 23 Oct 2014

Narrabri, with a population of 7,392 people. The Shire of Narrabri has a population of about 14,000.

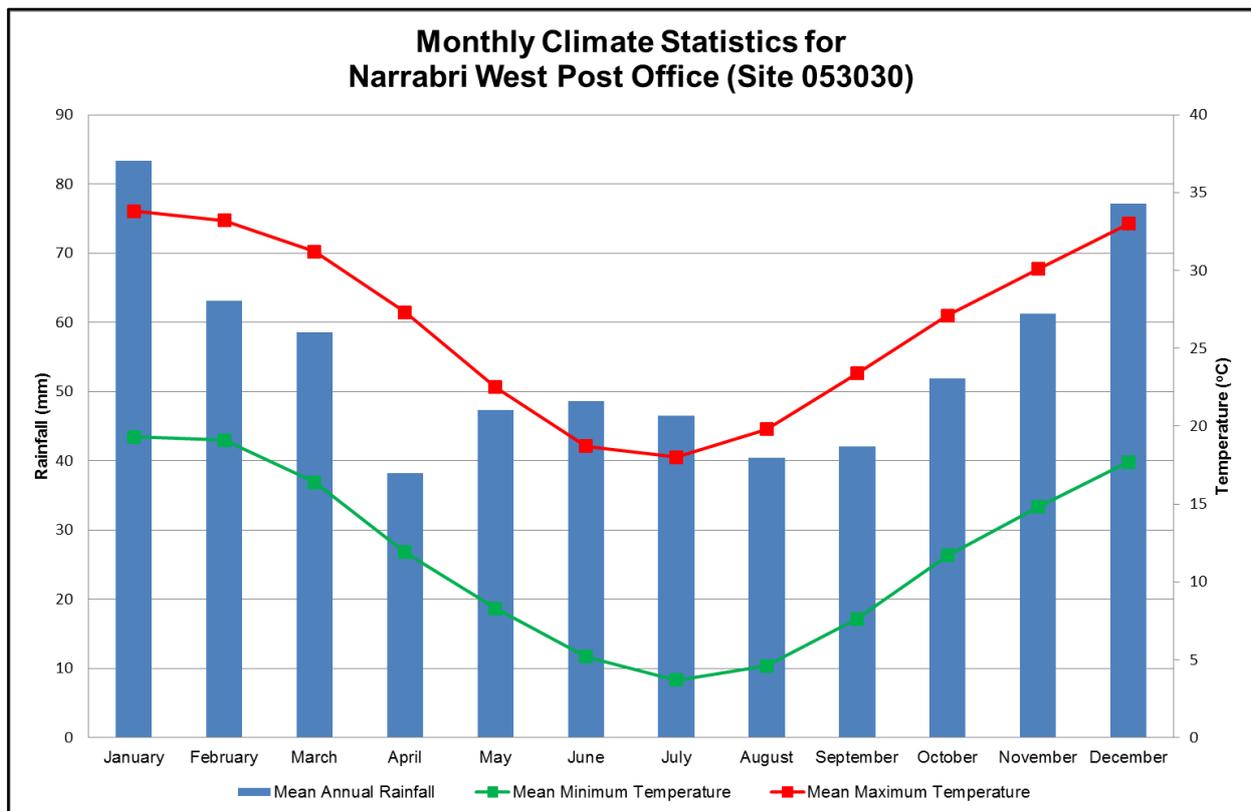
A rail loop constructed at Narrabri North connects to the North-Western Branch Railway, which parallels the Kamilaroi Highway and eventually connects to the Main North Line leading to the Port of Newcastle. The distance to the Port of Newcastle is 382 km by rail.

5.4 Climate

The region is located in a tropical to temperate climatic zone, with seasonal fluctuations typical. The average maximum temperature for the summer months, between December, January, February is 33.3°C, and the average minimum temperatures are 18.7°C. The winter months of June, July and August record the lowest temperatures with a daily averages of 4.5-18.8°C.

Average monthly rainfall is 55 mm, with a yearly total of 658.8 mm. This is highest in the summer months.

Temperature and rainfall data is presented Figure 5.1, and is sourced from the Australian Bureau of Meteorology (BOM) Narrabri West Post Office, station number 053030, for the period from 1891 to 2014. The station is located approximately 25 km northwest of the mine area. The mine operates all year round and is not limited by climatic conditions.



Source: http://www.bom.gov.au/climate/averages/tables/cw_053030.shtml

Figure 5.1 Monthly climate statistics for Narrabri West post office

5.5 Workforce

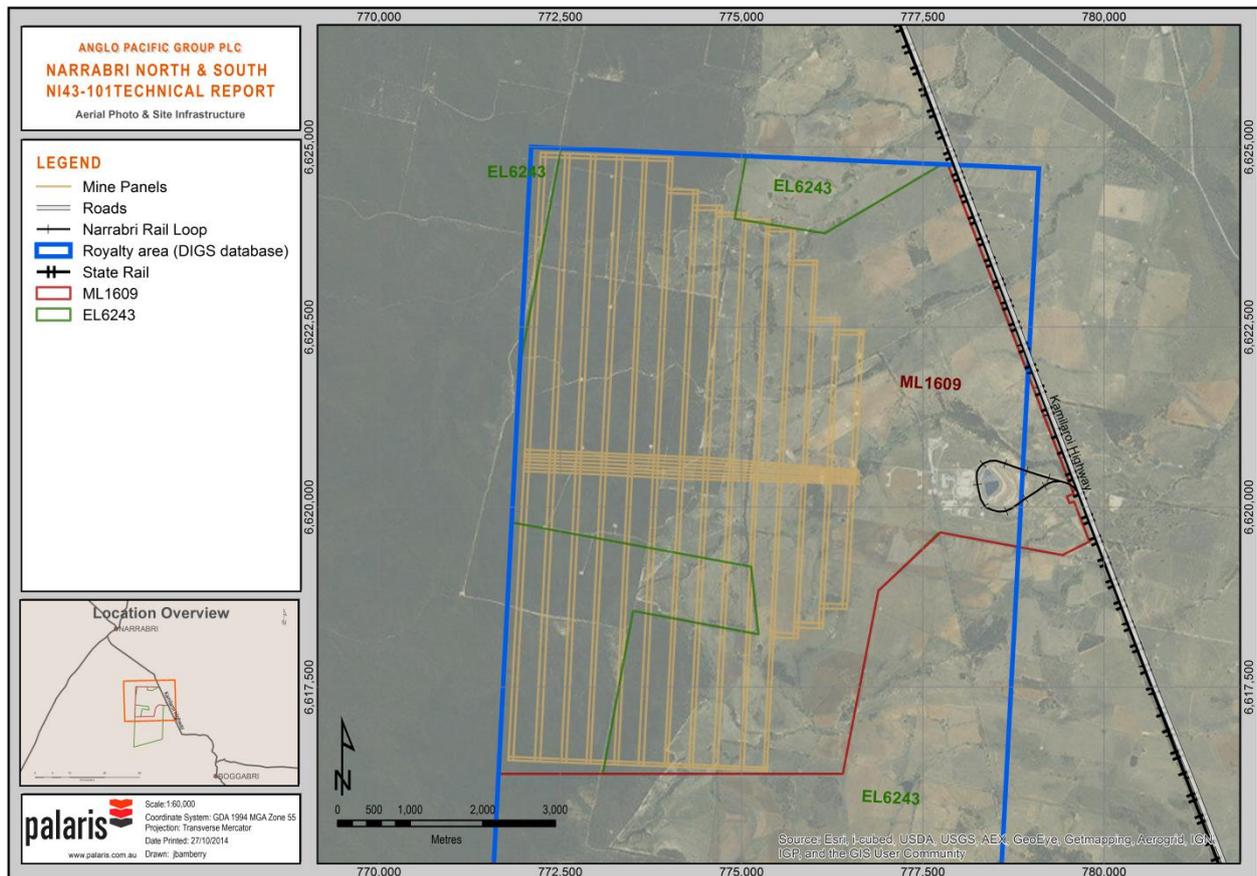
A local workforce based out of Narrabri staffs the site. The downturn in the Australian mining industry has meant that access to an experienced workforce does not present any difficulty.

5.6 Site Infrastructure

Key site infrastructure is shown in Figure 5.2. Further details of project infrastructure are provided in Section 18.2.

Road access to the Narrabri site is provided by the Kamilaroi Highway. A rail loop from the Gunnedah-Narrabri line allows loading of trains destined for the Port of Newcastle.

Permanent mains power is supplied via a spur line from a new 66 kV power line located to the east of the Kamilaroi Highway. The 66 kV of the spur line is converted to 11 kV for use at the site offices, buildings and the crushing / sizing plant within a substation on the Pit Top Area.



Sources: http://goto.arcgisonline.com/maps/World_Imagery

Figure 5.2 Aerial photo and site infrastructure

6 Item 6: History

6.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

In preparing this part of the report Technical Report, Palaris has solely relied on publically available documents and quarterly reports published by Whitehaven Coal on line.

6.2 Prior Ownership

The area now covered by the Narrabri tenements was formerly part of Authorisation No. 216 (A216), which was held by the NSW Department of Mineral Resources (DMR). The DMR conducted regional drilling in the Gunnedah Basin in the 1970's and 1990's.

When EL6243 was granted in 2004, the part of A216 that overlapped EL6243 was excised from A216.

No prior mining has taken place within the property area.

6.3 Exploration and Development History

6.3.1 Previous Exploration

Hill (1983) reported on the coal resources of the “Narrabri Coalfield”, following an assessment of part of the regional drilling undertaken by the DMR in the early 1980's. This work mapped out possible subcrop limits of the Hoskissons Seam beneath the overlapping Digby Formation. Broad definition of the seam structure, ash content and depth of cover of the seam is defined in this work.

In 1983, the Electricity Commission of NSW formed a joint venture with the DMR with the aim of identifying coal suitable for power generation. This program consisted of 41 holes drilled at approximate four kilometre centres. This work identified the “major economic potential” for the development of low to medium-ash coal for power generation (Tadros et al. 1987). This work also identified the vertical zonation of the Hoskissons seam into a thick, basal low- to mid-ash working section, beneath a high ash upper part.

Eleven drill holes drilled by the DMR occur within the current boundaries of the Narrabri tenements.

6.4 Historical Resource and Reserve Estimates

Prior to the granting of EL6243 to Narrabri Coal, no specific resource or reserve estimate was done within the boundaries of the tenement. However, in a document describing resources of the Gunnedah Basin, Wiles (1996) quoted “Inferred Class 1”⁴ resources of 445 Mt for the whole seam having average raw ash content less than 20% (ad) to 300 m depth of cover. The maximum ash content of this estimate was 35% and minimum seam thickness of 1.5 m. This resource estimate extended over an area stretching from Baan Baa to 4 km north of Narrabri town. “Inferred Class 1” resources were a low confidence category of resource that are equivalent to Inferred Mineral Resource of the CIM or JORC definitions.

The Narrabri North Mine and Narrabri South Project are entirely within the zone identified by Wiles (1996) as “North Narrabri”.

Whitehaven have listed resources for the property since 2007. Table 6.1 lists the resource reports since that time, and they are also shown in Figure 6.1. Up until 2012, coal resources were supported separately for Narrabri North (ML1609) and Narrabri South (EL6243). In 2010, a substantial increase in resources occurred in response to the recognition that the upper part of the coal seam may be recovered by top coal caving methods. Since the mine has commenced operations, this method has not been installed; however, current resources include coal with the potential for this mining method.

Table 6.1 Coal resource estimates for the project since 2007

| Date | Licence | Measured (Mt) | Indicated (Mt) | Inferred (Mt) |
|----------------|----------------|---------------|----------------|---------------|
| August, 2007 | ML1609 | 88.64 | 81 | 60 |
| | EL6243 | 30.66 | 103 | 75 |
| February, 2010 | ML1609 | 169.4 | 171 | 135 |
| | EL6243 | 45.2 | 114 | 220 |
| August, 2012 | ML1609, EL6243 | 153 | 375 | 254 |
| August, 2013 | ML1609, EL6243 | 188.4 | 381 | 180 |
| August, 2014 | ML1609, EL6243 | 180 | 380 | 180 |

⁴ Inferred Class 1 Resources is a now obsolete classification of coal resource that was defined by the Standing Committee on Coalfield Geology of New South Wales (1980)

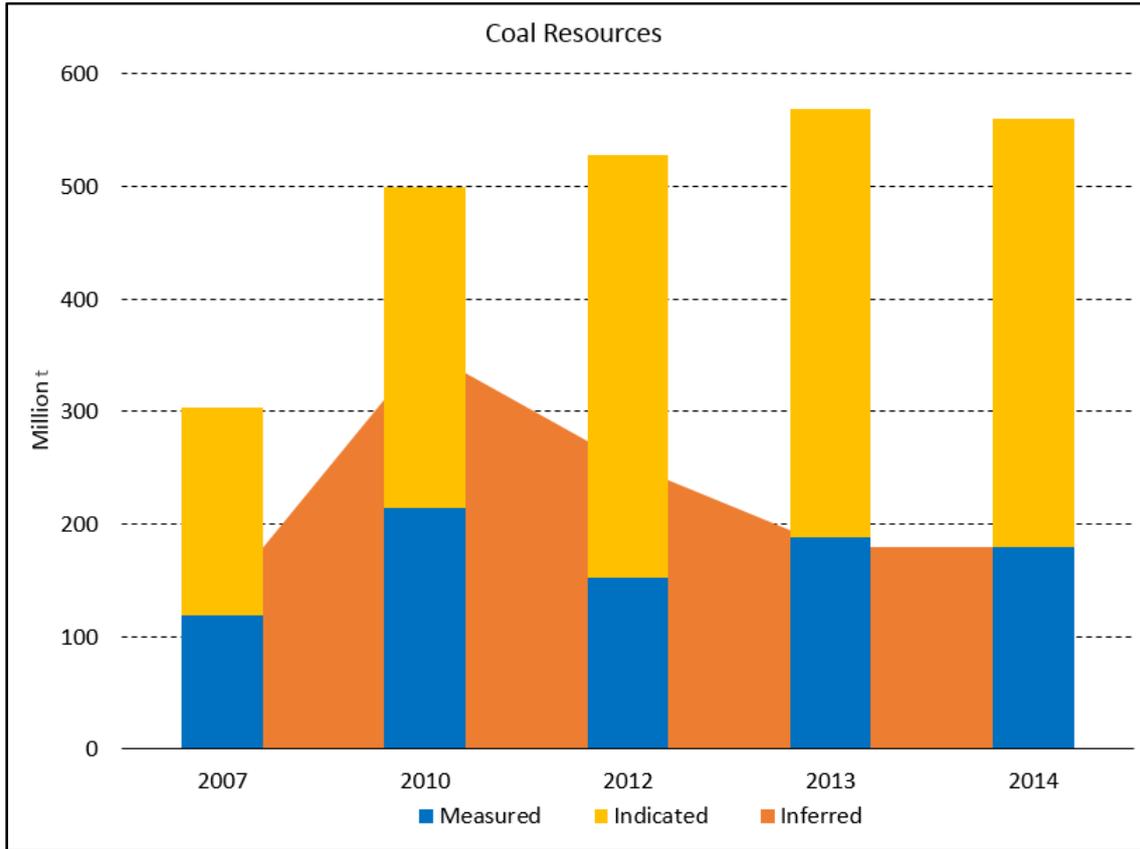


Figure 6.1 Coal resource estimates for the project since 2007

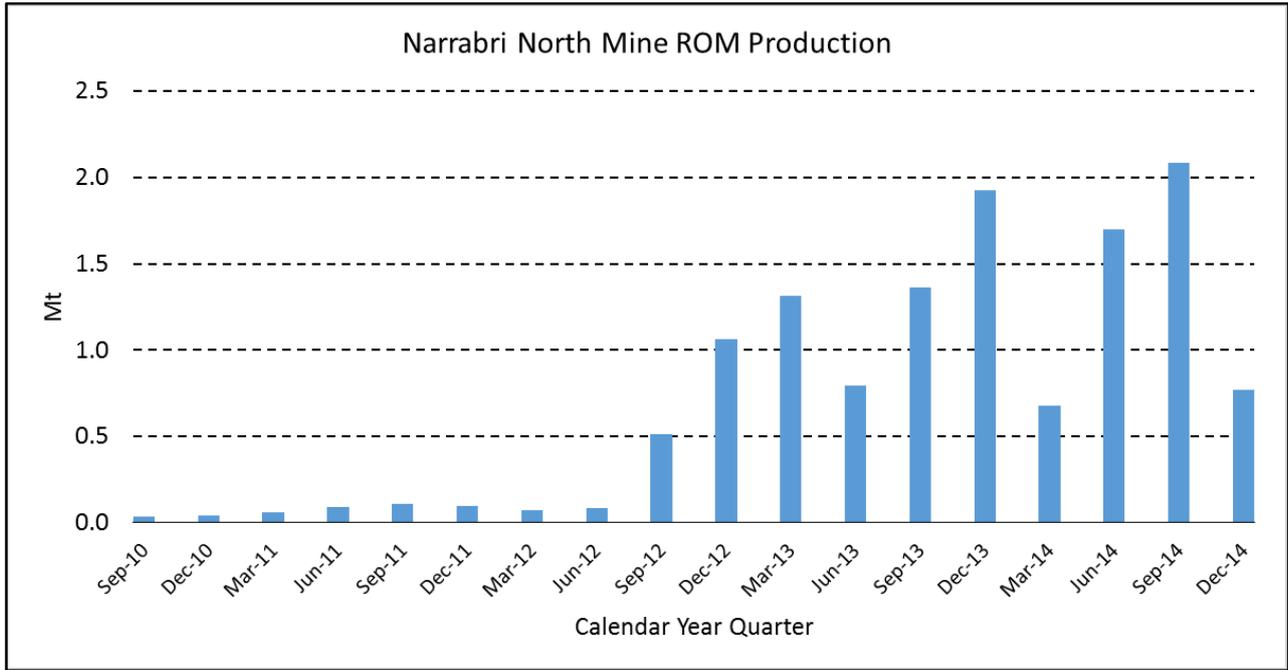
6.5 Production

Prior to Narrabri North mine, no historical production of coal has occurred within the tenement.

First coal was produced at the Narrabri North mine on 28 June, 2010 from development workings. The longwall was installed in the June quarter, 2012, which is marked by the step up in production after that time (Figure 6.2).

The first longwall relocations were completed during the June quarter of 2013 and the March and December quarters of 2014, resulting in a slight drop in output during those periods. Loss of horizon control at the tailgate end of the longwall panel also contributed to the drop in output during the March 2014 quarter.

The quarter ending September, 2014, resulted in the highest ROM coal production for a quarter achieved to date at 2,082 kt of coal.



Source: Quarterly reports from <http://www.whitehavencoal.com.au>

Figure 6.2 Quarterly production for Narrabri North mine

7 Item 7: Geological Setting and Mineralisation

7.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

In preparing this part of the Technical Report, Palaris is unable to comment on any factors affecting the coal seam that are not described in publically available documentation. Palaris are unable to comment on details of:

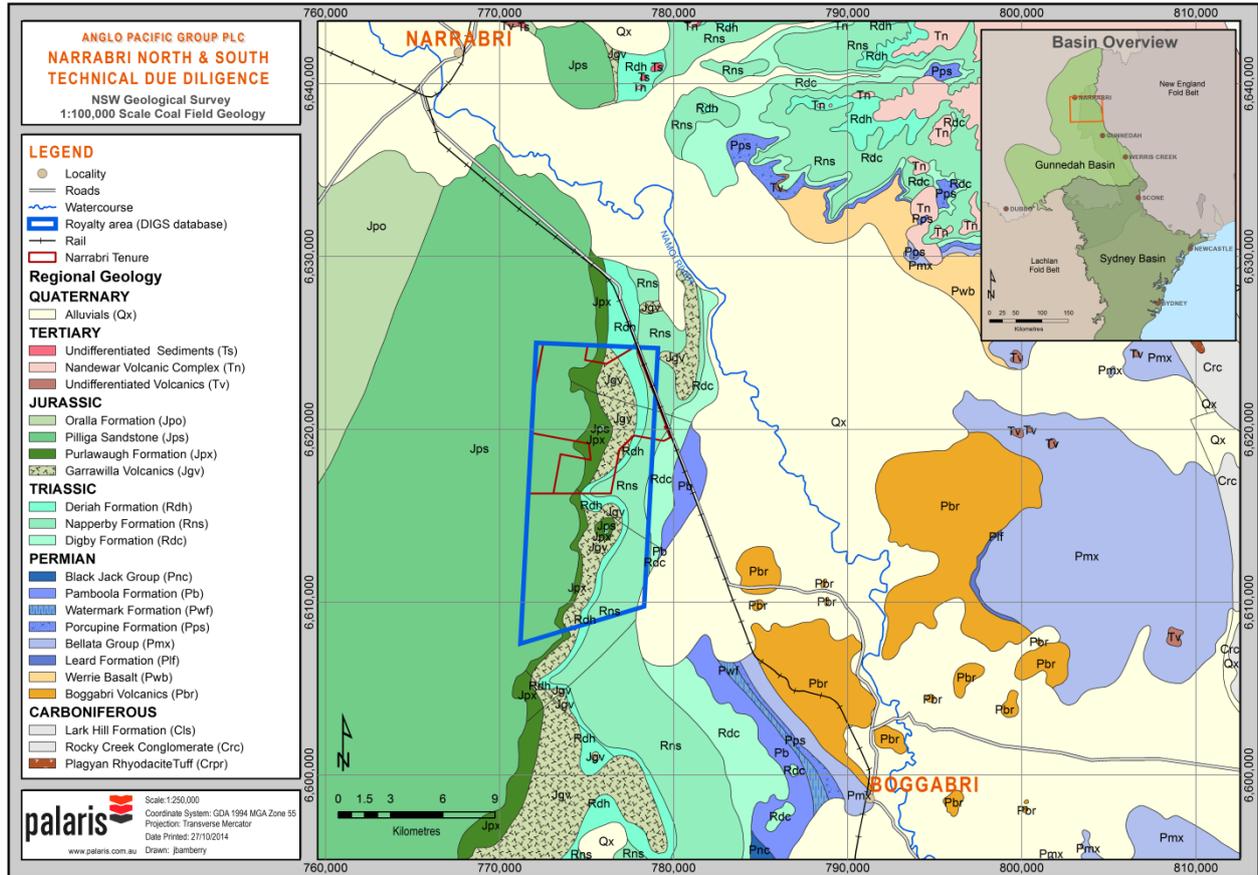
- the presence of any faulting or intrusions in the coal seam

7.2 Regional Geology

The Narrabri North mine and Narrabri South project are located in the Gunnedah Basin, which forms part of the Early Permian to Late Triassic Sydney-Gunnedah-Bowen Basin system that runs for 1,800 km in a north-south direction along the east coast of Australia.

The Gunnedah Basin is contiguous with strata of the Sydney Basin to the south, and the Bowen Basin to the north. The eastern boundary is a structural boundary with the adjacent New England Fold Belt, marked by the Hunter-Mooki Fault System, whereas the western boundary is defined by onlap of basin strata onto the older Lachlan Fold Belt.

Geological units in the area consist of Permian-Triassic-age Gunnedah Basin strata, Jurassic-age Surat Basin strata and undifferentiated Quaternary sediments. The stratigraphy of the Gunnedah Basin is shown in Table 7.1. Locally, the basement to the Gunnedah Basin sequence comprises Early Permian volcanic rocks of the Boggabri Ridge. These volcanics form a northerly trending basement high that divides the Gunnedah Basin into the Maules Creek and Mullaley sub-basins. The project area is located in the eastern part of the Mullaley Sub-Basin.



Source: Pratt (1998)

Figure 7.1 Regional geological setting

Table 7.1 Stratigraphy of the Gunnedah Basin

| Group | Formation |
|--------------------|---|
| Narrabeen Group | Deriah Formation |
| | Napperby Formation |
| | Digby Formation |
| Black Jack Group | Trinkey Formation |
| | Wallala Formation |
| | Clare Sandstone / Benelabri Formation |
| | Hoskissons Coal |
| | Brigalow Formation / Arkarula Formation |
| Millie Group | Pamboola Formation |
| | Watermark Formation |
| Bellata Group | Porcupine Formation |
| | Maules Creek formation |
| Boggabri Volcanics | Goonbri & Leard Formations |
| | |

7.3 Local Geology

The local geological structure at Narrabri has been influenced by the presence of the Boggabri Ridge. The strata strike north-south and dip westwards at less than 5°. The stratigraphic sequence (Table 7.1) developed at the mine site includes the following units, described in descending order:-

- Pilliga Sandstone – coarse grained quartz sandstone up to 60 m thick, which crops out in the western parts of ML1609 and EL6243
- Purlawaugh Formation – up to 140 m thickness of thinly bedded sandstone and siltstone, with subordinate claystone and coal
- Garrawilla Volcanics – up to 40 m thickness of alkali basalt flows with thin intervening mudstone and clastic rocks, unconformably overlying Triassic rocks where it is present
- Deriah Formation – sporadically developed, lithic sandstone up to 15 m thick
- Napperby Formation – siltstone, sandstone/siltstone laminate and fine- to medium-grained quartz-lithic sandstone to 140 m thick
- An intrusive basalt sill is present 30-35 m above the base of the Napperby Formation and is 15 to 20 m thick
- Digby Formation – lithic, pebble conglomerate, typically 12-24 m thick, overlying the Black Jack Group; the boundary between the two being a low angle unconformity
- Black Jack Group – consists of lithic sandstone, siltstone, claystone, coal and minor tuff; thickness is up to 70 m in the western part of ML1609 and less than 40 m thick in the east where the sequence is partially overlapped by the Digby Formation
- The Hoskissons Coal, which forms the mineable resource at the property, has formation status and is part of the Black Jack Group
- The Black Jack Group is underlain by a sequence of rock of marine sedimentary origin, namely the Watermark and Porcupine Formations
- The marine sequence is underlain by the Maules Creek Formation, which is mined to southeast of Narrabri and is, in turn, underlain by the Leard Formation
- The basement to the Gunnedah Basin sequence in the area comprises the dacite- to rhyolite-basalt and pyroclastic rocks of the Boggabri Volcanics

7.4 Property Geology

The Hoskissons Coal consists of mainly of dull coal, comprising a lower ash basal section and a higher ash upper section. The full seam thickness within ML1609 and EL6243 is in the range 0 to 11.8 m thick (Ditton, 2009); the seam is overlapped in the eastern part of the tenements by the conglomerate at the base of the Digby Formation. Over the area where the seam is being mined, and is planned to be mined, the full seam thickness is generally of the range 5-9 m thick. The basal 4.2 m section of the coal seam is defined as the working section for underground development within ML1609.

The Hoskissons seam is developed over an approximate area of 7,200 ha and occurs at depths ranging from 140 m in the east to 360 m in the west. The contained strike length of the coal seam is approximately 16 km whereas the down-dip width of the coal seam within the tenements is 4.5 km.

Strata of the Black Jack Group are developed above the Hoskissons Coal where the seam is not overlapped. The thickness of these strata range from zero in the east to over 30 m in the west. These strata consist of lithic sandstone, siltstone and minor coal of the Benelabri Formation.

The strata immediately below the Hoskissons Coal include the Arkarula Formation, comprising 10 m of quartz sandstone and siltstone. These strata grade laterally westwards into the Brigalow Formation, which comprises coarse-grained sandstone and conglomerate.

A northwest-southeast structural trend has been identified from interpretation of regional magnetic data, and relates to fault blocks in the basement Boggabri Volcanics. Several normal and reverse faults of this orientation with throws of 1 to 5 m, have been identified in the mine area (Ditton, 2009) but are not considered to have a significant impact on continuity of longwall mining operations (Narrabri Coal Operations, 2012).

No igneous intrusions within the coal seam have been identified to date. Igneous bodies are known to intrude the coal seam in other parts of the basin; such as the "Benelabri" area, some 35 km to the southeast (Pratt, 1998).

8 Item 8: Deposit Types

8.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG contacted Whitehaven Coal during September 2014 requesting access to relevant data and a site visit to the Narrabri Mine. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

In preparing this part of the Technical Report, Palaris has relied on publically available documents and those published by Whitehaven Coal on-line.

Description of Coal

The Hoskissons Coal is a widespread geological unit in the Gunnedah Basin, having formation status. It developed as a nearly continuous peat blanket synchronously over most of the Sydney and Gunnedah Basins during a period of tectonic stability characterised by little to no subsidence (Tadros, 1993).

The Narrabri mine exploits coal from the Hoskissons seam. A typical seam stratigraphic column is shown in Figure 8.1. At this site, the seam is divided into two sections, namely an upper section (HC1) and a lower section (HC2). The lower section (HC2) contains low ash coal, suitable for underground mining and production of thermal coals (raw ash 8-13%). HC2 is 2.0 to 4.2 m in height and is the working section for the mine. The seam is thinnest in the east, where it is overlapped by the Digby Formation, but is consistently 4.2 m thick, allowing for thick seam longwall extraction. The upper section (HC1) contains high ash stony coal and tuffaceous claystone and as such, is higher in ash content.

The upper part of the seam (HC1) forms a mainly coal roof against the conglomerates of the Digby Formation, which is dominated by conglomerate (12-24 m thick) and consisting of hard lithic pebble- to cobble-size clasts (>100 mm) within a variable strength matrix.

The extent of planned mine workings in Narrabri North is approximately 33 km² whereas reserves quoted for Narrabri South cover an area of approximately 26 km².

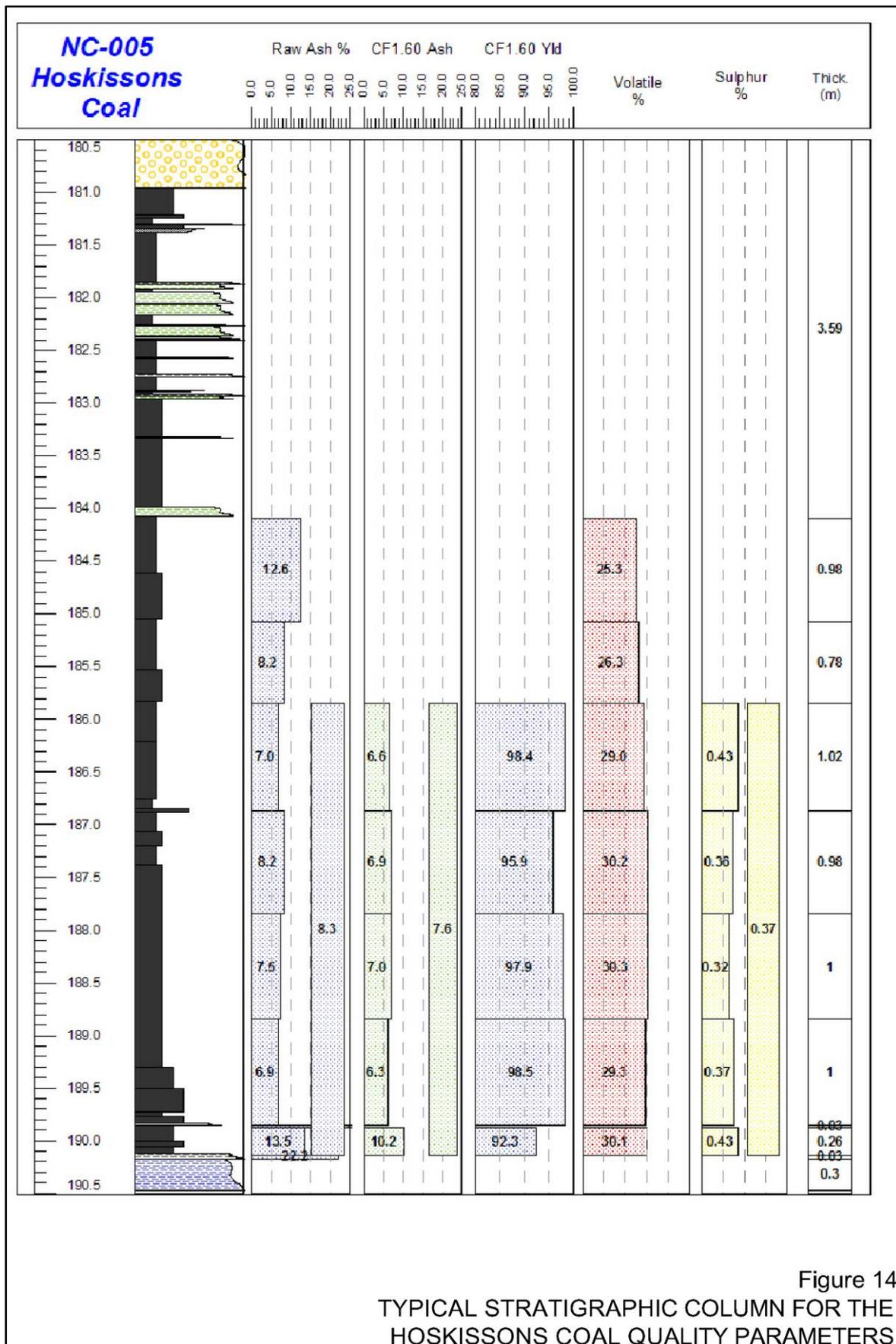


Figure 14
TYPICAL STRATIGRAPHIC COLUMN FOR THE
HOSKISSONS COAL QUALITY PARAMETERS

Source: http://whitehavencoal.com.au/operations/documents/67405_Part10_Geology.pdf, accessed 24 Oct 2014

Figure 8.1 Typical Hoskissons seam stratigraphic column

9 Item 9: Exploration

9.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

In preparing this part of the Technical Report, Palaris is unable to comment on specific methods, standards or exploration methods used by Whitehaven Coal other than what is available in the public domain. Palaris are unable to comment on details of:

- the procedures and parameters relating to surveys and investigations
- sampling methods and sample quality, including comment on whether samples are representative or biased
- information on location, number, type, nature and spacing or density of samples collected and the area recovered
- the status of exploration, in addition to the nature and extent of all relevant exploration work other than drilling

9.2 Historical Exploration of Other Forms Than Drilling

Cowan Geodata Services (1995) provided an interpretation of the airborne geophysical data (magnetic and radiometrics) collected by Kevron Geophysics Pty Ltd for the DMR. The survey was flown at a height of 60 m and a line spacing of 100 m with 1 km tie lines.

The report specifically listing interpretation for the Narrabri area defined a “Central anomaly zone”, which coincides with the property. The Central anomaly zone is defined by a series of north-west and west-northwest faults and is dominated by broad magnetic lows with superimposed sill and basement anomalies.

Pratt (1997) discussed this interpretation and concluded that the anomaly zone is an expression of the Garrawilla Volcanics. He also related magnetic anomalies to the intrusions in the Narrabeen Group, and acknowledged that no intrusions had been identified within the Black Jack Group.

Seismic data was collected in 2009 over part of ML1609 to investigate faulting.

Narrabri Coal (2012) also list the following

- Uniaxial Compressive Strength (UCS) determination for roof and floor strata
- slake durability testing of floor strata
- analysis of regional and high resolution aeromagnetic data
- assessment of gas
- “televviewer” interpretation on 25 deep holes for evidence of stress-related breakout
- assessment permeability and porosity of strata
- geotechnical review of data with emphasis on assessment of likely mining conditions
- spontaneous combustion investigations

9.3 Current Exploration

Documents outlining future exploration plans are not available in the public domain.

10 Item 10: Drilling

10.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

In preparing this part of the Technical Report, Palaris is unable to comment on specific methods, standards or drilling methods directly used by Whitehaven Coal other than what is available in the public domain.

Palaris are unable to comment on details of:

- the type and extent of drilling, procedures followed, and summary and presentation of results
- any drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results
- drill hole information, such as collar location, azimuth, dip and depth
- relationship between sample length and true seam thickness

10.2 Historical Exploration Drilling

Prior to the grant of EL6243, exploration was carried out by the DMR as shown in Figure 10.1.

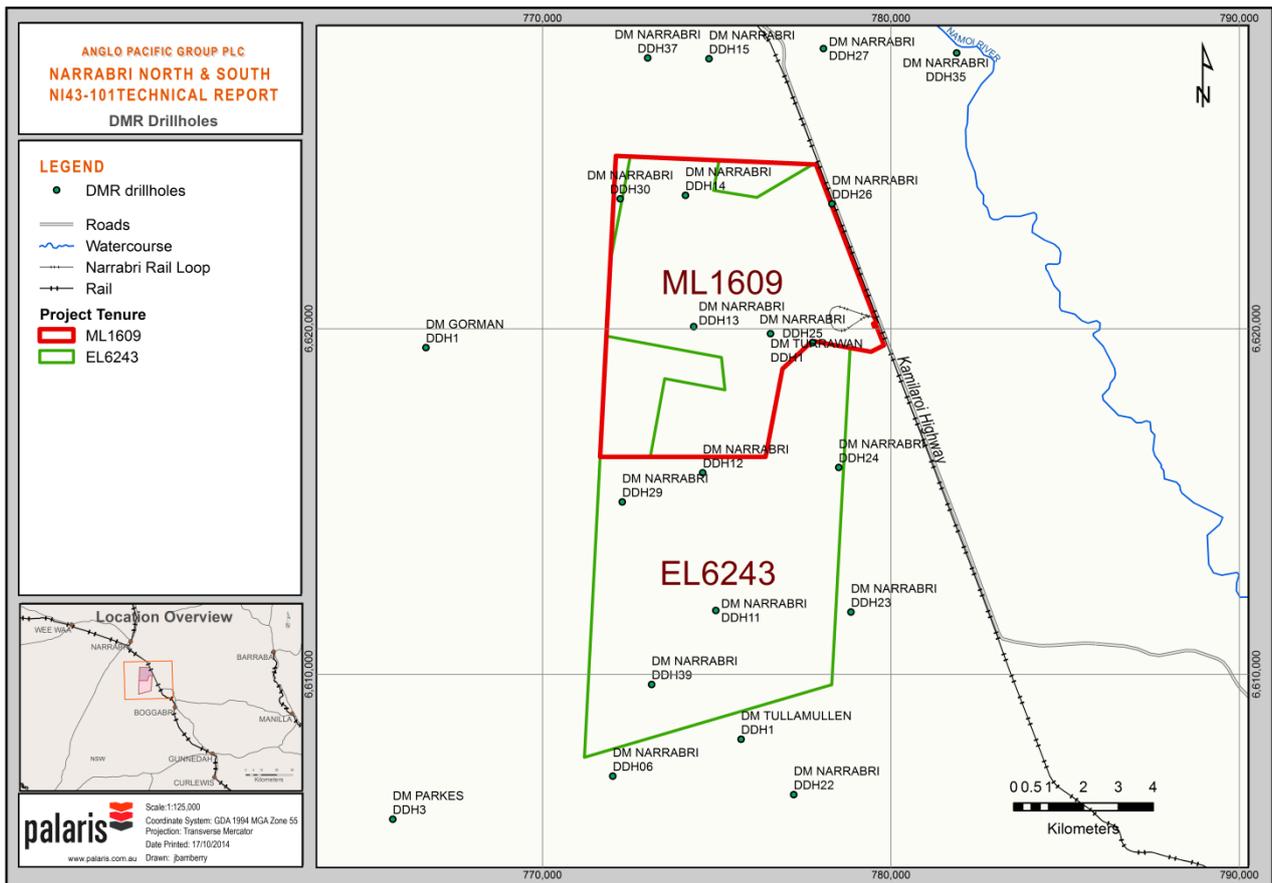


Figure 10.1 Drilling undertaken by the DMR

In the 1970's to 1980's, the DMR undertook regional drilling that led to the indication of substantial coal resources in the Hoskissons seam. Drill holes undertaken during this phase of exploration) included:-

- DM Gorman DDH 1 (west of ML1609): intersected a 6.99 m section of Hoskissons seam having a raw ash content of 30.6 % (ad) over the basal 2.69 m
- DM Tullamullen DDH 1 (south of EL6243): intersected a split Hoskissons seam consisting of an upper 2.80 m thick seams (raw ash 38.1% (ad)) and a lower seam of 1.14 metres thickness (raw ash 24.1 % (ad); separated by 5.25 m of interburden
- DM Turrawan DDH 1 (eastern part of ML1609): intersected 6.47 m of Hoskissons seam having a raw coal ash of 13.0% (ad) for the full seam, and 11.0% (ad) over the basal 4.0 m; the depth to coal was 167 m

In 1984-85, the DMR undertook the Narrabri Stage 2 drilling program in joint venture with the then Electricity Commission of New South Wales. This work and subsequent reporting (Tadros et. al, 1987) led to the recognition of a large resource base in the region.

A summary of the holes from this program in and around the vicinity of ML1609 and EL6243 are presented in Table 10.1. Tadros et al. (1987) defined the subcrop limits of the Hoskissons seam and potential resource areas as a result of this drilling.

Table 10.1 Summary of part of Narrabri drilling program and Hoskissons seam intersections

| Location | Borehole | Thickness (m) | Ash % (ad) | Moisture % (ad) |
|-----------------|--------------------|------------------------------------|------------|-----------------|
| North of ML1609 | DM Narrabri DDH 37 | 7.64 | 15.4 | 3.0 |
| " | DM Narrabri DDH 15 | hole terminated in Digby Formation | | |
| " | DM Narrabri DDH 27 | not present | | |
| " | DM Narrabri DDH 35 | not present | | |
| ML1609 | DM Narrabri DDH 30 | 10.12 | 28.4 | 3.3 |
| " | DM Narrabri DDH 14 | 8.36 | 22.2 | 4.6 |
| " | DM Narrabri DDH 26 | 0.22 | 19.9 | 3.8 |
| " | DM Narrabri DDH 13 | 9.35 | 26.5 | 3.4 |
| " | DM Narrabri DDH 25 | 0.37 | 18.5 | 3.6 |
| EL6243 | DM Narrabri DDH 12 | 9.75 | 26.2 | 4.4 |
| " | DM Narrabri DDH 24 | not present | | |
| " | DM Narrabri DDH 29 | 9.87 | 39.6 | 2.5 |
| " | DM Narrabri DDH 11 | 6.00 | 18.6 | 4.6 |
| " | DM Narrabri DDH 39 | 5.98 | 34.0 | 2.9 |
| East of EL6243 | DM Narrabri DDH 23 | not present | | |
| South of EL6243 | DM Narrabri DDH 6 | 2.77 | 37.8 | 18.1 |
| " | DM Narrabri DDH 22 | 0.57 | 47.4 | 3.2 |

The core sizes used for this drilling were HQ and NQ size. Upper sections of the holes were chipped, presumably by hammer drilling.

Wireline logs have been collected on most of the holes drilled, and included some or all of gamma, neutron, density, point resistance, self-potential, resistivity and caliper logs. Scanned copies of the logs are available for the 1982 series of drilling. All core has been photographed.

Whole core intersections of the Hoskissons seam were sampled in these holes on a ply-by-ply basis. Core recovery for each sample has been recorded on laboratory reports.

The DIGS® database lists 88 drill holes put down by Narrabri Coal in 2011. These holes, prefixed with "NC", were completed for gas compliance, gas testing and fault definition.

In August, 2014, Whitehaven published a "Table 1 Checklist" to support their 2014 Resources and Reserves Statement, published in accordance with the JORC Code (2012 Edition). According to this document, 1,021 drill holes were included in the project database as at 30th June, 2013. Many of these drill holes are related to mine support activities.

Of these, 548 drill holes were used for defining structural points of observation, and 164 points used for defining quality points of observation.

10.3 Recent Drilling

Whitehaven (2014) describes use of 4C (100 mm diameter), HQ triple tube, percussion and rotary open hole methods for the drilling techniques used at site.

Drilling, sampling or recovery issues that could materially impact the accuracy and reliability of results are managed by:

- all holes were drilled vertically
- sample recovery was determined by comparison to wireline logs, and volumetrically from laboratory results; samples with less than 90% recoveries were excluded from the digital geological model used for the resource estimate
- logging was undertaken by geologists experience in coal resource investigation and evaluation

10.4 Current Drilling Practices

Current drilling practices used at Narrabri Coal are partly described in Whitehaven (2014) as required by the JORC Code (2012 Edition). Details of planned or future drilling are not available in the public domain.

However, Dr Bamberry, one of the QP's for this report, is familiar through other means, of the standards of work undertaken by Whitehaven's geological team and considers those practices meet industry accepted standards.

11 Item 11: Sample Preparation, Analyses, and Security

11.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

In preparing this part of the Technical Report, Palaris is unable to comment on the specific sample preparation, analyses and sample security practices employed by Whitehaven Coal, other than to draw conclusions from publically available documentation.

Palaris are unable to comment on details of:

- sample preparation methods and quality control measures employed
- the testing laboratories and their sample preparation, assaying and analytical procedures, and whether the laboratories are certified by an standards association
- the quality control and quality assurance actions undertaken to provide adequate confidence in data collection and processing

11.2 Historic Sampling

Sampling of coal seams has been undertaken by using the industry accepted practice of ply-by-ply sampling. Whole core samples have been sampled and analysed at coal laboratories.

11.2.1 DMR Sampling and Analysis

The procedures used by the Department of Mineral Resources in the 1980's⁵ involved designation of samples as either coal or stone, which determined the level of analysis that was undertaken. Each ply was identified, sampled, and sealed in plastic bags for delivery to coal laboratories. The preparation and subdivision of samples from the DMR holes is not documented but is likely to have involved air-drying, as per Australian Standards, crushing to -11.2 mm and subdivision by rotary sample divider or riffle splitter.

The analyses undertaken by the DMR for samples collected from holes drilled in 1982 included the following on raw coal:-

- Ash
- Hygroscopic moisture
- Volatile matter (coal plies only)
- Relative density
- British Swelling Index (coal plies only)

⁵ Dr Bamberly, one of the authors of the reports, worked for the DMR in the 1980's and 1990's and was familiar with the sampling practices of that time.

Composited sample assays were calculated by weighting on a length-times relative density basis. No washability tests were conducted on this early drilling.

The analysis undertaken on samples from the Stage 2 Narrabri Drilling program included:

Raw coal analysis

- Ash
- Moisture of the analysis sample (ad)
- Volatile matter
- Relative density
- Crucible Swelling Index

Float-sink Analysis

- float-sink analysis at densities of 1.40 to 1.90 in 0.1 RD increments on composited seam sections
- full proximate analysis, CSN, relative density and total sulphur on float-fractions

Composite Analysis

- proximate analysis, CSN, relative density, sulphur and specific energy on cumulative floats to F1.90 (CF1.90) and select raw coal composites
- moisture, ash, ultimate analysis, carbonate carbon, chlorine and fluorine on select raw coal composites and CF1.90 composites
- ash composition (10 oxides) and ash fusions temperatures (reducing atmosphere) on select raw coal composites and CF1.90 composites

This analysis was undertaken at the Mineral Resources Development Laboratory. Palaris cannot comment on the standards or any national certification of this laboratory.

11.2.2 Narrabri Coal – Sampling and Analysis

Holes drilled by Narrabri Coal include a combination of cored, partly cored and open holes. Sampling practice is described in Whitehaven (2014), which describes sampling techniques. Some of the more salient points are:-

- HQ and 4C core is used to ensure sample is representative and sufficient sample is available for sub-sampling
- sample preparation, sub-sampling and quality control procedures was undertaken in accordance with Australian Standards at NATA accredited laboratories

No specific security measures are described by Whitehaven (2014) other than the samples being delivered to a local laboratory.

Analytical data for the Narrabri Coal series of holes is not specified in publically available documents. However, Narrabri Coal Pty Ltd (2007) described raw coal properties in terms of:-

- proximate analysis, sulphur, specific energy, relative density and Hardgrove Grindability Index on raw coal
- floats-sink analysis of composited sections at densities of 1.40 (or 1.45) and 1.60
- analysis of washed coal composites, including ash analysis and ultimate analysis

In Palaris' view, the quantum of analysis undertaken by Narrabri Coal is likely to be greater than what is described here, which has been obtained from public documents only.

11.3 Current sampling

Palaris have not viewed the current sampling, analytical and quality control practices of Whitehaven. However, Palaris understand that Whitehaven Coal follow accepted industry practices in sample preparation, security of samples and analytical procedures. As such, these are considered to adequately satisfy JORC and NI 43-101 requirements.

12 Item 12: Data Verification

12.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- The data verification procedures applied by the competent persons estimating the JORC resources

Palaris has obtained as much data as possible from public domain. In lieu of Palaris being able to examine confidential geological data, the following forms of verification are available:

- Details of exploration by the DMR prior to the granting of the lease, reports on coal seam gas wells west of the lease, and reports concerning the regional geology provide enough information to validate the trends in the data described by Whitehaven (2014), which summarises salient points about the coal resources

Whitehaven (2014) describe their internal processes of verification of data:

- Coal intersections in drill holes are verified by reconciliation of thicknesses and depths with wireline logs. Coal seam intersections have also been independently checked and audited by a database geologist (Whitehaven, 2014)
- Drill hole collar, lithology and raw coal quality are stored in a LogCheck software, which allows storage of drill hole header, drilling, geological and geotechnical data. Data is exported into a format suitable for modelling in Minescape software

These practices are industry accepted practices.

Based on this review, the Qualified Person considers that the reported resource data described in this report are adequate for the intended use.

13 Item 13: Mineral Processing and Metallurgical Testing

13.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- the nature and extent of testing and analytical procedures
- the basis for any assumptions or predictions regarding recovery estimates
- the extent to which test samples are representative of the coal deposit as a whole
- any processing factors or deleterious elements that could have a significant effect on potential economic extraction

In preparing this part of the Technical Report, Palaris has relied on data that is publically available through Government repositories and Whitehaven Coal.

13.2 Testing and analytical procedures

The analysis that has been undertaken on drill hole samples was described in Section 11. The Hoskissons seam is subdivided into an upper high-ash section of coal named HC1

Coal quality of the basal working section of the coal seam was summarized by Narrabri Coal (2007) (Table 13.1). This summary outlines the quality of raw coal from 19 drill holes, and may not entirely be representative of the coal quality across the property.

Table 13.1 Average raw coal analysis of Hoskissons seam working section

| Moisture % (ad) | Ash % (ad) | Volatile Matter % (ad) | Sulphur % (ad) | Specific Energy (MJ/kg) (ad) | Relative Density |
|-----------------|------------|------------------------|----------------|------------------------------|------------------|
| 4.0 | 10.4 | 26.3 | 0.34 | 28.9 | 1.43 |

Source: Narrabri Coal, 2007

Narrabri Coal (2012) presented a summary of raw coal quality for the upper high ash part of the seam (HC1) and the lower targeted working section (HC2). These results are presented in Table 13.2. The HC1 interval has been examined as a possible target of longwall top coal caving; however, this section being high in ash content would require processing to beneficiate the coal to an acceptable product. In the quarterly report for the period ending September, 2014, Whitehaven reported that “a decision was made ... to pursue the feasibility of extending the longwall face to 400 m in lieu of top coal caving as the superior optimization path for Narrabri”. It should be noted that the coal within the high ash HC1 section is included in the Coal Resources for the site, but is excluded from Reserves (Whitehaven, 2014).

Table 13.2 Average raw coal analysis of Hoskissons seam sections HC1 and HC2

| Section | Moisture % (ad) | Ash % (ad) | Volatile Matter % (ad) | Sulphur % (ad) | Specific Energy (MJ/kg) (ad) | Relative Density |
|---------|-----------------|------------|------------------------|----------------|------------------------------|------------------|
| HC1 | 4.8 | 30.1 | 23.4 | 0.33 | 24.7 | 1.61 |
| HC2 | 4.8 | 11.3 | 27.5 | 0.34 | 28.2 | 1.43 |

Source: Narrabri Coal, 2012

Narrabri Coal (2007) also described the average quality of washed coal of the working section from 17 drill hole composites (Table 13.3).

Table 13.3 Average washed coal analysis of Hoskissons seam working section

| Cumulative Floats 1.45 Yield % | Cumulative Floats 1.45 Ash % | Cumulative Floats 1.60 Yield % | Cumulative Floats 1.60 ash % |
|--------------------------------|------------------------------|--------------------------------|------------------------------|
| 87.9 | 7.1 | 93.9 | 7.8 |

Source: Narrabri Coal, 2007

13.3 Coal Recovery

Borecore analysis indicates that the working section (HC2) yields high proportion of coal at CF1.60 (Table 13.3) with low ash content.

Whitehaven (2014) described the metallurgical factors or assumptions for the site. Approximately 60% of the coal is produced raw (i.e. bypasses the coal plant) to yield coal suitable for export as thermal coal. The Narrabri North CHPP includes dry screening raw crushed coal at 20 mm. Undersize and secondary product from dense medium cyclone middlings reports to thermal coal product with around 12% ash content. The mine produces a PCI coal of 7-8% ash content, expecting to produce 0.85 Mt of PCI product during 2014, out of a total forecast output of 5.5 Mt.⁶

Whitehaven (2014) state that all coal produced from the project area (Narrabri South) will require washing, and is expect to yield thermal coal only of 8 to 15% ash content.

13.4 Representativity of Test Samples

Raw coal analysis that is representative of the HC2 working section is available for the DMR series of drill holes and 20 Narrabri Coal drill holes (Narrabri Coal, 2012). The spread of this data is considered by the QP (J. Bamberry) to be representative of the raw coal quality of the Hoskissons seam at the property and the style of mineralisation (i.e. the coal seam).

Palaris cannot comment on the degree to which washability the test samples are representative of the various types and styles of mineralization and the mineral deposit as a whole, as little of this information is available publically. Increasing ash content in the working section is implied by the comments that all coal in Narrabri South will require washing.

⁶ http://www.whitehavencoal.com.au/operations/narrabri_north_mine.cfm, accessed 24 Oct 2014

14 Item 14: Mineral Resource Estimates

14.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG are currently investigating purchasing a royalty stream on revenue generated from both the existing Narrabri North Mine and the planned Narrabri South Mine which is currently at Project status. APG has not been involved in estimation of Resources at Narrabri Mine.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- sample preparation methods and quality control measures employed
- sufficient discussion of the key assumptions, parameters, and methods used to estimate the Mineral Resources, for a reasonably informed reader to understand the basis for the estimate and how it was generated
- the extent to which the Mineral Resource estimates could be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors

Whitehaven Coal have recently reported estimate Resources for Narrabri North Mine/Narrabri South Project in accordance with The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition).

Whitehaven Coal’s reporting is governed by ASX listing rules, under which there is no requirement for disclosure of any technical reports which support Reserves estimates. As such reports have been not been supplied by Whitehaven Coal, Palaris are unable to directly comment upon the key parameters, assumptions, and methodology used in the estimation of Mineral Resources as set out in NI 43-101.

14.2 Resources Reporting Code

The Committee for Mineral Reserves International Reporting Standards (CRIRSCO), formed in 1994⁷, is a grouping of representatives of organisations that are responsible for developing mineral reporting codes and guidelines. These organisations are known as National Reporting Organisations (NRO’s), and include⁸:

⁷ About CRIRSCO, <http://www.crirSCO.com/background.asp>, accessed 20 October 2014

⁸ http://www.crirSCO.com/crirSCO_terms_of_reference.pdf, accessed 20 October 2014

- Australasia – Joint Ore Reserves Committee (JORC)
- Canada – Canadian Institute of Mining, Metallurgy and Petroleum (CIM)
- Chile – Mining Commission for the Qualification of Competencies in Mineral Resources and Reserves
- Europe – Pan European Resources and Reserves Reporting Committee (PERC)
- South Africa – South African Mineral Resource Committee (SAMREC)
- United States of America – Society for Mining, Metallurgy and Exploration (SME)
- Russia – National Association for Subsoil Use Auditing (NAEN)

CRIRSCO aims to promote best practice in the international public reporting of mineral exploration results, mineral resources and mineral reserves.

14.2.1 The JORC Code

As highlighted in the scope of The JORC Code, 2012 Edition⁹, the principles governing the operation and application of the JORC code are Transparency, Materiality, and Competence:

- “Transparency requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled by this information or by omission of material information that is known to the Competent Person
- Materiality requires that a Public Report contains all the relevant information that investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Ore Reserves being reported. Where relevant information is not supplied an explanation must be provided to justify its exclusion
- Competence requires that the Public Report be based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable professional code of ethics (the Competent Person)”

The JORC Code is an “acceptable foreign code” as per Part 1 of National Instrument 43-101.

Whitehaven Coal have reported¹⁰ a summary of important assessment and reporting criteria for the Narrabri North Mine/Narrabri South Project in accordance with the “Table 1 checklist” of The JORC Code, 2012 Edition. The estimated Resources are based on the guiding principles, terms and definitions set out in The JORC Code, 2012.

⁹ JORC, 2012. Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) [online]. Available from: <<http://www.jorc.org>> (The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia).

¹⁰ <http://www.whitehavencoal.com.au/investors/docs/narrabri-underground26163159.pdf>, accessed 14 Oct 2014

14.2.2 Competent Persons

The “Table 1 checklist” (Section 4 Estimation and Reporting of Coal Reserves) states that the Mineral Resource estimate used as the basis for the Coal Reserves Statement was “Coal Resource Report for the Narrabri Coal Project, ML1609; EL6243, NSW, Australia”, prepared by Whitehaven Coal Limited, July 2014. The Competent Person for the Resource estimates was Mr Mark Dawson, B.Sc. who is a Member of the Australian Institute of Mining and Metallurgy and was the Geology Manager employed by Whitehaven Coal Limited. It was stated that the Resources Statement was compiled in accordance with The JORC Code 2012 Edition. The Coal Resources were reported inclusive of those Coal Resources modified to produce the Coal Reserves.

A search of the Australasian Institute of Mining and Metallurgy’s register of members¹¹ indicates that as of 1 October 2014, Mr Dawson was a Member without Chartered Professional accreditation. A search of the Australian Institute of Geoscientists indicates that Mr Dawson is not a member of the AIG¹². Unless he is a member of another Accepted Foreign Association, Mr Dawson does not appear to satisfy the requirements of a Qualified Person as defined by NI43-101.

Mr Dawson however is known to the QP (Dr Bamberry) who considers that Mr Dawson’s use of industry accepted standards, the use of reviewers and peer review of the resources and database by others (also known to the QP), confirms that the standard of resource estimation and reporting is adequate for the purposes of this report.

14.3 Reported Resources

Coal resources for the property were last reported as at August, 2014. The resources are reported in accordance with the JORC Code (2012 Edition). The Competent Person for the August, 2014 Resource Statement for the property was Mr Mark Dawson, a full time employee of Whitehaven Coal and a Member of the Australian Institute of Mining and Metallurgy.

The defined terms used in the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves, 2014 are referenced in NI 43-101. The definition of the terms Mineral Resource and the categories (Measured, Indicated and Inferred) are identical to those defined in the JORC Code (2012 Edition). No material differences exist between the two codes. The Competent Person who prepared the Resource estimate satisfies the requirements of the JORC Code.

The coal resources reported at this time include a total resource for the property, and does not split up the coal resources by the mine or project area. The coal resources quoted cover the whole of the Hoskissons seam and the assumptions described to define the resources (Whitehaven, 2014) are as follows:-

- a maximum raw ash content of 35% (ad) for the WS42 section (the 4.2 m basal working section)
- a minimum mineable seam thickness of 1.8 m
- no maximum ash was applied to limit resources in the upper section of coal that may be amenable to longwall top coal caving

¹¹ http://www.ausimm.com.au/content/docs/membership/AusIMM_Register_of_Members.pdf, accessed 15 Oct 2014

¹² <http://www.aig.org.au/about-aig/membership/member-search/>, accessed 22 Oct 2014

A geological model based on validated drill hole data was constructed in Ventryx Minescape software. The grid models generated by the software permit estimation of the volume of coal within the tenements. Relative density was modelled from ply sample data and adjusted to in situ moisture basis, which has been estimated at 12% (ar). The gridded density data was then used to determine mass of coal for individual resources categories.

Resource classification for the site was undertaken by the Competent Person. The resource categories is based on distribution of “point of observation”, which in this instance, comprise drill hole data providing evidence for the continuity of seam structure and quality. Specific distances of categorisation are not described in the 2014 Resources and Reserves Statement, or preceding public releases. Palaris cannot validate whether distances are in line with accepted codes as no resource diagrams are publically available. The Competent Person describes the continuity of coal but does not ascribe distances of extrapolation in publically available documents.

Table 14.1 shows the reported resources as at August, 2014. The grade in terms of ash, calorific value or other relevant properties is not described in public documentation.

Table 14.1 Narrabri coal resources (at 12% in situ moisture) as at end August, 2014¹³

| Titles | Measured (Mt) | Indicated (Mt) | Inferred (Mt) |
|----------------|---------------|----------------|---------------|
| ML1609, EL6243 | 180 | 380 | 180 |

No grade parameters for this resource were published by Whitehaven Coal in their 2014 statement of Coal Resources and Reserves, although this an implicit requirement of the JORC Code (2012 Edition).

No legal, political or environmental risks that are material to the development of the property have been identified.

14.4 Opinion of Stated Resources

Palaris consider that the described processes for sampling, estimation and reporting of the coal resources is adequate but public documentation lacks justification for the classification of resources and no resource diagrams are available. As such it is difficult to qualify the validity of resource classification in this instance.

¹³ The terms Measured, Indicated and Inferred Resources under JORC (2012 Edition) have exactly the same meaning under the CIM Definition Standards for Mineral Resources and Reserves, as at October, 2012.

15 Item 15: Mineral Reserve Estimates

15.1 Compliance Exemption

APG are currently investigating purchasing a royalty stream on revenue generated from both the existing Narrabri North Mine and the planned Narrabri South Mine which is currently at Project status. APG has not been involved in estimation of Reserves at Narrabri Mine.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- the key assumptions, parameters, and methods used for a reasonably informed reader to understand how the Competent Person converted the Mineral Resources to Ore Reserves
- the extent to which the Ore Reserve estimates could be materially affected by mining, metallurgical, infrastructure, permitting, and other relevant factors

Whitehaven Coal have recently reported estimate Reserves for Narrabri North Mine/Narrabri South Project in accordance with The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition).

Whitehaven Coal's reporting is governed by ASX listing rules, under which there is no requirement for disclosure of any technical reports which support Reserves estimates. As such reports have not been supplied by Whitehaven Coal, Palaris are unable to directly comment upon the key parameters, assumptions, and methodology used in the conversion of estimated Mineral Resources to Mineral Reserves as set out in NI 43-101.

15.2 Reserves Reporting Code

15.2.1 The JORC Code

As noted in section 14.2.1 earlier, the JORC Code is an "acceptable foreign code" as per Part 1 of National Instrument 43-101.

Whitehaven Coal have reported¹⁴ a summary of important assessment and reporting criteria for the Narrabri North Mine/Narrabri South Project in accordance with the "Table 1 checklist" of The JORC Code, 2012 Edition. The estimated Reserves are based on the guiding principles, terms and definitions set out in The JORC Code, 2012.

¹⁴ <http://www.whitehavencoal.com.au/investors/docs/narrabri-underground26163159.pdf>, accessed 14 Oct 2014

15.2.2 Competent Persons

The “Table 1 checklist” (Section 4 Estimation and Reporting of Coal Reserves) states that the Mineral Resource estimate used as the basis for the Coal Reserves Statement was “Coal Resource Report for the Narrabri Coal Project, ML1609; EL6243, NSW, Australia”, prepared by Whitehaven Coal Limited, July 2014. The Competent Person for the Resource estimates was Mr Mark Dawson, B.Sc. who is a Member of the Australasian Institute of Mining and Metallurgy and was the Geology Manager employed by Whitehaven Coal Limited. It was stated that the Resources Statement was compiled in accordance with The JORC Code 2012 Edition. The Coal Resources were reported inclusive of those Coal Resources modified to produce the Coal Reserves.

The “Table 1 checklist” does not state the Competent Person who estimated the Reserves, but in the ASX Announcement releasing the 2014 Coal Resources and Coal Reserves¹⁵, the Competent Person for the Reserve estimate is named as Mr Graeme Rigg, a full time employee of RungePincockMinarco Ltd. Further details of Mr Rigg were presented in a Prospectus issued by Whitehaven Coal in 2007¹⁶ - his qualifications were reported as including:

- Bachelor of Engineering (Mining-Hons)
- Third Class Certificate of Competency, Coal Mines Qualifications Board, 1984
- Second Class Certificate of Competency, Coal Mines Qualifications Board, 1984

The prospectus further details Mr Rigg’s experience as including:

- over 17 years’ experience (as of 2007) associated with the coal mining industry
- considerable experience in underground mine design
- extensive experience in bord and pillar and longwall mining operations
- carried out several mine planning studies and other technical reviews
- experience includes Reserves assessment
- worked on projects in Australia, USA, Canada, and other countries

He is reported¹⁷ as having been employed by RungePincockMinarco from 1998 to the present.

A search of the Australasian Institute of Mining and Metallurgy’s register of members¹⁸ indicates that as of 1 October 2014, Mr Rigg was a Member with Chartered Professional accreditation. Mr Rigg appears to satisfy the requirements of a Qualified Person as defined by NI43-101.

¹⁵ <http://www.whitehavencoal.com.au/investors/docs/august-2014-coal-resources-and-reserves-update.pdf>, 27 August 2014, accessed 14 Oct 2014

¹⁶ http://whitehavencoal.com.au/investors/documents/Whitehaven_Coal_Limited_Prospectus_May2007.pdf, accessed 14 Oct 2014

¹⁷ www.linkedin.com, profile accessed 14 Oct 2014.

¹⁸ http://www.ausimm.com.au/content/docs/membership/AusIMM_Register_of_Members.pdf, accessed 15 Oct 2014

15.3 Reported Reserves

Whitehaven reports its Reserves and Resources in accordance with the guiding principles, terms and definitions given in The JORC Code 2012 Edition.

The defined terms used in the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves, 2014 are referenced in NI 43-101. The CIM definitions of Mineral Reserves, and the sub categories Proven and Probable Mineral Reserves, align with the JORC Code definitions for Ore Reserves and the subcategories Proven and Probable Ore Reserves. No material differences exist between the two codes. The Competent Person who prepared the Reserves estimate satisfies the requirements of the JORC Code.

Resources are reported inclusive of Reserves. Reserves for Narrabri are shown in the table below.

The latest JORC Reserve statement¹⁹ for Narrabri was announced to the ASX on 27 August 2014, and is summarised in Table 15.1 and Table 15.2. Supporting mine plans are shown in Figure 15.1 and Figure 15.2. Figure 15.1 shows the area mined out to June 2014 shaded in magenta.

Table 15.1 Narrabri 2014 JORC recoverable coal reserves

| Narrabri North (ML1609) | | Mt |
|-------------------------|--|-----|
| Proved | | 57 |
| Probable | | 83 |
| Total | | 140 |
| Narrabri South (EL6243) | | Mt |
| Proved | | - |
| Probable | | 94 |
| Total | | 94 |

Source: Whitehaven Coal Resources and Reserves statement, August 2014

¹⁹ Coal Resources and Coal Reserves, Whitehaven Coal, August 2014
<http://www.whitehavencoal.com.au/investors/docs/august-2014-coal-resources-and-reserves-update.pdf>, accessed 14 Oct 2014

Table 15.2 Narrabri 2014 JORC marketable coal reserves

| Narrabri North (ML1609) | | Mt |
|-------------------------|--|-----|
| Proved | | 54 |
| Probable | | 79 |
| Total | | 133 |
| Narrabri South (EL6243) | | Mt |
| Proved | | - |
| Probable | | 75 |
| Total | | 75 |

Source: Whitehaven Coal Resources and Reserves statement, August 2014

A footnote in the Reserves statement states that Whitehaven owns a 70% share in the Narrabri Joint Venture, however the statement does not explicitly state if the reserves are in 100% or 70% terms.

A total of 140 Mt proved plus probable reserves is stated for Narrabri North. A quick estimation of the potential tonnage contained within the mine plan shown in Figure 15.1 can be made:

(2 km x 8 km + 2 km x 6 km) footprint x 4.2 m extraction height x 1.45 t/m³ density x 70% overall recovery = 120 Mt

This is in approximate agreement with the total reserve of 140 Mt, and suggests that the reserves are stated in 100% terms.

In the announcement, it is noted that the named Competent Persons consent to the inclusion of material in the form and context in which it appears.

While the ASX Announcement is dated 27 August 2014, the date in the Reserves statement table header is not stated more precisely than “August 2014”. A report date of “Jun-14” is shown in the table, but it is unclear whether this is the date of preparation of a report, or the date at which the reserves have been estimated (possibly supported by the magenta shading in Figure 15.1).

The Reserves summarised above are the most up to date value currently available, however it should be noted that they must be depleted for any production since the date of the Reserves being estimated to today’s date.

No average product yield is stated in the Reserves statement. The average yield from the Recoverable Coal Reserves to realise the Marketable Coal Reserves is 95.0% for Narrabri North and 79.8% for Narrabri South. “Table 1” does not discuss if a plant recovery performance factor has been applied to laboratory-scale exploration data in order to reflect a plant-scale practical yield.

The following information is extracted from “Table 1”:

- no coal quality cut-off parameters were applied when converting Resources to Reserves, however 35% ash was used as a cut-off for the 4.2 m working section in the Resource statement
- approximately 60% of ROM coal currently bypasses the CHPP
- ROM moisture is 12%
- two marketable products are prepared – a 7-8% ash PCI product, and a 12% ash thermal product
- an 11% moisture is assumed for the PCI product, and the thermal product moisture will vary, depending upon the proportion of 13% moisture middlings that is added back to the bypass split

Whitehaven describe the Narrabri coal product type as being about 80% high calorific value, low ash thermal coal, and 20% PCI coal.²⁰ While not explicitly stated, this is assumed to be representative of Narrabri North. The expected production from Narrabri North during 2014 was expected to be 0.85 Mt of PCI product, out of a total forecast output of 5.5 Mt (84.5% thermal, 15.5% PCI)²¹.

Mining losses and dilution are discussed in Item 16: Mining Methods.

Mining operations in New South Wales are required to submit Mining Operations Plans to the state government, outlining projected operations, potential environmental impact and proposed controls. The MOP submitted in March 2010 and amended in June 2010²² refers to Stage 1 coal processing consisting only of size reduction during Stage 1 (2.5 Mtpa continuous miner operation), with a Coal Handling and Processing Plant (CHPP) to be installed for Stage 2 (8 Mtpa longwall mining operation). The CHPP is described²³ as being expected to remove up to 5% of the total Run of Mine (ROM) feed as reject. This is consistent with the average yield of 95% calculated for Narrabri North earlier.

The raw coal ash of the resource increases²⁴ towards the south, and it is reasonable to assume that additional coal processing will be required to prepare a marketable product, resulting in lower yields for Narrabri South than for Narrabri North. This is confirmed in Section 4 of “Table 1” – while 60% of Narrabri North ROM coal currently bypasses the washery, 100% of Narrabri South ROM coal will be washed to produce a thermal product of 8-15% ash which would be blended as required with other Whitehaven products.

A history of Reserves declared for Narrabri by Whitehaven has been prepared by accessing Whitehaven reserve statements and annual reports²⁵, and is shown in Figure 15.3 and Figure 15.4.

²⁰ Whitehaven Coal Limited 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 6 Nov 2014

²¹ Narrabri North Mine, http://www.whitehavencoal.com.au/operations/narrabri_north_mine.cfm, accessed 6 Nov 2014

²² Mining Operations Plan for the Construction and Continuous Miner Development of Stage 1 of the Narrabri Coal Mine for the Period Ending 31 December 2011, Narrabri Coal Operations Pty Ltd, June 2010, http://whitehavencoal.com.au/operations/documents/MOPamendment_2010_text.pdf, accessed 14 Oct 2014

²³ <http://www.whitehavencoal.com.au/environment/docs/section-2-description-of-the-longwall-project.pdf>, accessed 14 Oct 2014

²⁴ Coal Resource Audit of the Gunnedah Basin, New South Wales Department of Mineral Resources, 1996

²⁵ http://www.whitehavencoal.com.au/investors/asx_announcements.cfm, accessed 14 Oct 2014

The reserves base increased significantly in 2009, when a maiden reserve was declared for Narrabri South. No reason is given for the increase in reserves at North Narrabri in 2010. The minor increase in 2013 at North Narrabri was attributed to a Resources update. At that time it would also appear that while the reserves base increased at Narrabri South by nine percent, the reserve confidence decreased – the original Proven Reserves were written down to Probable status.

It is possible that this is due to a lack of sufficient washability data, as mentioned in Section 4 of “Table 1” (“all Reserves from Measured and Indicated Resources have been classified as Probable Reserves. Approximately 25 Mt of Probable Reserves have been derived from Measured Resources.” This comment is presumed to apply to Narrabri South.

The Narrabri North Recoverable Reserves have been depleted by 6.4 Mt from 2013 to 2014, however ROM production of 5.7 Mt was reported²⁶. It is not possible to determine from publicly available information whether the difference of 0.7 Mt is derived from a difference between annual reporting and reserve declaration dates, or whether a reconciliation of actual and modelled ROM production has been completed and this has resulted in a write-down. Similarly, Marketable Reserves have been depleted by 5.5 Mt, while reported marketable production was 5.3 Mt.

The presence of the Pilliga East State Forest would appear to have an impact upon the ability to improve deposit confidence by drilling, as can be seen from the cored and open hole collar locations shown in Figure 15.1 and Figure 15.2.

A total probable reserve of 94 Mt is stated for Narrabri South. A quick estimation of the potential tonnage contained within the mine plan shown in Figure 15.2 can be made:

4 km x 6 km footprint x 4.2 m extraction height x 1.45 t/m³ density x 70% overall recovery = 102 Mt

This is in approximate agreement with the probable reserve of 94 Mt, and suggests that the entire mine plan footprint as shown in Figure 15.1 has been estimated as a probable reserve.

As noted earlier, Palaris consider that the described processes for sampling, estimation and reporting of the coal resources is adequate but public documentation lacks justification for the classification of resources and no resource diagrams are available. As such it is difficult to qualify the validity of resource classification and subsequent reserve classification in this instance.

15.4 Opinion of Stated Reserves

Palaris consider that the described processes for estimation and reporting of the coal reserves is adequate but public documentation lacks justification for the classification of reserves and no detailed reserve diagrams are available. As such it is difficult to qualify the validity of reserve classification in this instance.

²⁶ <http://www.whitehavencoal.com.au/investors/docs/fy2014-annual-financial-report.pdf>, accessed 14 Oct 2014

Beyond the generic technical risks affecting any longwall mining operation (e.g. presence of unsuspected geological structures), Palaris are unaware of any unique technical risks that exist at Narrabri apart from a reference to the risk of periodic weighting²⁷ in Section 4 of “Table 1”. The Competent Person notes:

For Narrabri North -

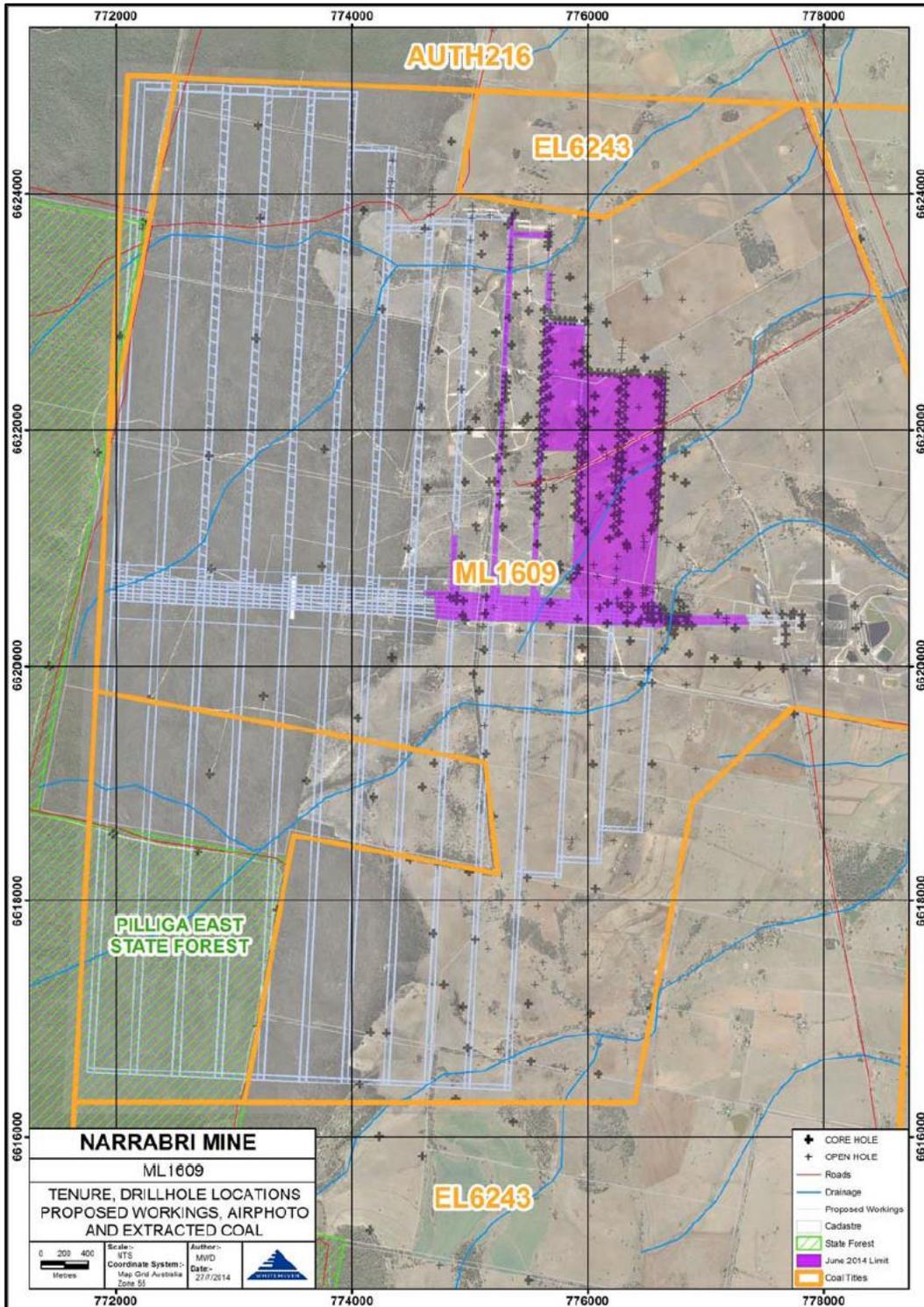
- Pre-conditioning of conglomerate has been successfully employed to reduce the risk of significant periodic weighting impacting longwall operations
- An Environmental Impact Statement has been prepared and all environmental approvals have been obtained
- All key stakeholder agreements are in place providing social licence to operate
- All material legal agreements, marketing agreements and government agreements are in place to allow Narrabri North to successfully operate. As mining proceeds it is reasonably expected any modifications to existing agreements or additional agreements that may be required can be obtained as required

For Narrabri South -

- No Environmental Impact Statement has been prepared
- No key stakeholder agreements are in place providing social licence to operate
- No legal agreements, marketing agreements or government agreements are in place to allow the Narrabri South Project to commence mining operations. The existence of Narrabri North immediately adjacent to Narrabri South should simplify the approval process somewhat

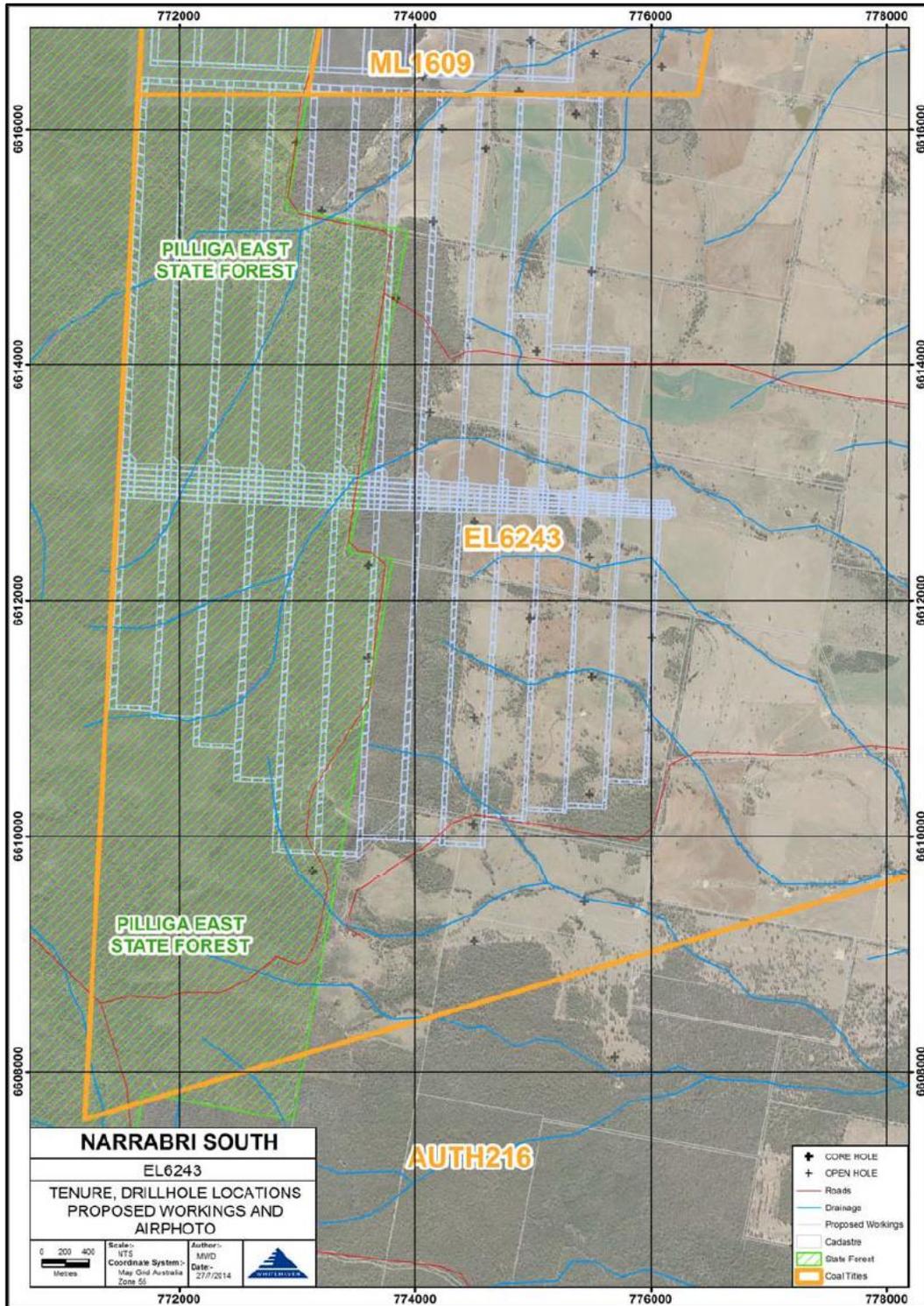
The key non-technical risks appear to have been recognised.

²⁷ Periodic weighting of longwall supports can occur during retreat of the face under certain geological conditions. Strong strata in the immediate and main roof can cantilever over the waste, weighting the supports periodically, and potentially interrupting production.



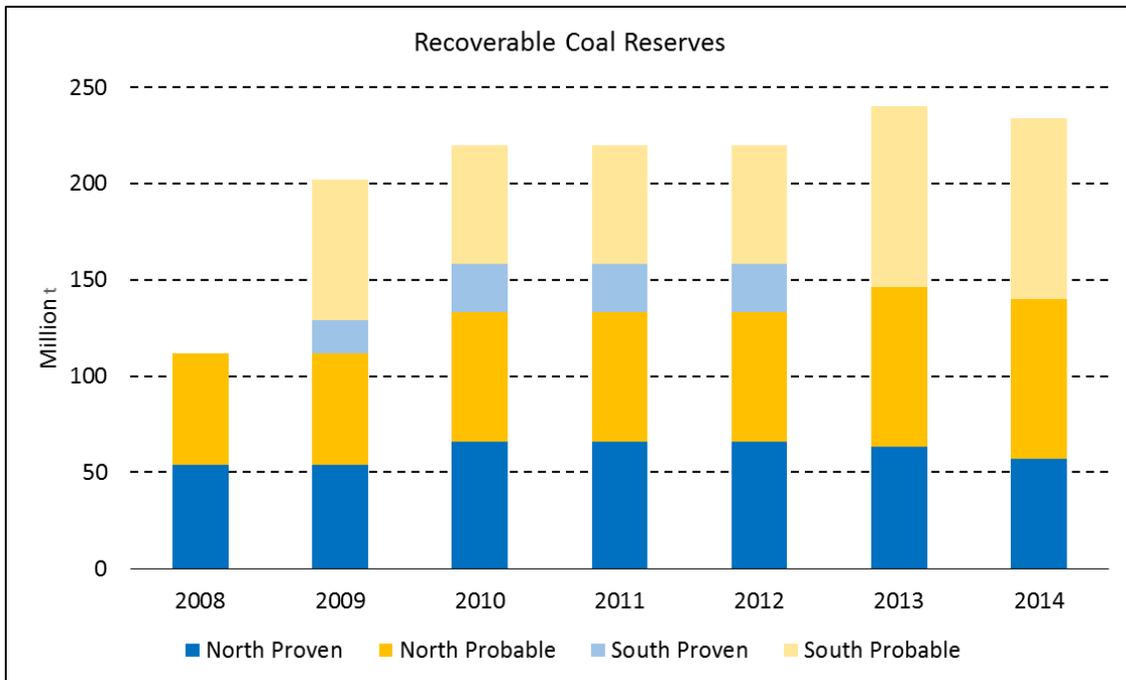
Source: Narrabri Table 1, JORC Reserves, August 2014. "June 2014 Limit" is area mined to that date.

Figure 15.1 Narrabri North mine plan



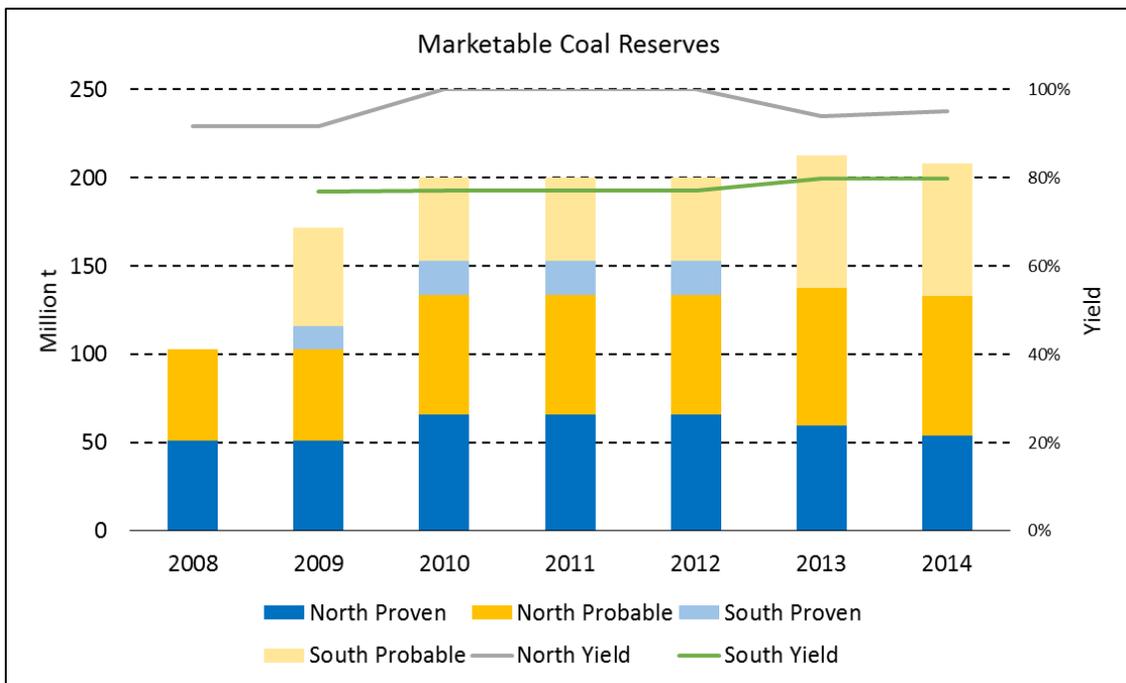
Source: Narrabri Table 1, JORC Reserves, August 2014

Figure 15.2 Narrabri South mine plan



Source: http://www.whitehavencoal.com.au/investors/asx_announcements.cfm

Figure 15.3 Recoverable coal reserves history



Source: http://www.whitehavencoal.com.au/investors/asx_announcements.cfm

Figure 15.4 Marketable coal reserves history

16 Item 16: Mining Methods

16.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- geotechnical, hydrological, and other parameters relevant to development of mine plans

Whitehaven Coal’s reporting is governed by ASX listing rules, under which there is no requirement for disclosure of any technical reports which support Reserves estimates. As such reports have not been supplied by Whitehaven Coal, Palaris are unable to directly comment upon the following key parameters, assumptions, and methodology used in the conversion of estimated Mineral Resources to Mineral Reserves as set out in NI 43-101:

- geotechnical, hydrological, and other parameters relevant to mine or pit designs and plans
- production rates, expected mine life, mining unit dimensions, and mining dilution factors used
- requirements for stripping, underground development, and backfilling
- required mining fleet and machinery

16.2 Mining Method

Longwall mining is the predominant underground coal mining technique in use in Australia. It has significant safety, productivity and cost advantages over other coal mining methods.

Both Narrabri North and Narrabri South Reserves assume the use of retreat longwall mining. In retreat longwall mining, two parallel sets of roadways (gateroads) are driven from main headings to block out an initial longwall panels. Panel widths can range from 100 to 440 m, and lengths can reach 4 to 5 km. Once the gateroads reach the extent of the longwall panel, a connecting roadway is driven, then the longwall face equipment is installed in this. As the longwall face retreats back to the main headings, the roof of the mined area behind the longwall collapses (goaf). Subsequent longwall blocks are formed up by driving more gateroads. A schematic retreating longwall mine plan is shown in Figure 16.1, and an artist’s impression of the Narrabri operation is shown in Figure 16.2.

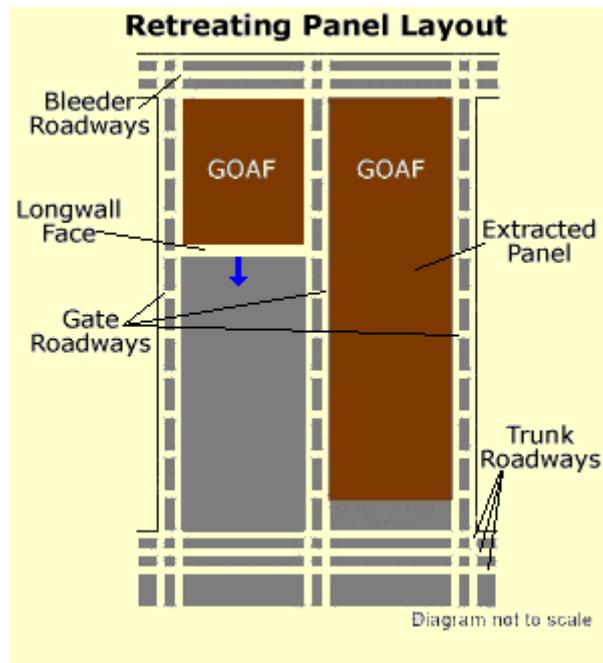
Four main factors determine the potential length of longwall panels:

- geological constraints – e.g. seam thickness, faults, coal quality

- ventilation constraints – adequate quantity of air is required to manage seam gas and strata temperatures, at a safe panel pressure
- conveyor constraints – sufficient power must be provided to attain the required coal clearance rates, and the belting must be capable of operating at required tensions
- face equipment service life – key equipment must be designed with a service life so as to avoid mid-panel change-outs of key equipment

The potential width of longwall panels is governed by:

- geological constraints – e.g. seam thickness, cross grade, depth of cover
- face equipment constraints – the face conveyor must have sufficient capacity to cater for expected coal/stone loadings and cross grades
- subsidence constraints – the potential impact of surface subsidence must be taken into account. Widths are reduced in areas with stringent surface subsidence constraints



Source: <http://eis.uow.edu.au/longwall/html/retreat.html>

Figure 16.1 Schematic retreat longwall mine layout

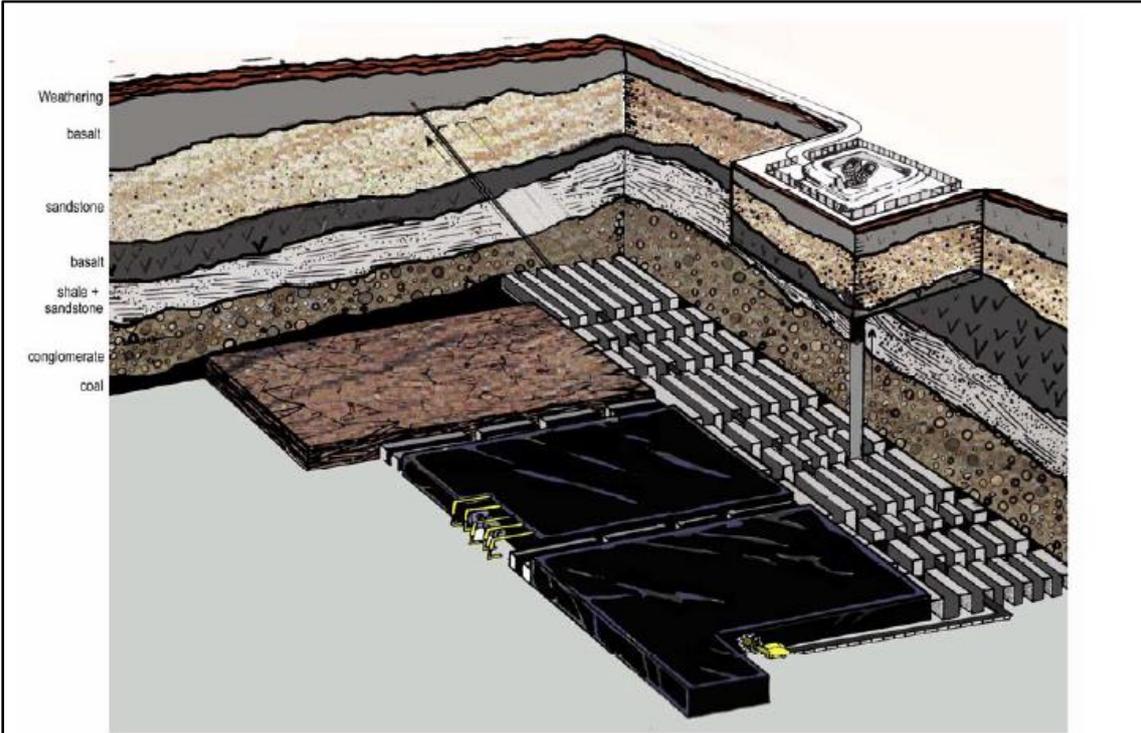


Plate 2.1
Artist's Impression of Longwall Mining Operation



Plate 2.2
Thick Seam Longwall Coal Mining Operation

Source: Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Project

Figure 16.2 Thick seam longwall mining

16.3 Narrabri Mine Design Parameters

16.3.1 Geotechnical Parameters

No information was found in the public domain with regard to main headings design parameters.

Significant subsidence modelling has been conducted in order to model the likely environmental impact of longwall mining at Narrabri²⁸, and gateroad pillar dimensions used in the subsidence modelling is presented in Table 16.1.

Table 16.1 Narrabri gateroad pillar parameters

| Cover Depth (m) | Virgin Stress (MPa) | Pillar Width (m) | Applied Pillar Stress (MPa) | Pillar Factor of Safety Under Final Loading |
|-----------------|---------------------|------------------|-----------------------------|---|
| 160 | 4.0 | 24.6 | 15.7 | 1.66 |
| 180 | 4.5 | 24.6 | 19.2 | 1.36 |
| 200 | 5.0 | 24.6 | 23.0 | 1.14 |
| 220 | 5.5 | 24.6 | 27.1 | 0.97 |
| 240 | 6.0 | 29.6 | 27.3 | 1.21 |
| 260 | 6.5 | 29.6 | 31.3 | 1.05 |
| 280 | 7.0 | 29.6 | 35.7 | 0.93 |
| 300 | 7.5 | 34.6 | 35.6 | 1.17 |
| 320 | 8.0 | 34.6 | 39.9 | 1.04 |
| 340 | 8.5 | 37.6 | 41.5 | 1.15 |
| 360 | 9.0 | 37.6 | 45.9 | 1.04 |

Source: Narrabri Mine Stage 2 Subsidence Predictions and Impact Assessment, November 2009

The gateroad pillar dimensions appear appropriate.

16.3.2 Hydrological Parameters

Groundwater and surface modelling has also been completed²⁹. This modelling predicted peak groundwater inflows between 3.2 Ml/day and 5.2 Ml/day. Mine water management systems will have to be capable of controlling this inflow. As the water is expected to be saline (Total Dissolved Solids of up to 8,000 mg/l), a water conditioning plant will be required³⁰. Water will be used for coal processing, dust suppression and equipment cooling. Storage facilities will be constructed on site for concentrated brine, while excess treated water will be discharged offsite.

²⁸ Stage 2 Mine Subsidence Predictions and Impact Assessment, Ditton Geotechnical Services, November 2009. <http://www.whitehavencoal.com.au/environment/docs/part-1-subsidence-assessment-a.pdf>, accessed 15 Oct 2014

²⁹ Hydrogeological Assessment, Aquaterra Consulting, November 2009. <http://www.whitehavencoal.com.au/environment/docs/part-2-groundwater-assessment-a.pdf>, accessed 15 Oct 2014

³⁰ Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Project, R.W. Narrabri Coal Operations Pty Ltd, November 2009, <http://www.whitehavencoal.com.au/environment/docs/section-2-description-of-the-longwall-project.pdf>, accessed 15 Oct 2014

16.4 Mining Unit Dimensions

Mine plans³¹ for the Narrabri operation were shown earlier in Figure 15.2 and Figure 15.1. In both mine plans, access to pit bottom is provided by drifts from the surface. From pit bottom, main headings are driven to the west. Longwall panels are developed to the north and south of the main headings by driving two-entry gateroads.

Narrabri North's original longwall panel width is 305 m³² (295 m actual face plus development roadways³³). Longwall panel lengths reach to approximately 4 km. While recent studies into widening the face are being pursued³⁴, the current reserves mine plans appear to still be based on the 305 m face width. Standard development roadways are 3.5 m in height and 5.4 m wide.

The longwall and development dimensions are typical of other Australian longwall operations.

The longwall face equipment has been designed with a 4.2 m mining height,³⁵ and will only extract the lower section of the Hoskissons Seam which ranges from 4.6 to 10 m in thickness.

Whitehaven Coal announced recently announced³⁶ that a decision has been made to pursue the feasibility of extending the longwall face to 400 m in lieu of introducing longwall top coal caving (LTCC). Whitehaven claim that this is the superior optimization path for Narrabri, stating that "the key attributes of a wider longwall face compared to top coal caving are lower operating risk, higher incremental production and reduced underground development, all of which can be achieved for a similar capital cost".

If technically viable, LTCC could significantly increase the Narrabri Reserves base. While the Hoskissons Seam thickness appears suited to LTCC, a range of factors affect the technical viability of LTCC³⁷, including:

- coal strength
- cover depth
- joints and cleats
- coal banding
- roof strata
- cutting and caving ratio

³¹ <http://www.whitehavencoal.com.au/investors/docs/narrabri-underground26163159.pdf>, accessed 14 Oct 2014

³² Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Project, R.W. Narrabri Coal Operations Pty Ltd, November 2009, <http://www.whitehavencoal.com.au/environment/docs/section-2-description-of-the-longwall-project.pdf>, accessed 15 Oct 2014

³³ Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Project, R.W. Narrabri Coal Operations Pty Ltd, November 2009, <http://www.whitehavencoal.com.au/environment/docs/section-2-description-of-the-longwall-project.pdf>, accessed 15 Oct 2014

³⁴ <http://www.whitehavencoal.com.au/investors/docs/september-quarterly-report-2014.pdf>, accessed 15 Oct 2014

³⁵ Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Project, R.W. Narrabri Coal Operations Pty Ltd, November 2009, <http://www.whitehavencoal.com.au/environment/docs/section-2-description-of-the-longwall-project.pdf>, accessed 15 Oct 2014

³⁶ September 2014 Quarterly Production Report, Whitehaven Coal, September 2014. <http://www.whitehavencoal.com.au/investors/docs/september-quarterly-report-2014.pdf>, accessed 16 Oct 2014

³⁷ Application of Longwall Top Coal Caving to Australian Operations, Report C11040, ACARP, February 2004

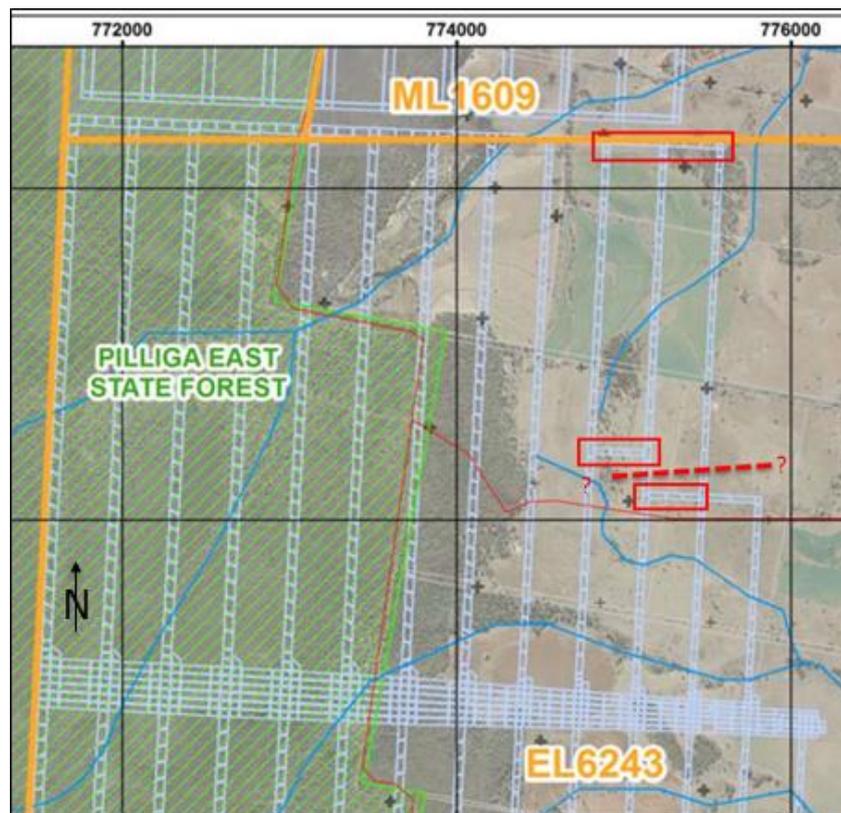
No further material has been found in the public domain to elaborate upon Whitehaven’s choice to pursue a wider face with partial recovery rather than to pursue higher recovery from LTCC, although the high strength of the coal seam and overlying strata together with poorer quality of the upper coal plies is believed to be a major factor in making this decision.

The eastern longwall panels at Narrabri North appear to be constrained by either seam thinning or outcropping. The western panels appear to be constrained by lease boundaries. To the west of the lease boundary, the seam continues but gets deeper and thinner.

The eastern longwall panels at Narrabri South appear to be constrained by either seam thinning or outcropping. The northern panels appear to be constrained by lease boundaries, while the southern panels appear to be constrained by structural constraints.

It can be seen in Figure 16.3 that two of the north eastern Narrabri South longwall panels have two installation roadways, highlighted in red. Take-off positions are not shown on the mine plan. The presence of some structure may be inferred from this plan.

In Whitehaven’s 2007 Prospectus³⁸ for a capital raising, an independent technical expert’s report noted that no igneous intrusions had been detected to that date, and that a structural risk interpretation had identified a number of NW, NE, and more locally N-NNW trending structural zones. The risk of encountering full-seam displacement faults was perceived to be very low, and the thick seam conditions were expected to mitigate the risk of longwall production interruptions.



Source: Narrabri Table 1, JORC Reserves, August 2014

Figure 16.3 Narrabri South mine plan detail

³⁸ Prospectus for the Offer of 1.9 Million Shares in Whitehaven Coal Limited, May 2007, http://www.whitehavencoal.com.au/investors/documents/Whitehaven_Coal_Limited_Prospectus_May2007.pdf , accessed 17 Oct 2014

16.5 Mining Dilution Factors

The mining loss and dilution parameters used when estimating the Narrabri Reserves have been extracted from “Table 1” supporting the 2014 JORC Reserves statement³⁹, and are summarised in Figure 16.2.

Table 16.2 Loss and dilution assumptions

| Assumption | Longwall | Development |
|--|----------------------------------|--------------------------------|
| Roadway dimensions | 3.0 – 4.2 m high 295.6 m wide | 3.2 – 3.5 m high 5.4 m wide |
| Coal loss – Roof | 20 mm | 20 mm |
| Coal Loss – Floor | 40 mm | 30 mm |
| Coal Loss – Additional (washouts/partings) | 2% | - |
| Dilution – Roof | 60 mm | 100 mm |
| Dilution – Floor | 100 mm | 50 mm |

Source: Narrabri Table 1, JORC Reserves, August 2014

According to “Table 1”, the Prestons-Sanders formula has been used in the estimation of in situ moistures, and default dilution qualities used when estimating overall ROM coal quality.

The in situ and ROM moistures have been taken as 12%, as supported by a study completed in 2013.

The loss and dilution factors appear reasonable, and in line with those experienced at other Australian longwall operations.

16.6 Mining Fleet

The principal components of the Narrabri longwall system include⁴⁰:

- a double-ended ranging drum shearer rated at 3,500 tph with full horizon control
- an armoured face conveyor rated at 3,500 tph with provision for single tailgate drive and dual maingate drives
- beam Stage Loader rated at 3,500 tph
- high capacity two leg and four leg chocks shields with shearer initiation, base lift and high set functions

³⁹ Coal Resources and Coal Reserves, Whitehaven Coal, August 2014
<http://www.whitehavencoal.com.au/investors/docs/august-2014-coal-resources-and-reserves-update.pdf>, accessed 14 Oct 2014

⁴⁰ Mining Operations Plan for the Stage 2 Longwall Project of the Narrabri Coal Mine for the Period Ending 31 December 2017, Narrabri Coal Operations Pty Ltd, April 2011,
http://www.whitehavencoal.com.au/operations/documents/MOP_000.pdf, access 14 Oct 2014

The longwall system was supplied by Bucyrus Australia Underground Pty Ltd⁴¹. Bucyrus was acquired by Caterpillar in 2010, and the parts and support for the longwall system are now provided by Caterpillar.

The longwall system capacity appears adequate to support projected annual production.

Additional underground mining equipment used in association with the longwall mining unit is listed in Table 16.3.

Table 16.3 Narrabri mining equipment

| Equipment | No | Use |
|-----------------------|----|--|
| Continuous miner | 4 | Underground roadway development |
| Shuttle car | 8 | Coal transfer from continuous miner to shuttle car |
| Breaker feeder | 4 | Sizing/regulation of coal feed on to conveyors |
| Load haul dump unit | 6 | Material transport |
| Personnel transporter | 7 | Personnel transport |
| Panel conveyor belt | 3 | Coal transfer from feeder breaker to trunk conveyors |

Source: Narrabri MOP, April 2011;

In February 2013, the number of operational development units was reduced to three as sufficient development in advance of the longwall had been established⁴².

The equipment fleet is typical of a modern longwall operation, and appears adequate to support projected annual production.

16.7 Production Capacity

16.7.1 Whitehaven Forecasts

An indicative production schedule was presented in the Narrabri Coal Mine Environmental Assessment in 2009,⁴³ showing an annual ROM output of approximately 6.5 Mtpa. The Environmental assessment schedule time base “project years” – Palaris have converted the time base to financial years to match actual project commencement date. This is shown in Figure 16.4, and shows a steep ramp-up to the 6.5 Mtpa rate. Some fluctuation in output is most likely due to the number of longwall relocations being affected by longwall panel length.

⁴¹ ASX Announcement, Whitehaven Coal Signs Narrabri Longwall Contract with Bucyrus, 25 September 2009, <http://www.whitehavencoal.com.au/investors/documents/WHCBucyruslongwallcontract.pdf>, accessed 31 Oct 2014

⁴² <http://www.whitehavencoal.com.au/investors/docs/29131353-fy2013-results-presentation.pdf>; accessed 4 Nov 2014

⁴³ Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Project, R.W. Narrabri Coal Operations Pty Ltd, November 2009, <http://www.whitehavencoal.com.au/environment/docs/section-2-description-of-the-longwall-project.pdf>, accessed 15 Oct 2014

The average yield from the Recoverable Coal Reserves to realise the Marketable Coal Reserves is 95.0% for Narrabri North (from Table 15.1 and Table 15.2) – applying this to the 2009 forecast annual ROM output of 6.5 Mtpa results in a marketable output of 6.2 Mtpa, as shown in Figure 16.5.

While this forecast is somewhat dated, a more up to date detailed production schedule was not found in the public domain.

When reporting their FY2014 results, Whitehaven Coal confirmed forecast annual ROM output to be 6.5 Mtpa for FY2015 and beyond⁴⁴. Whitehaven representatives have previously stated that upside potential exists and 7.0 Mtpa is achievable, flagging that as a target for FY2017^{45,46}. Whitehaven has stated that in the longer term, production is planned to reach the permitted 8.0 Mtpa level.⁴⁷

16.7.2 Narrabri Potential

The third longwall panel at Narrabri was near completion in October 2014,⁴⁸ and production from the fourth panel (LW04) commenced on 30th November 2014.⁴⁹ The actual production achieved to date shows a ramp-up profile typical of operational longwall mines, with 5.66 Mt being achieved in FY2014. During Q1 of FY2015, ROM output was 2.08 Mt – annualising this rate (allowing for a 6 week longwall relocation each year) demonstrates potential capacity of 7.4 Mtpa as currently configured.

Whitehaven expect that increasing the longwall face width to 400 m will enable an increase in annual ROM production between 0.7 Mtpa⁵⁰ and 0.8 Mtpa⁵¹

Palaris consider that there is potential upside to increase Narrabri output by 10-15% from the FY2015 forecast of 6.5 Mtpa by increasing the longwall width to 400 m, with associated savings in

⁴⁴ Whitehaven Coal Limited Full Year Results FY2014, <http://www.whitehavencoal.com.au/investors/docs/27090837-fy2014-results-presentation.pdf>, accessed 20 Oct 2014

⁴⁵ Whitehaven Coal Limited Presentation to Hunter Business Chamber Lunch, Nov 2013 <http://www.nswbusinesschamber.com.au/NSWBC/media/Hunter/131115-Hunter-Business-Chamber-Presentation-final.pdf>, accessed 24 Oct 2014

⁴⁶ Whitehaven Coal Limited June 2014 Quarterly Report Investor Briefing, <http://www.whitehavencoal.com.au/investors/docs/whitehaven-coal-june-quarterly-report-2014-audio-195mb-mp3.mp3>, accessed 22 Oct 2014

⁴⁷ Whitehaven Coal Limited, Presentation to 2014 Global Metals, Mining & Steel Conference, May 2014, <http://www.whitehavencoal.com.au/investors/docs/global-metals-mining-and-steel-conference-2014.pdf>, accessed 31 Oct 2014

⁴⁸ Whitehaven Coal Limited 2014 AGM Chairman's Address, <http://www.whitehavencoal.com.au/investors/docs/28073738-chairmans-address-and-managing-directors-presentation.pdf>, accessed 4 Nov 2014

⁴⁹ Whitehaven Coal Limited, December 2014 Quarterly Production Report, Jan 2015, <https://www.whitehavencoal.com.au/investors/docs/december-2014-quarterly-report.pdf>, accessed 14 Jan 2015

⁵⁰ Whitehaven Coal FY14 Annual Results Presentation Recording, <http://www.whitehavencoal.com.au/investors/docs/whitehaven-coal-fy14-annual-results-presentation-audio.mp3>, accessed 6 Nov 2014

⁵¹ Whitehaven Coal Limited, Presentation to 2014 UBS Iron Ore and Coal Conference, Dec 2014,, <http://www.whitehavencoal.com.au/investors/docs/ubs-iron-ore-and-coal-conference-presentation03115151.pdf>, accessed 8 Dec 2014

required roadway development. A hypothetical 10% upside case from the 6.5 Mtpa forecast, delivering 7.15 Mtpa ROM, is shown in Figure 16.4 and Figure 16.5.

16.8 Expected Mine Life

Assuming that a 6.5 Mtpa rate was sustained in to the future, the 2014 Reserves of 140 Mt at Narrabri North would result in a mine life of a further 22 years, as shown in Figure 16.4. The 94 Mt of Reserves at Narrabri South could provide a further 14 years of mine life at this rate. Should an increase of 10% be implemented and 7.15 Mtpa be sustained, the remaining mine life for Narrabri North reduces to 20 years, with Narrabri South providing a further 13 years of mine life.

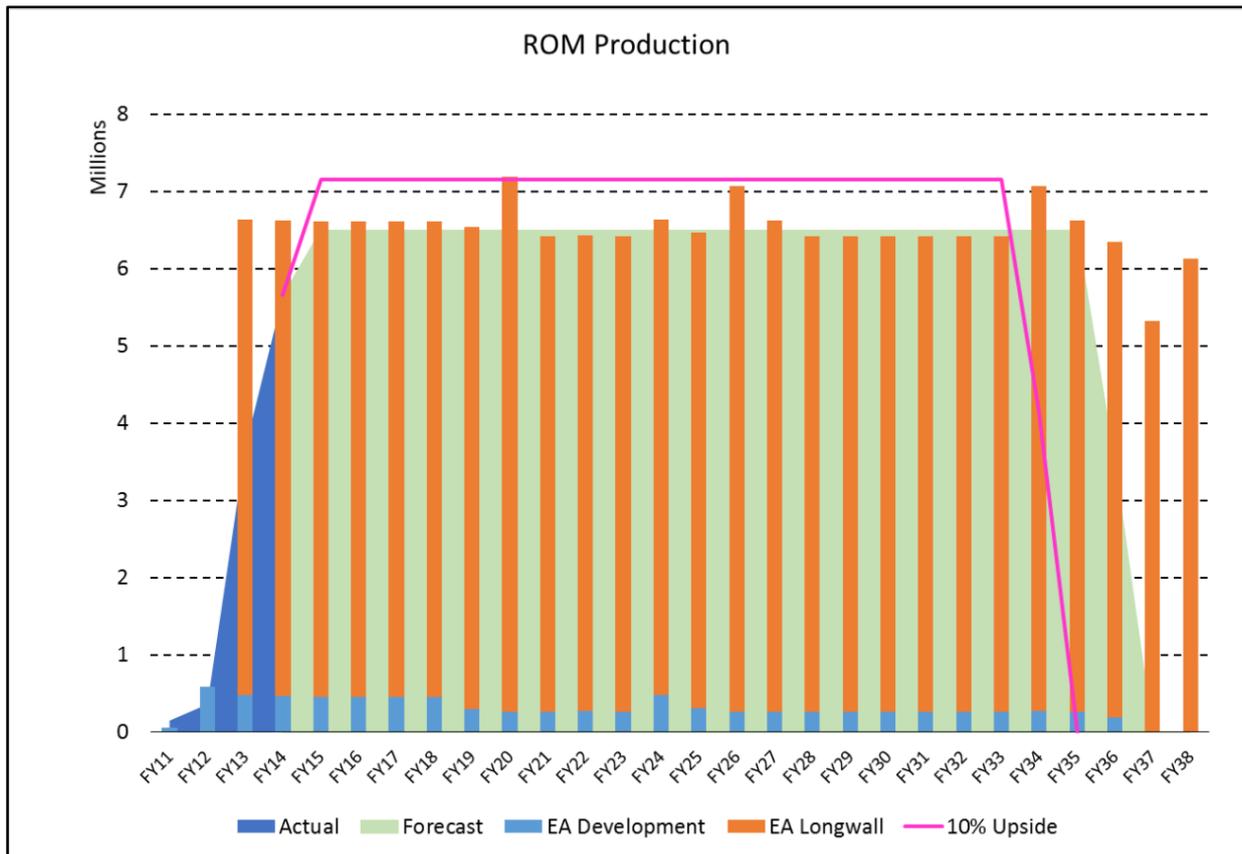


Figure 16.4 Narrabri North mine forecast ROM output (EA 2009)

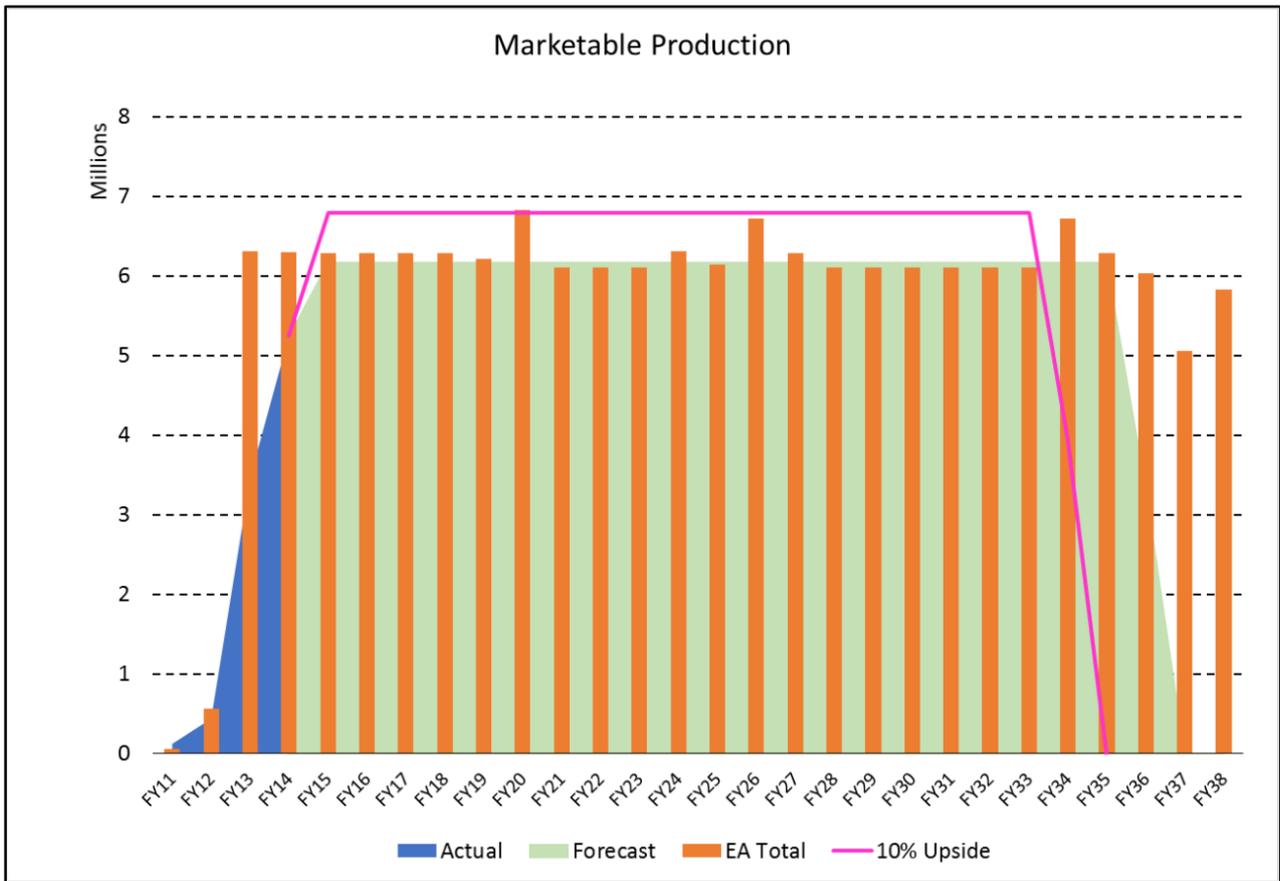


Figure 16.5 Narrabri North mine forecast marketable output (EA 2009)

17 Item 17: Recovery Methods

17.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- test or operating results relating to the recoverability of the coal and amenability to the processing methods
- requirements for energy, water and process materials

17.2 Coal Handling and Preparation Plant

ROM coal is transported from the mining faces via panel conveyors and main trunk conveyors, then to the surface by a drift conveyor.

As can be seen in Figure 17.1, the drift conveyor discharges to a ROM stockpile. The ROM stockpile footprint as of October 2013 was approximately 2.5 ha. The stockpile area is to be increased to 4.2 ha according to the Mining Operations Plan (MOP)⁵², which will result in a claimed stockpile capacity of 400,000 t. This will provide an increased capacity to cater for longwall relocations and CHPP shutdowns.

The drift conveyor capacity is shown as 3,500 tph capacity on a coal flow chart extracted from the MOP, as shown in Figure 17.2. Palaris did not have the opportunity to inspect the conveyor installation as no site visit was possible, but it is not unreasonable to expect that the capacity could be increased – depending upon the details of the installation, that may be achieved through a combination of some or all of conveyor drive power, belt speeds, belt strength, belt widths and troughing angles.

The MOP states that ROM coal is recovered from the ROM stockpiles, and passed through a rotary breaker to reduce sizing. Material less than 20 mm goes directly to the product coal stockpile, while the remainder goes to the Coal Preparation Plant (CPP). (Note that the size split is shown as -16 mm on the MOP flow sheet)

The MOP states that fine and ultra-fine reject from the CPP will be dewatered to produce a filter cake which will be disposed of in combination with the coarse coal reject. Palaris did not have the opportunity to inspect current reject disposal practice as no site visit was possible. The washed

⁵² Mining Operations Plan for the Stage 2 Longwall Project of the Narrabri Coal Mine for the Period Ending 31 December 2017, Narrabri Coal Operations Pty Ltd, April 2011, http://www.whitehavencoal.com.au/operations/documents/MOP_000.pdf, access 14 Oct 2014

coal is transferred to the product coal stockpile area (300,000 t capacity) from where it is loaded into train wagons for transport from site.

The MOP states that the CPP is expected to remove up to 5% of the ROM feed as reject, predominantly floor dilution. This consistent with the 95% conversion of Recoverable Reserves to Marketable Reserves shown in the 2014 Reserves statement.

Reject material is trucked to a reject disposal area, visible in Figure 17.1

Commissioning of the Narrabri Coal Handling and Preparation Plant (CHPP) commenced in August 2011⁵³. It was originally operated by a contractor– Whitehaven took over operation in February 2014⁵⁴, hoping to reduce costs and operate more efficiently.



Source: Google Earth, Imagery Date 10/10/13, n.t.s.

Figure 17.1 Narrabri North surface facilities

⁵³ Whitehaven Coal Annual Financial Results for FY2011, , http://www.afr.com/rw/2009-2014/AFR/2011/08/23/Photos/8da0bfa6-cd20-11e0-a648-3567d5de62fd_whc%20res.pdf, accessed 31 Oct 2014

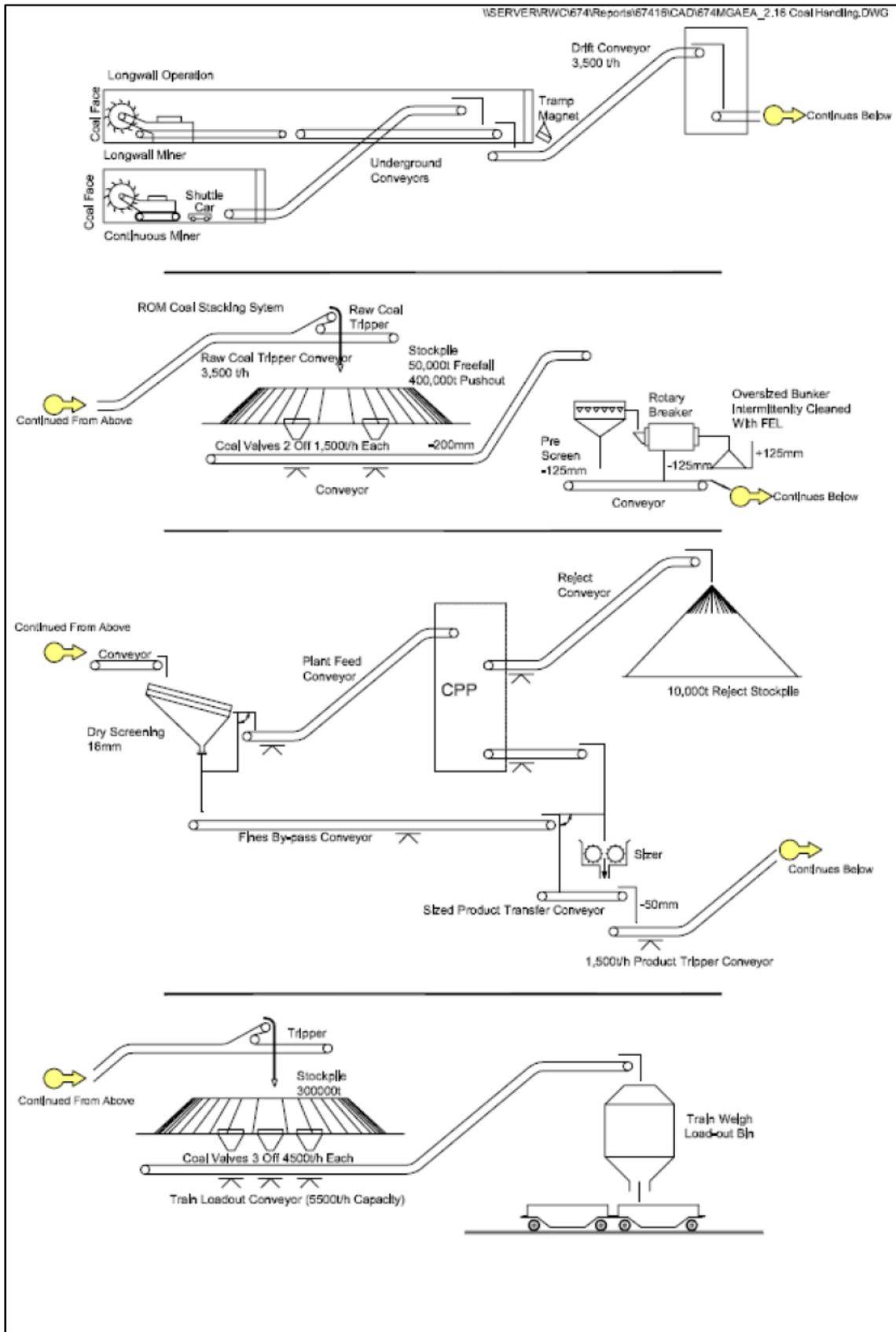
⁵⁴ Whitehaven Coal Limited 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 20 October 2014

17.3 Processing Plant Design

A coal flow chart extracted from the MOP is shown in Figure 17.2. Details of the Coal Preparation Plant are shown in Figure 17.3

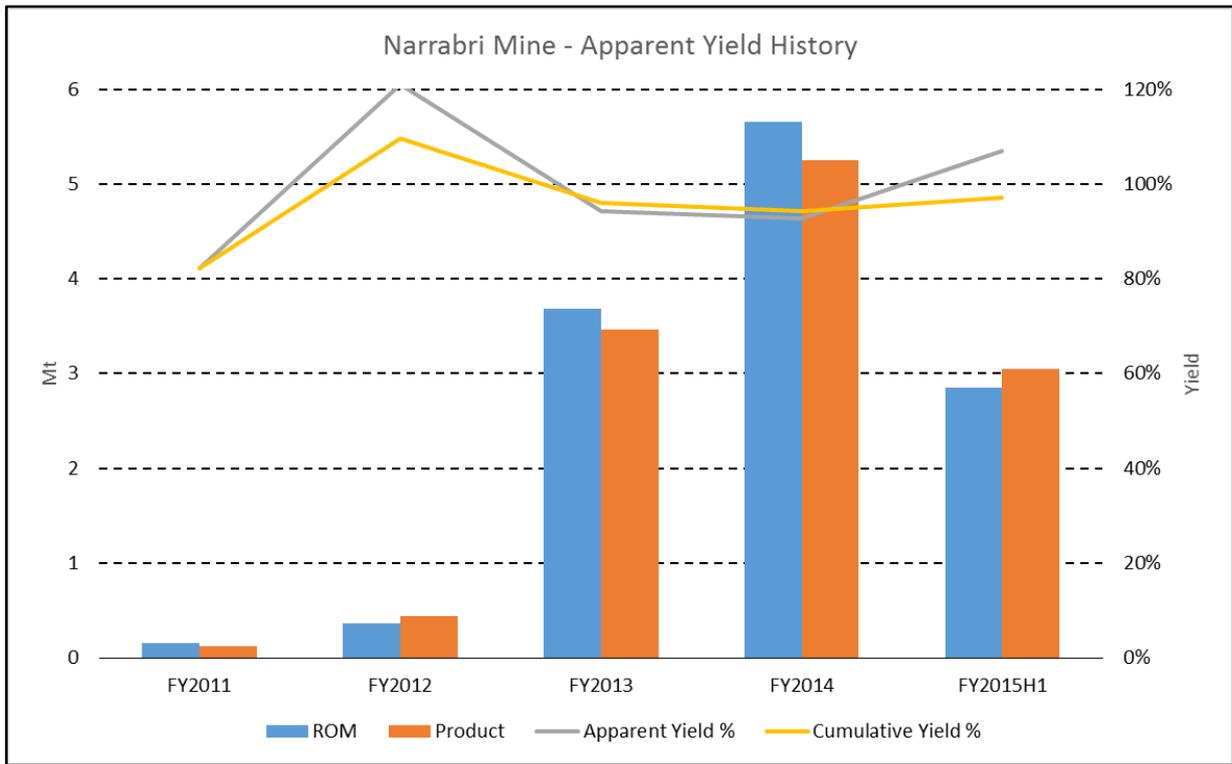
According to “Table 1” of the JORC Reserves statement, the Narrabri North process generates a PCI coal product from a low cut point that will produce a 7 - 8% ash product and a thermal product of around 12% ash is produced from the screening undersize and the Dense Media Cyclone (DMC) middlings. It is envisaged that the Narrabri South product range would be restricted to a thermal product of 8 – 15% ash, which would then be blended as required with other Whitehaven products at the port.

An 11% moisture is assumed for the PCI product, and the thermal product moisture will vary, depending upon the proportion of 13% moisture middlings that is added back to the bypass split.



Source: Narrabri MOP, April 2011

Figure 17.2 Narrabri coal flow sheet



Source: Whitehaven Coal Quarterly Reports

Figure 17.4 Narrabri coal production history

18 Item 18: Project Infrastructure

18.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

The following description of the Narrabri infrastructure is sourced from the Narrabri Coal Mine Environmental Assessment.⁵⁷ This document focuses on the development of Narrabri North. Much of the major infrastructure can be reutilised for Narrabri South. Additional infrastructure will be required to service the increased footprint of Narrabri South.

18.2 Project Infrastructure

The Narrabri project was developed in two major stages, in order to obtain an improved understanding of the geology of the structure and actual mine water inflows before committing fully to a longwall operation.

Stage 1 was the construction and operation of an underground coal mine extracting up to 2.5 Mtpa of ROM coal for export, and construction and operation of mine surface facilities⁵⁸, and was approved in February 2008⁵⁹. Site works on the pit top area for the Narrabri Coal Mine commenced on 7 April 2008⁶⁰, and Stage 1 was completed towards the end of 2010. Stage 2 covered progression from underground mining by continuous miner to longwall mining with an annual production rate of up to 8 Mtpa.

As described in the Stage 2 Mining Operations Plan, the infrastructure was completed in two tranches, supporting Stage 1 and Stage 2. Stage 1 infrastructure consisted of

- site access road
- main office, administration and light vehicle carpark
- workshop and stores buildings

⁵⁷ Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Project, R.W. Narrabri Coal Operations Pty Ltd, November 2009, <http://www.whitehavencoal.com.au/environment/docs/section-2-description-of-the-longwall-project.pdf>, accessed 15 Oct 2014

⁵⁸ Major Project Assessment: Narrabri Coal Project, Department of Planning, October 2007, http://www.planning.nsw.gov.au/asp/pdf/05_0102_narrabri_coal_project_dg_asstreport.pdf, accessed 31 Oct 2014

⁵⁹ Mining Operations Plan for the Stage 2 Longwall Project of the Narrabri Coal Mine for the Period Ending 31 December 2017, Narrabri Coal Operations Pty Ltd, April 2011, http://www.whitehavencoal.com.au/operations/documents/MOP_000.pdf, access 14 Oct 2014

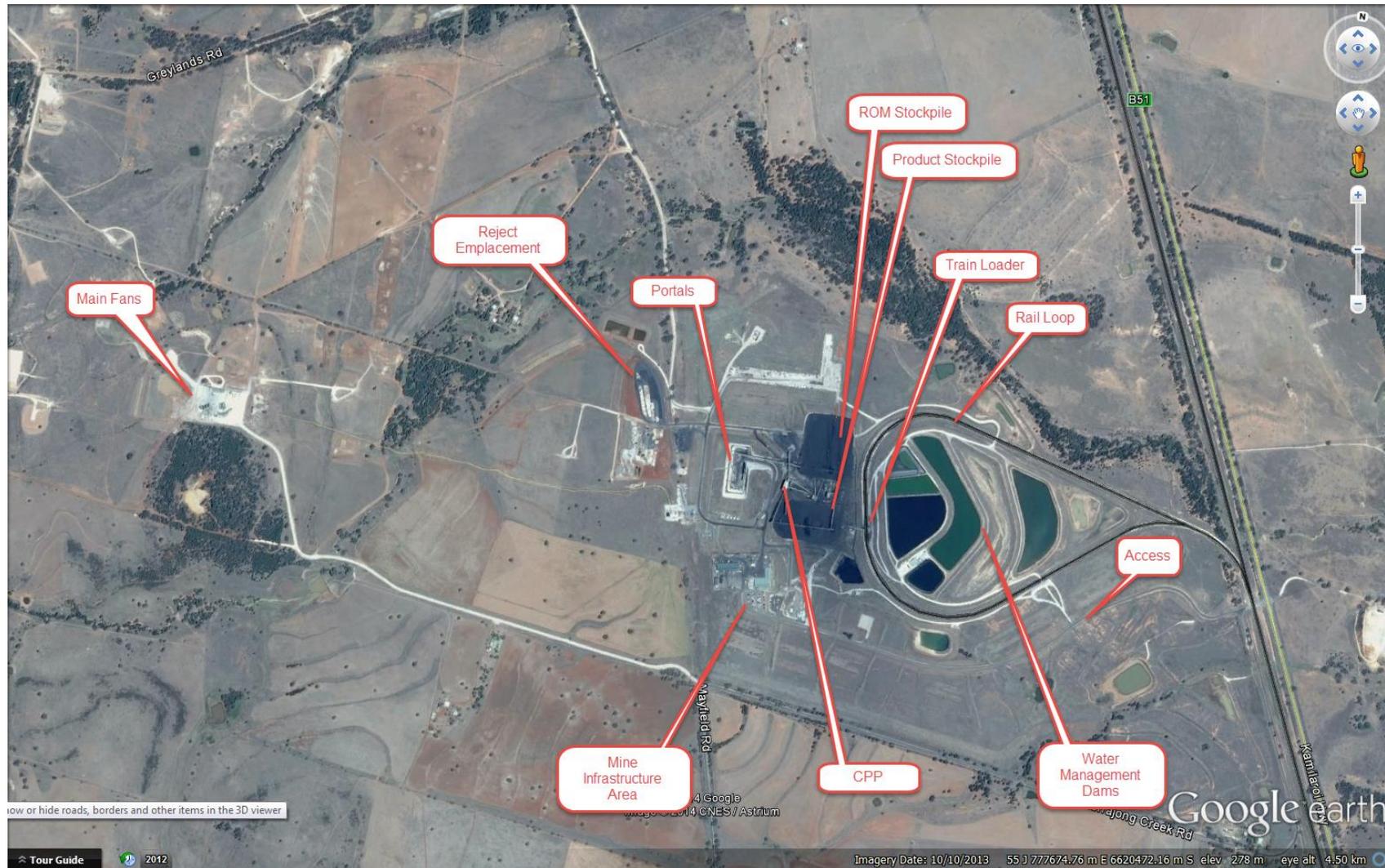
⁶⁰ Preliminary Environmental Assessment for the Narrabri Coal Mine Stage 2 Longwall Proposal, http://www.planning.nsw.gov.au/asp/pdf/08_0144_narrabri_coal_st2_prelimasst_pp1_4.pdf, accessed 6 Nov 2014

- intersection upgrade between the Kamilaroi Highway and Kurrajong Creek Road
- rail crossing upgrade over the North-Western Branch Railway Line
- ventilation fans within the box cut
- electrical sub-station and associated electricity infrastructure
- equipment laydown area
- rail loop
- sewage treatment plant
- box cut and mine portals
- drift construction to pit bottom
- drift and skyline conveyors
- coal crushing station
- Run of Mine (ROM) coal and product coal pad hardstand areas
- train loadout bin and train loader
- water storages and lined evaporation ponds
- amenity bund
- explosives magazine
- CHPP (commenced but not completed)
- West Mains ventilation shaft (commenced but not completed), and
- gas pre-drainage infrastructure

Stage 2 infrastructure consisted of

- construction and use of mine ventilation and gas drainage infrastructure, including completion of the 5.5 metre diameter blind bored ventilation shaft with associated fan installation
- mine dewatering facilities
- Coal Handling and Preparation Plant (CHPP)
- water pipeline from the Namoi River

As can be seen in Figure 18.1, the key infrastructure is in place and operational.



Source: Google Earth, Imagery Date 10/10/13, n.t.s.

Figure 18.1 Narrabri key surface infrastructure

Key site infrastructure requirements are summarised below.

18.2.1 Access Roads and Service Corridors

Approximately 80 km of access road and service corridor will be required throughout the life of the mine.

18.2.2 Power Supply and Distribution

Incoming electrical power is supplied via a 66 kV spur line. This is reduced to 11 kV for use on the mine site. Initial underground power supply will be via the drift. Each future ventilation shaft site will also include provision for boreholes to take power underground.

18.2.3 Mine Infrastructure Area

The Mine Infrastructure Area (MIA) includes:

- mine offices
- car parking
- bath house facilities
- first aid facilities
- fire-fighting facilities
- workshop facilities
- warehouse facilities
- laydown area
- substation area
- gas monitoring facilities
- main ventilation fans
- explosive storage magazines
- fuel storage
- air compressors
- ballast supply facilities
- stone dust storage/distribution facilities
- longwall support fluid storage/distribution facilities
- clean and dirty water management structures

18.2.4 Ventilation Shafts

Ventilation shafts of up to 6 m in diameter will be required to maintain production. The preferred construction technique is blind boring from the surface prior to underground development reaching the shaft bottom area. Construction of the No. 1 ventilation shaft and fans was completed in January 2012⁶¹.

Three main shafts will eventually be required as the workings progress down dip. Smaller shafts (1 - 1.5 m diameter) will be required at intervals of three to four longwall panels.

⁶¹ Narrabri Mine Community Newsletter, Issue 2, February 2013, http://www.whitehavencoal.com.au/operations/documents/NarrabriMineNewsletter2_web.pdf, accessed 31 Oct 2014

18.2.5 Gas Drainage

The Hoskissons Seam gas content is such that gas drainage will be required, both in advance of development and after longwall extraction.

Surface to In-Seam Pre-Drainage

Surface to In-Seam (SIS) pre-drainage requires a number of small diameter SIS boreholes to be drilled into and along the length of the coal seam. These holes will be spaced at 1.5 km intervals along the longwall panels. A pump well will be required for each set of SIS holes to extract gas and water. Each pump site will require water storage facilities.

Goaf Gas Drainage

Vacuum pumps will be used to drain goaf gas from vertical holes drilled at nominal 200 m intervals along the length of the longwall panels.

18.2.6 Reject Emplacement Area

Up to 25 ha will be required for the storage of coarse and fine reject material from the CHPP.

18.2.7 Brine Storage Ponds

Up to 160 ha will be required for the brine storage over the life of Narrabri North. The area proposed for brine storage in the Environmental Assessment was undisturbed as of October 2013.

18.2.8 Raw Water

Two pipeline will be installed, enabling water to be drawn from the nearby Namoi River, and for treated waste water to be discharged from the mine site to the river.

18.2.9 Coal Handling and Processing Plant

As described earlier, the CHPP consists of:

- ROM coal stockpile facilities
- Coal Processing Plant
- Product coal stockpile facilities
- Train loading facilities

18.3 Transport Infrastructure

The first train load of coal was despatched from Narrabri Mine in August 2010.⁶² The train loader is a multi-batch design allowing flexibility to load various wagon sizes in a train, allowing full utilisation of the limited capacity rail line.

⁶² Australian Bulk Handling Review, September/October 2010. Accessed on-line 17 Oct 2014.

18.3.1 Rail Track

Australian Rail Track Corporation (ARTC) lease and operate on the Narrabri-Werris Creek-Newcastle Ports line (Gunnedah Basin line), an element of the Hunter Valley Rail Corridor.

The rail track has been upgraded to allow 72 wagon (5,400 t) trains to be utilised⁶³, and provide an annual capacity of 11-12 Mtpa to be shared between Whitehaven and neighbouring Idemitsu mines. Average train capacities are forecast to reach 7,634 t in 2015⁶⁴. ARTC have plans to further increase Gunnedah Basin rail line capacity to ~16 Mtpa, with planned line upgrades shown in Figure 18.2.

Whitehaven has sufficient contracted rail capacity with ARTC to deliver both current production and also expected future production levels⁶⁵.

| Project Name | Contracted | Prospective |
|---|------------|--------------|
| Scone reconfiguration | Q3 2014 | Q3 2014 |
| Gunnedah Yard Upgrade | Q4 2014 | Q3 2014 |
| Aberdeen loop extension | | Q1 2017 |
| Togar North Loop (previously 311 km loop) | | Q1 2016 |
| 316 km loop (North Scone) | | Not Required |
| Wingen loop | | Q1 2016 |
| Blandford loop | | Q1 2017 |
| Kankool - Ardglen | | Q3 2017 |
| Bells Gate south extension | | Q1 2018 |
| 414 km loop (Werris Creek North) | | Q1 2021 |
| South Gunnedah loop | | Q1 2016 |
| Collygra loop (504 km) | | Not required |

Source: ARTC 2014-2023 Hunter Valley Corridor Capacity Strategy – Consultation Draft

Figure 18.2 Gunnedah Basin line contracted and prospective upgrades

⁶³ Delivering Growth, Whitehaven Coal Presentation to DPI Conference, August 2009, <https://www.whitehavencoal.com.au/investors/documents/WHCPresentationtoNSWMineralandInvestmentConference.pdf>, accessed 17 Oct 2014

⁶⁴ ARTC 2014-2023 Hunter Valley Corridor Capacity Strategy – Consultation Draft, <http://www.artc.com.au/library/2014%20HV%20Strategy%20-%20Consultation%20Draft.pdf>, accessed 4 Nov 2014

⁶⁵ Whitehaven Coal Limited 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 6 Nov 2014

18.3.2 Rail Haulage

Whitehaven has two rail haulage contracts in place extending out to 2026, one with Pacific National, and a second one with Aurizon⁶⁶.

The current operating contract with Pacific National for 9.5 Mtpa was renegotiated and extended to 2026. The second haulage contract with Aurizon is for an amount of up to 16.0 Mtpa commencing with the start-up of Whitehaven's Maules Creek project. Aurizon have already begun hauling coal from existing operations under a short term spot contract which has assisted them in establishing operations in the region ready for the commencement of Maules Creek operations

18.3.3 Port

There are two major coal loading facilities at the Port of Newcastle – Port Waratah Coal Services (PWCS) and Newcastle Coal Infrastructure Group (NCIG). Whitehaven owns an 11% share in NCIG and access to the resulting capacity entitlements⁶⁷.

Whitehaven's capacity at NCIG is 6.0 Mtpa, through Whitehaven's equity share of the coal terminal, and its capacity at the PWCS terminal is 5.3 Mtpa until FY2015⁶⁸.

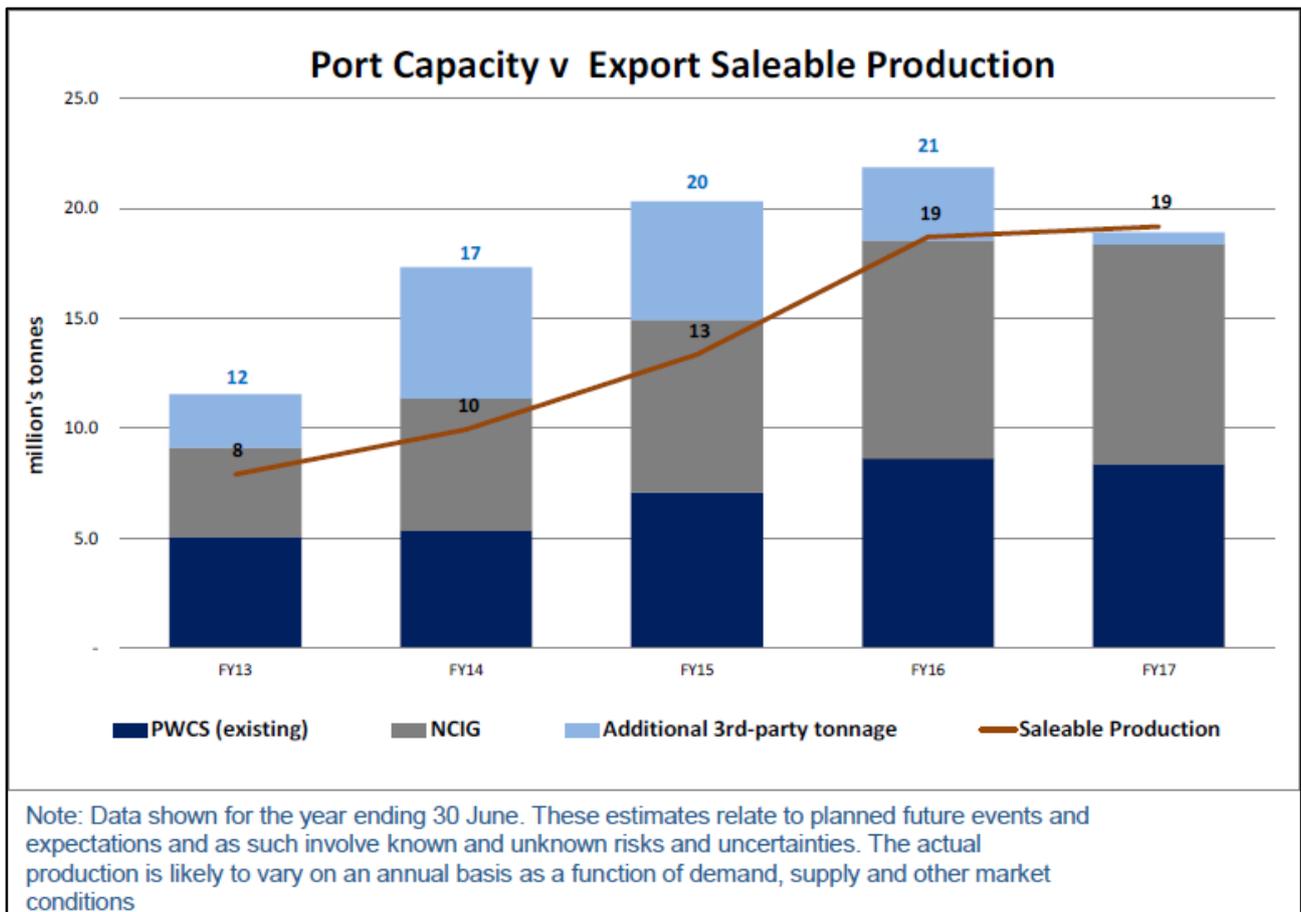
As per Whitehaven Coals forecast (as shown in Figure 18.3), their current port allocation exceeds saleable production forecasts due to delays in gaining approvals for the Maules Creek project. Additional capacity will however be required by FY2017 as access to third-party capacity drops ⁶⁹.

⁶⁶ Whitehaven Coal Limited 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 6 Nov 2014

⁶⁷ Whitehaven Coal ASX Release, 2 September 2011, <http://www.asx.com.au/asxpdf/20110902/pdf/420vfy2x3jm0b0.pdf>, accessed 31 Oct 2014

⁶⁸ Whitehaven Coal Limited 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 6 Nov 2014

⁶⁹ Whitehaven Coal Limited, Full Year Results, FY2014, <http://www.whitehavencoal.com.au/investors/docs/27090837-fy2014-results-presentation.pdf>, accessed 4 Nov 2014



Source: Whitehaven Coal Limited, Fully Year Results FY2014

Figure 18.3 Whitehaven Coal port allocation and demand

19 Item 19: Market Studies and Contracts

19.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

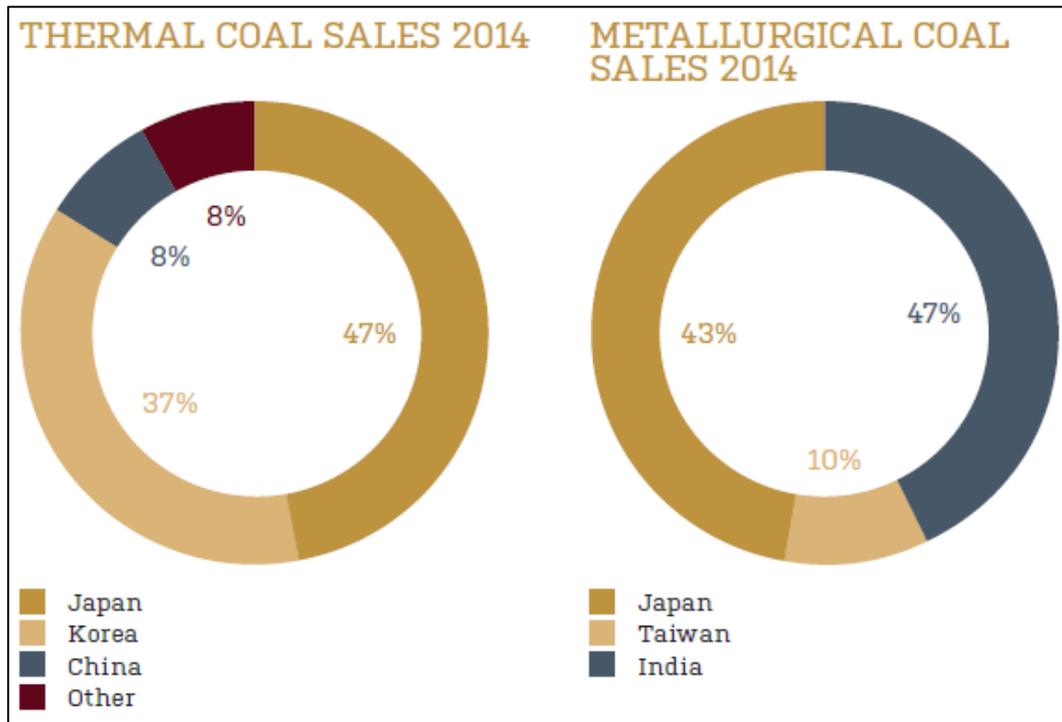
- any contracts that are required for property development, including mining, concentrating, smelting, refining, transportation, handling, sales and hedging, and forward sales contracts or arrangements and their status

19.2 Market Studies

Whitehaven sells coal to power generators and steel makers in the Asian region. The destination of Whitehaven coal in FY2014 is illustrated in Figure 19.1.⁷⁰ Whitehaven managed sales of 10.8 Mt in FY2014, however, no public information is available to determine the specific customers for the coal from Narrabri Mine, with FY2014 sales of 5.1 Mt accounting for approximately 47% of total Whitehaven sales.⁷¹

⁷⁰ <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>

⁷¹ <http://www.whitehavencoal.com.au/investors/docs/15093956-june-quarterly-report-2014.pdf>



Source: <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>

Figure 19.1 Whitehaven Coal customer locations

Detailed quality information for the Narrabri reserves does not appear to be reported in the public domain, however representative quality has been sourced from the 2013 NSW Coal Industry Profile⁷². Given the expected high quality of Narrabri thermal coal (Table 19.1), sales from the mine are not expected to be impacted by the recently announced restrictions on the import of coal into China. China’s National Development and Reform Commission (“NDRC”) released new guidelines for coal quality on September 15 extending existing coal quality requirements of maximum 16% ash and 1% sulphur to the Pearl and Yangtze River Deltas (previous version released in December 2013 applied only to coal sold in Beijing, Tianjin and Hebei). Narrabri’s thermal product meets both the ash and sulphur restrictions, and therefore sales from the mine will not be impacted when the guidelines are planned to come into effect from 1 January 2015.

Table 19.1 Narrabri coal quality

| Narrabri Coal Quality | Thermal |
|---|---------|
| Moisture % (ad) | 5.0 |
| Moisture % (ar) | 11.0 |
| Ash % (ad) | 12.0 |
| Volatile matter % (ad) | 28.5 |
| Sulphur % (ad) | 0.5 |
| Specific energy (kcal / kg) (gross air dried) | 6850 |

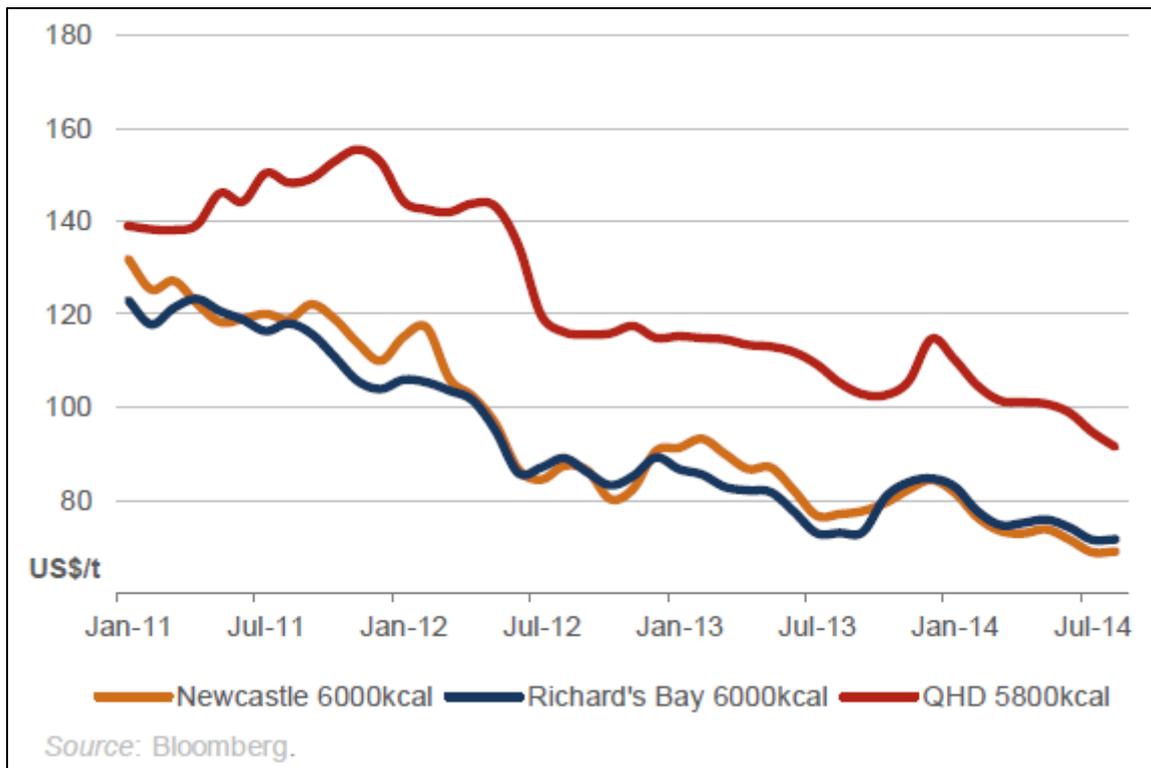
Source: 2013 NSW coal industry profile

⁷² New South Wales Coal Industry Profile, NSW Trade & Investment, 2013

From October 15, China will levy import tariffs on coal set at 3% for anthracite and coking coal (such as PCI), 6% for non-coking coal (such as Newcastle benchmark thermal coal) and 5% for briquettes and other coal-based fuels. Indonesia – the second-biggest exporter of coal – will be exempt from the tariffs due to a free trade agreement between China and the Association of South-eastern Asian Nations (ASEAN). The impact on Whitehaven sales and prices is expected to be limited, with approximately 7% of total Whitehaven FY2014 sales traded with China⁷³. However, the tariff in Australia may only apply in the short-to-medium term, as there is potential for the coal import tariffs to be exempted in the Australia-China Free Trade Agreement (FTA) which is currently in advanced stages of negotiation.

19.2.1 Thermal Coal Market

Thermal coal prices have been in decline since 2011 (Figure 19.2), with recent price falls due in large part to oversupply in the seaborne thermal coal market. Lower prices are expected to lead to mine closures and production declines for uncompetitive mines, as many producers are currently unprofitable at current spot prices. The downward pressure on prices is expected to ease as supply normalises in the medium term. On the demand side, coal continues to remain a dominant source of energy due to cost and reliability advantages (Figure 19.3), with most of the growth in world energy demand coming from non-OECD emerging countries (Figure 19.4), and expected to drive growth in seaborne thermal coal trade by 2 per cent per annum to 2019.⁷⁴

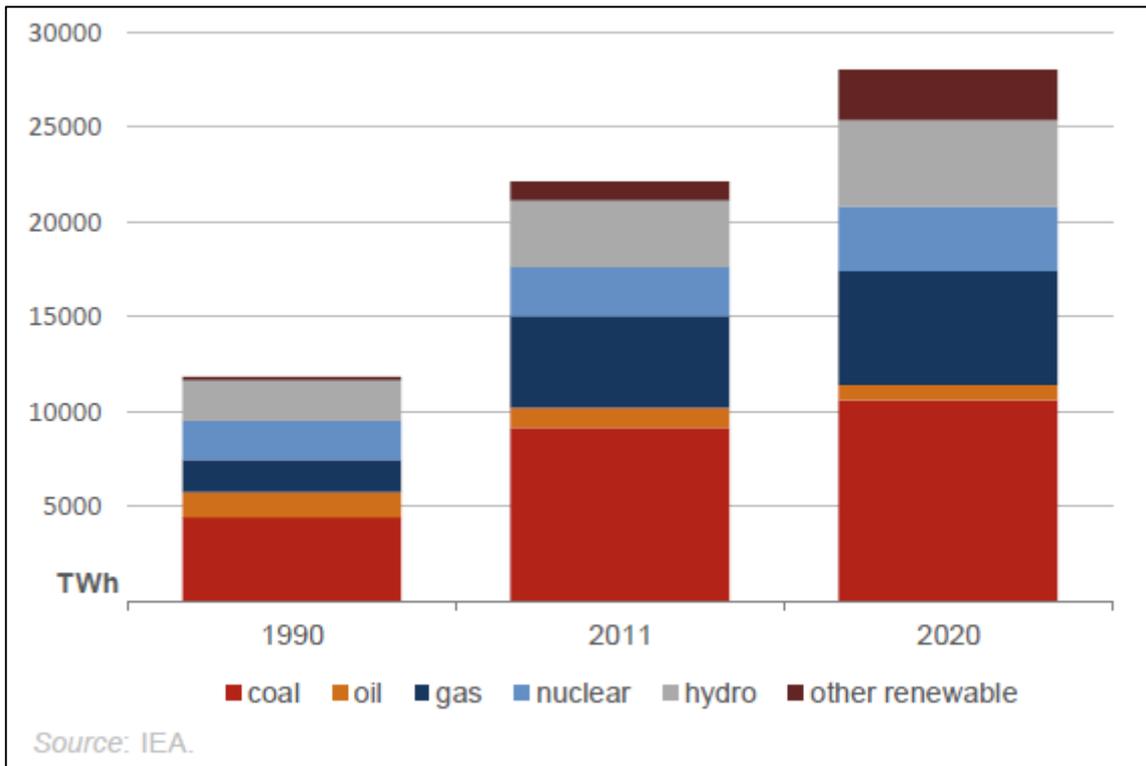


Source: BREE

Figure 19.2 Thermal coal spot prices

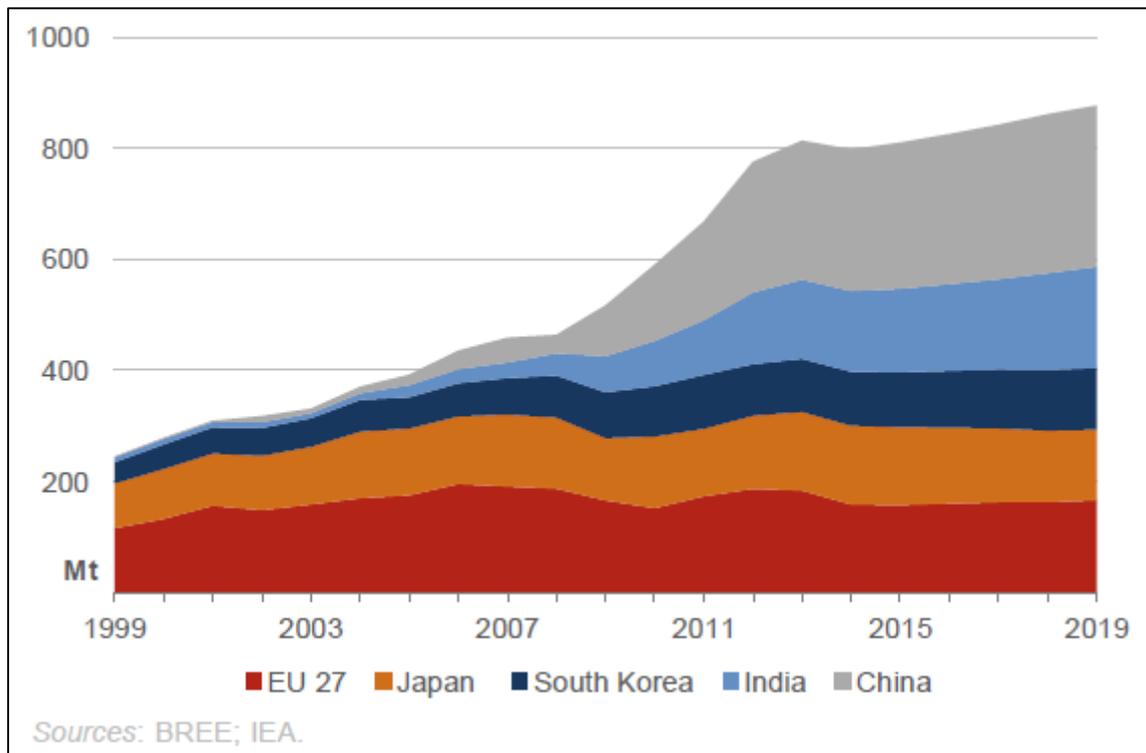
⁷³ <http://www.whitehavencoal.com.au/investors/docs/septemberquarterlyinvestorbriefing.mp3>

⁷⁴ <http://www.bree.gov.au/sites/bree.gov.au/files/files//publications/req/REQ-2014-09.pdf>



Source: BREE

Figure 19.3 Projected electricity generation by fuel



Source: BREE

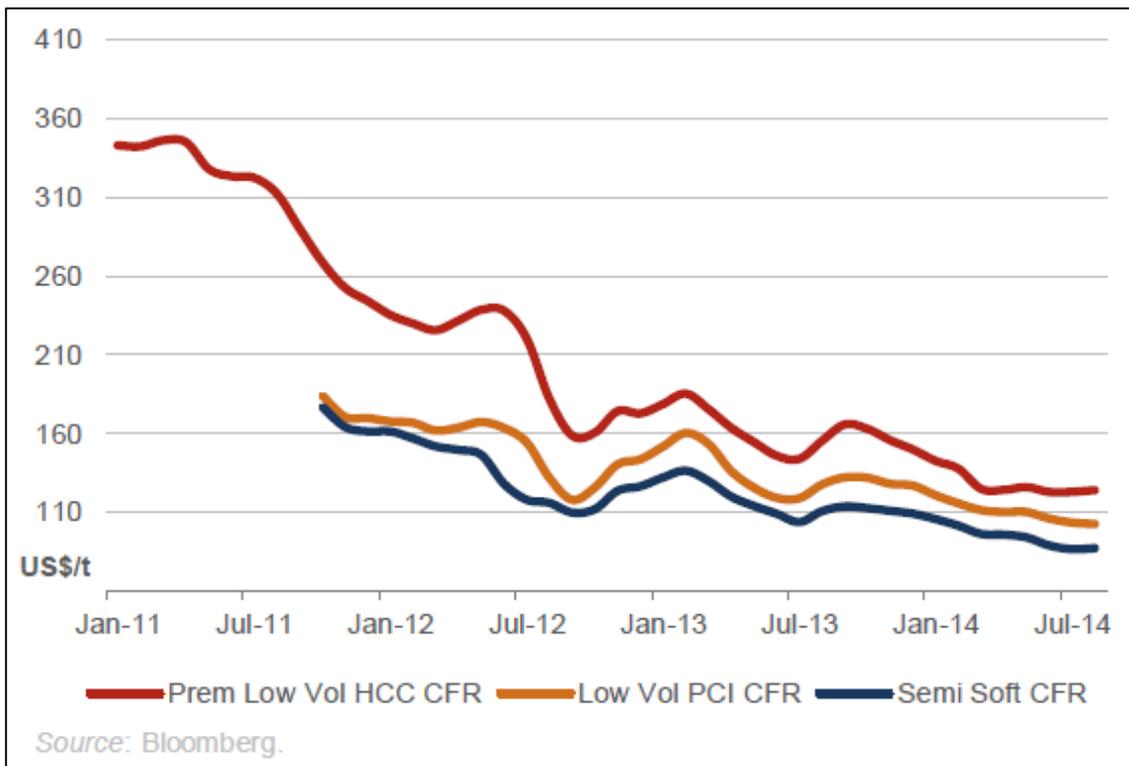
Figure 19.4 Major thermal coal importers

19.2.2 Coking Coal Market

Metallurgical coal, also known as coking coal, is used to produce metallurgical coke, an essential raw material in the manufacturing of iron and steel. There are different types of coking coal based on the inherent qualities of the coal (such as volatile material, swell and coke strength) - hard coking coal, semi-hard coking coal, semi-soft coking coal and pulverised coal injection (PCI). Steel producers look to blend an ideal mix of coking coals to produce a coke blend and increase the efficiency of the blast furnace. With approximately 70% of global steel production dependant on coking coal, demand for coking coal is driven by production of steel for consumption in industries such as construction, auto manufacturing, transport and infrastructure.

While hard / semi-hard / semi-soft coking coals are combined to produce a coke blend, PCI is injected directly into the blast furnace to reduce the amount of coke required, reducing coking coal consumption and lowering the cost of steel making. Low volatile PCI coals are generally priced at a premium compared to high volatile PCI, due to a higher coal replacement ratio.

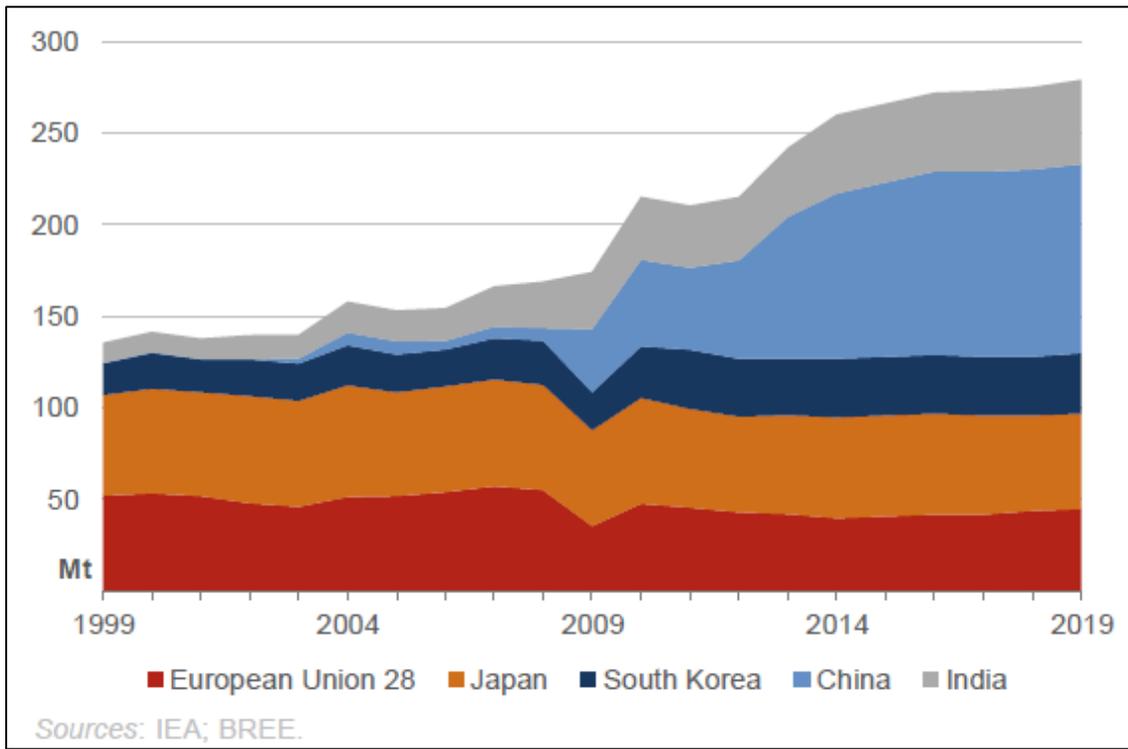
Coking coal prices have been in decline since 2011 (Figure 19.5) due to reduced import demand from China and oversupply in the seaborne market. China’s sustained downturn in the property market has led to reduced demand and production in the steel sector, however, this is expected to moderate as the property market recovers. At current spot prices, a large portion of coking coal producers are unprofitable and this is expected to lead to a market balancing as supply growth normalises. On the demand side, the main drivers of coking coal consumption growth is expected to be China and India (Figure 19.6), with seaborne coking coal trade forecast to grow at 1 per cent per annum to 2019.⁷⁵



Source: BREE

Figure 19.5 Coking coal spot prices

⁷⁵ <http://www.bree.gov.au/sites/bree.gov.au/files/files//publications/req/REQ-2014-09.pdf>



Source: BREE

Figure 19.6 Major coking coal importers

19.2.3 Consensus Forecasts

The consensus coal price forecast for thermal coal is for prices to increase from US\$75/t in 2014 to US\$101/t in 2020, and for the PCI price to increase from US\$89/t in 2014 to US\$132/t in 2020⁷⁶. The PCI price is derived from the benchmark hard coking coal price sourced from Consensus Economics using an historical discount of 26%. The nominal price forecasts are highlighted in Figure 19.7 with the shaded area representing the forecast range for each commodity.

⁷⁶ Consensus Economics, August 2014

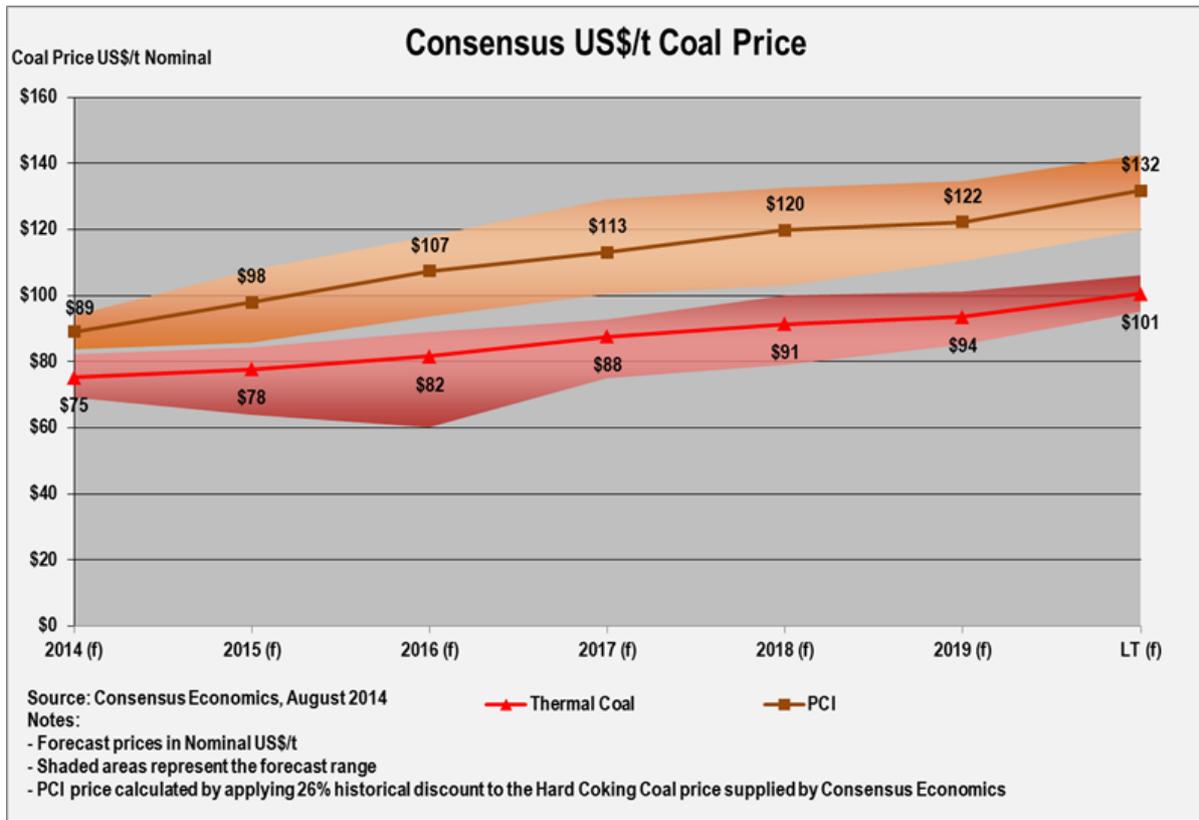


Figure 19.7 Consensus coal price forecast

19.3 Marketability of Narrabri Product

“Table 1” of the Narrabri JORC Reserves Statements notes that the Estimator anticipates no foreseeable issues in demand for the Narrabri North product.

As noted in Section 1.1.1, Narrabri is owned by a joint venture and managed by Narrabri Coal Pty Ltd. Such an arrangement allows strategic marketing benefits by including potential customers and trading houses as joint venture partners. At Narrabri, the joint venture partners have life of mine offtake contracts in place which account for most of the mine output. The contracts are for an agreed tonnage each year, sold at the prevailing Newcastle market price.⁷⁷

Whitehaven believe that the thermal coal market is transitioning from a period of strong growth (7.5% pa over the past five years) when China and India installed significant amounts of new generating capacity, to a more moderate growth (2.7% pa over the next five years). While this means that coal production growth will have to slow in response, they believe that Whitehaven’s coal quality is such that demand for it will be strong into the future.

⁷⁷ Whitehaven Coal Limited’s 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 17 Oct 2014

All production and sales at Whitehaven are managed by Whitehaven Coal.⁷⁸ Whitehaven Coal's customer base comprises major world steel producers and a number of electricity generators located in Japan, Korea, Taiwan, India and China.

Early in 2014⁷⁹ Whitehaven resolved the impact of low energy levels being experienced in the Narrabri thermal coal product. The reinstallation of the upgraded by-pass circuit enabled blending of crushed ROM coal with washed thermal coal product resulting in a thermal coal product that meets the Newcastle thermal coal benchmark specifications. Consequently, all Narrabri coal sold during the year has met the required specifications.

19.4 Contracts

Coal marketing contracts are commercially sensitive. No information relating to coal marketing contracts in place for Narrabri Mine were found in the public domain.

⁷⁸ Whitehaven Coal Limited's 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 17 Oct 2014

⁷⁹ Whitehaven Coal Limited's 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, p.20 accessed 17 Oct 2014

20 Item 20: Environmental Studies, Permitting, and Social or Community Impact

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

20.1 Environmental Studies and Impacts

The Narrabri North Mine is authorised by the Stage 2 Project Approval (PA) 08_0144; the key NSW approval instrument required for the mine. Issues raised through the Environmental Impact Statement (EIS) and consultation processes primarily related to subsidence impacts on the environment, including ground and surface water, Aboriginal cultural heritage, and biodiversity impacts. Other issues raised included air quality and noise management, potential socio-economic impacts, rail traffic impacts and rehabilitation of the site.

20.1.1 Subsidence

Subsidence predictions were made using an empirical model developed in 2003 for an Australian Coal Industry research project. Reference was also made to published information regarding the subsidence-reducing potential of dolerite sills over South African underground coal mines. The Stage 2 EIS predicted a maximum subsidence level of 2.44 m.

The possible effects of subsidence have been well considered in an ‘Extraction Plan’ required to be developed and approved by the NSW Government. Narrabri North Mine has monitored the subsidence movement across the surface of LW101 to LW103 in accordance with the approved Extraction Plan.

In the Narrabri Coal Mine 2014 Annual Review, subsidence monitoring for LW101 and LW102 indicated that maximum subsidence is likely to be closer to 2.65 m.

20.1.2 Noise

The Narrabri Coal EIS included a noise impact assessment undertaken in accordance with recognised government and industry standards. Both the PA and Environmental Protection Licence (EPL) set noise compliance requirements for the mine. Compliance requirements are based on noise impacts to private receivers. Operational noise impacts have been considered, and appropriate monitoring and management measures are detailed in the Mine’s Noise Management Plan.

In the Narrabri Coal Mine 2014 Annual Review, a number of exceedances of the Mine’s noise criteria were recorded and reported. Exceedances were recorded in May, June, September, and December 2013, and March 2014. Exceedances were recorded at the “Naroo” and “Bow Hills” properties and were generally caused by audible mining noise related to dozers working on the coal stockpiles.

Narrabri Coal has commenced acquisition negotiations with the owner of the “Naroo” property and the results of further noise model validation have been provided to the owner of the “Bow Hills”

property. The owner of the “Bow Hills” has since requested additional noise mitigation measures (e.g. double glazing, air conditioning). The Mine has also erected a shed to mitigate the potential for adverse noise impacts at “New Haven” regarding a temporary ventilation fan.

20.1.3 Air Quality

The Narrabri Coal EIS included an air quality impact assessment undertaken in accordance with recognised government and industry standards. Both the PA and EPL set dust compliance requirements for the project. Compliance requirements are based on dust impacts on private receivers. Dust impacts have been considered, and appropriate monitoring and management measures are detailed in the Mine’s Air Quality Management Plan.

No exceedances of the Mine’s dust criteria were recorded in 2013-2014. However, during the latter half of 2013, numerous complaints were made to the mine regarding visible dust from the coal processing area. The Narrabri Coal Mine 2014 Annual Review reports the dust as resulting from old coal being stockpiled for longer than usual combined with hot, dry and windy weather conditions⁸⁰.

The Mine has recognised the ongoing dust impacts on the community and has committed to implementing a range of additional management controls. Additional measures include removing fine dust from the toe of stockpiles, designing an automated sprinkler system for the coal stockpiles and installing coal discharge chutes on the skyline conveyor.

20.1.4 Tailings and Reject Management

The coal preparation process is expected to remove up to 5% of the total ROM feed as reject. Approximately 90% of the reject will be coarse reject (16 mm to 25 mm) and 10% will be filter cake, with both reject streams stockpiled within a temporary reject pile⁸¹. From the reject pile, the consolidated reject will be transferred to a constructed 25 ha Reject Emplacement Area immediately to the west of the box cut. Approximately 5.7M m³ of reject will be produced throughout the life of the mine.

Narrabri Coal will require approval under s100 of the Coal Mines Health and Safety Act for emplacement of reject material. Palaris did not have the opportunity to inspect current reject disposal practice as no site visit was possible.

20.2 Environmental Monitoring and Management

Narrabri Coal maintains a current and live environmental management strategy consisting of a series of Environmental Management Plans (EMP) that dictate management and monitoring requirements for the project (Table 20.1). EMPs provide the framework for management of environmental risks across the Mine. An integral part of the EMPs is a program to effectively monitor and check the environmental performance of the Mine. Environmental monitoring currently being undertaken in accordance with the North Narrabri Mine PA and EPL includes noise and air quality, ground and surface water, flora and fauna, and subsidence.

⁸⁰ Narrabri Coal Mine Annual Review (2014),

http://www.whitehavencoal.com.au/environment/narrabri_north_mine_environmental_management.cfm

⁸¹ GSS Environmental, 2011. Narrabri Coal Mine – Revised Conceptual Mine Closure Plan for Stage 2 Longwall Operations

Table 20.1 Narrabri North mine environmental management plans

| EMP | Status |
|---|--|
| <p>Extraction Plan (for all second workings in the project area), including a:</p> <ul style="list-style-type: none"> ◆ Coal Resource Recovery Plan ◆ Subsidence Predictions ◆ Subsidence Monitoring Program ◆ Built Features Management Plan; ◆ Public Safety Management Plan ◆ Landscape Management Plan ◆ Water Management Plan ◆ Biodiversity Management Plan ◆ Land Management Plan; and ◆ Heritage Management Plan | Longwall panels (LW) 101 to 105 approved by the DP&I on 27 March 2012 and DRE on 5 June 2012 |
| Noise Management Plan | Plan approved 6 December 2011 |
| Air Quality Monitoring Program | Plan approved 6 December 2011 |
| <p>Water Management Plan, including a:</p> <ul style="list-style-type: none"> ◆ site water balance ◆ erosion and sediment control plan ◆ surface water monitoring plan ◆ raffinate discharge and transfer control and monitoring plan ◆ groundwater monitoring program; and ◆ surface and groundwater response plan | Plan approved 5 April 2013 |
| Aboriginal Cultural Heritage Management Plan | Plan approved 6 December 2011 |
| Energy Savings Action Plan | Plan approved 6 December 2011 |
| Greenhouse Gas Minimisation Plan | Plan approved 12 June 2012 |
| Waste Management Plan | Plan approved 6 December 2011 |
| Landscape Management Plan | Plan approved 27 March 2012, updated as part of the Extraction Plan |
| Mine Closure Plan | Plan approved 6 December 2011 |
| Environmental Management Strategy | Plan approved 6 December 2011 |
| Pollution Incident Response Management Plan | Submitted August 2012 |
| <p>Major Hazard Management Plans incorporating:</p> <ul style="list-style-type: none"> ◆ Surface Transport Management Plan ◆ Underground Transport Management Plan ◆ Airborne Dust Management Plan ◆ Explosives Handling Management Plan ◆ Slope Stability Management Plan ◆ Fire and Explosion Management Plan ◆ Strata Failure Management Plan ◆ Inrush Management Plan ◆ Dust Explosion Management Plan ◆ Outburst Management Plan ◆ Spontaneous Combustion Management Plan | All plans currently managed and implemented by Narrabri Mine |

Source: Narrabri Coal Mine Annual Review (2014)

20.3 Project Permitting

The Narrabri North Mine was developed after substantial investigations were undertaken under Exploration Licence (EL) 6243, granted in May 2004. Following completion of relevant geological assessments and feasibility studies, the Narrabri Coal Project applied for Project Approval (PA) through the NSW and Commonwealth Governments. An Environmental Impact Statement (EIS) was prepared and submitted to the NSW Department of Planning (DP&E) in March 2007. PA 05_0102 was subsequently granted for Stage 1 of the Project on 13 November 2007. Subsequent approvals for Stage 1 were granted in early 2008.

Since commencing Stage 1, continued geological exploration and a range of related technical studies were completed to evaluate the feasibility of converting the Stage 1 continuous mining operation to a longwall mining operation. An application for PA for the Narrabri Mine Stage 2 Longwall Project was submitted to DP&E in July 2008 and subsequently approved on 26 July 2010. Table 20.2 summarises the current status of approvals relative to the Narrabri North Mine.

Table 20.2 Narrabri North mine permit and approvals status

| Issuing/Responsible Authority | Type of Lease, Licence, Approval | Date of Issue | Expiry | Comments |
|--|--|----------------------------------|-------------------------------------|---|
| Division of Resources and Energy (DRE) | Exploration Licence EL 6243 | 21 May 2004 | 20 May 2014 | Approval for exploration. renewal application has been submitted |
| Minister for Planning | Project Approval (PA 05_0102) | 13 November 2007 | 18 January 2029 | Project approval for Stage 1. Surrender of the Stage 1 project approval approved on 2 August 2011 |
| DRE | Mining Lease (ML 1609) | 18 January 2008 | 18 January 2029 | Approval for mining |
| Environment Protection Authority (EPA) | Environment Protection Licence 12789 | 20 February 2008 | Nil – Anniversary date: 20 February | For mining operation >5,000,000 t (handled and produced) |
| Narrabri Shire Council (NSC) | Construction Certificate DP 816020 Inspection Report/Permit to Occupy No 2413 | 17 October 2008 6 August 2009 | N/A | Stage 1 mine surface facilities |

| Issuing/Responsible Authority | Type of Lease, Licence, Approval | Date of Issue | Expiry | Comments |
|-------------------------------|---|-------------------------------------|---------------|---|
| NSW Office of Water (NOW) | 90CA811347 / WAL15922 | | | |
| | 90WA812891 / WAL20131 90AL807276 / WAL12833 | | | GAB – Water supply (248 ML) |
| | 90CA802130 / WAL6762 90CA802130 / WAL2671 90CA802130 / WAL2728 | | | GW – Water supply (150 ML) GW – Water supply (67 ML) |
| | 90CA802130 / WAL20152 | | | River – High Security (20 ML) River (48 ML) River (10 ML) |
| | 90BL254679 / WA822539 | | | |
| | 90WA822539 / WA822539 | | | River (600 ML) |
| | 90BL254481 -90BL254487 90BL254660 - 90BL254663 90BL254658 | | | Mining (Low Security) (818 ML) |
| | 90BL254659 90BL254701 | | | Mine De-gassing/De-Watering |
| | 90BL254958 - 90BL254967 90BL255167 - 90BL255173 90BL255216 - 90BL255218 90BL255769 – 90BL255772 90BL256060 – 90BL256063 | | | Groundwater Monitoring Purposes |
| | Minister for Planning | Project Approval (PA 05_0102 MOD 1) | 26 March 2010 | 18 January 2029 |
| Minister for Planning | Project Approval (PA 08_0144) | 26 July 2010 | 26 July 2031 | Project Approval for Stage 2 |
| WorkCover NSW | Notification for explosives use and storage | 5 August 2010 | 20 July 2015 | Licence to store – 07-100215-001 Licence to handle – various |
| Narrabri Shire Council (NSC) | Construction Certificate DP 816020 | 23 September 2010 | N/A | Stage 2 Mine Surface Facilities |
| Minister for Planning | Project Approval (PA 08_0144 MOD 1) | 30 March 2011 | 26 July 2031 | Notice of modification under Section 75W of the EP&A Act |
| | Project Approval (PA 08_0144 MOD 2) | 21 December 2011 | 26 July 2031 | Notice of modification under Section 75W of the EP&A Act |

Source: Narrabri Coal Mine Annual Review (2014)

20.3.1 Stage 2 PA 08_0144

The Narrabri North Mine is currently authorised under the NSW *Environmental Planning and Assessment Act 1979* by the conditions of the Stage 2 PA 08_0144. PA conditions are generally consistent with, and reflective of those issued to other NSW underground coal mining operations. Of significance to the Project is the limit on ROM coal extraction to 8.0 million tonnes per calendar year.

In 2011, Narrabri Coal commissioned an Independent Audit of the Mine's PA⁸². At the time of the Audit, both the Stage 1 and Stage 2 PA's were reviewed. The Audit identified a number of administrative non-compliances which required Narrabri Coal to consult with, or gain approval from government agencies for certain activities. The Audit found that whilst the non-compliances were administrative in nature, the Mine generally complied with the overall intent of the relevant conditions.

20.3.2 Exploration Licence 6243

An application for renewal of Exploration Licence (EL) 6243 was submitted prior to the expiration date of 20 May 2014. The renewal application currently remains outstanding. For the purposes of ongoing exploration activities within EL6243, the NSW *Mining Act 1992* states "If an application for the renewal of an authority is not finally dealt with before the date on which the authority would otherwise cease to have effect, the authority continues to have effect, in relation only to the land to which the application relates, until the application is finally disposed of".

Narrabri Coal understand that after considering an application for the renewal of an EL, the decision maker can refuse the application, amend any conditions of the EL, or require relinquishment of a portion of the land currently the subject of the EL.

20.3.3 Narrabri South Project

Palaris recently examined the approvals timeframes for 13 major mining and quarrying projects in NSW since 2011. The average timeframe for approval (Project Approval) of all projects (new projects and major modifications) was 22 months. For the purposes of developing an indicative approvals timeframe, the approvals process was deemed to have commenced once the initial request for Director Generals Requirements (DGR) was made. This assumes that a preliminary background document had been completed to support the DGR request. For projects where Commonwealth approval was also required, the average timeframe was 36 months.

20.4 Social Engagement

The NSW Government approvals process for the Narrabri Coal Project required an open and transparent consultation process for the local and regional communities. The Stage 2 EIS was publically exhibited for seven weeks in November and December 2009 and received only one public submission objecting to the project. The Stage 1 EIS only received 7 public submissions on the application. More recent project applications across NSW have received greater than 200

⁸² Umwelt Environmental Consultants, 2011. Independent Environmental Compliance Audit-Narrabri North Coal Mine

public submissions objecting to the project. No significant social engagement commitments or community contribution funds were identified through publically available documentation.

20.4.1 Community Consultative Committee

Narrabri Coal currently facilitates a Community Consultative Committee (CCC) required under its Project Approval. The CCC meets quarterly and will be required to continue throughout the life of the mine. A review of the most recent CCC minutes indicates that operational noise and dust issues remain a concern for the local community.

20.4.2 Landholder Rights

Narrabri North Mine

The Stage 2 PA includes specific conditions relating to landholder rights where the Mine is considered to be exceeding its impact assessment criteria. At any point in time if a landowner considers the project to be exceeding the impact assessment criteria then they may ask the NSW Government in writing for an independent review of the impacts on their land. Where the Mine is deemed to not be complying with the relevant impact assessment, the Mine must take all reasonable and feasible measures to ensure compliance. Where the Mine is deemed to be exceeding the defined 'land acquisition' criteria, the Mine is obliged to enter into acquisition negotiations with the landholder.

Narrabri South Project

In order to continue exploration and undertake relevant environmental studies to support an EIS over the Narrabri South Project area, Narrabri Coal will require legal land access. Land access can be obtained via direct ownership or through a negotiated access agreement. Such access is also required prior to the final grant of a ML; particularly where surface access is required to facilitate mining. Allotments of private land currently exist across areas of EL6243.

20.4.3 Financial Contributions

A review of the Planning Agreements and financial contributions required to be paid to the Narrabri and Gunnedah Shire Councils indicates that no further financial contributions are required to be paid.

20.5 Mine Closure Requirements

Narrabri Coal has developed the "Narrabri Coal Mine – Revised Conceptual Mine Closure Plan for Stage 2 Longwall Operations". The Mine Closure Plan (MCP) was approved by the NSW Government on 6 December 2011.

With the exception of a proportion of the perimeter amenity bund wall, covering approximately 3.0 ha, and the rail loop covering 4.7 ha, all land disturbed during the life of the mine is proposed to be returned to a land capability similar to the pre-mining agricultural environment. The presence of the rail loop may lend the site to be used for some other related activity or industry, including sale yards, transport hub or bulk goods storage.

At the completion of mining, all infrastructure at the site will be removed (excluding the rail loop, southern section of the perimeter amenity bund and water management structures).

Decommissioning will also require the sealing of the underground access portals and the removal of surface infrastructure, including offices, bath house, ROM coal stockpile infrastructure, reject emplacement area, workshop, fuel storages, conveyors, ventilation shafts and operational water management structures. The post mining landform will then be reshaped to create a stable surface with slopes at a maximum of 4 degrees. Surface water management structures such as contour banks, diversion drains and settlement ponds required to provide permanent, long-term stable water flow and storage will be constructed. The open areas will be rock raked and ripped, in particular where roads and hardstand areas have compacted the existing ground, with ripping up to 1 m in depth. At least 150 mm of soil will then be spread over the site and seeded with a suitable cover crop to minimise soil erosion. Some roads may remain open if required for future land uses, and access to the site. All areas above the longwall mining area will be rehabilitated to remediate areas affected by mine induced subsidence.

Narrabri Coal has developed industry standard rehabilitation success criteria in order to demonstrate stability and sustainability of the site. Demonstration of compliance with the success criteria will ultimately determine the Mine's success in relinquishing its ML and recovering the rehabilitation security bond.

After decommissioning works have been undertaken, a monitoring program will be designed to demonstrate that the rehabilitation success criteria have been met and that the site is not resulting in any off site impacts. The current conceptual schedule for ML relinquishment is 10 years following the cessation of mining.

20.5.1 Closure Costs

The NSW Government requires that all coal title holders lodge a security deposit with the government to ensure that the liability for rehabilitation is borne by the titleholder. The security deposit must cover the Government's full costs in undertaking rehabilitation in the event of default by the titleholder. Whilst the rehabilitation costs for the Narrabri North Mine are not publically available.

20.6 Current Developments in New South Wales

Recent developments in NSW have highlighted that with the current arrangements in place, despite having all the requisite approvals and support from sections of the government, that there is a risk of projects failing to obtain final approval.

The NSW Planning Assessment Commission (PAC) is a statutory body established under the Environmental Planning and Assessment Act 1979 (EP&A Act) in November 2008. The Commission is independent of the NSW Government, the Minister for Planning and the Department of Planning and Environment.

The EP&A Act details the functions of the Commission including the determination of development applications when those matters are delegated to it by the Minister, and the provision of independent expert advice to the Minister on a range of planning and development matters.

Anglo American Metallurgical Coal had applied to extend operations at the Drayton Mine, near Muswellbrook, into the Drayton South Coal Project Area. The PAC has refused permission for this, stating that it was not in the public interest,⁸³ despite all required approvals being in place, and the project having the support of the Department of Planning and Environment. Another project, the Coalpac Consolidation Project near Lithgow, was also dismissed.⁸⁴ Both of these projects are in highly environmentally sensitive areas.

While a similar decision is not expected to affect the established Narrabri North operation, there is a slight risk that a similar decision could impact the Narrabri South project.

⁸³ <http://www.theaustralian.com.au/news/latest-news/nsw-drayton-south-mine-plan-refused/story-fn3dxiwe-1227097104151?nk=7cb816df02304116aa507bd33d817ba1>, accessed 24 Oct 2014

⁸⁴ <http://www.smh.com.au/business/mining-and-resources/drayton-coalpac-knockbacks-a-brutal-double-blow-for-coal-miners-in-nsw-20141021-11974o.html>, accessed 24 Oct 2014

21 Item 21: Capital and Operating Costs

21.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- capital and operating cost estimates, with the major components set out in tabular form

21.2 Capital Costs

Limited site specific details on capital costs at Narrabri Mine could be located in the public domain. It is therefore not possible to present validated tabulated capital costs.

Works for stage 1 of Narrabri North commenced in FY2008 and were completed in FY2010 for a capital cost of AUD\$227M.⁸⁵ Stage 2 of the project was completed in FY2012 within the budgeted AUD\$300M.

The longwall face extension project is flagged for introduction on longwall block 7, with capital expenditure for additional longwall equipment estimated at A\$50M and approximately A\$20M of capital for additional belts and drives.⁸⁶

There is limited data available in the public domain to identify forecast levels of sustaining capital required for ongoing operations at Narrabri. Sustaining capital for FY14 was reported at \$38.7M (on a 100% owned basis) inclusive of \$18M of mains development, resulting in sustaining capital of approximately \$21M or \$4/t ROM^{87,88}. This is in line with Australian benchmarks of A\$4-6/t ROM coal with the expectation for Narrabri to comfortably spend within that range to sustain operations.

Information on estimated capital expenditure for the Narrabri South project is not available in the public domain due to the early stage conceptual nature of the project.

21.3 Operating Costs

No detailed site specific operating costs for Narrabri Mine could be located in the public domain. It is therefore not possible to present validated tabulated operating costs.

⁸⁵http://www.whitehavencoal.com.au/investors/documents/2010_Whitehaven_Coal_Limited_Annual_Report.pdf

⁸⁶ <http://www.whitehavencoal.com.au/investors/docs/septemberquarterlyinvestorbriefing.mp3>

⁸⁷ <http://www.whitehavencoal.com.au/investors/docs/27090837-fy2014-results-presentation.pdf>

⁸⁸ <http://www.whitehavencoal.com.au/investors/docs/whitehaven-coal-fy14-annual-results-presentation-audio.mp3>

Narrabri North FOB operating costs are currently operating at approximately A\$67/t and have the potential to decrease in future due to increased productivity and lower development ratio from the longwall face extension project.⁸⁹ Narrabri is expected to improve FOB operating costs in FY2015 but the extent of cost reduction is unclear. Whitehaven has provided cost guidance of A\$59-62/t for FY 2015, however, it is unclear if this includes Government and private royalty payments⁹⁰.

⁸⁹ <http://www.whitehavencoal.com.au/investors/docs/24152812-ubs-australian-iron-ore-coal-conference.pdf>

⁹⁰ Whitehaven Coal Limited, Full Year Results FY2014,
<http://www.whitehavencoal.com.au/investors/docs/27090837-fy2014-results-presentation.pdf>

22 Item 22: Economic Analysis

22.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

Palaris are unable to comment on details of:

- an economic analysis for the project, addressing annual costs, revenue, and cash flow forecasts to determine net present value and other valuation parameters
- sensitivity analysis of the economic robustness of the project

In the preparation of this section of the Technical Report, Palaris is unable to directly comment on cash flow forecasts on an annual basis using Mineral Reserves or Mineral Resources and an annual production schedule for the life of project; a discussion of net present value (NPV), internal rate of return (IRR), and payback period of capital with imputed or actual interest; a summary of the taxes, and other government levies or interests applicable to the mineral project or to production, and to revenue or income from the mineral project; and sensitivity or other analysis using variants in commodity price, grade, capital and operating costs, or other significant parameters, as appropriate, and discuss the impact of the results.

22.2 Production Forecast

Narrabri North currently has an estimated Reserves based mine life of 22 years (at 6.5 Mtpa), with FY2014 production of 5.66 Mt of ROM coal and 5.25 Mt of saleable coal⁹¹. The mine has a permit to extract up to 8 Mt of coal per annum. Historical annual production was shown earlier in Figure 17.4.

Whitehaven has forecast a target production of 6.5 Mt for FY2015, with rates demonstrated during the September 2014 quarter of 2.082 Mt ROM and 1.819 Mt saleable, suggesting the company is on track to meet or exceed production targets for FY2015.⁹²

Narrabri is actively pursuing opportunities to expand production using the following strategies:

- Reducing the frequency of longwall change-outs as panel lengths increase. Productivity at Narrabri is expected to improve as the panel lengths increase from approximately 3.5 Mt blocks (panel 3) to 5 Mt (panel 4) and eventually to approximately 7 Mt (panel 9 onwards), reducing the frequency of longwall change outs.

⁹¹ Whitehaven Coal Limited 2014 Annual Report, <http://www.whitehavencoal.com.au/investors/docs/2014-annual-report.pdf>, accessed 6 Nov 2014

⁹² <http://www.whitehavencoal.com.au/investors/docs/15085630-september-quarterly-report-2014.pdf>

- Optimising longwall change-out methods by improving processes and purchasing additional equipment if feasible (such as shearers) to reduce wait time for major equipment overhauls
- Extending the longwall face to approximately 400 m to reduce the number of longwall change-outs and reduce development driveage requirements
- Narrabri South - the tenement area to the south of the existing mining lease – potential mine development to either extend the mine life by transferring longwall operations to Narrabri South after Narrabri North, or to increase total project output by running Narrabri North and Narrabri South concurrently (with appropriate infrastructure and approval changes). Whitehaven have stated that Narrabri South could be comparable in size and quality to Narrabri North.⁹³

Narrabri South has a similar coal resource to Narrabri North. Subject to sufficient infrastructure capacity, a second longwall mine could be developed in this area. This would require amended approvals, and construction of second CHPP similar to the existing plant servicing Narrabri North if both longwalls were to be operated concurrently. Alternatively, a second longwall mine could provide a reserves based mine life extension of ~14 years at a production rate of 6.5 Mtpa ROM by transferring coal mining operations to the south once Narrabri North has been depleted.

The full impact and timing of the planned productivity improvements and expansion projects is unknown at this stage due to the absence of detailed technical and mine scheduling information in the public domain. As discussed in Section 16.7.2, Palaris consider that there is potential upside to increase Narrabri North output by 10-15% - a hypothetical 10% upside case from the FY2015 forecast will deliver 7.15 Mtpa ROM.

22.3 Revenue Forecast

Prices are forecast to rise gradually over the medium-to-long term, as discussed previously in Section 19.2.3. A comprehensive cash flow analysis is not possible in the absence of a detailed mine plan and coal quality analysis.

Limited coal product type information is available. As noted earlier, Whitehaven currently describe the Narrabri coal product type as being about 80% high calorific value, low ash thermal coal, and 20% PCI coal. Whitehaven delivered presentations in 2012 and 2014, where Narrabri's output was described as being up to 30% PCI coal (2012)⁹⁴ and 20% PCI (2014)⁹⁵.

⁹³Whitehaven Coal Investor Presentation, 2008,
<https://www.whitehavencoal.com.au/investors/documents/AmendedInvestorPresentation-170608.pdf>,
accessed 6 Nov 2014

⁹⁴ Whitehaven Coal 2012 AGM Managing Director's presentation,
<http://www.whitehavencoal.com.au/investors/documents/ASXRelease-ChairmansaddressandManagingDirectorsPresentation.pdf>, accessed 6 Nov 2014

⁹⁵ Whitehaven Coal, Presentation to 2014 Global Metals, Mining and Steel Conference, 2014,
<http://www.whitehavencoal.com.au/investors/docs/global-metals-mining-and-steel-conference-2014.pdf>,
accessed 6 Nov 2014

23 Item 23: Adjacent Properties

23.1 Compliance Exemption

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

23.2 Adjacent Properties

The Narrabri North and South mine and project area are surrounded by Authorisation No. 216, which is held by the NSW Government.

Regional studies of the geology of the Gunnedah Basin, such as Tadros (1993), describes the continuity of the Hoskissons seam, and describe the resource potential across the Gunnedah Coalfield.

No resources or reserves in compliance with the JORC Code (2012) are described for A216, since they are held by the Government and not a publicly listed company.

However, Wiles (1996) described 760 Mt of “Inferred Class 1”⁹⁶ Resources in the Hoskissons seam to 300 m depth of cover in an area referred to as “South Narrabri”. This area does not coincide with the Whitehaven Narrabri South project area, but is an area south of this. The workable coal in this area is generally in the range 1.5 to 3.0 m thick over most of the area where the coal is <300 m depth of cover, and up to 5.4 m thick. These resources are not JORC compliant. This estimate was not undertaken by a Competent Person, as prescribed by the JORC Code and should be treated as an indicative estimate of the in situ tonnes in the “South Narrabri” area.

Petroleum exploration licences overlap the Narrabri property and large areas surrounding the tenements. Drilling by Eastern Star Gas Ltd has explored PEL238 (now owned by Santos) for coal seam gas. This exploration has occurred in areas west of the Narrabri North mine, approximately 12 km west. Wells drilled in the area have intersected the Hoskissons seam with thicknesses comparable to those encountered in the western part of the property. As the target of this exploration and development is coal seam gas, JORC resources have not been reported.

Figure 23.1 shows the location of coal seam gas wells in relation to the property. Rights to mining tenure in the area immediately to the west of Narrabri reside with the Crown.

⁹⁶ Obsolete term of the JORC Code (1989). The term “Inferred Class 1” implies a low level of confidence in the resource estimate. The term is synonymous with “Inferred Mineral Resource” of CIM Definition Standards as at October, 2012.

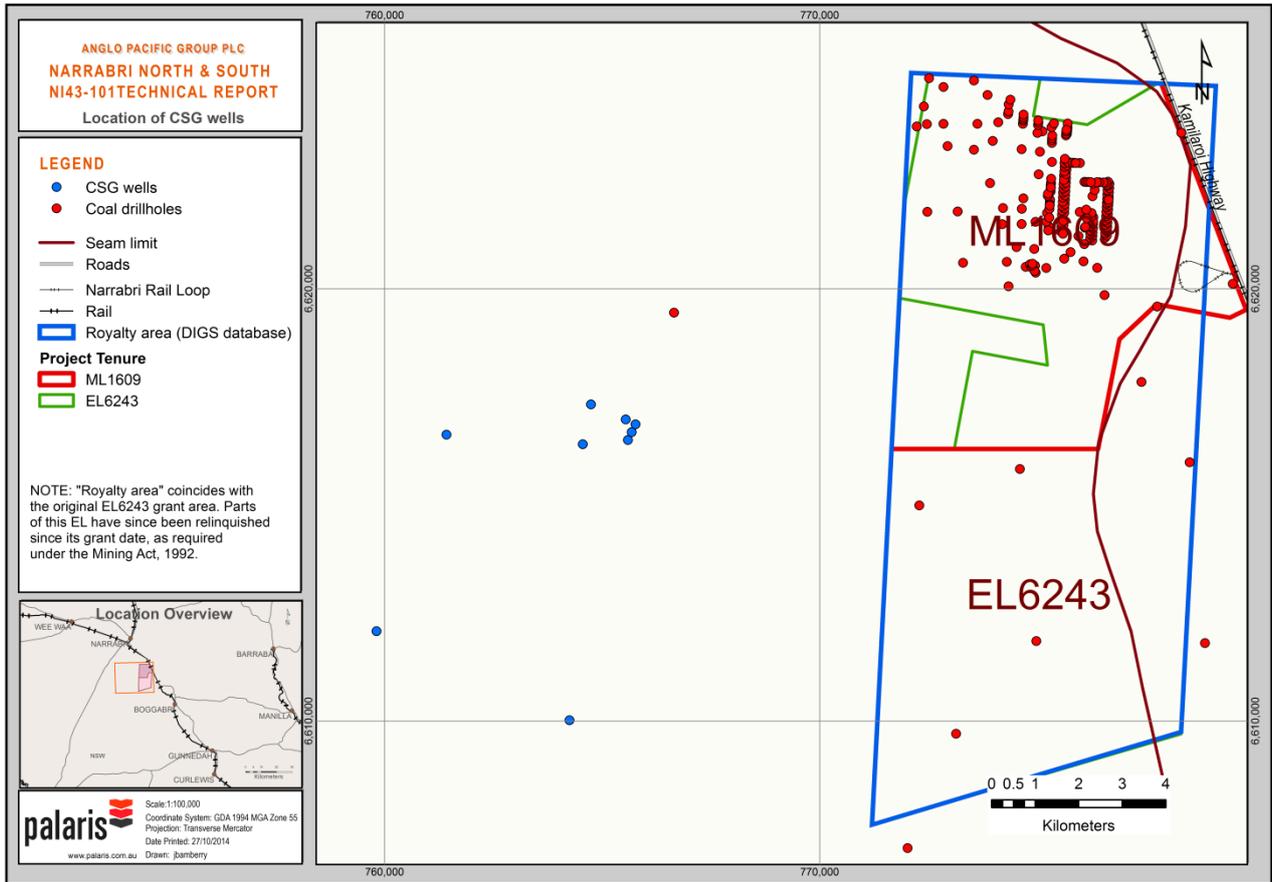


Figure 23.1 Location of coal seam gas wells

24 Item 24: Other Relevant Data and Information

No other relevant data or technical information is considered appropriate to include in this NI Statement.

25 Item 25: Interpretation and Conclusions

APG is relying on an exemption under “Part 9, Section 9.2 Exemptions for Royalty or Similar Interests” of the “National Instrument 43-101 Standards of Disclosure for Mineral Projects” to limit disclosure in this instance.

APG made contact with Whitehaven Coal during September 2014 requesting access to relevant data and for a site visit to the Narrabri Mine to be granted to its consultants Palaris. This request was refused and as such, data and information utilized in the generation of this Technical Report is solely reliant upon what could be collected from public domain sources (see Item 3).

This Technical Report is based solely upon data found within the public domain during preparation of the report. Further information may be in the public domain which has not been found by the searches conducted.

Without complete access to the data and techniques used to estimate the Resources and Reserves of the Narrabri Project, it is not possible to fully audit the estimates

Based on the publically available data, Palaris have made the following interpretations and conclusions:-

- the geology of the property area is well understood
- trends in coal quality across the site are broadly described in publically available documentation and show a tendency to higher ash content and hence, lower yields towards the west and south
- geological hazards such as faults and igneous intrusions are a low risk to continued development of the coal resource
- distribution of drill hole data is poor in places, particularly in those areas of the Pilliga State Forest
- coal resources are estimated for the working section (the lower 4.2 m thickness of coal) using appropriate grade and thickness cut-off assumptions
- no quality criteria have been applied to the upper section of coal, which may be mined as top coal caving in the future
- resource classification distances are not specified in publically available documentation: in future resource statements greater transparency is required on this matter
- the mining method, equipment in use, and mine plan appear suited to the characteristics of the resource
- the forecast production rates appear to be achievable, and supported by recent performance

26 Item 26: Recommendations

Recommended work programs for the property should include:

- Additional exploration drilling is required in the western part of the defined “Reserve” areas of Narrabri North. This work should include gas testing of coal seams that are developed above the Hoskissons seam, additional washability testing on the working section and evaluation of the gas content of the target seam
- Maps presented in Whitehaven (2014) suggest that the Pilliga Forest is likely to be an impediment to exploration, as each proposed drill hole location will require considerable disturbance to reach required locations, and as such, a Review of Environmental Factors undertaken for each site/program
- The reserve areas of Narrabri South need to be proved up with more washability data, and drill holes in general, to describe the resource in this area. This is equally affected by the presence of the Pilliga State Forest

27 Item 27: References

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Wiles, L. 1996 – Coal Resource audit of the Gunnedah Basin. NSW Department of Mineral Resources, 319pp.

28 Certification of Qualified Persons

28.1 Certification by Qualified Person – Dr John Bamberry

I, Dr William John Bamberry, MAIG, do hereby certify that:

- a) My full name is William John Bamberry, and I am a principal geologist employed by Palaris Australia Pty Ltd, Level 1, 384 Hunter Street, Newcastle NSW 2300 Australia
- b) This certificate applies to the technical report titled “National Instrument 43 101 Technical Report on Narrabri North Mine and Narrabri South, Gunnedah Basin, New South Wales”, dated 30th January 2015 (the Technical Report”)
- c) I graduated with a Bachelor of Applied Science (Geology) (Hons) from the NSW Institute of Technology in 1985, and was awarded a Doctor of Philosophy (Geology) in 1992 from the University of Wollongong. I have over 25 years’ experience as a geologist, and have worked in the coal industry for all of that time. I have been involved in mineral resource estimation for over 20 years

I am a Member of the Australian Institute of Geoscientists. The AIG is an Accepted Foreign Association as listed in Appendix A of National Instrument 43-101 (“NI 43-101”)

I have read the definition of “qualified person” set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements of a “qualified person” for the purposes of NI 43-101

- d) The Technical Report has been compiled solely from public domain information and I have not personally visited Narrabri North or Narrabri South
- e) I am jointly responsible with Mr Gregor Carr of Palaris Australia Pty Ltd for the content, compilation, and editing of all sections of the Technical Report relating to Narrabri North Mine and Narrabri South
- f) I am independent of Anglo Pacific Group PLC, applying the test in part 1.5 of NI 43-101
- g) I have not had prior involvement with the properties that are the subject of the Technical Report
- h) I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form in reliance on the exemption provided by Section 9.2 of NI 43-101
- i) The effective date of the Technical Report is 14th January 2015. As of 30th January 2015, to the best of my knowledge, information and belief, I am not aware of any material fact or material change with respect to the Narrabri North Mine and Narrabri South that is not reflected in the Technical Report, and the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading



Dr William John Bamberry

Principal Geologist

Palaris Australia Pty Ltd

30th January 2015

28.2 Certification by Qualified Person – Mr Gregor Carr

I, Mr Gregor CARR, MAusIMM CP (Min), RPEQ, do hereby certify that:

- a) My full name is Gregor Robert CARR, and I am a mining engineer employed by Palaris Australia Pty Ltd, 7/500 Queen Street, Brisbane QLD 4000 Australia
- b) This certificate applies to the technical report titled “National Instrument 43 101 Technical Report on Narrabri North Mine and Narrabri South, Gunnedah Basin, New South Wales”, dated 30th January 2015 (the Technical Report”)
- c) I graduated with a Bachelor of Engineering (Mining) from The University of Queensland in 1981, and was awarded a Graduate Diploma in Mine Ventilation from The University of New South Wales in 2006. I have over thirty years of experience as a mining engineer, and hold both open cut and underground coal mining statutory qualifications. I have been involved in Mineral Reserve estimation for over twenty years

I am a Member of the Australasian Institute of Mining and Metallurgy (AusIMM) with Chartered Professional accreditation in the discipline of Mining. The AusIMM is an Accepted Foreign Association as listed in Appendix A of National Instrument 43-101 (“NI 43-101”). I am also a registered Professional Engineer in the state of Queensland

I have read the definition of “qualified person” set out in NI 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements of a “qualified person” for the purposes of NI 43-101

- d) The Technical Report has been compiled solely from public domain information and I have not personally visited Narrabri North or Narrabri South
- e) I am jointly responsible with Dr John Bamberry of Palaris Australia Pty Ltd for the content, compilation, and editing of all sections of the Technical Report relating to Narrabri North Mine and Narrabri South
- f) I am independent of Anglo Pacific Group PLC, applying the test in part 1.5 of NI 43-101
- g) I have not had prior involvement with the properties that are the subject of the Technical Report
- h) I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form in reliance on the exemption provided by Section 9.2 of NI 43-101
- i) The effective date of the Technical Report is 14th January 2015. As of 30th January 2015, to the best of my knowledge, information and belief, I am not aware of any material fact or material change with respect to the Narrabri North Mine and Narrabri South that is not reflected in the Technical Report, and the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading





Mr Gregor CARR

Senior Mine Planning Consultant
Underground

Palaris Australia Pty Ltd

30th January 2015