EX-96.1 3 exhibit961.htm EX-96.1

Exhibit 96.1

TECHNICAL REPORT SUMMARY CENTURION MINE

In accordance with the requirements of SEC Regulation S-K (subpart 1300)

EFFECTIVE DATE: OCTOBER 15, 2024
REPORT DATE: OCTOBER 15, 2024

PEABODY ENERGY CORPORATION

701 Market Street, Saint Louis, Missouri 63101

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Title: Technical Report Summary - Centurion Mine, SK-1300

Peabody Energy Corporation (BTU)

Effective Date of Report:

October 15, 2024

Project Location:

The Centurion Mine (previously known as the North Goonyella Mine) is an underground coal mine located on the western flank of the Bowen Basin, a major coal producing region in Australia.

Centurion is located approximately 180km west southwest of Mackay, in the Isaac Regional Council local government area. Access to the area is via the sealed section of the Suttor Development road from Lake Elphinstone then along a sealed private road to the mine. Alternative access is via unsealed roads from Moranbah to the south and Charters Towers via Mt Coolon to the west.

Centurion Coal Mining Pty Ltd, (ACN 010 879 526) is the owner of the Centurion Mine and is the holder of Mining Lease 6949 (the Holder). The Holder is a wholly owned subsidiary of Peabody Energy Australia Pty Ltd (ACN 096 909 410) with the overall parent company being Peabody Energy Corporation, a New York Stock Exchange listed entity.

Qualified Persons:

(With responsible report sections listed.)

Xenith Consulting Pty Ltd

By: /s/ Troy Turner
Name: Troy Turner
Title: Managing Director and CEO

Geology (Sections:1,2,3,4,5,6,7,8,9,11,21,22,23,24,25)

/s/ Damien Wichlacz (Peabody Energy Corporation)

Mining Engineering (Sections: 1,2,3,4,5,10,12,13,14,15,16,17,18,19,20,21,22,23,24,25)

Signature Date: October 15, 2024

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1. EXECUTIVE SUMMARY

1.1. Disclaimer

This Technical Report Summary for the Centurion Mine has been prepared by a team of qualified persons (QP) on staff at Peabody Energy and Xenith Consulting Pty Ltd. The purpose of this statement is to provide a summary of technical studies which support the coal resources and reserves in accordance with the United States Securities and Exchange Commission's (SEC) mining rules under the SK-1300 regulation. All information within this report has been prepared based on present knowledge and assumptions.

1.2. Property Description

The Centurion Mine is an existing underground coal mine owned by Centurion Coal Mining Pty Ltd, (ACN 010 879 526). The underground operations for Centurion are environmentally authorized by EA EPML00815613 that covers all activities within ML 6949 and PL 504. The holder of the tenements and the EA EPML00815613 is Centurion Coal Mining Pty Ltd.

Centurion North is comprised of ML1790 and ML70495 (part of the Ward's Well project which has been subdivided between Peabody and Stanmore) and a portion of MDL3010 (Dabin) which is owned by the West Burton Joint Venture (85% Peabody). A limited amount of environmental disturbance is currently authorized on the Ward's Well portion of Centurion North by EA EPPR00668513 and on the Dabin portion by EA EPPR00497713. The EA for Ward's Well is currently being de-amalgamated by DESI to separate the Stanmore and Peabody parts of Ward's Well and will likely be approved in Q3 2024.

Centurion Coal Mining Pty Ltd (Centurion) is a wholly owned subsidiary of Peabody Energy Australia Pty Ltd (ACN 096 909 410) with the overall parent company being Peabody Energy Corporation (Peabody), a New York Stock Exchange listed entity.

The current approved production rate for the operation is 10.2 Mtpa ROM coal that after processing, equates to approximately 7.6 Mtpa product coal. The mine is located on the western flank of the Bowen Basin, approximately 160km WSW of Mackay in Queensland, Australia. (see Figure 1-1)

Figure 1-1. General Location Map

1.3. Geology and Mineralization

The Project lies on the Collinsville Shelf on the western margin of the Bowen Basin in Central Queensland. The regional stratigraphy of the area comprises the Permian Blackwater Group which comprises three coal bearing sequences, the Moranbah Coal Measures (MCM), the Fort Cooper Coal

Measures (FCCM), and the Rangal Coal Measures (RCM), the Triassic Group sediments (Rewan and Clematis) and Tertiary sequences. The Project covers the subcrop of the Moranbah and Fort Cooper Coal Measure sequences. The Permian strata is regionally overlain by Triassic Rewan Group and Clematis Group sediments, however in the Project area the Triassic sediments have been removed and a large unconformity exists between the Permian and Tertiary sediments. The main seams of economic interest are the Goonyella Upper A, the Goonyella Middle and the Goonyella Lower B2.

1.4. Exploration

Early exploration in the area was carried out by the former Mines Department, and by the Utah Development Company as part of its regional exploration of the Bowen Basin in the early to mid-1960s. With only the MCM present, early exploration was focused on proving large open cut resources. As most of the Centurion resources were considered underground mineable, the area was relinquished by Utah at the time it applied for ML 1763, Goonyella Mine. Authority to Prospect (ATP) 453C was granted to North Goonyella Coal Properties Pty Ltd (NGCP), which was owned by White Mining Ltd (51%) and a subsidiary of Sumitomo Pty Ltd (49%), in May 1989. After an extensive exploration program, an application for a mining lease was made, leading to the grant of ML 6949 in October 1991 for a period of 35 years.

Exploration activities were then divided into a northern area covering today's MLs 1790, 70443 and 70495 and the southern area covering today's ML 6949 and MDL 3040. Peabody has been undertaking extensive and on-going exploration programs in the southern area. Initially Thiess Peabody Mitsui joint venture (TPM) and later BHP undertook intensive drilling programs in the northern areas until the leases were transferred to Stanmore Resources Ltd in June 2022.

The lease has continued to be explored using cored and non-cored boreholes, together with the use of geophysics to help determine both the location of resources and reserves, and also to define the structural geology of the area.

1.5. Development and Operations

The Centurion Mine is an underground operation that has extracted several plies of the Goonyella Middle (GM) Seam utilizing continuous miners to develop longwall panels, which are then mined using a longwall system. The mined seams are subsequently washed at the onsite preparation plant before shipping.

White Mining Ltd developed the operation (then known as the North Goonyella Mine), including a rail loop, coal handling preparation plant (CHPP) and nearby accommodation village, following the grant of ML6949 in 1991. The mine commenced longwall production in early 1994. Sumitomo acquired White Mining's share of NGCP, taking 100% ownership in the mine before selling to a consortium of RAG and Thiess in November 2000. Thiess sold its stake in the mine to RAG in January of 2003. Peabody then acquired North Goonyella as part of an acquisition of RAG's coal assets in April of 2004 and operated it until September of 2018, when a fire in the mine halted operations. The mine has been idled since that time while plans to re-initiate production with regulatory approval were developed.

During the third quarter of 2022, Peabody initiated the redevelopment of the mine. The project will utilize substantial existing infrastructure and equipment at the mine, including a new 300-metre longwall system, a coal handling preparation plant, a dedicated rail loop for transport to the Dalrymple Bay Coal Terminal, and an accommodation village with housing and service amenities for more than

400 workers. Redevelopment activities which include ventilation, equipment, conveyance and infrastructure updates are underway in anticipation of reaching development coal, subject to regulatory approvals, in the first half of 2024. Longwall operations are expected to commence in 2026.

In October 2023 Peabody entered into an agreement with Stanmore to purchase the southern area of Wards Well (ML 1790 and ML 70495) with the intent to expand underground operations to the North of the North Goonyella Mine footprint and eventually extend into Dabin (MDL 3010).

In December of 2023, the mine was renamed the Centurion Mine.

1.6. Coal Resource and Reserve Estimates

Coal resource and reserve estimates are summarized in Table 1-1. The total resources for the Centurion Project are estimated at 790 million tonnes, this includes 527 million tonnes classified as measured or indicated, and 260 million tonnes in the inferred category. The total reserves are estimated to be 173.3 million tonnes, with 76.0 million tonnes of proven reserves, and 97.3 million tonnes of probable reserves on a Peabody ownership basis.

Table 1-1. Coal Resources and Reserves on a Peabody Ownership Basis

Resources (in million tonnes)				**Reserves** (in million tonnes)		
Measured	Indicated	Inferred	Total	Proven	Probable	Total
87	440	260	790	76.0	97.3	173.3

1.7. Economic Analysis

The coal resource as stated in this report is in the same coal field as the areas that have been mined out by the previous North Goonyella mine. The geological features and coal qualities appear to be consistent. To convert those resources to reserves, it will require additional exploration, changes of operating environment, mine design planning, and financial analysis.

The 173.3 million tonnes of coal reserves are supported by the Life of Mine (LOM) plan. The Centurion GM Seam operation is projected to produce 4.3 million tonnes of product annually following commencement of longwall operations. Mining operations in the GM Seam at Centurion Mine Complex has an average annual total FOB cost of US$450 million and a total capital expenditure of US$1,672 million. The LOM plan averages US$207 million in annual cash flow and US$1,608 million Net Present Value (NPV).

Once longwall operations commence within the GLB2 Seam, the operation is projected to produce 3.4 million tonnes of product annually, with an average annual total cost of US$431 million and a total capital expenditure of US$630 million. The GLB2 Seam LOM plan will produce US$127 million in annual cash flow and US$31 million NPV.

1.8. Conclusion

A fire event in 2018 has delayed operations and damaged some of the underground infrastructure and equipment, however these are currently being replaced or refurbished, to bring the mine back into production.

At the time of writing this report, all required licenses and permits are in place for all planned activities associated with the operation of Centurion for extraction of GM and GLB2 coal reserves. Although extraction of coal from the Ward's Well portion of Centurion North is approved by the granted mining leases, it will be necessary to obtain appropriate environmental conditions relevant to the planned coal extraction activities which will be obtained through amendment of the existing environmental authority. Furthermore, it will be necessary to obtain a new mining lease over the portion of Dabin (MDL3010) that forms part of Centurion North. The amended environmental authority for Ward's Well will also be able to cover the activities on the new mining lease.

All required property control, including coal and surface, for the reserve area has been obtained to support the operation. All coal within the resource areas is under control by leases. There is a significant amount of historic exploration and survey data for coal reserve estimates. The data has been determined by the Qualified Persons to be adequate in quantity and reliability to support the coal resource and reserve estimates in this Technical Report Summary. The resources are estimated to be 790 million tonnes. The coal reserve estimates and supporting Life of Mine (LOM) plan conclude that there are 173.3 million tonnes of reserves at Centurion Mine. The reserves are economically mineable based on the historical mining, production projections, historical and projected coal sales prices, historical and projected operating costs and capital expenditure projections for the LOM Plan.

1.9. Recommendations

Geology and Resources

Further exploration work should be considered to provide additional geological confidence. This, along with the mine survey and sampling programs, will provide adequate support to the operation for short-term and mid-term planning, production, and coal quality control purposes.

It is recommended to conduct more seismic surveys (2D and/or 3D) to further define faults for future mining areas. Horizontal drilling should be evaluated and possibly conducted from nearby gate roads once they are developed.

It is recommended to continue to have experienced geologists log core holes, measure core recovery, and conduct sampling. All activities should be conducted according to Peabody drilling exploration standards. Any future rotary holes should also be geophysically logged to verify the strata and coal thickness. All geological data should be collated into Peabody's GeoCore database.

Several recommendations were identified from the preparation of the resource estimate. These are:

- Additional points of Observation are recommended to further confidence in the Centurion Project Resource. Infilling the current spacing within lower confidence areas.
- Intrusion and heat affected identification drilling for the GUA seam in the north of the Project area.
- Location of historic downhole verticality data to assist with the accuracy of the interpretation where they are missing.
- An updated DHSA that incorporated both sets of data from Centurion North and South would be of benefit.

Mining, Processing and Reserves

It is recommended to conduct a reconciliation to further validate the assumptions for loss and dilution during mining and processing. Strip sampling from underground roadways should be used to update coal quality information within the geological model once development operations have commenced. Opportunities to maximize longwall panels should be explored once the extent of faults impacting the mine plan have been further understood from development mining.

The operation should continue to follow the approved roof control and ventilation plan. Any material changes on the plans or from the plans should be assessed, and any related impacts on resource and/or reserve estimates should be incorporated in any future updates.

Environmental, Permitting and Social Considerations

With recent legislative changes in Queensland, all mine sites are required to submit a Progressive Rehabilitation and Closure Plan (PRCP). The Centurion PRCP was submitted March 2024. It is recommended that the potential impact on current and future Reserve estimates is assessed against the commitments required by this document.

Economic Analysis

The ability of Peabody, or any coal company, to achieve production and financial projections is dependent on numerous factors. These factors primarily include site-specific geological conditions, the capabilities of management and mine personnel, level of success in acquiring coal leases and surface properties, coal sales prices and market conditions, environmental issues, securing permit renewals and bonds, and developing and operating mines in a safe and efficient manner. Unforeseen changes in legislation and new industry developments could substantially alter the performance of any mining company. It is recommended that those factors should be assessed regularly according to the Company’s internal control. Material changes are to be reflected in the future resource and/or reserve estimates.

2. INTRODUCTION

2.1. Introduction

This Technical Report Summary was prepared for the Centurion Mine, which is operated by Peabody Energy Corporation's wholly owned subsidiary, Centurion Coal Mining Pty Ltd.

This Technical Report Summary for the Centurion Mine is prepared in accordance with the United States' Securities and Exchange Commission (SEC) S-K 1300. The S-K 1300 sets the standards for the reporting of scientific and technical information on mineral projects and specifies that the Technical Report Summary must be prepared by or under the supervision of a Qualified Person(s).

This report is an update to the previous Centurion Technical Report filed in February 2024 and includes the Resource and Reserves acquired through the Wards Well acquisition from Stanmore in April 2024. The report summarizes information to support the resource and reserve results.

2.2. Terms of Reference

Coal resource and coal reserve estimates are reported according to the definition of S-K 1300 on a 100% controlled basis (i.e. owned and controlled by Peabody) unless otherwise noted. The point of reference for coal resources and coal reserves estimates are in situ and saleable product respectively. Coal resource estimates, exclusive of coal reserves, are provided in this report as part of the technical evaluation process.

Units and Abbreviations

Unless otherwise stated, units used in this report are expressed in the Metric system. Currencies are expressed in US dollars (USD) unless otherwise noted. A list of abbreviations used in this report is shown below in Table 2-1.

2.3. Sources of Information and References

The information and references listed here and in Section 24 and Section 25 of this report were used to support its preparation.

GeoCore: Company's internal geological database of drill hole and coal quality information.

LMS: Company's internal Land Management System which includes all mineral and land contracts.

Peabody Map View: Company's internal Geographical Information System (GIS) for mapping.

Life of Mine (LOM): Company's internal process for mine planning and economic analysis.

IP system: Company's internal Integrated Planning (IP) system for LOM financial model.

All government permits and approval documents.

Table 2-1. List of Units and Abbreviations

AD	Air Dried
AHD	Australian Height Datum
ALS	Australian Laboratory Services
ARO	Asset Retirement Obligation
ASTM	American Society of the International Association for Testing and Materials
AUD	Australian Dollar
C	Degree Celsius
CAPEX	Capital Expenditure
CBM	Coal Bed Methane
CDA	Co-disposal area
CHPP	Coal Handling Process Plant
CSR	Coke Strength after Reaction
DESI	Department of Environment, Science and Innovation
DHSA	Drill Hole Spacing Analysis
EIS	Environmental Impact Statement
GM	Goonyella Mine Seam
GLB2	Goonyella Lower B2 Seam
GPa	Gigapascals
HV	High Volatile
IRR	Internal Rate of Return
kWh	Kilowatt Hour
LLC	Limited Liability Company

LMS	Land Management System
LOM	Life of Mine
LTCC	Longwall Top Coal Caving
ML	Mining Lease
MR Act	Mineral Resources Act 1989
NPV	Net Present Value
NUMA	Non Use Management Area
PL	Petroleum Lease
PMLU	Post Mining Land Use
PoO	Point of Observation (Resources)
PRCP	Progressive Rehabilitation Closure Plan
QP	Qualified Person
ROM	Run of Mine
SAI	Sampling Associates International
SEC	Securities and Exchange Commission
TPH	Tonnes Per Hour
UCS	Uniaxial Compressive Strength
USD	United States Dollar
VM	Volatile Matter

2.4. Involvement of Qualified Persons

The following parties serve as Qualified Persons (QPs) for this report as defined in S-K 1300:

Mining Engineering: Damien Wichlacz (Qualified Mining Engineer, AusIMM Member No. 3054930), Peabody employee

Geology: Xenith Consulting Pty Ltd, Brisbane, Australia

Mr. Wichlacz is employed as Senior Manager Mining Engineering Underground at Peabody's Corporate Office in Brisbane, Queensland, Australia. Damien is a member of the AUSIMM (The Australasian Institute of Mining and Metallurgy). He has responsibilities for managing underground engineering and technical services for underground operations and projects within Australia. He has over 15 years of coal industry experience in underground and open cut coal mines in Australia. He regularly travels to Centurion for engineering support. He provided engineering support for Life of Mine Planning and budget mine planning at Centurion.

Xenith Consulting Pty Ltd ("Xenith") has a world-class team of highly qualified and skilled resource industry experts. Xenith's team has deep experience in geology, engineering, project management, business operations and financial analysis. Most of the Xenith team are members of AUSIMM. In recent years ESG, stakeholder engagement, land access, cultural heritage, native title and environmental approvals have been added to the service offering. Xenith is committed to innovation and providing its clients with up to-date data, geological modelling, and real-time learning by utilising a range of geological software solutions. Xenith has undertaken resource and reserve estimates for numerous coal mines in Australia and the world over the last 20 years. Xenith is familiar with the geological settings as well as mine planning and mining operations of the Centurion area.

3. PROPERTY DESCRIPTION

3.1. Location

The Centurion Mine is an existing underground coal mine owned by Centurion Coal Mining Pty Ltd, (ACN 010 879 526).

The underground operations for Centurion are environmentally authorized by EA EPML00815613 that covers all activities within ML 6949 and PL 504. The holder of the tenements and the EA EPML00815613 is Centurion Coal Mining Pty Ltd.

Centurion North is comprised of ML1790 and ML70495 (part of the Ward's Well project which has been subdivided between Peabody and Stanmore) and a portion of MDL3010 (Dabin) which is owned by the West Burton Joint Venture (85% Peabody). A limited amount of environmental disturbance is currently authorized on the Ward's Well portion of Centurion North by EA EPPR00668513 and on the Dabin portion by EA EPPR00497713. The EA for Ward's Well is currently being de-amalgamated by DESI to separate the Stanmore and Peabody parts of Ward's Well and will likely be approved in Q3 2024.

Centurion Coal Mining Pty Ltd (Centurion) is a wholly owned subsidiary of Peabody Energy Australia Pty Ltd (ACN 096 909 410) with the overall parent company being Peabody Energy Corporation (Peabody), a New York Stock Exchange listed entity.

The mine is located on the western flank of the Bowen Basin, approximately 160km WSW of the town of Mackay in Queensland, Australia.

The location of the Centurion Mine within Australia is shown in Figure 1-1, and its position relative to the eastern coast of Australia is shown below in Figure 3-1.

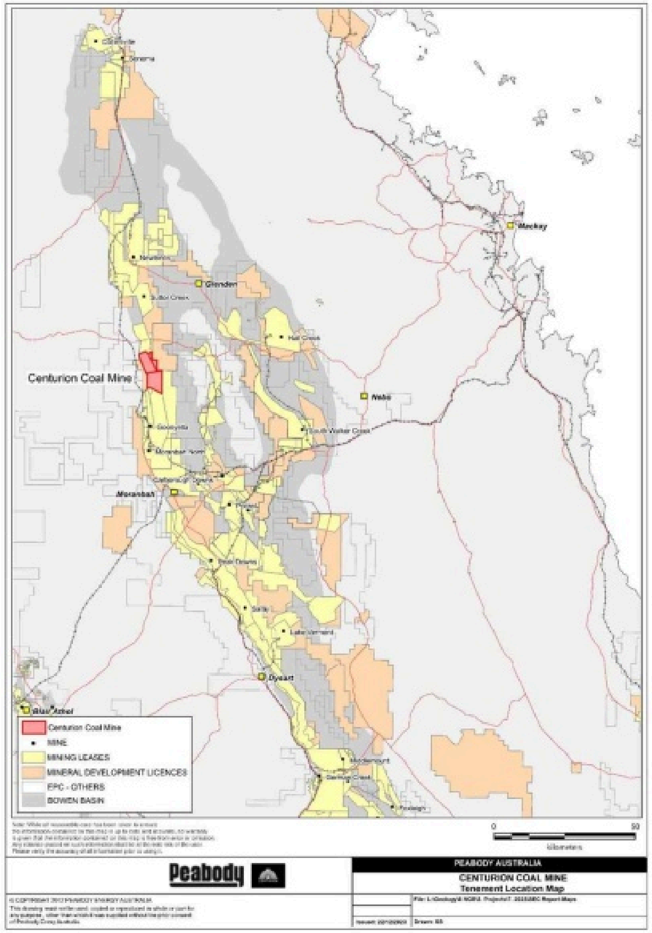

Figure 3-1. Regional Location Map

Centurion's current surface facilities consist of a Drift Entry and Bathhouse, Coal Handling Preparation Plant (CHPP), coal stockpiles, refuse co-disposal facilities, and Rail Loop and Loadout, all of which are located on the Mining Lease (ML) 6949. Centurion also has a nearby Accommodation Village, and the Burton Gorge Dam enables a reliable supply of water to the site. The location of the Drift Entry, CHPP, Train Loadout, Accommodation Village and the Burton Gorge Dam are shown as follows in Table 3-1. All key infrastructure items described are located within the Isaac Regional Council Local Government Area (LGA).

Table 3-1. Mine Facility Coordinates (GDA94 / MGA Zone 55)

Facility	Easting	Northing
Drift Entry	599,100	7,604,270
CHPP	599,520	7,603,450
Train Loadout	598,840	7,603,450
Accommodation Village	616,765	7,608,865
Burton Gorge Dam	616,890	7,608,670

3.2. Property Rights

The Centurion Mine operates under tenure issued by the State Government of Queensland. Tenement holders are bound by the Mineral Resources Act 1989 and the Mineral Resources Regulation 2013 which define the laws pertaining to coal exploration and mining in Queensland. Under the system administered by the Department of Natural Resources, Mines and Energy (DNRME), tenements are held as either EPC (Exploration Permit Coal), MDL (Mineral Development License) or ML (Mining Lease).

The Centurion Mining area consists of ML's, a MDL and a Petroleum Lease (PL) as outlined in Table 3-2. The ML allows for mining and the sale of coal by both underground and open cut methods. Overlapping this Mining Lease, Centurion also holds a Petroleum Lease, PL504, which enables the company to commercialize any coal seam gas (methane) that may be extracted within the lease area. Processes have been established to convert the MDL to a ML prior to the commencement of mining.

Table 3-2. Surface and Coal Control

Title	Name	Type	Purpose	Area (ha)	Grant	Expiry
ML 6949	Centurion	Mining Lease	Coal	3293	26/09/1991	30/09/2026
PL 504		Petroleum Lease	Coal Seam Gas		03/12/2015	02/12/2041
ML1790	Wards Well	Mining Lease	Coal & Gaseous Hydrocarbons	2722.8150	13/07/1978	31/07/2041
ML70495		Mining Lease	Coal & Industrial facilities	747.7536	29/05/2017	31/05/2038
MDL3010	Dabin (West Burton)	Mineral Development License	Coal	10827	16/02/2017	28/02/2027

Figure 3-2 shows the Centurion ML and PL areas. The forward plans for Centurion Mine include renewal of these leases as required.

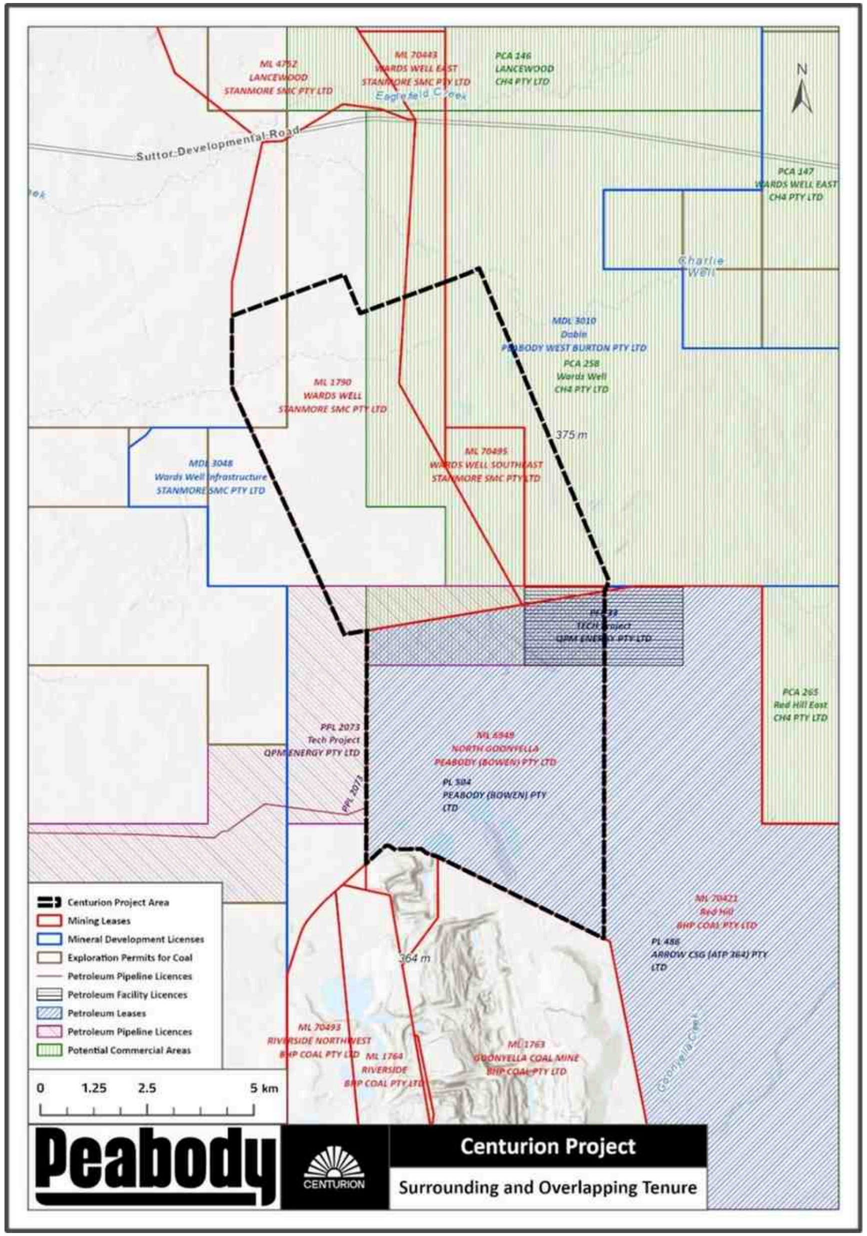

Figure 3-2. Mineral Property Map

Peabody owns the freehold land which holds North Goonyella and the access road, which goes all the way to the accommodation village and up to the Suttor Development Road (yellow land parcels). Most of the surrounding land is freehold, except for Lot2SP214117, owned by Stanmore, which is leasehold and underlies the Dabin project.

Figure 3-3 shows the land ownership around the Centurion Mine.

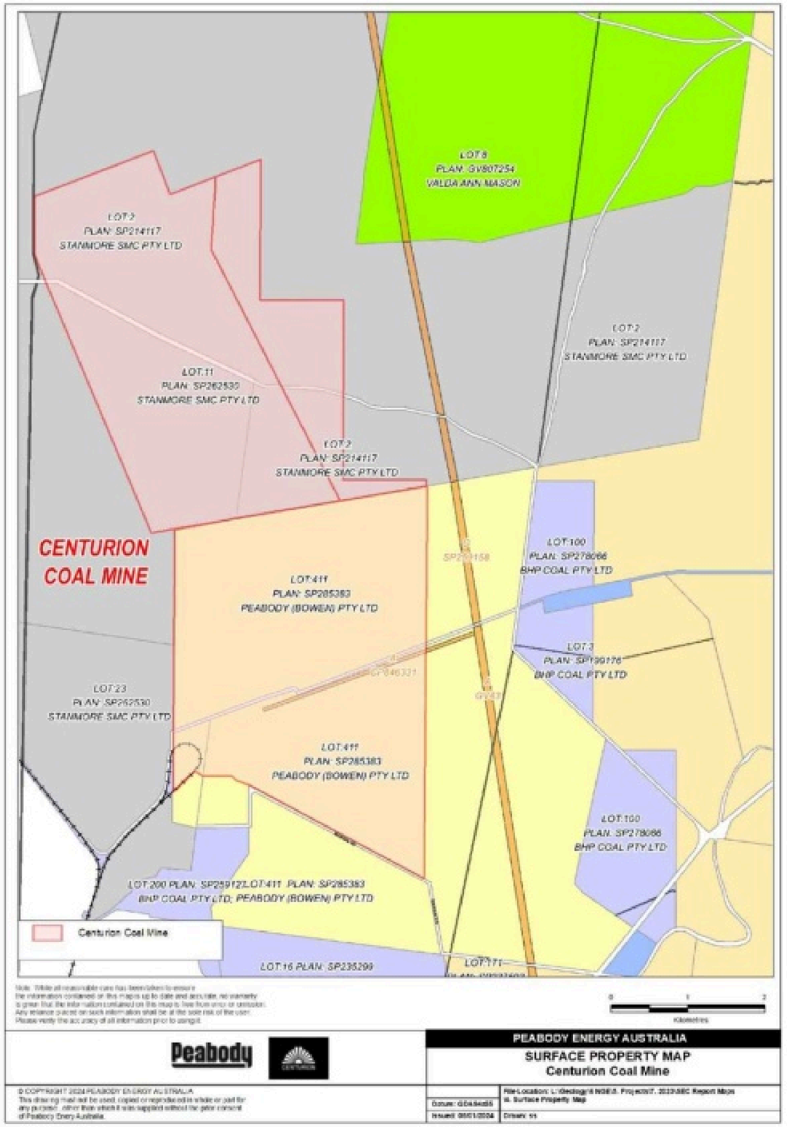

Figure 3-3. Surface Property Map

Production from the Centurion Coal Mine is subject to the Queensland Government Royalty charged on total revenue. Queensland Government royalties are based on the price paid (in $A) with the rate using the parameters as defined in Queensland Public Ruling MRA001.3. summarized below.

Average price per tonne for period	Rate	
Up to and including $100		7%
Over $100 and up to and including $150	First $100: Balance:	7% 12.5%
More than $150 and up to and including $175	First $100: Next $50: Balance:	7% 12.5% 15%
More than $175 and up to and including $225	First $100: Next $50: Next $25: Balance:	7% 12.5% 15% 20%
More than $225 and up to and including $300	First $100: Next $50: Next $25: Next $50: Balance:	7% 12.5% 15% 20% 30%
More than $300	First $100: Next $50: Next $25: Next $50: Next $75 Balance:	7% 12.5% 15% 20% 30% 40%

Figure 3-4. Queensland Government Coal Royalty Rates

In addition to this standard government royalty, there is also a special private royalty agreement established in relation to the sale of the property by a prior owner. This special royalty is limited to production from the Goonyella Middle Seam (GMS) within a defined area. The royalty, paid annually, amounts to 20% of the nominal before-tax cashflow attributable to sales from the defined area less capex, and any accumulated losses (since the original sale process was completed in CY2000). The impact of these royalties has been included in the financial modelling for this property.

As part of the consideration for the acquisition of the Centurion North (Wards Well) tenements, a price-linked royalty is payable to the prior owner on the first 120Mt of product coal mined from the area, capped at circa US$200m. The royalty rate is dependent on the prevailing coal price exceeding certain targets, and an additional royalty would be triggered if coal is mined above 120Mt, with the royalty cap to be pro-rated to the initial royalty cap on a tonnage basis. Peabody will only commence making these payments once it has recovered its upfront investment in the development of Centurion North. A similar royalty arrangement would be applicable for coal ownership on adjacent leases. All royalties have been considered in the financial analysis.

3.3. Comments from Qualified Person(s)

To the extent known to the QP, there are no other significant factors and risks that may affect access, the title of the right, or ability to perform work on the property.

4. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES

4.1. Physiography

The Centurion Mine lies in the Fitzroy River Basin within the Nogoa / Mackenzie System which is bounded by the Denham and Broadsound Ranges to the west and east. The Nogoa / Mackenzie Rivers are the major rivers in the Fitzroy River Basin. The major tributaries of the Mackenzie River are the Isaac, Connors and Comet Rivers.

The Centurion Mine is located within the upper reaches of the Goonyella Creek catchment, which flows into the Isaac River approximately 9 km downstream of the mine. The relative location is shown in Figure 4-1.

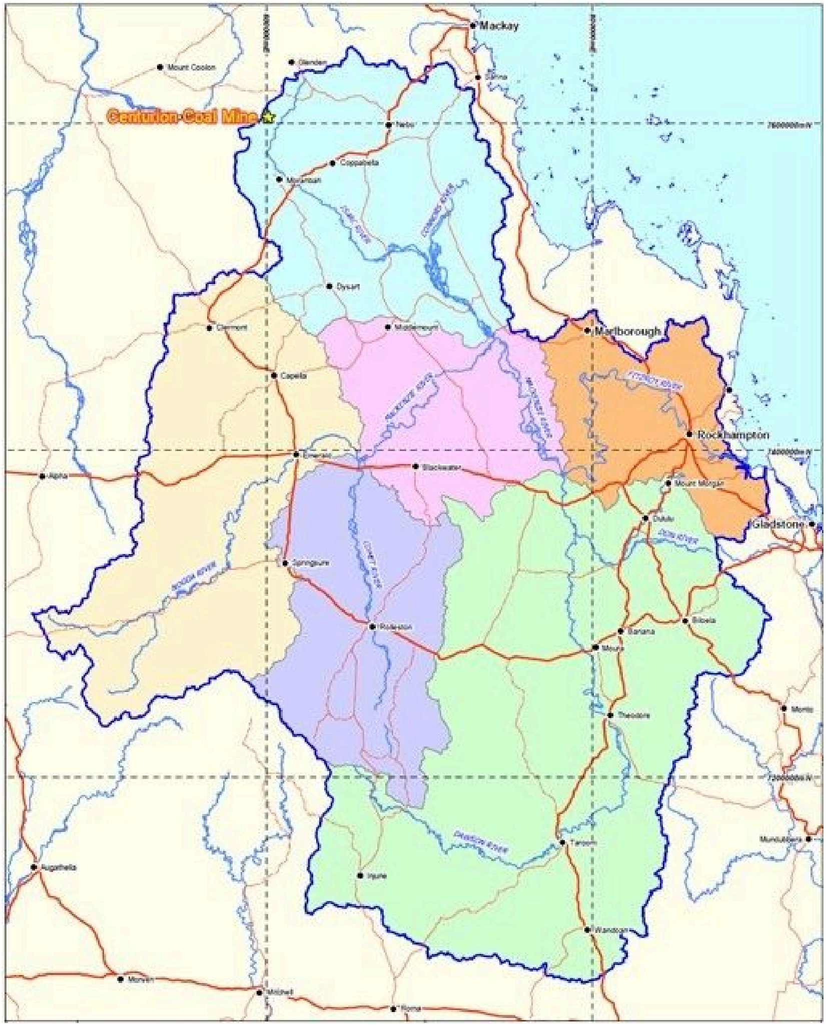

Figure 4-1. Regional River Catchments

The natural topography of the eastern and northern sections of the Centurion Mine comprises predominantly flat slopes, to undulating low hilly lands, primarily based on alluvial plains overlying Permian sedimentary rocks. In general, the terrain units (topography and geology) across the Centurion Mining area are consistent and typical for the region.

Surface elevations over the lease area range from approximately 280m AHD in the southeastern portion of the lease, to approximately 355m AHD on the western side of the Dabin lease.

The primary natural feature in the broader landscape is the Burton Range, which extends in a north to south direction approximately 10km to the east of the site. The topography slopes from the Burton Range in the east down towards the Centurion Mine leases. The Burton Range is approximately 200 – 300m higher than the surface at the Centurion Mine. To the south, the open pits of the Goonyella Riverside Mine extend for approximately 20km in a southerly direction. The waste dumps associated with the Goonyella Riverside Mine are also a significant topographical feature of the area.

Land within the Centurion Mine lease areas has historically been used for beef cattle grazing, although the last 30 years have also seen significant coal mining and exploration work undertaken in the surrounding region. The majority of the lease has been cleared for improved pasture, with Buffel Grass well established in most soil units.

4.2. Access

The Centurion Mine is located within the Isaac Regional Council area (former Belyando Shire) and is located adjacent to the Goonyella Riverside Coal Mine which is owned and operated by the BHP Mitsubishi Alliance (BMA).

The site is accessed from Mackay on the Peak Downs Highway then via the Suttor Developmental Road, turning off just west of the Isaac River and following the mine access road past the Burton Gorge Dam for a further 17km until the administration area of the Mine is reached. The site is also accessible via Red Hill Road and Goonyella Road to the south, which is the most direct route to the township of Moranbah.

There are two commercial airports in the vicinity of the Centurion mine. Both the Mackay and Moranbah airports provide regular flight services to the state capital of Brisbane as well as other cities on the east coast of Australia. The Mackay airport is the larger airport, with regular jet services supporting a range of industries including tourism, agriculture, and mining.

Figures 4-2 and 4-3 show the access roads from Mackay and Moranbah airports to the Centurion mine.

Figure 4-2. Access Map from Mackay Airport

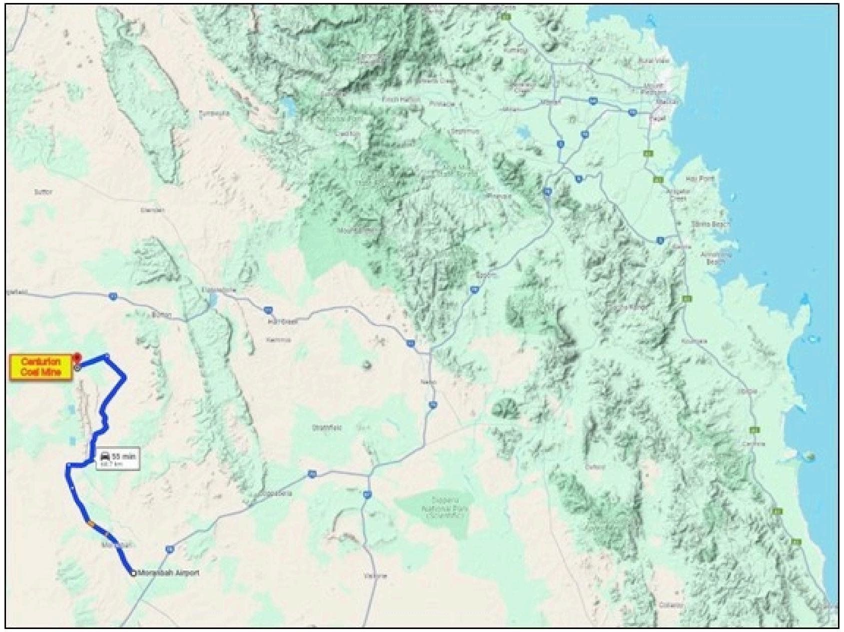

Figure 4-3. Access Map from Moranbah Airport

4.3. Climate

According to the Australian Bureau of Meteorology (BOM), the Centurion Mine area is classified as ‘Subtropical’ based on the Koppen classification system. This generally refers to areas that have humid, wet summers and cool, dry winters.

The BOM has a weather station located at the Moranbah Water Treatment Plant, (Station #034038), which has collected climatic records since 1972 through April 2012. This is the closest long-term weather station, located 37km south-west of Centurion Mine. The average monthly climate data recorded at this location is presented in Table 4-1 and provides indicative long-term climate and weather data for the Centurion area.

Moranbah has a warm climate with mean maximum temperatures ranging from 23.7 °C in July to 34.1 °C in December. Mean minimum temperatures range from 9.8 °C in July to 21.9 °C in January. Heat wave conditions can occasionally be expected between October and March and frosts between May and August.

Table 4-1. Moranbah Water Treatment Plant Monthly Temperature

Temperature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average High (deg C)	33.9	33.1	32.2	29.6	26.5	23.7	23.6	25.5	29.3	32.3	33.1	33.9	29.7
Average Low (deg C)	21.9	21.8	20.2	17.6	14.2	11.1	9.8	11.1	14.1	17.6	19.4	21.1	16.7

(Source: www.bom.gov.au)

Table 4-2. Moranbah Water Treatment Plant Monthly Precipitation

Precipitation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Rainfall (mm)	103.8	100.7	55.4	36.4	34.5	22.1	18.0	25.0	9.1	35.7	69.3	103.9	613.0

(Source: www.bom.gov.au)

The BOM Queensland Flood Summaries indicate that there have been relatively few cyclones in the past 120 years in the Centurion Mining area. The most intense cyclone, a Category 3 event, occurred in March 2010 in Airlie Beach and caused significant wind damage in coastal regions. High floods associated with low pressure systems from active or decaying Tropical Cyclones have also been experienced in all tributaries of the Fitzroy and Burdekin Rivers, especially the Dawson, Mackenzie, Comet and Nogoa Rivers.

Several Category 1 and 2 cyclones have been reported in the Mackay region over the last 120 years, however these cyclones have tended to be weak in intensity and have caused limited damage.

Meteorological monitoring commenced at the Moranbah Water Treatment Plant in 1972. Since 1972, the highest daily rainfall recorded at the Moranbah BOM station was 164.8 mm. Table 4-2 shows the monthly precipitation in the area. There is a risk of regional flooding and impact from cyclonic winds on the Centurion Mine and surrounding infrastructure. This may occasionally, although infrequently, necessitate halting of mining activities.

4.4. Available Infrastructure, Water, Electricity, and Personnel

Coal mining operations have been established in this area for many decades and the infrastructure including roads, railroads, powerlines, and waterways is well developed. The warehouse and maintenance facilities from major equipment and material suppliers are accessible for the mining operations in the region.

Local infrastructure in the district includes:

- The Peak Downs Highway (State Route 70) from Mackay, approximately 100km to the East via the Suttor Development Road (State Route 11). Access to the east coast network is paved minimum two-lane road;
- Access to both the Goonyella and Newland Rail Systems provides access to the coal export terminals at the Port of Hay Point, and the Port of Abbot Point.
- Existing Mine Infrastructure Area, Coal Processing and Rail Load Out facilities.
- The 15GL capacity Burton Gorge Dam – Centurion holds a license to take 1.7GL/a from this facility to top-up water harvested from on-site catchments.
- Connection to a High Voltage electricity grid that provides electricity to the existing facilities.

Townships for supply of labour and materials include:

- Moranbah, approximately 60km to the south.
- Nebo, approximately 110km to the east; and
- Mackay, approximately 190km to the northeast.

Accommodation villages in the area which support the workforce include:

- The Centurion Accommodation Village located 19km east of the Centurion Mine; and
- Other camps established in or near the Glenden, Nebo and Moranbah townships that support other mining ventures in the area.

4.5. Comments from Qualified Person(s)

The local resources and infrastructure are well developed due to the long history of coal mining activities in the region. It is the QP's opinion that there are no deficiencies in local infrastructure or resources to support the reserves and resources.

5. HISTORY

5.1. Prior Ownership

The Queensland Government granted EPCs in the area to Utah Development company in 1964. The area was relinquished in 1969 when Utah applied for a Mining Lease to commence the Goonyella Mine (ML 1763).

North Goonyella Coal Properties Pty Ltd (NGCP) applied for and was granted EPC 453C covering the Centurion Mine area in 1989. NGCP was owned by White Mining Ltd (51%) and a subsidiary of Sumitomo Pty Ltd (49%).

Following the grant of ML 6949 in 1991, the mine was developed with longwall production coming in early 1994.

Since the 1990s, exploration has been conducted by BHP, the then holders of MLs 1790 and 70495 (Wards Well and Wards Well Southeast) and Peabody, the holders of ML 6469 (North Goonyella) and MDL 3010 (West Burton).

Sumitomo acquired White Mining's share of NGCP, taking 100% ownership in the mine before selling to a consortium of RAG Australia Coal Pty Ltd (RAG) (60%) and Thiess NG Pty Ltd (Thiess) (40%) in November 2000. Thiess sold its stake in the mine to RAG in January of 2003.

Peabody acquired North Goonyella as part of an acquisition of RAG's coal assets in April of 2004 and operated it until September of 2018, when a fire in the mine halted operations.

In October 2023 Peabody entered into an agreement with Stanmore to purchase the southern area of Wards Well (ML 1790 and ML 70495) with the intent to expand underground operations to the North of the North Goonyella Mine footprint and eventually extend into Dabin (MDL 3010). The Wards Well leases were previously owned by BHP Mitsui Coal (BMC). BHP sold its 80% stake in BMC to Stanmore Resources in 2022.

Following the announcement that the mine would commence the work necessary to install a new longwall system, Peabody changed the name of North Goonyella to Centurion Mine in December 2023.

5.2. Exploration, Development, and Production History

Early exploration in the area was carried out by the former Mines Department and by Utah Development Company as part of its regional exploration of the Bowen Basin in the early to mid-1960s. With only the Moranbah Coal Measures present, early exploration was focused on proving large open cut resources. As the bulk of the Centurion resources were considered to be underground mineable, the area was relinquished by Utah at the time it applied for ML 1763, Goonyella Mine. Authority to Prospect (ATP) 453C was granted to North Goonyella Coal Properties Pty Ltd (NGCP), owned by White Mining Ltd (51%) and a subsidiary of Sumitomo Pty Ltd (49%), in May 1989. After an extensive exploration program, an application for a mining lease was made, leading to the grant of ML 6949 in October 1991 for a period of 35 years. Since the 1990s, exploration has been conducted by BHP, the then holders of MLs 1790 and 70495 (Wards Well and Wards Well Southeast) and Peabody, the holders of ML 6469 (North Goonyella) and MDL 3010 (Dabin). BHP undertook several mining studies over the years that it controlled the leases, with the study considering an infrastructure area including a boxcut portal entry in the northern part of 1790.

White Mining Ltd developed the operation (then known as the North Goonyella Mine), including a rail loop, coal handling preparation plant (CHPP) and nearby accommodation village, following the grant of ML 6949 in 1991. The mine commenced longwall production in early 1994. Peabody acquired the mine in 2004 and operated the mine until a fire halted operations in September 2018. The mine has been idled since that time while plans to re-initiate production with regulatory approval were developed.

During the third quarter of 2022, Peabody initiated the redevelopment of the mine. The project will utilize substantial existing infrastructure and equipment at the mine, including a new 300-metre longwall system, a coal handling preparation plant, a dedicated rail loop for transport to the Dalrymple Bay Coal Terminal, and an accommodation village with housing and service amenities for more than 400 workers. Redevelopment activities which include ventilation, equipment, conveyance, and infrastructure updates, are underway in anticipation of reaching development coal, subject to regulatory approvals, in the first half of 2024. Longwall operations are expected to re-commence in 2026.

Historical Annual Coal production from the Centurion Mine is shown in Figure 5-1 and Figure 5-2. *(Sources: Woodmac and Peabody)*

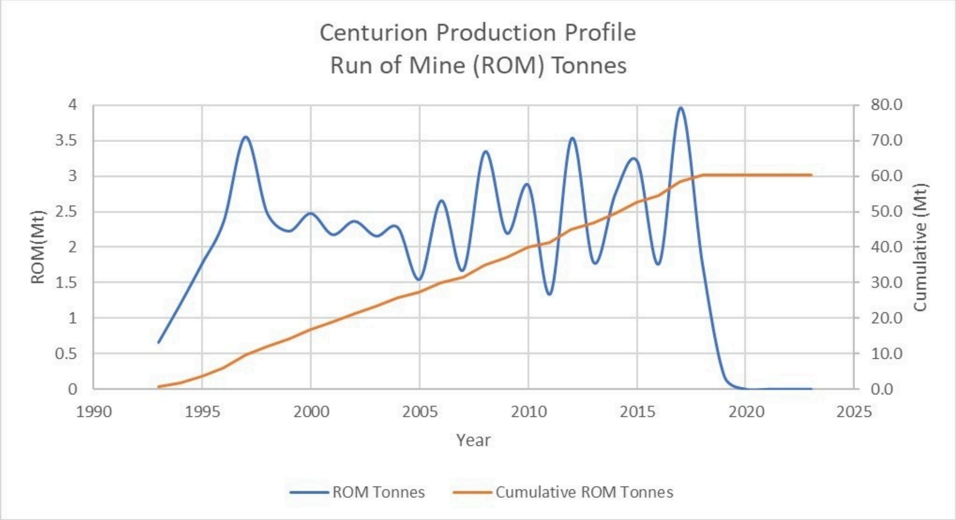

Figure 5-1. Historical Annual Run of Mine Production

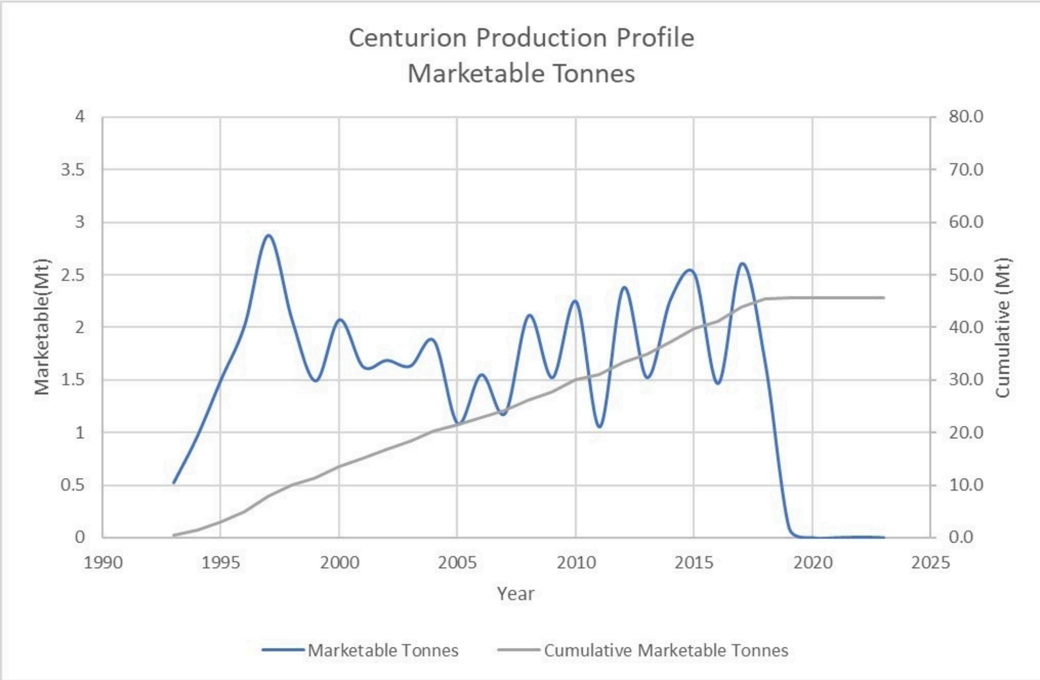

Figure 5-2. Historical Annual Marketable Production

6. GEOLOGICAL AND HYDROLOGICAL SETTING, MINERALIZATION, AND DEPOSIT

6.1. Geological Setting

Regional Geology

The Project is located in the north-south trending, Early Permian to Middle Triassic, geological Bowen Basin. The Bowen Basin (Figure 6-1) covers an area of approximately 200,000 km^2 and is exposed over 600 km from Collinsville in the north to Rolleston in the south. The Bowen Basin contains a sedimentary sequence of Permo-Triassic clastics, which attain a maximum thickness of 9,000 m in the depocenter of the Taroom Trough.

The Bowen Basin is divided into several tectonic units comprising north north-west to south south-east trending platforms or shelves, separated by sedimentary troughs. The major structural unit surrounding the Project area is the Collinsville Shelf, underlain at shallow depths (one or two kilometres) by the Clermont Stable Block, which bounds the northern Bowen Basin to the west. The Collinsville Shelf was a stable tectonic environment and is characterised by a monoclinal accumulation of sediments, which dip gently (two to eight degrees) and thicken to the east. The Project is located within the northern Bowen Basin.

Folding within the basin is gentle and mostly related to drag on thrust faults at the eastern margin of the basin limb. The boundary between the Collinsville Shelf and the adjoining major axis of deposition, the Nebo Synclinorium, a northerly extension of the Taroom Trough, is marked by a major thrust fault system termed the Jellinbah Thrust Fault Zone. Scarcity of regional significant structures distinguishes the Collinsville Shelf sediments from the more disturbed formations of the Nebo Synclinorium. The important structural elements of the Bowen Basin are illustrated in Figure 6-1.

Regionally, the stratigraphic sequence is presented as a schematic West-East cross-section through the Project area in Figure 6-2 and can be summarised as follows: the Permo-Triassic sediments of the Bowen Basin are overlain by a thin covering of unconsolidated Quaternary alluvium and colluvium, poorly consolidated Tertiary sediments of the Tertiary Suttor and Duaringa formations and, in places, remnants of Tertiary basalt flows. The Triassic Rewan Formation underlies the Tertiary units across most of the Project area, and a few outcrops of the Moolayember Formation and Clematis Sandstone can be found in outcrops in the northern area. The Permian Blackwater Group coal measures and associated over- and interburden are located below the Triassic strata and overly the Back Creek Group, the basement of the project area. The geology of the sub-surface Project area is shown in Figure 6-3.

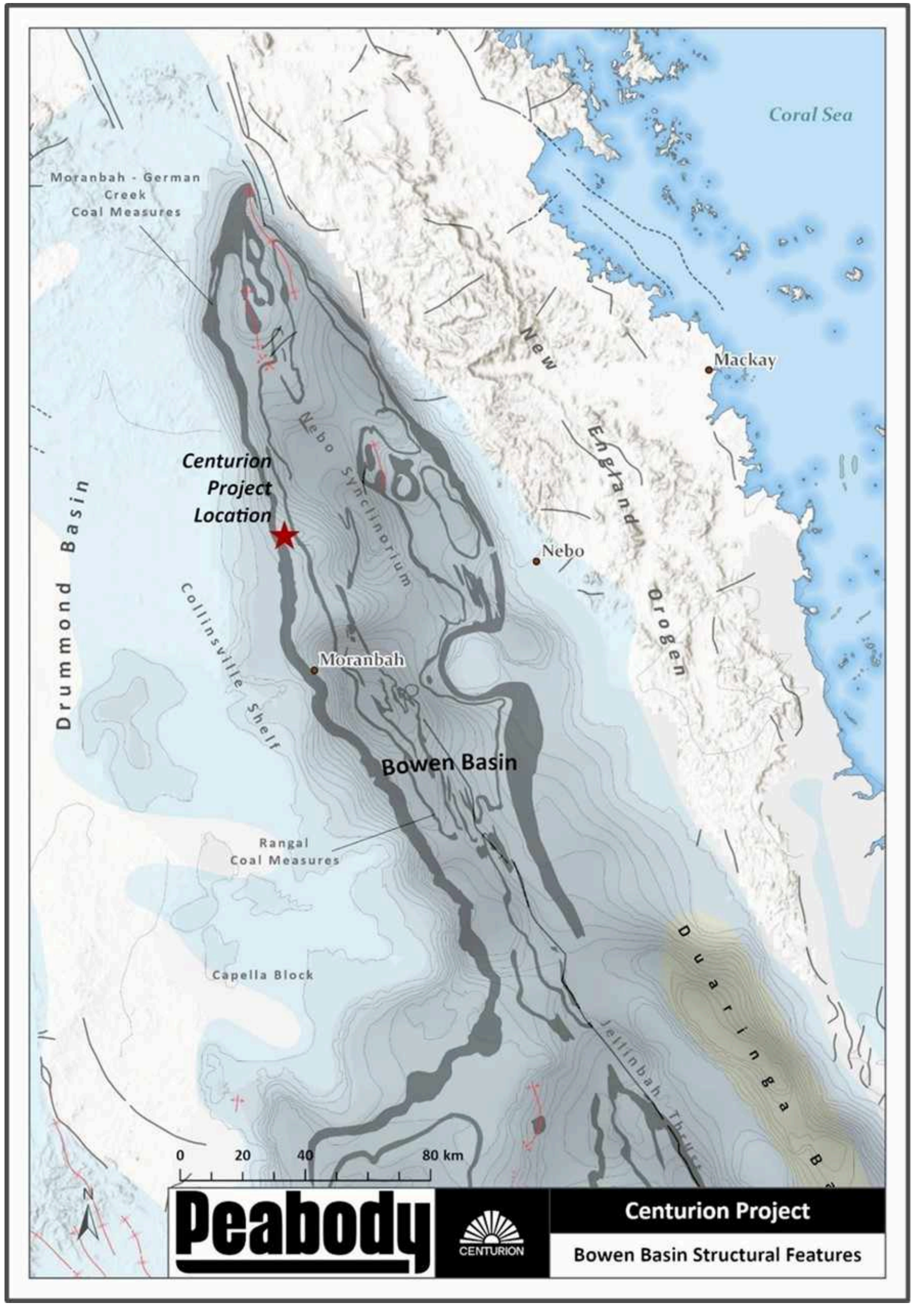

Figure 6-1. Regional Bowen Basin Structure

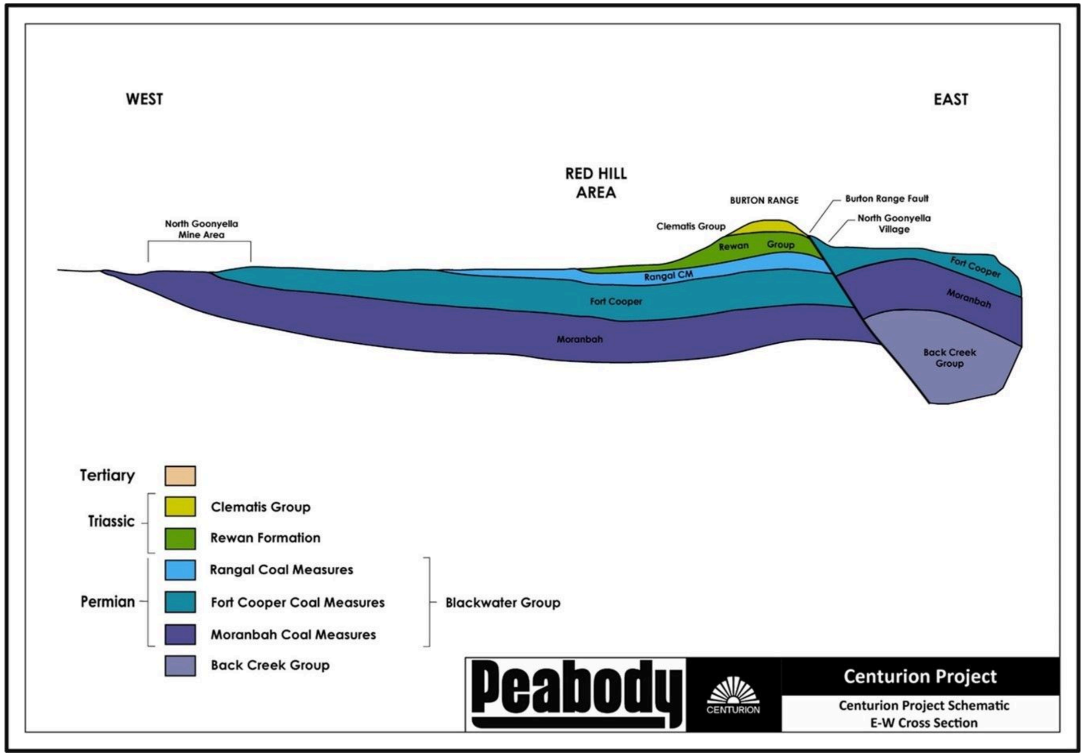

Figure 6-2. Schematic Regional Geological Section

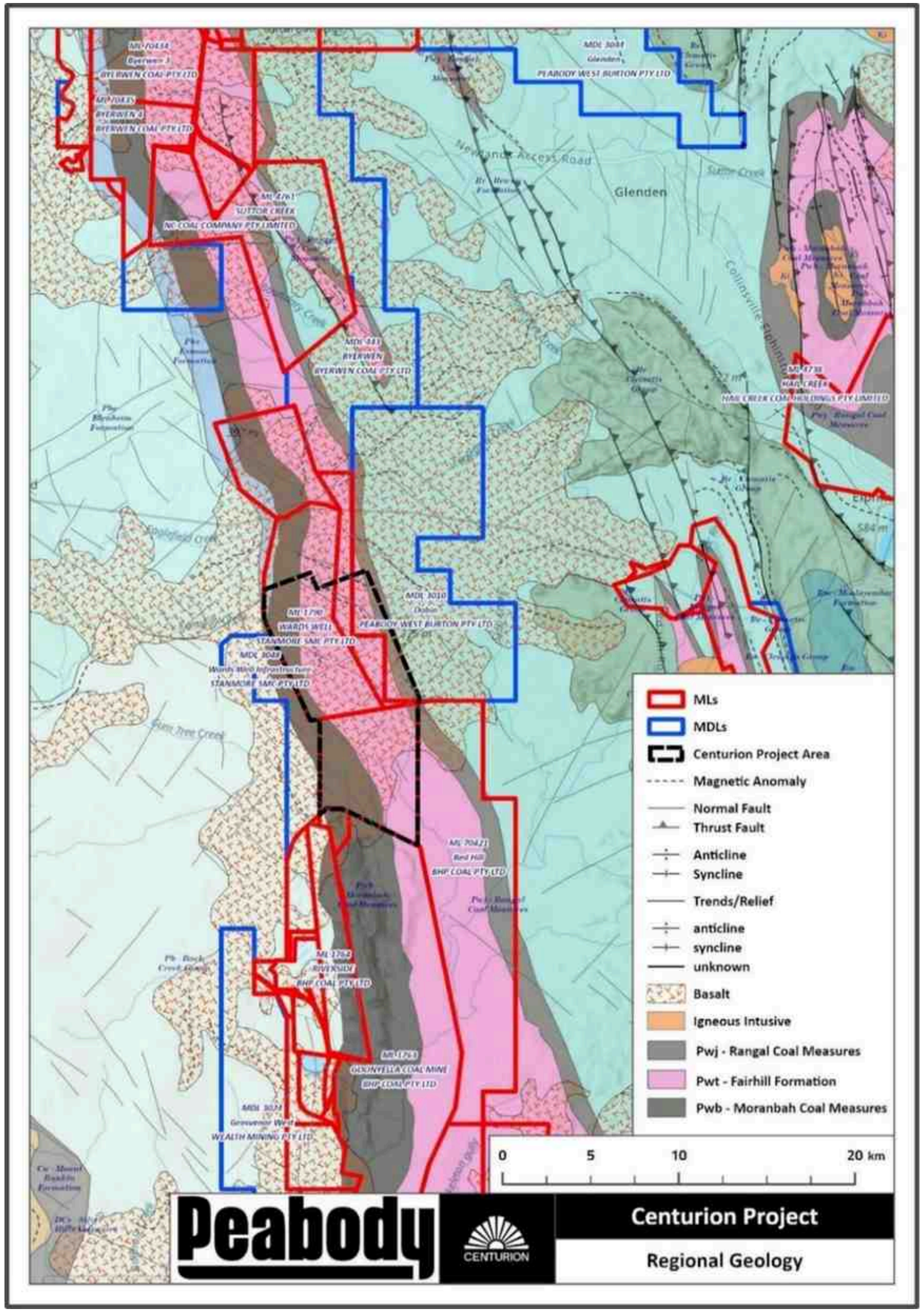

Figure 6-3. Regional Geology

Local Geology
The stratigraphic units of the Centurion project are described below. The Project's Triassic and Permian stratigraphy is shown in Figure 6-4.

Quaternary (Surface soils)
Quaternary soils cover all the mining lease and surrounding areas and are composed of red brown to very dark brown-grey soils, sands, silts, clayey soils and gravels.

Tertiary deposits (Tertiary)
Characterisation of Tertiary units has identified several distinct weak clay-sandy and sand-clayey units that are discontinuous across the property. The units are partly associated with lateritic horizons are also observed to occur interbedded with basalt flows, mainly in the northern and western areas of ML 6949. Three reasonably continuous extremely weathered to fresh but altered basalt layers are observed within the Tertiary horizon and these consist of, in stratigraphic sequence:

At the base of the basalt flows, another sequence of alternating sand, sandy clay, clay, carbonaceous claystone and lignite beds overlie Permian strata. This moderately weak to moderately strong sequence consists of pale-coloured rocks except for the dark brown and brown-black of the carbonaceous clays and lignites and dark grey of the breccia. This sequence averages approximately 70 m in thickness, though not all units are present in all drill holes.

Thicknesses of the basalt layers tend to be variable, and its coverage dominates both tertiary channels and the north and western parts of the tenement. A basalt thickness map is given in Figure 25-1.

Fair Hill formation (the Lateral equivalent of the Fort Cooper Coal Measures) (Permian)
The Fair Hill Formation (FHF) underlies Tertiary sediments in some areas of the property, and it is comprised of grey lithic sandstones, siltstones, mudstones, coals and tuffaceous sediments. A number of FHF seams sub-crop within the lease area, but it is only the thick Fair Hill seam (30 – 40 m of interbedded high ash coal seams, sandstones, mudstones, siltstones and tuff beds) that has been correlated throughout the area. The Fair Hill seam is a highly interbedded sequence of generally inferior high ash coal bands, cream to brown tuffaceous claystone, carbonaceous mudstones, siltstones and fine-grained clayey sandstones. Though parts of the seam contain coal plies up to 3m thick. FHF coal densities and ash content are predominantly high as inferred from geophysical logs and coal quality analysis. The base of the Fair Hill seam is interpreted to be the base of the FHF (FCCM) and start of the MCM.

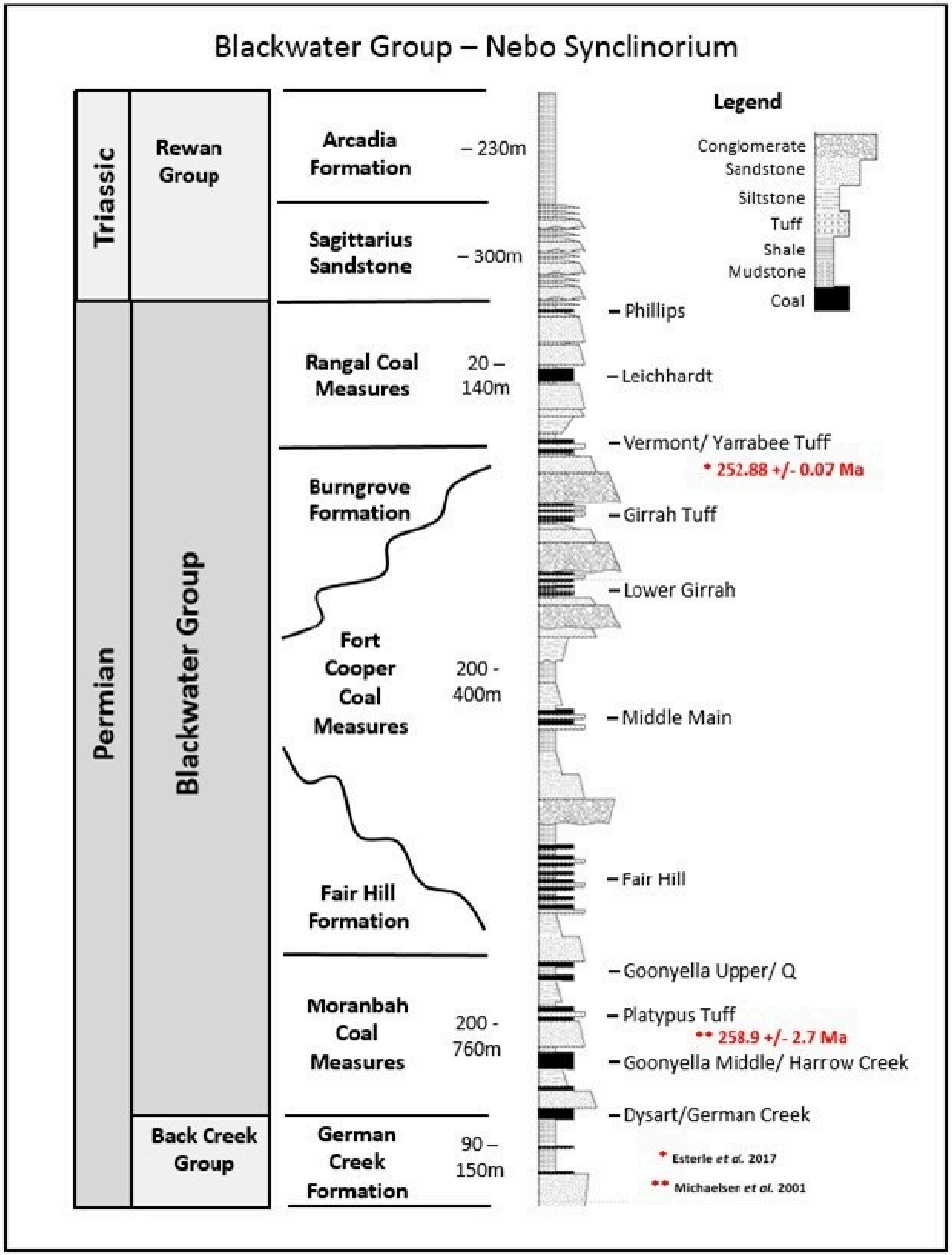

Figure 6-4. Regional Stratigraphy

Moranbah Coal Measures (Permian)

The MCM sub-crop is within and to the west of the project and contains the MCM coal seams. They have been mined in various open cut and underground operations in the area. Presently, the Goonyella Middle (GM) seam is mined at North Goonyella (Peabody underground), Goonyella Riverside (BMA open cut), Broadmeadow (BMA underground), Grosvenor and Moranbah North (Anglo Coal underground). The Goonyella Lower (GL) seam is currently being mined as part of the open cut mine at Goonyella Riverside.

At North Goonyella, the Goonyella Upper and Lower coal seams of the MCM underwent considerable splitting from the general seam architecture of the Goonyella area to the south, however, economic potential has been demonstrated for splits of the GU and GL seams (i.e. the GUA and GLB2 seams).

The MCM is comprised of regular sequences, grading from fine lithic sandstones, siltstones and mudstones to coal then back to mudstone, siltstone grading to sandstones. The sedimentary sequences are typical of cyclic fluvial clastic depositional systems with considerable seam splitting occurring in the area.

Post-depositional structures are characterised by northeast-trending thrust structures and west trending normal structures. Thrust faults are observed to be the generally low angle, low to moderate displacement structures dipping east whilst normal faults are observed to comprise of steeply dipping structures with somewhat less variable throws and increased continuity as opposed to thrusting structures.

Geology of the Moranbah Coal Measures in the Project Area

The project area‘s stratigraphy shows Tertiary deposits, followed by the Fort Cooper Coal Measures (FCCM) ending with the Fair Hill seam, leading in turn to the start of the Moranbah Coal Measures (MCM) and eventually the first of its seams, the R-seam.

The MCM coal seams are listed in Table 6-1. A typical stratigraphic column is shown in Figure 6-5 and a West-East cross-section through the Project are in Figure 6-6. Only the GUA, the GM and the GLB2 seams are considered to have reasonable expectations for eventual extraction and are the only seams with resources defined. They are briefly described below. The other seams are too thin or of too poor quality to be considered to have economic potential.

Table 6-1. MCM Seams

SEAM
R
Q
GUA
GUB
GXU
GXL
PU
PR
P
P3
GM
GLA1
GLA2
GLB1
GLB2
LB2L
LB2LL

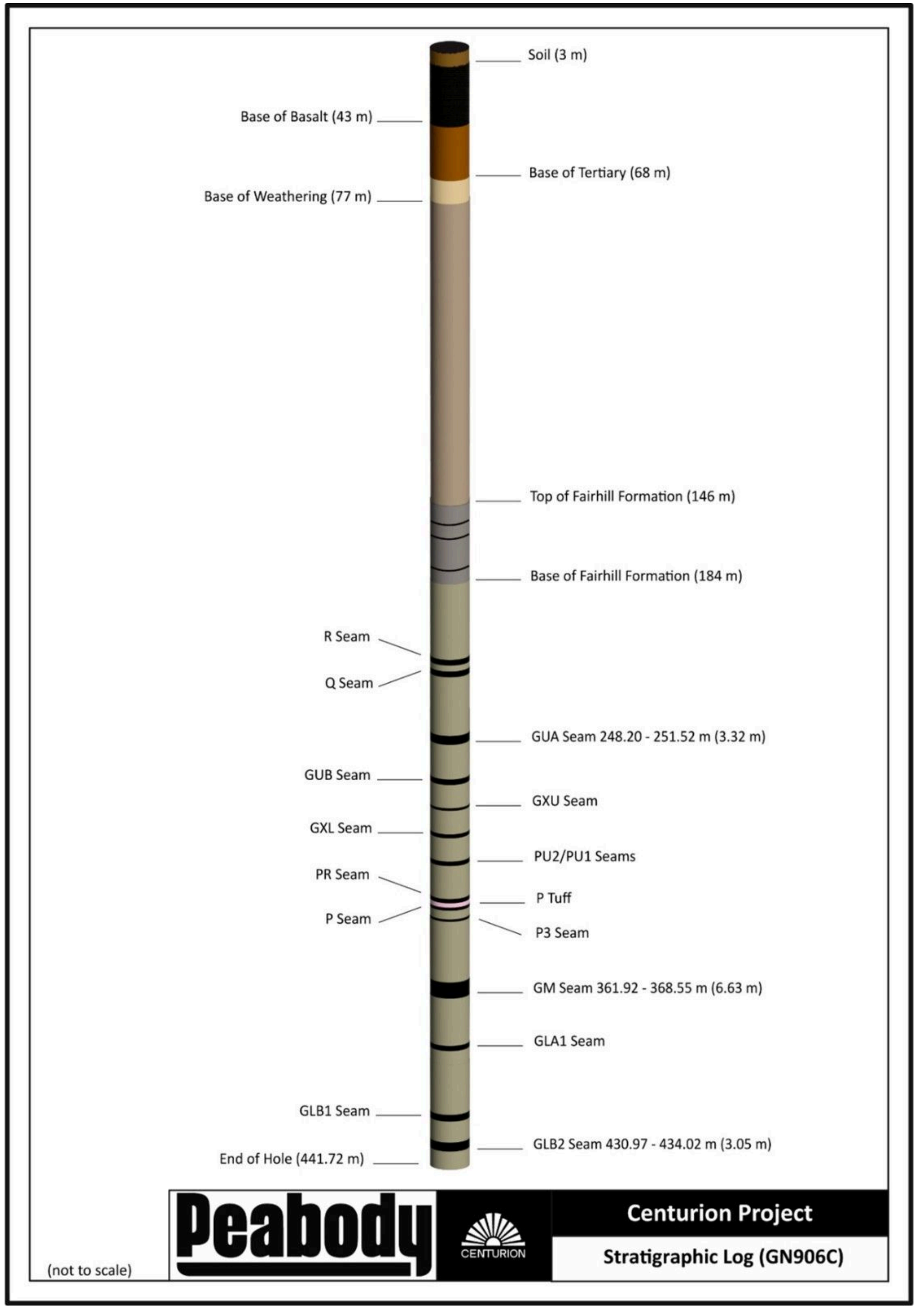

Figure 6-5. Stratigraphic Column of Main Intervals and Horizons

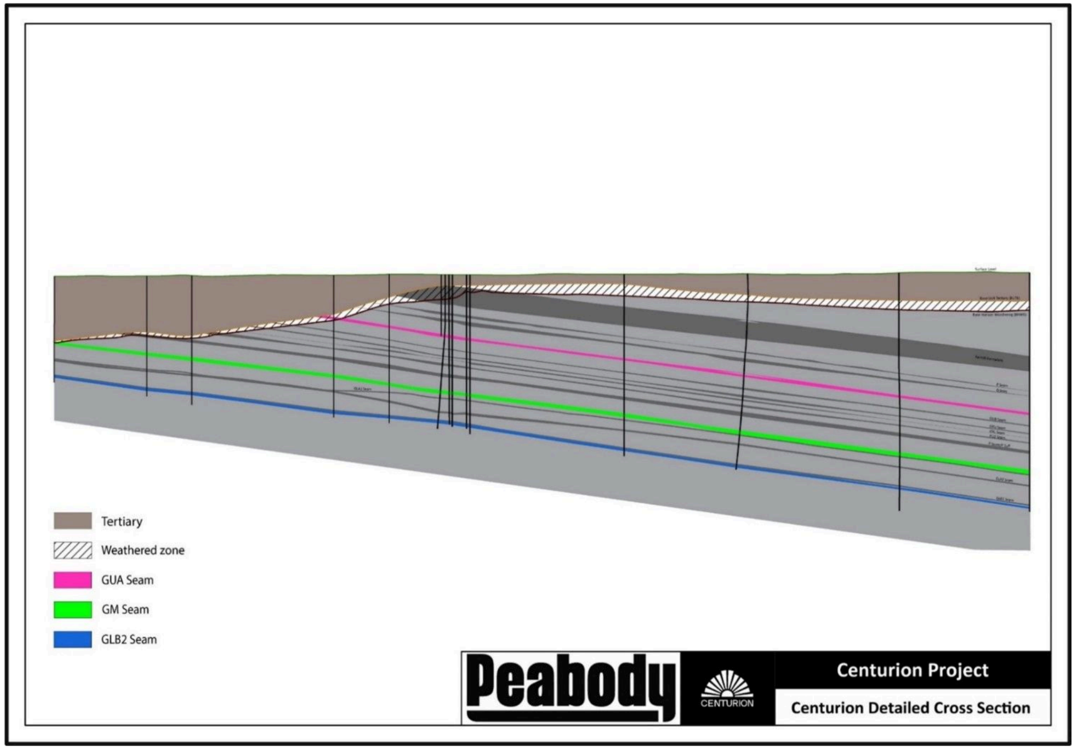

Figure 6-6. Typical Centurion West-East Cross-Section

Maps of the depth of weathering, the thickness of the Tertiary basalt as well as GUA, GM and GLB2 seams depth to coal, roof elevation, thickness, interburden, raw ash content and yield are provided in Figure 26-1 to Figure 26-19.

Goonyella Upper (GUA) Seam

The GUA seam is composed of two distinct plies. The upper dull banded ply, the GUA2, is about 1.5 m to 2 m thick and incorporates numerous dark brown tuffaceous claystone bands. The lower ply GUA1 is about 1.5 m to 2.5 m in thickness. It is comprised of a dull coal with numerous bright bands grading to dull and bright banded at the base. The GUA1 has a typical thickness of 2.5 m.

The total thickness of the GUA seam is generally 3 to 4 m thick with a moderate to high raw ash content ranging from 22% in the north-west to 34% (ad) in the south. The seam is intruded in the north-western corner of the project.

Goonyella Middle (GM) Seam

The main seam of the MCM is the GM seam. The interburden to the GUA increases from 100 m in the west to 130 m in the east. The GM thickness ranges typically from 5 to 8 m increasing from west to east. It has a low in situ ash content typically of the order of 18% (ad). The GM seam is the primary economic seam in the area and is currently the only seam mined at the North Goonyella Mine.

The GM consists of 6 coal plies which are – from top to bottom - the GM6, GM5, GM4, GM3, GM2 and GM1 with the lower plies showing lower ash with a relative increase in ash towards the upper section of the seam. The GM1a is a stone ply lying above the GM1. The basal 3 plies (GM1 to GM2) are based on lithology. The remaining plies are determined by working section considerations.

The bottom ply, the GM1 is a smaller band of coal at the base of the GM. It runs from the base of GM seam to the GM1a stone band. The GM2 is from the GM1a to the top of the thin marker tuff band. The top of the GM3 is 4 m above the base of the GM1 if the GM1a is less than 0.2 m thick and 4 m above the top of the GM1a if it is more than 0.2 m thick. The GM4 is 0.25 m above the top of the GM3, and the GM5 another 0.25 m above. The GM6 is the remainder to the roof of the GM seam.

Goonyella Lower B2 (GLB2) Seam

The Goonyella Lower seam is split into the distinct A1, A2, B1 and B2 plies. The GM to GLB2 interburden ranges 40 to 70 m, increasing to the north-west. The GLB2 seam thickness typically ranges from 2 to 4 m thickness, increasing towards the north. It shows relatively bright coal of low ash, with few parting bands.

Structural Geology

Studies identified two distinct periods of active tectonism, a basin extension period during the early Permian period coinciding with the deposition of Permian coal measures and a later compressional stage occurring in the mid-Triassic period.

A period of “tectonic relaxation” and extension is said to have occurred during the Tertiary period. Sedimentary deposits from this period are marked by widespread basalt flows indicative of crustal thinning.

A combination of normal faulting possessing transcurrent displacement (strike-slip) and thrusts are observed to occur throughout the lease. Thrust structures generally trend north-south, dipping to the east and are consistently low angle (15°-30°). Normal faults are normally observed to trend in a WNW-ESE direction with larger displacement zones associated with transcurrent displacement. The continuity of these features both horizontally and vertically is thought to vary with strong evidence of in-seam shearing linking a series of more vertical features.

Faults (both normal and reverse) have been observed both in cores recovered in exploration programs and during mapping of the underground longwall operation. Several major faults have been identified from drilling results and 3D seismic results.

In the future northern lease area, the most significant structure proposed is a graben feature (approximately 5 0m wide) which strikes east-southeast across the middle of the northern panels with displacements estimated to range from 1 to 7.5 m. Extrapolation of this zone up dip into the mine area was confirmed by the mine personnel where normal faults, some with the strike-slip movement were observed in the main gate in LWP4N. Considerable roof instability intersected in this zone.

The second major feature identified by the 3D seismic was a reverse fault striking approximately northeast-southwest across the deeper southern panels area. This steeply dipping (approximately 80º to the southeast) reverse fault has displacements ranging from 2 to 10 m, averaging approximately 6m. It is unclear whether this reverse fault has a strike-slip component or if the structure has only dip-slip movement.

The third group of significant structures identified by drilling and confirmed by the 3D seismic is the corridor of low angle thrust faults and back thrusts generally striking north-south across the deeper northern and southern panel areas which tend to be irregular and discontinuous and vary from 200 to 500 m in length. Their faults appear almost en-echelon particularly in the southern panels and though this probably oversimplifies the fault pattern complexity it is inferred that they are in groups of several smaller thrusts imbricating from a lower weak layer beneath the GM seam. An example of this style of faulting was observed in LWP2N in the recovery road area. These thrust faults vary in displacement from 1.5 to 7.5 m and predominantly dip to the east, with the occasional conjugate back-thrust dipping to the west.

The fourth group of structures as determined from the 3D seismic are a set of normal faults which strike approximately northwest and appear to form small grabens. These faults are oriented subparallel to the small-scale faults which are regularly observed on the longwall face and are generally less than 1m in displacement. These interpreted faults have displacements estimated to range from 2.5 to 6.5 m and represent a significant hazard to longwall operations.

Faulting interpreted or mapped at the GM seam level is assumed to also impact the GUA and the GLB2 seam with many structures vertical or sub-vertical.

6.2. Hydrology Setting

Regional Hydrology
The Centurion mines lie within the catchment area of the Isaac River. The area is surrounded by several natural landform features, including the Denham, Peak, Broadsound and Connors Ranges,

with the topography of the catchment ranging from approximately 250m AHD elevation along the Isaac River to approximately 325m AHD elevation along sections of the Denham Range that define the western boundary of the valley (Golder, 2018).

The Isaac River is a major tributary of the Mackenzie River in the Fitzroy Basin. Ultimately, the Mackenzie River joins the Fitzroy River, which flows initially north and then southeast towards the east coast of Queensland and discharges into the Coral Sea southeast of Rockhampton, near Port Alma.

Regarding regional hydrogeology, the Isaac River alluvial aquifer is considered the main aquifer in the region of the Northern Bowen Basin. The aquifer is considered of low to moderate productivity with most bore yields of 0.5 to 5 litres per second (Golder, 2018). Isaac river alluvials do not occur within the Centurion mine lease area, with the nearest occurrence approximately 5km south-east and is mostly confined to the current streams and past paleochannels.

In some areas the Isaac River alluvial aquifer sits atop clay of the Suttor Formation which can be up to 10m thick. It is suggested that the potential for connectivity between groundwater in the alluvial deposits along the Isaac River, and the underlying coal seam aquifers is highly unlikely due to the geological and hydraulic properties of the strata (Cenozoic clay, silt, mudstone, and siltstone of the seam overburden) developed in the base of the Quaternary aquifer. Potential pathways between the seam aquifers and the Isaac River alluvial aquifer may only exist where the alluvial aquifer is in direct contact with large scale thrust faults (Golder, 2018).

The Isaac River alluvial aquifer is mainly unconfined and recharged by seasonal surface waters along ephemeral rivers, during flooding in the adjoining flood plains, and surface infiltration of rainfall and overland flows into exposed sand and gravel layers where not overlaid by thick clays.

Local Hydrology

The Centurion coal mine is located within the Isaac River catchment that covers approximately 22,410 km2 (Department of Environment and Resource Management, 2011). The mine lease is in the upper reaches of Goonyella Creek. The Isaac River and its tributaries (including Goonyella Creek) experience variable flows, with peak flows expected from December to March. The upper reaches of Goonyella Creek are considered ephemeral. Ephemeral waterways commonly exhibit the following features: elevated turbidity and substantial sediment loads. Significant flow events typically transport a considerable sediment load, an occurrence often heightened by an extended preceding dry period. (Department of Environment and Resource Management, 2011)

Water quality variations in the upper reaches of Goonyella Creek may occur over small spatial areas due to different land management practices and industrial discharges.

The main source of ground water within the Centurion area is within the basalt layers that occupy the tertiary incised valleys of the Permian strata. The basalt is often vesicular and sometimes underlain by tertiary sand lenses. Where the sand layer and basalts are in direct contact, they are hydrologically connected, and considered as part of the one aquifer. These basalt layers are not considered extensive across the Centurion lease area and are mainly present towards the northwestern area.

The basalt aquifer has typical bore yields between 1 and 5 L/s and water quality is considered suitable for livestock. The basalt is not considered a major aquifer in the region due to its variable thickness and heterogeneity (Golder, 2018).

6.3. Mineralization and Deposit Type

The Project ‘s primary focus is the GM seam. Other seams with estimated resources are the GUA and the GLB2 seams. These seams show high fluidity and good caking properties and are sold as metallurgical, hard coking coal.

The MCM coal seams present as either medium volatile or high volatile A bituminous coal (ASTM Classification). The upper seams present as high volatile A, while the GM seam and lower are classified as medium volatile. The volatile matter generally decreases with depth, indicating a change in rank, as highlighted previously. While not consistent with every seam, rank generally increases towards the south. Raw sulphur levels within the coal are generally moderate, averaging approximately 0.5% air dried (ad) for the resource. The phosphorus content is low to moderate, and the chlorine levels are uniformly low across the resource. Tests on the coals have indicated that all seams show coking coal potential once the allowance is made for varying ash levels.

Peabody classifies the Centurion property as a coal deposit with moderate geological complexity based on the following factors:

The target seams are laterally continuous and can be correlated using geophysical logs across large distances with high confidence.

The seams are relatively flat lying (typically <5 degrees), dipping towards the east.

Larger faults can be delineated by drill hole intersections and seismic surveys (2D and/or 3D).

The GM seam is well known because -

- Peabody has successfully mined it in the North Goonyella underground (longwall) mine within the property.
- The Goonyella seams have been being mined in several open cut and underground mines in the region.

The areas of potentially higher variability or uncertainty are around seam intrusions (dykes, sills and/or plugs), Tertiary basalt flows in the overburden as well as fault locations and seam displacements. A multi-faceted exploration approach is utilized to increase confidence in the geological interpretation, including seismic surveys and associated validation drilling.

6.4. Comments from Qualified Person(s)

In the opinion of the QP, for both regional and local geology, the structural controls on mineralization are well studied and understood through decades of exploration and mining activities in the area. This is considered sufficient to support the estimation of coal resources and reserves.

7. EXPLORATION

7.1. Coordinate System

The project uses the Universal Transverse Mercator projection Map Grid of Australia (MGA), Zone 55, with the Geocentric Datum of Australia (GDA2020). Older drill holes surveyed in different coordinate systems were transformed to GDA2020.

Height data is captured as Australian Height Datum (AHD) which is tied to mean sea level.

Relevant surveys (drill hole collars, underground measurements) have been undertaken by qualified surveyors.

7.2. Geological Structure Mapping and Quality Sampling

The northern Bowen Basin is a major coal mining province. It has been drilled extensively. Geological data from mining operations have been collated and interpreted in various studies. The regional geological settings of the region are well understood.

No specific surface mapping was undertaken for this underground project. The understanding of the project's structure and its quality variation has been built on successive exploration drilling programs supported by seismic surveys and underground observations in the North Goonyella mine. This includes regular mapping of faults and other geological features.

In addition to the coal exploration holes on the tenements, Coal Seam Gas exploration holes have added to the knowledge of the regional coal seam structure.

7.3. Exploration Drilling

The Queensland Mines Department carried out early exploration in the area as part of its regional exploration of the Bowen Basin in the 1960s and early 1970s. This regional exploration, which totaled 5,700 metres of drilling, identified several economic coal seams.

Since the 1970s, exploration has been conducted by BHP (and before that TPM), the then holders of MLs 1790 and 70495 (Wards Well and Wards Well Southeast) and Peabody, the holders of ML 6469 (North Goonyella) and MDL 3010 (West Burton).

Peabody's extensive exploration drilling towards the end of the 1970s and in the 1980s resulted in the delineation of underground resources. Subsequently, ML 6949 was granted to North Goonyella Coal Properties Pty Ltd in October 1991.

Peabody continued exploration on the tenement using cored and non-cored drill holes, together with the use of geophysical surveys. This allowed the determination of the location of resources and reserves as well as to define the structural geology and the coal quality of the deposit. In addition, several distinct drilling programs have been carried out on the lease to help prove, ascertain and manage the resource since, including.

- Ongoing coal quality and gas drainage programs for the mined GM seam.
- The GLB2 Seam has been extensively explored which includes the coal quality coverage.

On-going drilling programs (gas conformance, mine services holes etc.) have been carried out to support the underground operations.

To the north of ML 9649, the Thiess Peabody Mitsui joint venture (TPM), began an intensive drilling program in 1973 to prove the quality and continuity of the MCM seams. During this phase, 78 boreholes were drilled on the then BHP MLs 1790 and 4752. The holes were drilled on an 800 m grid, for an aggregate 19,560 metres of open holes and 6,068 metres of core holes. ML 1790 was granted to TPM in 1974.

The next major exploration program commenced in July 1994. A core-hole pattern, which approximates a 600-metre triangular quality grid, was superimposed on a 300-metre triangular structure grid. Follow-up chip-hole drilling of structural anomalies, the drilling of larger 200 mm and 100 mm core boreholes for coal quality bulk samples, the drilling of 17-part core boreholes on a proposed drift centre line, and a hole for hydrogeological testing of the Tertiary basalts were also sunk.

Since then, BHP carried out several drilling programs on the ML to better define structure, intrusions, geotech, gas and coal quality parameters.

As of March 2021, there are 2,142 holes located within the Centurion property in the drilling database. The total drilling meterage for the Centurion property holes is more than 700 km, with an average depth of approximately 300 m. A break-down of these holes by type in shown is Table 7-1.

2025 holes within the Centurion property, plus numerous holes outside the Centurion property, are available to Peabody and have been used for a better understanding of the geological settings as well as in the geological model used for resource estimation. A plan showing the modelled drill holes is shown in Figure 7-1.

The two main types of exploration drill holes are rotary drill holes and core drill holes. Rotary (chip) holes are drilled for structural delineation to determine coal thickness, coal elevations and faults. These holes are generally 100 mm in diameter and drilled with air or water as a circulation medium. No samples are collected for quality analysis. The cuttings from these drill holes are logged for lithology and the holes are geophysically logged, with - at a minimum - caliper, density, gamma and verticality tools. Additional tools have included resistivity, sonic and acoustic scanners.

Core holes are drilled for coal quality, gas or geotechnical testing but provide structure and thickness information as well. Coal quality holes are generally rotary drilled through overburden or interburden to a designated core depth above the coal seams. The coal seam, including the immediate roof and floor, is cored typically with an HQ or HQ3 size (with a core diameter of 61.1 or 63.5 mm) Other core sizes are 100 mm or in more recent holes PQ or PQ3 sizes (85 and 83 mm). Specific washability and sizing holes have been drilled with a 200 mm core. Core holes are geophysically logged the same as the rotary holes. The cores are described, logged, photographed, bagged, and labelled at each interval and delivered to accredited laboratories for testing. Coal quality cores are analysed for raw coal proximates, sizing and washability characteristics, product coal properties including caking properties.

Geotechnical cores are analyzed for rock strength properties and – where appropriate for coal quality and/or gas. They are drilled similar to the coal quality holes but include a designated amount of overburden or interburden to be cored above and below the coal seams. The samples are tested for rock mechanic properties.

Gas holes are tested for gas content and gas properties. The two main types are holes to determine the gas content of the area and gas conformance holes to confirm the legally required maximum gas content for underground workings. Gas content is determined with a field test kit and/or in the laboratory.

All geotechnical and gas holes are geologically and geophysically logged.

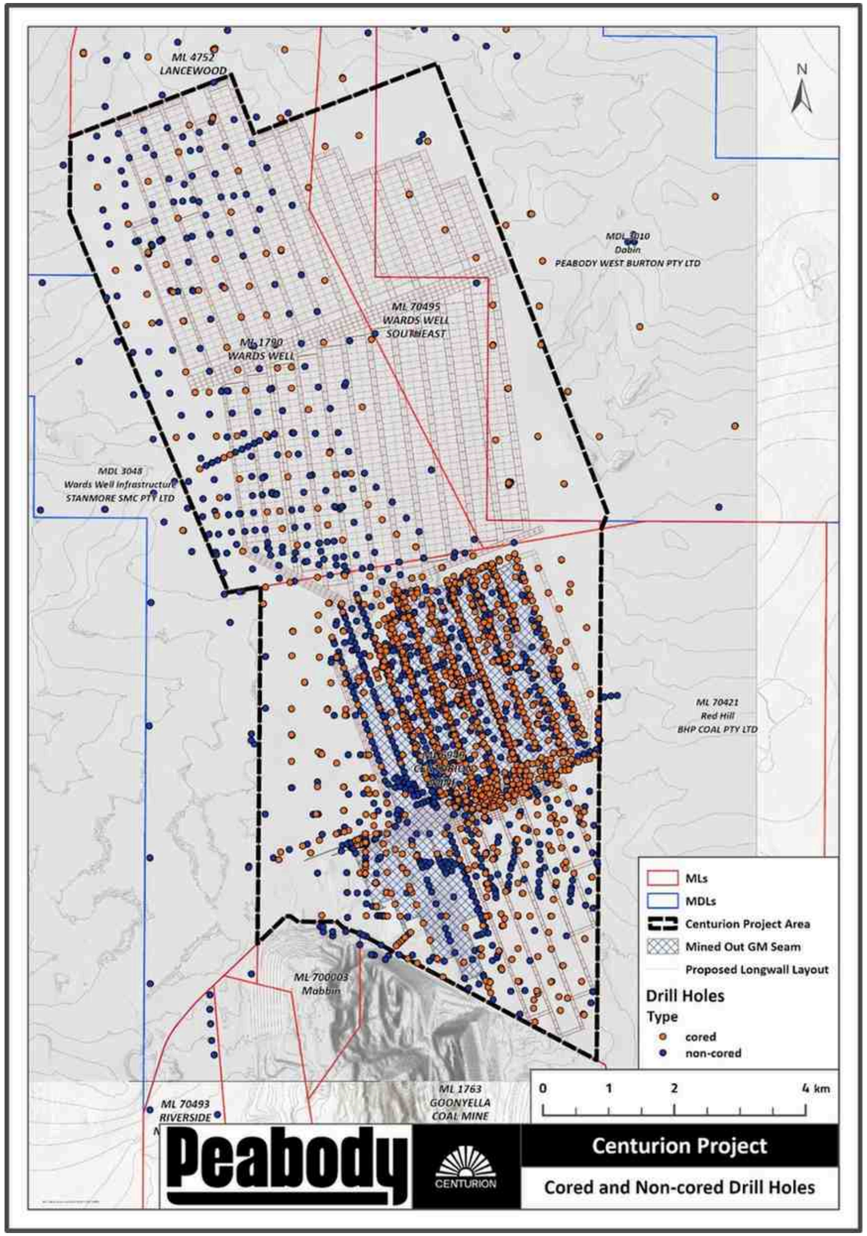

Figure 7-1. Drill Hole Location Map

Table 7-1. Summary of Drill Holes

Tenement	Designated Hole Purpose	Hole Type	
		Rotary	Cored (Partially)
Wards Well	Structure	219	
	Coal Quality		46
	Geotech		1
	Multi		31
	Other	15	
North Goonyella	Structure	639	14
	Coal Quality		196
	Geotech		21
	Gas		114
	Gas Conformance		485
	Multi		106
	Other	49	9
	Unknown	106	66
West Burton	Structure	5	1
	Gas		16
	Multi		2
	Other		1
	Unknown		1
Grand Total		1033	1109

The table shows holes drilled and includes pilot, duplicate and re-drill holes.

Multi holes are holes with any combination of Coal Quality, Gas or Geotech holes.

Gas conformance holes are cored holes for gas content assessment. They are generally geologically and geophysically logged where possible.

Mine Services holes like goaf drainage, ballast drop or gas riser holes have been excluded.

Seismic Surveys

A series of seismic surveys were carried out to provide more details on seam structures and seam faulting in particular,

The seismic surveys on the Centurion property (Figure 7-2) includes only one 2D seismic survey line acquired on the Wards Well ML 1790. It is located at the lease's southern end and was shot in 1997.

On the North Goonyella ML 9649, a dynamite trial line was shot in 2002, followed by a Mini-Vibe and Mini-SOSIE trials in 2003 over the same 2D seismic line. These lines were shot over the planned 3D survey area. The trials confirmed dynamite as the preferred source for the 3D survey which was conducted later in 2003. A total of 4,041 shot points on 173 lines and 9,148 receiver points on 86 lines were set out over approximately 6.9 km2. Total line length was 250km.

In 2018, a further 12.16 km of 2D seismic line data was acquired. The lines are located to the west of existing 2D and 3D seismic surveys that have been previously acquired for Peabody at North Goonyella. The new data were generated using a Vibroseis source and consisted of four source lines and 2 ghost lines, with one line (2018-03) also acquired a 2nd time using a different sweep, as a test. Later in the year 4.3 km^2 of 3D seismic data was acquired. This new 3D survey is located south and adjacent to the 2013 reprocessed 3D area, and in the same location as the 2011 2D seismic survey.

Other Surveys

Magnetic and radiometric surveys were carried out on the property providing additional information on the regional geological structure.

Recovery

Coal quality holes are generally required to have a 90% core recovery. Unless there are structural reasons, holes with less recovery are generally re-drilled. Historical drill holes with low(er) core recovery are generally excluded from the coal quality model and are not recognised as point of observation for resource classifications.

Drill Hole Surveys

The drill hole collars are surveyed by qualified surveyors using the coordinate system as described in Section 7.1. Collars from historical holes which were surveyed in older coordinate systems have been transformed. Apart from historical holes, drill holes were generally geophysical logged.

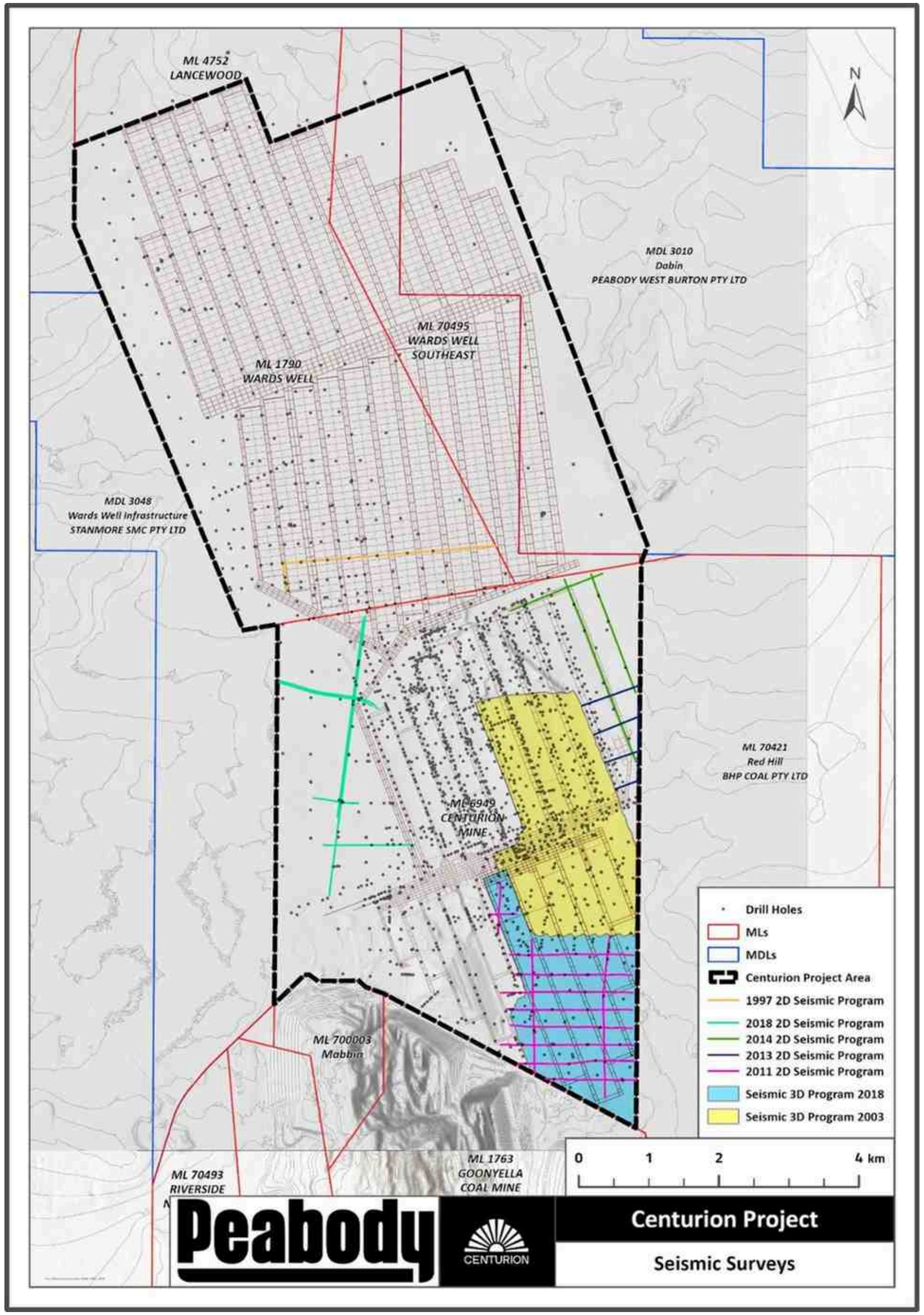

Figure 7-2. Seismic Surveys Location Map

7.4. Geotechnical Data

Most drill holes are logged for geotechnical parameters like fractures, defects and rock strength. Samples for strength testing are taken in the roof and floor of the main coal seams. The drill hole database shows 79 geotechnical holes (designated geotech holes and multi-purpose holes). They are shown in Figure 7-3.

Numerous assessments have been undertaken for the North Goonyella mining operations. The most relevant report for the planned mining area (SCT 2011, Preliminary Wards Well Southern Area Geotechnical Characterisation, Report No. BHPB3772B) finds that the area contains a high density of quantitative data for geotechnical assessment.

Based on the 320 rock test results analysed to date, the dataset comprises low to moderate strength samples ranging in UCS from 1.6MPa to 119MPa, with the majority of samples in the 5MPa to 50MPa. The median (P50) UCS is just under 40MPa, the P10 UCS is 10MPa and the P90 UCS is just over 60MPa. As is typically expected, the average strengths reduce with reducing grain size, with 40MPa-50MPa for the sandstones, siltstones in the 25MPa-35MPa range and carbonaceous shales and siltstones in the 10MPa to 25MPa range.

For the GM0, the median (P50) depth is 350m, P90 depth is 580 m and P10 depth is 190 m. The southern mining area is generally deeper than the north, ranging from nominally 200 up to 760 m depth.

Stress measurement data from mini-frac, overcore and breakouts are available for 16 boreholes, with some overlapping of parallel assessments in some holes. The horizontal stress regime is well constrained across the site and shows a consistent NNE-SSW to NE-SW direction. There is a suggestion of a normal distribution to the data, centred around a median bin range of 30-350 TN.

The horizontal stress magnitude increases with depth and is expected to be at a level to result in overstressing of coal at depths around 300-350m on first workings. Consideration of mine layout will significantly reduce the impacts of gate road stress concentrations in the deeper workings (>350 m).

7.5. Gas Data

Regional gas exploration has been carried out by the Coal Seam Gas companies CH4/Arrow Energy since the 1970s and has been part of exploration drilling programs since then, in connection with the North Goonyella underground mining operations. The Centurion property drill hole database shows 187 gas holes (designated gas holes and multi-purpose holes). This excludes gas conformance drill holes for the North Goonyella mine which were routinely drilled for gas compliance). They are shown in Figure 7-3.

The average gas content of the GM seam is approximately 10 (m^3/t), ranging from 4 to 17 and composed on average of approximately 92% methane.

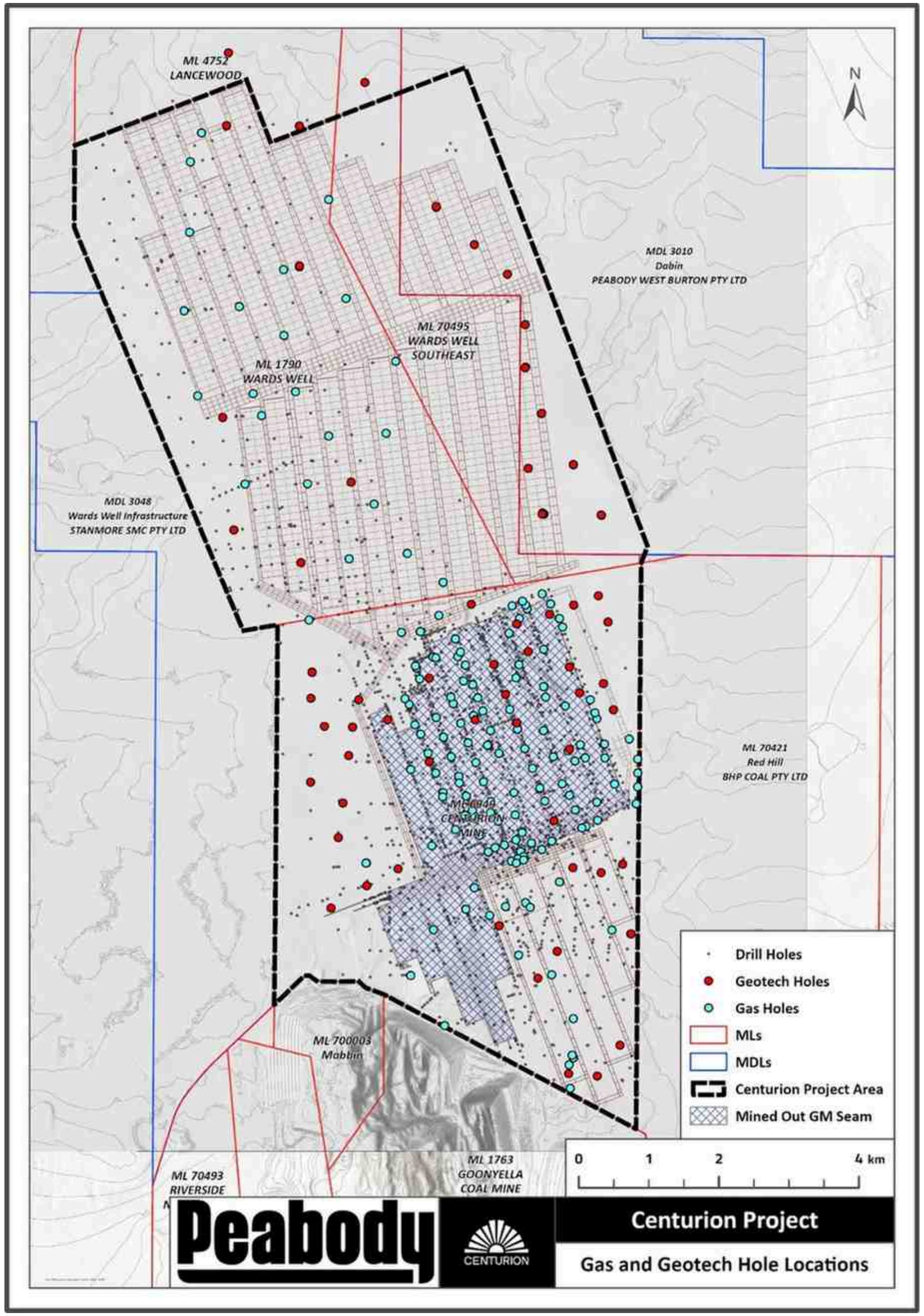

Figure 7-3. Gas and Geotech Holes Location Map

7.6. Hydrogeology

During exploration drilling ground water levels are routinely collected from drillers observations and geophysical logging tools. This is gathered by using an electronic dipmeter tool, or in the case of the geophysical logging is captured by the logging operator by analysing the density and gamma tools.

This data is stored with the drilling logs and stored within the geological database.

Various groundwater monitoring bores have been drilled across the Centurion deposit, designed to intersect mainly the Quaternary, Tertiary, and Permian formations. Vibrating wireline piezometers (VPWs) are installed at set horizons designated by a hydrologist or environmental consultant within the boreholes, and data is collected via an electronic data logger at the borehole.

Permeability testing and analysis was conducted within 4 boreholes targeting the GM and GLA1 seam in 2003 and reported by D.A.Casey and Associates at the time. Results reported ranged from 2.27mD to 32.4mD, with a mean of 10.43mD (mD = millidarcy).

7.7. Comments from Qualified Person(s)

The existing exploration programs have been validated. It is the opinion of the Qualified Person that the existing exploration data are adequate to support future operations and the estimates of coal resources and reserves.

8. SAMPLE PREPARATION, ANALYSIS, AND SECURITY

8.1. Washability Analysis

North Goonyella ML

Historical drilling that was conducted before Peabody acquired the North Goonyella operation followed acceptable preparation, quality analysis, and security procedures.

The early coal quality drilling programs under White Mining ownership, from 1989-2000, which includes holes GN001C to GN764CR2, did not include raw coal analysis as part of the treatment procedure. These holes were crushed to -12.7mm with washability analysis on 6 density fractions. The washability analysis undertaken fitted into two variants in Table 8-1 below.

Table 8-1. Quality Analysis Under White Mining Ownership

Seam	Number of Holes
GM cut	43
GLB2	31
GUA	15
Series	GN001C-GN451C
Sink Density	Float Density
	1.30
1.30	1.40
1.40	1.45
1.45	1.50
1.50	1.60
1.60	

Seam	Number of Holes
GM cut	55
GLB2	30
GUA	28
Series	GN536C-GN736C
Sink Density	Float Density
	1.40
1.40	1.45
1.45	1.50
1.50	1.60
1.60	1.70
1.70	

Clean coal composites were typically as follows:

- CF1.45 clean coal composite analysis for the GM and GUA seams.
- CF1.60 clean coal composite analysis for the GLB2 seam.

The coal quality drilling programs under RAG ownership, from 2001-2004, which includes holes GN823LD to GN1178R, now included raw coal analysis. These holes were now pretreated with detailed washability by size. The washability analysis undertaken fitted into two variants in Table 8-2 below. Of the 11 GUA holes drilled only 1 had the full GUA washability undertaken, the remaining 10 holes only had washability on the bottom GUA2 ply.

Table 8-2. Quality Analysis Under RAG Ownership

Seam	Number of Holes
GM cut	11
GLB2	14
GUA	0

Series	2001-2004	
Circuit	Size minus	Size Plus
To DMC	50.00	1.40
To Spirals	1.40	0.125
To FF	0.125	0
Float / Sink Analysis		
Washability for 50x1.4mm & 1.4x0.125mm	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.65
	1.65	1.70
	1.70	1.80
	1.80	2.00
	2.00	2.20
	2.20	
Froth Flotation Analysis -0.125mm		

Seam	Number of Holes
GM cut	21
GLB2	18
GUA	11

Series	2001-2004	
Circuit	Size minus	Size Plus
To DMC	50.00	4.00
To DMC	4.00	1.40
To Spirals	1.40	0.25
To Spirals	0.25	0.125
To FF	0.125	0
Float / Sink Analysis		
Washability for 50x4.0mm, 4.0x1.4mm, 1.4x0.25mm & 0.25x0.125mm	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.65
	1.65	1.70
	1.70	1.80
	1.80	2.00
	2.00	2.20
	2.20	
Froth Flotation Analysis -0.125mm		

Clean coal composites were typically as follows:

- CF1.45 clean coal composite analysis for the GM Seam.
- CF1.60 clean coal composite analysis for the GLB2 Seam.
- 8.5% ash clean coal composite only on the GUA2 ply

The coal quality drilling programs under Peabody ownership, from 2005-Present, which includes holes GN1179C to GN2025C, followed a similar treatment procedure to the RAG programs. These holes were pretreated with detailed washability by size. The pretreated washability analysis undertaken fitted into two variants in Table 8-3. below.

Table 8-3. Quality Analysis Under Peabody Ownership

Seam	Number of Holes	
GM cut	7	
GLB2	34	
GUA	3	
Series	U/G Wash Program	
Circuit	Size minus	Size Plus
To DMC	50.00	1.40
To Spirals	1.40	0.125
To FF	0.125	0
Float / Sink Analysis		
Washability for 50x1.4mm & 1.4x0.125mm	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.65
	1.65	1.70
	1.70	1.80
	1.80	2.00
	2.00	2.20
	2.20	
Froth Flotation Analysis -0.125mm		

Seam	Number of Holes	
GM cut	19	
GLB2	18	
GUA	21	
Series	Eaglefield Wash Program	
Circuit	Size minus	Size Plus
To DMC	50.00	1.40
To Spirals	1.40	0.125
To FF	0.125	0
Float / Sink Analysis		
Washability for 50x1.4mm & 1.4x0.125mm	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.65
	1.65	1.70
	1.70	1.80
	1.80	2.00
	2.00	
Froth Flotation Analysis -0.125mm		

Clean coal composites were typically as follows:

- CF1.45 clean coal composite analysis for the GM Seam.
- CF1.60 clean coal composite analysis for the GLB2 Seam.
- CF1.40 clean coal composite analysis for the GUA Seam.

Five holes with GLB2 seam intercepts and three holes with GUA seam intercepts were crushed rather than pretreated, with detailed washability undertaken on the 12.7 x 0mm material.

West Burton MDL

The West Burton area (MDL 3010) was drilled under Peabody ownership. These borecores were predominately crushed to minus 12.7mm with raw coal, washability and clean coal composite analysis. The crushed washability undertaken fitted into one variant in Table 8-4. Pretreated sizing and washability analysis was undertaken on several 4C holes. This pretreated washability analysis is detailed in Table 8-4.

Table 8-4. West Burton Quality Analysis Under Peabody Ownership

Seam	Number of Holes
GM	23
GLB2	21
GUA	22

Series	West Burton Crushed	
	Size minus	Size Plus
	12.70	0mm
Float / Sink Analysis		
Washability for 12.7x0mm	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.70
	1.70	1.80
	1.80	1.90
	1.90	2.00
	2.00	

Seam	Number of Holes
GM	2
GLB2	2
GUA	3

Series	West Burton Pretreated	
Circuit	Size minus	Size Plus
To DMC	50.00	1.40
To Spirals	1.40	0.125
To FF	0.125	0
Float / Sink Analysis		
Washability for 50x1.40mm & 1.40x0.125mm	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.70
	1.70	1.80
	1.80	1.90
	1.90	2.00
	2.00	
Froth Flotation Analysis -0.125mm		

West Burton clean coal composites were typically as follows:

- CF1.60 clean coal composite analysis for the GM Seam.
- CF1.60 clean coal composite analysis for the GLB2 Seam.
- CF1.40 clean coal composite analysis for the GUA Seam.

Wards Well ML

The Wards Well southern area was drilled under BMC ownership. These borecores were crushed to minus 12.7mm with raw coal, washability and clean coal composite analysis. The crushed washability undertaken fitted into two variants in Table 8-5. Pretreated sizing and washability analysis was undertaken on 1 LD core that only intersected the GLB2 seam. This pretreated washability analysis is detailed in Table 8-5.

Table 8-5. Wards Well Quality Analysis Under BMC Ownership

Seam	Number of Holes	
GM	23	
GLB2	25	
GUA	14	
Series	Wards Well Crushed	
Circuit	Size minus	Size Plus
To DMC	12.70	0.50ww
To FF	0.50ww	0
Float / Sink Analysis		
Washability for 12.7x0.50ww	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.60
	1.60	1.80
	1.80	
Froth Flotation Analysis -0.50ww		

Seam	Number of Holes	
GM	31	
GLB2	36	
GUA	21	
Series	Wards Well Crushed	
Circuit	Size minus	Size Plus
To DMC	12.70	0.50ww
To FF	0.50ww	0
Float / Sink Analysis		
Washability for 12.7x0.50ww	Sink Density	Float Density
		1.30
	1.30	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.80
	1.80	
Froth Flotation Analysis -0.50ww		

Seam	Number of Holes	
GM	0	
GLB2	1	
GUA	0	
Series	Wards Well Pretreated	
Circuit	Size minus	Size Plus
To DMC	50.00	16.00
To DMC	16.00	4.00
To DMC	4.00	1.40
To Spirals	1.4	0.5ww
To Spirals	0.5ww	0.25
To FF	0.25	0
Float / Sink Analysis		
Washability for 50x16.0mm, 16.0x4.0mm, 4.0x1.4mm, 1.4x0.0.50wwmm & 0.50wwx0.250mm	Sink Density	Float Density
		1.30
	1.30	1.33
	1.33	1.35
	1.35	1.40
	1.40	1.45
	1.45	1.50
	1.50	1.55
	1.55	1.60
	1.60	1.70
	1.70	1.80
	1.80	2.00
	2.00	
Froth Flotation Analysis -0.250mm		

8.2. Sampling Method

Sampling for Coal Quality

The sampling for coal quality analysis is as follows:

Pick the core point approximately several metres above the coal seam(s) to ensure that the whole seam is sampled. Holes are reamed below the lowest coal seam to allow for complete geophysical logging.

A minimum coal seam core recovery of 95% required. A recovery of less than 95% results in the need for a re-drill.

The coal core is covered with plastic when transferring to logging splits where it is logged. Core depths are clearly marked. The full core tray will be sealed with lid and packaging tape. Any trays that have coal will be stored in the cool room or freezer until geophysical logging has been completed. Corrections to the geophysics will be made to the geological log and the coal plies will be sampled from the core trays to ensure accuracy of the seam picks. The sample advice sheet records logged depths, geophysics depths, sample length and core recovery for each sample.

The core trays are removed from the freezer and sampled to the planned samples making sure that sample tags are completed for each sample. Each sample will be double bagged and zip tie closed with secure and visible sample tags. The bagged samples are returned to the cold room until dispatched to the laboratory.

Sampling for Rock Mechanics

Three geotechnical samples are generally taken from each cored borehole. The first one three metres above the top of the GM seam (from the predicted GM seam depths), the second one in the working seam roof (i.e. within the top 1.4 m of GM seam) and the third one directly below the GM seam. The geotechnical samples must be 20 – 40 cm long and be completely intact.

The sample is geologically logged and marked up with borehole number, sample number and depths. It is wrapped in cling film, then tin foil and packing tape. The outside will have the same marking as the core.

The geotechnical sample testing request form records sample details and tests required.

Sampling for Gas Testing

Four Q1 gas tests are conducted on site on each gas (conformance) hole; three on the GM seam and one on the GLA1 seam. The GM seam samples are located within the top metre of the seam, directly above and directly below the Marker tuff. The GLA1 sample is in the middle of the seam.

The Q1 gas test sheet is completed, and the gas bomb sample intervals are recorded. The completed Q1 gas bomb canisters with sample sheets are delivered to the gas test lab.

8.3. Laboratory Analysis

Coal Quality Analysis

All samples are prepared according to Australian standards AS4156 regarding sample pre-treatment, size analysis, float & sink testing & froth flotation analysis. Historically all coal testing since Peabody took ownership of the Centurion mine was conducted at ALS (formerly ACIRL), Bureau Veritas Australia and SGS Australia coal laboratories. These laboratories are NATA accredited and equipped to conduct all the coal testing according to the ISO and Australian standards.

Raw coal analysis was not conducted on holes drilled in the NGY ML prior to 2001. For these holes

- The cumulative ash from the washability testing was used to represent the raw coal ash.
- Raw coal relative density was predicted based on the linear relationship between ash and density using the post 2001 NGY raw database.
- Raw coal calorific value was predicted based on the linear relationship between ash and CV using the post 2001 NGY raw database.

Raw coal testing results are presented in Table 8-6 below.

Table 8-6. Raw Coal Testing Results

GM 4.3m LW Cut												
	ARD	Raw RD (ad)	Raw Moisture (ad%)	Raw Ash (ad%)	Raw Volatile Matter (ad%)	Raw Fixed Carbon (ad%)	Raw Chlorine (ad%)	Raw Phosphorus (ad%)	Raw TS (ad%)	Raw SE MJ/Kg (ad)	Raw CSN	Raw MHC
Count	28	244	136	244	136	111	108	82	86	244	20	86
Min	1.29	1.35	0.7	10.9	16.5	52.3	0.00	0.014	0.33	22.30	6.9	0.9
Max	1.54	1.58	1.8	33.3	24.7	67.6	0.07	0.101	1.03	31.80	9.5	3.4
Average	1.36	1.42	1.2	16.9	20.9	60.5	0.02	0.043	0.45	29.00	8.8	1.9

GLB2												
	ARD	Raw RD (ad)	Raw Moisture (ad%)	Raw Ash (ad%)	Raw Volatile Matter (ad%)	Raw Fixed Carbon (ad%)	Raw Chlorine (ad%)	Raw Phosphorus (ad%)	Raw TS (ad%)	Raw SE MJ/Kg (ad)	Raw CSN	Raw MHC
Count	71	236	173	235	173	173	130	113	117	235	42	60
Min	1.26	1.29	0.6	7.4	14.5	52.6	0.00	0.001	0.38	25.27	3.2	1.0
Max	1.54	1.54	2.3	25.9	24.7	73.3	0.06	0.091	1.12	32.89	9.5	3.7
Average	1.36	1.40	1.2	14.2	20.2	64.3	0.02	0.016	0.53	30.11	6.9	1.9

GUA Full Seam												
	ARD	Raw RD (ad)	Raw Moisture (ad%)	Raw Ash (ad%)	Raw Volatile Matter (ad%)	Raw Fixed Carbon (ad%)	Raw Chlorine (ad%)	Raw Phosphorus (ad%)	Raw TS (ad%)	Raw SE MJ/Kg (ad)	Raw CSN	Raw MHC
Count	27	142	97	142	97	97	62	62	65	142	47	34
Min	1.43	1.38	1.0	14.4	5.8	37.6	0.00	0.001	0.34	16.34	1.0	1.6
Max	1.59	1.66	3.7	41.9	25.5	61.5	0.05	0.055	1.29	30.09	9.0	6.4
Average	1.50	1.50	1.8	25.9	21.2	51.5	0.01	0.018	0.54	25.39	4.7	3.0

Washability testing was conducted on either crushed or pretreated samples at multiple specific gravities ranging from 1.30 to 2.20 as detailed in Section 8.0. This data is difficult to summarize in a table and is best presented as CHPP simulated product ash v yield curves, which will be covered in section 10. The clean coal composite laboratory yields, and product qualities are shown in Table 8-7 below.

Table 8-7. Clean Coal Composite Laboratory Yields

GM 4.3m LW Cut

	CCC Yield % (ad)	CCC Moisture % (ad)	CCC Ash % (ad)	CCC Volatile % (ad)	CCC Fixed Carbon % (ad)	CCC Total Sulphur % (ad)	CCC CSN	CCC SiO_2 % (d)	CCC Al_2O_3 % (d)	CCC Fe_2O_3 % (d)	CCC CaO % (d)	CCC MgO % (d)	CCC Na_2O % (d)	CCC K_2O % (d)	CCC TiO_2 % (d)	CCC Mn_3O_4 % (d)	CCC SO_3 % (d)	CCC P_2O_5 % (d)	CCC BaO % (d)	CCC SrO % (d)	CCC ZnO % (d)
Count	242	222	222	222	222	222	222	221	221	221	221	221	218	221	221	216	217	221	131	131	131
Min	35.9	0.6	4.9	16.6	63.6	0.40	5.6	43.6	17.2	1.06	0.31	0.24	0.01	0.16	0.82	0.01	0.01	0.05	0.02	0.02	0.01
Max	95.1	2.1	10.8	25.0	74.5	0.65	9.5	73.7	42.5	12.33	10.15	2.31	0.84	1.53	2.14	0.40	3.71	2.39	0.15	0.21	0.07
Average	81.4	1.2	7.6	22.1	69.2	0.49	8.2	51.5	36.5	4.73	1.89	0.77	0.23	0.60	1.54	0.04	0.44	1.06	0.05	0.08	0.03

GM 4.3m LW Cut

	CCC Ro Max %	CCC Vitrinite %	CCC Liptinite %	CCC Inertinite %	CCC Mineral %	CCC Semifusinite %	CCC Carbon % (daf)	CCC Hydrogen % (daf)	CCC Nitrogen % (daf)	CCC Sulfur % (daf)	CCC Oxygen % (daf)
Count	201	197	180	180	171	99	151	151	151	222	151
Min	1.07	34.0	0.0	21.6	1.2	14.0	85.5	4.75	1.62	0.43	2.11
Max	1.60	73.1	0.8	62.0	7.8	39.7	90.5	5.21	2.18	0.72	7.36
Average	1.27	61.3	0.1	35.3	3.7	24.6	88.7	4.96	1.90	0.54	3.93

GLB2

	CCC Yield % (ad)	CCC Moisture % (ad)	CCC Ash % (ad)	CCC Volatile % (ad)	CCC Fixed Carbon % (ad)	CCC Total Sulphur % (ad)	CCC CSN	CCC SiO_2 % (d)	CCC Al_2O_3 % (d)	CCC Fe_2O_3 % (d)	CCC CaO % (d)	CCC MgO % (d)	CCC Na_2O % (d)	CCC K_2O % (d)	CCC TiO_2 % (d)	CCC Mn_3O_4 % (d)	CCC SO_3 % (d)	CCC P_2O_5 % (d)	CCC BaO % (d)	CCC SrO % (d)	CCC ZnO % (d)
Count	225	213	213	213	213	213	213	212	212	212	212	212	212	212	212	212	212	212	162	163	164
Min	62.7	0.5	4.4	14.5	67.3	0.42	3.5	41.6	22.7	1.09	0.05	0.22	0.10	0.32	0.64	0.00	0.01	0.03	0.01	0.01	0.01
Max	94.8	1.7	9.1	23.5	77.8	0.68	9.5	67.9	35.1	17.76	9.41	1.91	2.27	3.35	1.63	0.41	4.59	3.72	0.22	0.15	0.14
Average	84.1	1.2	7.2	20.2	71.4	0.52	8.3	55.9	29.2	8.18	1.43	0.70	0.50	1.05	1.13	0.14	0.60	0.55	0.05	0.04	0.02

GLB2

	CCC Ro Max %	CCC Vitrinite %	CCC Liptinite %	CCC Inertinite %	CCC Mineral %	CCC Semifusinite %	CCC Carbon % (daf)	CCC Hydrogen % (daf)	CCC Nitrogen % (daf)	CCC Sulfur % (daf)	CCC Oxygen % (daf)
Count	197	196	178	178	172	138	158	158	158	213	158
Min	1.25	38.3	0.0	17.2	1.0	6.8	85.5	4.44	1.54	0.46	1.90
Max	1.77	79.1	1.1	46.0	5.7	37.3	90.8	5.21	2.13	0.74	7.45
Average	1.40	65.7	0.0	30.5	3.3	22.4	89.1	4.84	1.93	0.57	3.58

GUA Full Seam

	CCC Yield % (ad)	CCC Moisture % (ad)	CCC Ash % (ad)	CCC Volatile % (ad)	CCC Fixed Carbon % (ad)	CCC Total Sulphur % (ad)	CCC CSN	CCC SiO_2 % (d)	CCC Al_2O_3 % (d)	CCC Fe_2O_3 % (d)	CCC CaO % (d)	CCC MgO % (d)	CCC Na_2O % (d)	CCC K_2O % (d)	CCC TiO_2 % (d)	CCC Mn_3O_4 % (d)	CCC SO_3 % (d)	CCC P_2O_5 % (d)	CCC BaO % (d)	CCC SrO % (d)	CCC ZnO % (d)
Count	122	113	113	113	113	112	113	112	112	112	112	112	111	112	112	110	110	111	81	81	80
Min	3.3	0.5	7.6	18.3	58.2	0.49	4.9	48.6	12.7	1.27	0.23	0.68	0.06	0.91	0.77	0.00	0.01	0.02	0.02	0.01	0.01
Max	86.8	2.7	17.0	27.4	69.8	0.68	9.5	74.4	37.2	11.50	4.38	4.20	0.57	3.64	2.15	0.15	3.80	1.10	0.11	0.08	0.10
Average	57.2	1.4	11.5	23.9	63.2	0.57	8.2	57.1	29.0	5.86	1.21	1.81	0.30	1.76	1.58	0.04	0.58	0.22	0.05	0.05	0.02

GUA Full Seam

	CCC Ro Max %	CCC Vitrinite %	CCC Liptinite %	CCC Inertinite %	CCC Mineral %	CCC Semifusinite %	CCC Carbon % (daf)	CCC Hydrogen % (daf)	CCC Nitrogen % (daf)	CCC Sulfur % (daf)	CCC Oxygen % (daf)
Count	99	97	77	77	70	47	63	63	63	112	63
Min	1.02	44.2	0.0	17.9	1.4	9.7	84.9	4.84	1.57	0.57	3.69
Max	1.36	77.6	2.0	50.2	9.7	41.1	88.9	5.57	2.07	0.80	7.75
Average	1.14	64.7	0.4	30.1	4.6	21.3	87.4	5.12	1.77	0.65	5.06

Rock Mechanics Test

Rock mechanics testing is undertaken to provide a quantitative, quality and spatial assessment of relevant geotechnical data for the project, and to identify areas of further work to be conducted during the drilling and testing phase.

A program of rock mechanics testing has been implemented for all coring projects. When a core hole is to have rock mechanics testing performed on it, a minimum core length of two times the diameter is necessary for testing. A full list of sample depths, thicknesses and rock types is created. From this, a representative final list is selected for testing which includes two to three samples from each general rock type. Tests ran include:

- Direct Shear Strength
- Indirect Tensile Strength
- Unconfined Uniaxial Compressive Strength (UCS) with Young's Modulus
- Multi-Stage Triaxial Strength
- Axial and Diameter Point Load Strength

In-situ stress tests are conducted on selected drill holes. The results are calculated using Young’s Modulus and Poisson’s ratio values (of 10000MPa and 0.2 respectively).

Gas Test

Initial desorption measurements in the field are carried out using gas canisters and desorption apparatus. On completion of the field test component, the samples are sent to the gas laboratory, where the fast desorption method of gas content testing is used.

The Measured Gas Content (Qm) is the sum of Q1, Q2 and Q3 where.

- Q1 (lost gas) is the gas lost from the sample, subsequent to its being removed from its in-situ position and prior to its containment in the gas canister; expressed as the quantity per unit mass of coal.
- Q2 (measurable gas) is the measurable gas desorbed at atmospheric pressure from the non-pulverized coal sample; expressed as the quantity per unit mass of coal.
- Q3 (residual gas) is the gas still contained in coal at one atmosphere of seam gas; expressed as the quantity per unit mass of coal.

Q1 is determined in the field. Q2 and Q3 readings are taken in the laboratory. Gas composition testing includes carbon dioxide, methane, nitrogen and oxygen.

Density Determination

All samples are analysed for Relative Density on an air-dried basis in the laboratory.

The in-situ density is calculated using the equation.

$RDis = 5.079 \times 10^{-1} \times RDd + 4.470 \times 10^{-3} \times Ashd - 1.783 \times 10^{-3} \times VMdaf + 0.6291$

Where:

RDis = Estimated in situ density

RDd = Laboratory Relative Density ‘dry’ basis
Ashd = Ash ‘dry’ basis
VMdaf = Volatile Matter ‘dry-ash-free’ basis

This formula was developed in 2004 by A&B Mylec Pty Ltd as Australian Coal Association Research Program (ACARP) Project No. C10042 ‘Estimation of In Situ Density of Coal from Apparent Relative Density and Relative Density Analysis’. The formula was developed after detailed testing on several Australian site.

Analytical Laboratories

Coal quality analyses were carried out at different NATA accredited independent laboratories; namely ALS Richlands (formerly ACIRL), Bureau Veritas Australia and SGS Australia, all located in Mackay, Queensland.

Rock mechanics testing was done at Cardno Ullman and Nolan Geotechnic Pty Ltd laboratory in Mackay, Queensland.

The laboratories follow the national and international quality control procedures required to remain a certified laboratory. Peabody periodically conducts internal audits of these labs to ensure proper compliance.

8.4. Sample Security

Samples have chain of custody (documentation) from the drill site to the laboratory.

Samples are normally kept by the laboratories for a minimum of one year. Coal is a relatively low-value commodity and there is no need for special security procedures for the shipping, handling and storage of coal samples.

8.5. Comments from Qualified Person(s)

It is the opinion of the qualified person(s) responsible for this section that there are sound standards and procedures in place that are adequate for sample preparation, security and analytical testing.

9. DATA VERIFICATION

9.1. Data Verification Procedures

Peabody's geological database has built-in functions to allow the user to validate data across all available sources, including drill hole location and elevation, geophysical log interpretations, stratigraphic correlations, sample depth, sample thickness, and laboratory analysis. These data validation tools are used in a robust manner to verify historical and newly acquired data in both a systematic and efficient manner. The validation procedures include:

- Geologists' logs are validated against geophysical logs. Depths are adjusted up or down as necessary to reconcile to the geophysical logs. Coal quality sample depths are recorded to the adjusted depths.
- Coal quality results from laboratories are reviewed. If values appear to be out of range compared to surrounding quality values the sample is analyzed again at the laboratory.
- The collar for every drill hole location is surveyed. The final surveyed elevation is validated against the surveyed topography grid.
- The geological data are reviewed using lithological cross-sections or contour maps generated from the geological model by geologists and engineers.

9.2. Limitations

Only surveyed drill holes with lithology log, geophysical log plus (raw) coal quality results are considered valid points of observations for structure and coal quality respectively.

Holes that do not meet these criteria (e.g. holes without geophysical log) can be used as supporting data after review of the hole and surrounding holes.

9.3. Comments from Qualified Person(s)

It is the opinion of the Qualified Person that the data presented in this report are sufficient and in good standing. The geological data (structure and coal quality have been validated before being used for modelling and resource assessments.

10. COAL PROCESSING AND METALLURGICAL TESTING

The washability database for Centurion contained a mixture of pre-treated and crushed samples as detailed in section 8.0. The pretreated Bore/Cores were subjected to drop shatter and wet pre-treatment in the laboratory to simulate the natural breakage that occurs during mining and CHPP processing, with washability by size undertaken to reflect the Centurion CPP circuits in Table 10-1 below.

Table 10-1. Washability by Size

Circuit	Size mm
DMC	-50.0 + 1.40
Spirals	-1.40 + 0.125
Flotation	-0.125

Most of the Bore/Cores had been crushed prior to Float / Sink analysis. Crushing generates an unnatural liberation state, whereby coal particles of varying size and density are forced into size fractions where they would not normally exist in a ROM state. Using crushed data for CHPP simulations can result in significant yield and ash errors as the relative proportions assigned to circuit loadings and product streams are incorrect. The washability analysis of a crushed core can be transformed, through a series of unification models, into a washability state that aligns with correctly pre-treated data. These models are built around the predictable relationship between ash and density using the Centurion pre-treated Bore/Cores.

Application of the washability unification models can have significant implications for resource evaluations. Crushed data previously considered unsuitable for CPP simulation may be transformed to provide reliable yield and product ash predictions. This increases data density, providing a more reliable assessment of product yield and quality, and an improved indication of inherent variability throughout a resource. This is a cost effective and technically robust alternative to re-drilling and analyzing new Bore/Cores for Centurion, where crushed data and suitable reference pre-treated data is currently available. Table 10-2 below summarizes the number of crushed and pretreated holes for the GM cut GLB2 and GUA seams.

Table 10-2. Number of Crushed and Pretreated Holes

Seam	Crushed Holes	Pretreated Holes
GM cut	183	61
GLB2	148	88
GUA	104	38

Washability data unification involved the following processes.

- Float / Sink Unification

The first step in the data unification process is the standardization of float sink density fractions for both the crushed and pre-treated datasets. This involved interpolation and extrapolation of the historic washability data, to deliver a unified series of washability densities as follows in Table 10-3. This process relied upon the strong relationship between density and ash.

Table 10-3. Float / Sink Densities

	Sink	Float
Density 1		1.30
Density 2	1.30	1.35
Density 3	1.35	1.40
Density 4	1.40	1.45
Density 5	1.45	1.50
Density 6	1.50	1.55
Density 7	1.55	1.60
Density 8	1.60	1.70
Density 9	1.70	1.80
Density 10	1.80	2.00
Density 11	2.00	

- Circuit Segregation Modelling

Modelling the relationship between washability variability by size. These models are used to split crushed washability data into the three Centurion CPP circuits.

- Calculation of the size distribution to apply after Circuit Segregation Modelling

Calculating the size distribution for the crushed data variants, utilizing the head ashes generated for each size fraction following the application of the circuit segregation models above.

10.1. Coal Processing and Analytical Procedures

Washability

The unified washability database was used for CPP simulation to predict the performance of the DMC, Spirals and Flotation circuits in the plant. The simulation targets were as follows:

- GM Cut working section simulation targeted a 9.5% ash coking coal product.
- GLB2 seam simulation targeted a fixed DMC cut point of 1.55 SG (which was based on the historic maximum for the CHPP).
- GUA seam simulation targeted a 10.5% ash coking coal product.

Product from the Centurion mine has historically been sold as benchmark premium mid-volatile HCC coking coal into the seaborne market. The relevant coking properties were assessed for all shipments to ensure the coking coal specifications were maintained. Periodically pilot-scale coke oven tests were also undertaken on shipments to assess coke quality.

The coal recovery is based on the CPP simulations using the unified Bore/Core database. The clean coal composite data from the Bore/Core is adjusted to align with the simulated product ash.

The Table 10-4 below shows the simulation quality results for each seam using the entire Centurion washability database. Included is the washability head ash, DMC cut-point for the GM seam, and adjusted clean coal composite data to fit the simulated product ash. The simulated yields are dilution free and at feed moisture. Adjustments to factor in dilution (reduction in yield) and product moisture (increase in yield) are incorporated in the mine planning software (XPAC).

Table 10-4. Simulation Quality Results

GM LW Cut								
	Wash Head Ash	9.5 Ash Target Yield % (ad)	9.5 Ash Target Ash % (ad)	9.5 Ash DMC Cutpoint	9.5 Ash Target Volatile Matter % (ad)	9.5 Ash Target Fixed Carbon % (ad)	9.5 Ash Target TS % (ad)	9.5 Ash Target Phosphorus % (ad)
Count	159	159	159	159	141	141	141	140
Min	11.4	50.6	5.4	1.35	20.0	65.5	0.41	0.003
Max	33.3	89.6	10.2	1.55	24.6	72.0	0.64	0.087
Average	16.9	81.3	8.1	1.53	22.5	68.2	0.49	0.040

GLB2							
	Wash Head Ash	F1.55 Yield % (ad)	F1.55 Ash % (ad)	F1.55 Volatile Matter % (ad)	F1.55 Fixed Carbon % (ad)	F1.55 TS % (ad)	F1.55 Phosphorus % (ad)
Count	132	132	132	122	122	122	122
Min	8.9	75.7	6.0	18.3	67.4	0.42	0.001
Max	20.8	91.4	10.5	22.9	73.1	0.68	0.039
Average	13.6	84.6	7.7	20.6	70.7	0.52	0.006

Figure10-1 below shows the average product ash v yield curves. These curves are based on an arithmetic average of fixed DMC cut-point simulations for the GM LW cut and GLB2 seam. From these curves the target ash of 9.5% was determined for the GM LW cut, maximum density washing of 1.55SG for the GLB2 seam and a target ash of 10.5% for the GUA seam. The tables below summaries these fixed density simulations.

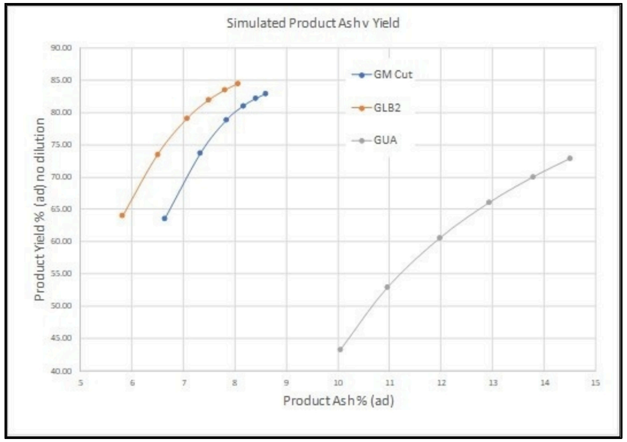

Figure 10-1. Average Product vs. Ash Yield Curve

Table 10-5. Fixed Density Simulations

GM LW Cut												
	F1.35 Yield	**F1.40 Yield**	**F1.45 Yield**	**F1.50 Yield**	**F1.55 Yield**	**F1.60 Yield**	**F1.35 Ash**	**F1.40 Ash**	**F1.45 Ash**	**F1.50 Ash**	**F1.55 Ash**	**F1.60 Ash**
Count	159	159	159	159	159	159	159	159	159	159	159	159
Min	47.1	56.9	59.4	60.5	61.1	61.7	4.8	5.0	5.2	5.3	5.4	5.4
Max	78.4	83.9	86.7	88.6	89.4	89.9	10.3	11.0	11.5	11.7	11.9	12.5
Average	63.8	74.3	79.5	81.6	82.6	83.3	6.7	7.3	7.8	8.1	8.3	8.5

GLB2												
	F1.35 Yield	**F1.40 Yield**	**F1.45 Yield**	**F1.50 Yield**	**F1.55 Yield**	**F1.60 Yield**	**F1.35 Ash**	**F1.40 Ash**	**F1.45 Ash**	**F1.50 Ash**	**F1.55 Ash**	**F1.60 Ash**
Count	132	132	132	132	132	132	132	132	132	132	132	132
Min	48.6	61.7	71.1	74.6	75.7	76.5	4.7	5.4	5.7	5.9	6.0	6.2
Max	77.6	84.2	88.5	90.2	91.4	91.9	7.9	8.7	9.5	10.1	10.5	10.9
Average	64.5	74.7	80.6	83.2	84.6	85.5	5.8	6.5	7.1	7.4	7.7	7.9

GUA												
	F1.35 Yield	F1.40 Yield	F1.45 Yield	F1.50 Yield	F1.55 Yield	F1.60 Yield	F1.35 Ash	F1.40 Ash	F1.45 Ash	F1.50 Ash	F1.55 Ash	F1.60 Ash
Count	125	125	125	125	125	125	125	125	125	125	125	125
Min	19.0	19.7	20.6	21.9	24.5	28.5	7.3	8.2	9.2	10.0	10.4	10.6
Max	64.3	74.0	82.6	87.6	89.7	90.5	18.2	18.3	18.9	20.0	21.3	22.4
Average	43.7	53.5	61.3	66.8	70.8	73.6	10.4	11.3	12.3	13.2	14.0	14.7

Coking Coal Properties

A coking coal product must be able to pass through a plastic phase upon heating, resulting in a carbon residue as the coke product for steel making. The plastic phase is measured by fluidity and other coking coal properties. The coke producers typically make a product by blending multiple coals with different coking properties. The key properties for coking coal include ash, sulfur, phosphorus, volatile matter, coke strength, reflectance, fluidity, etc. The Centurion operation routinely tested those parameters from different samples. The parameters of ash, sulfur, VM, and fluidity are tested more often using exploration samples, channel samples, and production and shipment samples. Trace elements, such as phosphorus, and petrographic analysis, including reflectance, are tested less frequently since they have less variability and are not always requested by customers. Certain coke strength tests, including Coke Strength after Reaction (CSR), require 450 kilograms of sampled coal for the pilot-scale coking-making process. Due to the requirement for a large sample size, this test is normally done on selected samples from either production or shipment on an as-needed basis.

Coking coal rank is measured by vitrinite reflectance, and the typical range is from 0.65% to 1.65%. Coal rank is the main driver for determining coke strength. The volatile matter in coal is inversely correlated to the coal rank. The higher the volatile matter and lower the rank, the coke yield becomes lower as well. When the coal is too high in rank, it might create high pressure and damage coke oven walls during the coke making process. The volatile matter is preferred to be between 18% to 35%. The ash is merely waste material for coke, and the lower the ash content the better the product. The content of sulfur and phosphorus in coal has deleterious effects on steel quality. The coke strength is measured by various tumbler tests to indicate how resistant coke will be to breakage and abrasion within the blast furnace. The hot coke strength test, (CSR) simulates the blast furnace temperature and gas composition to determine how reactive the coke is to carbon dissolution, and how well coke strength is maintained following a reaction.

Table 10-6 below shows the average product coal quality for the Centurion mine.

- The GM cut working section representatives the proposed LW layout.
- The GLB2 seam represents the proposed LW layout for the southern area combined with the resource for the northern area cropped to the BOW in the west and 850m DOC to the east.
- The GUA seam represents the resource for the northern area cropped to the BOW in the west and 850m DOC to the east. The low yielding southern area has been excluded.

Table 10-10-6. Typical Coal Quality

Seam	Centurion GM Cut	Centurion GLB2	North Centurion GUA
Moisture % (ad)	1.2	1.1	1.3
Ash % (ad)	7.8	7.8	10.5
Volatile Matter % (ad)	20.9	19.3	22.9
Fixed Carbon % (ad)	70.1	71.8	65.3
Phosphorus in Coal % (ad)	0.033	0.031	0.016
Total Sulfur % (ad)	0.47	0.51	0.57
CSN	8.0	8.0	8.0
Ro Max %	1.35	1.48	1.23
Vitrinite %	64	68	68
Predicted CSR	67	69	59

10.2. Analytical Laboratories

Centurion uses Australian Laboratory Service (ALS) for Bore/Core analysis, production, superintending, small scale, and pilot-scale carbonization testing. ALS is a leading testing, inspection, certification, and verification company headquartered in Brisbane, Australia. ALS are independent commercial entities that have no affiliates to either the Centurion operation or Peabody, other than providing professional test services.

10.3. Recovery Estimates

The ROM coal is fed to the washing plant, which utilizes heavy medium in the DMC circuit, centrifugal forces in the Spirals circuit and surface properties in the Flotation circuit to classify or separate coal from waste. The size and density of the feed material are the main factors determining the recovery. Due to the physical limitation of the different circuits, some coal is lost into the refuse and some refuse material is misplaced in the coal product. Heavy medium circuits are generally more efficient compared to other equipment using water as a medium such as a Baum jig, spiral, etc.

The longwall at Centurion can cut 4.3m of coal from the GM seam. The GM seam is approximately 6.0 to 8.5m thick, so not all the seam is recovered during longwall mining. The bottom of the seam has better coking coal properties, is lower in raw ash and generates a higher yielding lower ash product than the top of the seam. The longwall mining horizon therefore targets the bottom 4.3m of the GM seam.

The GLB2 seam is thinner and will require a different longwall for extraction. The GLB2 seam ranges in thickness from 2.1 to 3.5m. The longwall will extract the full GLB2 seam, adjusting the cut height based on the seam thickness in the geological model.

The GUA seam for the northern centurion area ranges in thickness from 2.9 to 4.4m, which is suitable for longwall extraction. The longwall would potentially extract the full GUA seam, adjusting the cut height based on the seam thickness in the geological model.

Coal loss, roof and floor mining assumptions, and moisture adjustments are applied to the simulated yields to predict recovery as described in sections 12.2.2 and 12.2.3.

10.4. Comments from Qualified Person(s)

It is the opinion of the Qualified Person that the data represented in this report is sufficient and accurate. The use of the data for the estimates of coal recovery is the general practice within the coal industry.

11. COAL RESOURCE ESTIMATES

11.1. Introduction

A coal resource is an occurrence of material of economic interest in the Earth's crust in such form, quality, and quantity that there are reasonable prospects for eventual economic extraction. A coal resource is a reasonable estimate of tonnage, considering relevant factors such as quality, likely mining dimensions, location, or continuity, that, with the assumed and justifiable technical and economic conditions, is likely to, in whole or in part, become economically extractable. It is not merely an inventory of all coal tonnage drilled or sampled.

Coal resources are sub-divided, in order of increasing geological confidence, into inferred, indicated, and measured classifications.

Definitions

The following definitions related to the classification of Mineral Resources, are provided for reference:

An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated based on limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill holes.

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.

A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill holes and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered.

The term 'Mineral' is equivalent to Coal when considering Coal Resources.

Background

A portion of the geological data used for the Centurion Project estimate was collected before Peabody acquired access to the northern Centurion Project area off Stanmore Resources Ltd. The resource modeler, on behalf of the Qualified Person, validated the data using historic drilling databases, geophysical logs and coal quality reports as developed by A&B Mylec on behalf of Peabody Energy. The qualified person also supervised the validation, geological interpretation, creation of the geological model, and resource estimation. The resource estimate is exclusive of reserves in Section 12.

11.2. Geologic Model and Interpretation

The Centurion geological model consists of both a stratigraphic and coal quality model based on data from the geological database and coal quality datasets. The structural model was derived from both drill hole, underground mapping, and seismic data. The geological model includes bore holes without corresponding geophysical logs that have reasonable thickness from core measurements and coal depth values, where cross checked against nearby drillholes, and or seismic data. These holes have been historically used in geological models. Upon review of these holes, it was determined that continuing to use these holes in the model would provide more thickness and structure values to further define the coal seam. 2,349 boreholes were selected for import to the modelling package software, of which 284 were excluded by the modeler from the final model due to validations issues.

The geological model was developed using Maptek Vulcan software. This is a widely used software package in the coal industry in Australia and overseas.

The models are created using the GRID CALC module in Vulcan by using the Integrated Stratigraphic Modelling menu, an audit trail is created within the specification files used in grid generation. The modelling method is based on a “Hybrid” stacking method. The stacking method creates all horizon structure surfaces based upon one selected structural surface. The selected surface becomes a reference for creating the rest of the grids in the model. The remaining surfaces are created by adding and subtracting thicknesses and mid-burdens from the reference surface. The reference surface chosen was the Goonyella Middle seam roof.

Interpolation of the seam structure grids is based on a triangulation, with seam thickness interpolated using triangulation algorithm method. The base of weathering model was developed from the drillhole intersections and a limit line for fresh coal was created for all final structure grids used to calculate coal tonnes to ensure oxidized coal was excluded from the coal resource calculations. The structural grid outputs from the models include the structure seam roof and floor, and seam structure thickness.

Only three seams from the Centurion stratigraphy are targeted for extraction based on suitable underground mining thickness and coal quality continuity. The three seams are Goonyella Upper A (GUA), Goonyella Middle (GM) and Goonyella Lower B2 (GLB2). Table 11-1 shows the typical thickness for each of the target seams.

Table 11-1. Resource Stratigraphy

Seam	Typical Thickness (metres)
GUA	3.6
GM	7.1
GLB2	3.3

The modelled quality parameters include raw ash (% adb), raw volatile matter (% adb), In Situ relative density (g/cc), total sulphur (% adb), phosphorous (% adb) and chlorine (% adb) etc. Additional product quality parameters have also been modelled including Ash Analysis, Target Seam head Ash, Yields, MBI and CSR etc.

The interpreted fault locations and displacements are incorporated in the seam structural model. Fault locations and interpretations are developed from drilling intersects, underground, mapping, and seismic interpretation. The topography grid was supplied by Peabody and was generated from triangulated aerial LiDAR survey data.

The modelling methods used for Centurion are summarized in Table 11-2.

Table 11-2. Interpretation Method

Model Parameter	Interpretation method
Seam Structure	Triangulation
Seam Structure	Triangulation
Coal Quality	Inverse Distance

11.3. Resource Classification

The resource classification used for Centurion encompasses the qualified person's confidence in the deposit. There were multiple factors used for the final analysis, including data quality, historic local and regional observations, operational history, and quantitative analysis.

The southern portion of the Centurion Project area has been mined historically, spanning several years up to the present. There is a competent understanding of the geology and depositional nature of the Goonyella Middle Seam.

- Measured resources have the highest level of confidence for the estimated quantity and quality based on the geological evidence and sampling. A set of criteria (Table 11-6) on the degree of uncertainty is assessed and the low degree of uncertainty normally corresponds to the category of Measured resource.
- Indicated resources have a lower level of confidence than the Measured resource, but a higher level of confidence than the Inferred resource. A set of criteria (Table 11-6) on the degree of uncertainty is assessed and the medium degree of uncertainty normally corresponds to the category of Indicated resource.
- Inferred resources have the lowest level of confidence. A set of criteria (Table 11-6) on the degree of uncertainty is assessed and the high degree of uncertainty normally corresponds to the category of Inferred resource.

PoO Classification

Estimation of coal resources is based on drill hole intercepts that the QP determines meet the requirements of a Point of Observation (PoO). Points of Observations (PoOs) are used to classify resources. PoO's are sections of coal-bearing strata, at known locations, which provide information about the coal by observation, measurement and/or testing. They allow the presence of coal to be unambiguously determined.

In this resource estimate, for a drill hole to be classified as a PoO for a seam or ply, it must be a cored or partially cored hole and have:

- A geophysical log for the cored hole (or its pilot hole), including density and gamma-ray data.
- Greater than 90% core recovery across a seam or accepted by QP as being representative of the seam through analysis of the coal quality results, geophysical signature, and geological logging notes.
- Raw coal quality data, including at least Relative Density and Ash.

The definition of a PoO provides reasonable confidence that the parameters represented by that sample are valid; accurately located, appropriate lithology and downhole geophysics collected, adequately sampled, and assayed by a laboratory. The PoO then becomes the basis for estimating the properties of the surrounding coal.

There are 243 coal quality holes at Centurion used as PoOs for this estimate. A portion of these PoOs are in areas that have been historically mined out. The historic underground mining was also considered when supporting the confidence levels of this resource.

Some areas of the resource were downgraded to Indicated as coal quality holes lacked geophysics to support the PoO status, even though geophysical support can be assumed. Additionally, where the full seam was not sampled across the interpreted horizon, the resource was downgraded to indicated.

Historically the target GUA, GM and GLB2 seams have been sampled in their entirety and effort was made to produce a weighted average full seam value where plies were sampled separately. Weighted averaging was carried out by Mr. J O'Brien of A&B Mylec on behalf of Peabody.

The resource area polygons for the target seams in the Centurion resource area are shown below (Figure 11-1, Figure 11-2, and Figure 11-3).

Analysis of the variability between neighbouring PoO's provides a measure of the distance that coal seam parameters can be extrapolated from a valid PoO. This can be done through geostatistical analysis based on precision tolerances from global estimation variance; also known as Drill Hole Spacing Analysis (DHSA). The DHSA method of resource classification is both valid and practical for coal deposits as compared to the more complex conditional simulation analysis.

Both Peabody (Centurion South) and BHP (a previous owner of Centurion North) have carried out a DHSA previously within their respective areas. The following is an excerpt from the Centurion Mine SK1300 Report, 2024

To complete this study, the ArcMap 10.6 geostatistical extension was used to validate and view the normalcy of the input data and construct semi variograms. Once the semi variogram was plotted, the spherical model was fitted to the data using a calculated nugget, range, and sill from the optimum model fit. This provides a mathematical function to explain the relationship between real-world values and distances between points. Then, the estimation variance was calculated for a range of test block sizes at varying sizes which in turn was converted to relative error at a 95% confidence. Lastly, the Resource classifications were defined based on relative error precision tolerances of 10%, 20%, 50% for Measured, Indicated, and Inferred respectively. These precision tolerances were developed by Bertoli et al (2013) regarding the area of a five-year period. From this study the classification radii, based on the distance of the error tolerance, were used to create Resource classification polygons with individual modifications from supporting data as the QP determines.

The geostatistical analysis was conducted on the raw ash and the thickness variables taken from the points of observation utilized in the construction of the geological model. The study area utilized was based on an approximate 5yr production area for both the GM and GLB2 seams. The most variable result (that results in a smaller spacing) of either the raw ash or thickness is used as a base to classify the resources before any individual modifications are made. In the majority of analyses the raw ash was the most variable of parameters.

Due to the relative uniformity of the GM seam thickness (5.0 – 7.5m thick) and the consideration of potential for underground mining method (conventional longwall), DHSA was not performed on the seam thickness for the GM seam. DHSA analysis from the GM seam raw ash was conducted on the *working section height of approximately 4.25 – 4.5 metres. It is the QP's experience that drillhole classification radii from raw ash analysis is often smaller than radii from seam thickness for this deposit type. Therefore, raw ash spacings are considered more conservative and were utilized as the basis for the classification of resources.*

The Centurion Mine's minimum drill hole spacing for resource classification is shown it Table 11-3.

Table 11-3. Centurion Mine (North Goonyella) Resource Classification Radii in metres

Seam	Parameter	Measured	Indicated	Inferred
Goonyella Upper		n/a	n/a	n/a
Goonyella Middle	Coal Thickness	n/a	n/a	n/a
	Raw Ash	**425**	**775**	**1710**
Goonyella Lower B2	Coal Thickness	640	1090	2120
	Raw Ash	**350**	**650**	**1570**

Historic DHSA conducted within the Centurion North area by former project holders BHP developed a minimum drill hole spacing between PoOs as shown in Table 11-4 below. The DHSA was on areas equivalent to 5-year production and based on the GM seam.

Table 11-4. Centurion North (Wards Well) Resource Classification Radii in metres

	Measured (+/- 10%)	Indicated (+/- 20%	Inferred (+/- 50%)
All Seams	Drill Hole Spacing Required – Rounded down to the closest 50 metres. (area equivalent to 5 years production)		
Drill Spacing (m)	400	750	1,650

For the project target seams, designated areas of confidence were assigned according to PoO spacing and seam variability relating to thickness and quality.

Upon review of the resultant required spacings at Centurion the following drill hole spacing was chosen for the Project area (Table 11-5)

Table 11-5. Centurion Project Resource Classification Radii in metres

	Measured	Indicated	Inferred
All Seams spacing (m)	250	750	1,500

A minimum of 3 PoOs were required to generate resource estimates for a single resource category. Where these PoOs formed a linear relationship relative to each other, the continuity of the deposit could not be established. Therefore, as a minimum 3 PoOs needed to form a 'triangle shape' spatially, allowing the continuity between these points to be established.

It was noted that an area of 300 Ha in the east of ML1790 and within ML70495 was outside the nominal PoO spacing. The area was reviewed for inclusion in the Indicated resource classification. It was determined that the resource is sufficiently supported by surrounding Points of Observation to the east, and in the down dip direction to establish confidence in the continuity. The area will be targeted for future exploration to consolidate this confidence classification.

The resource classification used for Centurion mine encompasses the qualified person's confidence in the deposit. There were multiple factors used for the final analysis. This includes data quality, operational history, the QP's experience, as well as quantitative analysis.

Table 11-6. Degree of Uncertainty

Source	**Degree of Uncertainty**		
	Low	**Medium**	**High**
Exploration	No significant issues. Protocols consistent with Peabody standards and industry best practices.	Historical boreholes without geophysical logs rely to a certain degree on the drillers accuracy of identifying coal thicknesses. These holes are excluded from the classifications.	
Sampling method	Standard site operating procedure and guidelines	Sampling sections of coal have changed over time and between leases. If <90% represent interval of interest, then data not used. Coal quality specialist has created a spreadsheet aligning sampling methods for all areas and for the entire seam.	
Sample Prep/Analysis	On site, ASTM accredited and independent contracted lab - consistent with industry standards.	Increased uncertainty for older cores where sample preparation and testing procedures are not recorded.	
Quality Assurance/Quality Control	Sample prep and analysis procedures follow ASTM and meet current industry standards. The laboratory is NATA certified. Quality is retested to confirm anything that looks abnormal.		
Data Verification	Thickness and depths within Drillers logs have been checked and corrected against Geophysical logs (where available) for accuracy. Quality results have been reviewed by A&B Mylec, and sample photos reviewed by site personnel where available	Some missing analysis reports for historical data are captured in spreadsheets, however mostly in previously mined out areas. Some LAS information stored in spreadsheets hinting at the existence of historic information that was not supplied.	
Database	Geological, analytical, and location data in the model verified to the QP's satisfaction. Unverified or questionable data inactivated and not used.	Some sample duplication identified in database. Samples reviewed before inclusion to model. Some sampling over a portion of the seam, these results not used in the resultant model.	

Geological Modelling	Structural modelling was visually validated against drilling and expected positioning and thicknesses. Anomalous values were checked and edited where not consistent with underlying geological conditions.	Some boreholes verticality survey not included. This can cause inaccuracies in seam structure RL as depth of cover increases. Extrapolation down dip of last row of holes can cause inaccuracies and therefore not included in resources. The interpretation of the limit of heat affected coal for the GUA seam will require further exploration. A conservative approach to the extents has been developed for the resource estimation.	
Density	Borecore sample density and inherent moisture tested extensively across sites.		
Quantitative analysis (Drill hole Spacing Analysis)	Historic DHSA performed by both Peabody and historic tenure holders for the Centurion North Lease. Single domain analysed. Only core holes with Geophysical logs included in Resource Estimation as PoOs. A conservative radius was selected. Drill hole radii: GUA Seam, GM seam 250 m. GLB2 seam - 250 m	Historic bore holes without geophysical logs were excluded from Drill hole Spacing Analysis. Drill hole radii: GUA Seam, GM seam and GLB2 seam - 750 m	Drill hole radii: GUA Seam, GM seam and GLB2 seam - 1500 m
Other Classification Criteria	• For the GUA seam a 50% yield was selected. Upon review current wash strategies this was deemed appropriate for this seam to remove the poorer quality coal from the resource • Only Fresh Coal was selected for resource. • A 50 m standoff from historic underground mining area within Centurion south.		Depth limited to 850m from topo. surface
Cut Off Criteria (Cut-off grade and metallurgic recovery)	The cutoff grade is not relevant for this deposit. Review of data was conducted and no evidence for coal with raw ash values greater than 50% (adb)		
Mining Methods	Mature longwall mining technology used at operation historically		
Costs	Long operating history with documented costs		
Prices	Well established market and demand for high grade metallurgical product		

Additional Classification Criteria

Quality Constraints

All quality data was modelled from information supplied by Mr J O'Brien of A&B Mylec on behalf of Peabody. No manipulation of the data was undertaken by Xenith personnel prior to modelling of the data.

A maximum raw ash content of 50% (adb) cut-off is generally applied to resource estimates.

The GUA seam is proposed to be washed to generate a 10.5% ash stand-alone coking coal product. A minimum yield (undiluted) of 50% was deemed necessary to classify the GUA seam as a viable resource. The GUA seam throughout the majority to the Centurion South area did not satisfy this minimum yield requirement, consequently a resource has not been defined for the GUA seam south of the Centurion North GM seam mine footprint in ML6949 (Figure 11-1).

If the GUA seam product strategy was to change to a higher ash product in the future, then a viable resource classification for the Centurion South area may still be possible (A&B Mylec).

Areal Constraints

- The resource polygons for the three target seams (full thickness) GUA, GM and GLB2, are limited by the following areal constraints:

  The Stanmore Resources Ltd agreement line in the north.

  The total resource area is limited by the mining lease boundaries (ML6949, ML 1790, ML70443, and ML70495).

  Fresh coal limit in the west, where not intersected within Mining Lease.

  Historically mined underground areas are determined by supplied surveyed polygons.

  A 50m stand-off to the underground mined out area for the GM seam in the Southern Centurion project.

  For the GUA seam a yield limit of 50% was used in the south to limit resources.

  No minimum thickness for the target seams has been applied to the resource.

  All resources are reported exclusive of reserves. The remaining material above or below the designed working section has effectively been deemed unrecoverable and therefore not part of resource. Any change to the proposed mining method has not been considered for this resource estimate.

Resources have been limited to a maximum depth of 850 m. This maximum depth was chosen as a precedent having been set by other underground mines in Australia historically. Additional mining data parameters would need to be attained for any consideration to mine deeper. The reported resources have been sub-set on depth ranges of 0 to 400 m, 400 to 600 and 600 to 850 m are reported (Table 11-10).

No additional yield constraints were utilised for the other target seams or for the GUA seam in Centurion North. Resource Polygon outlines for each seam are shown below in Figure 11-1, Figure 11-2, Figure 11-3.

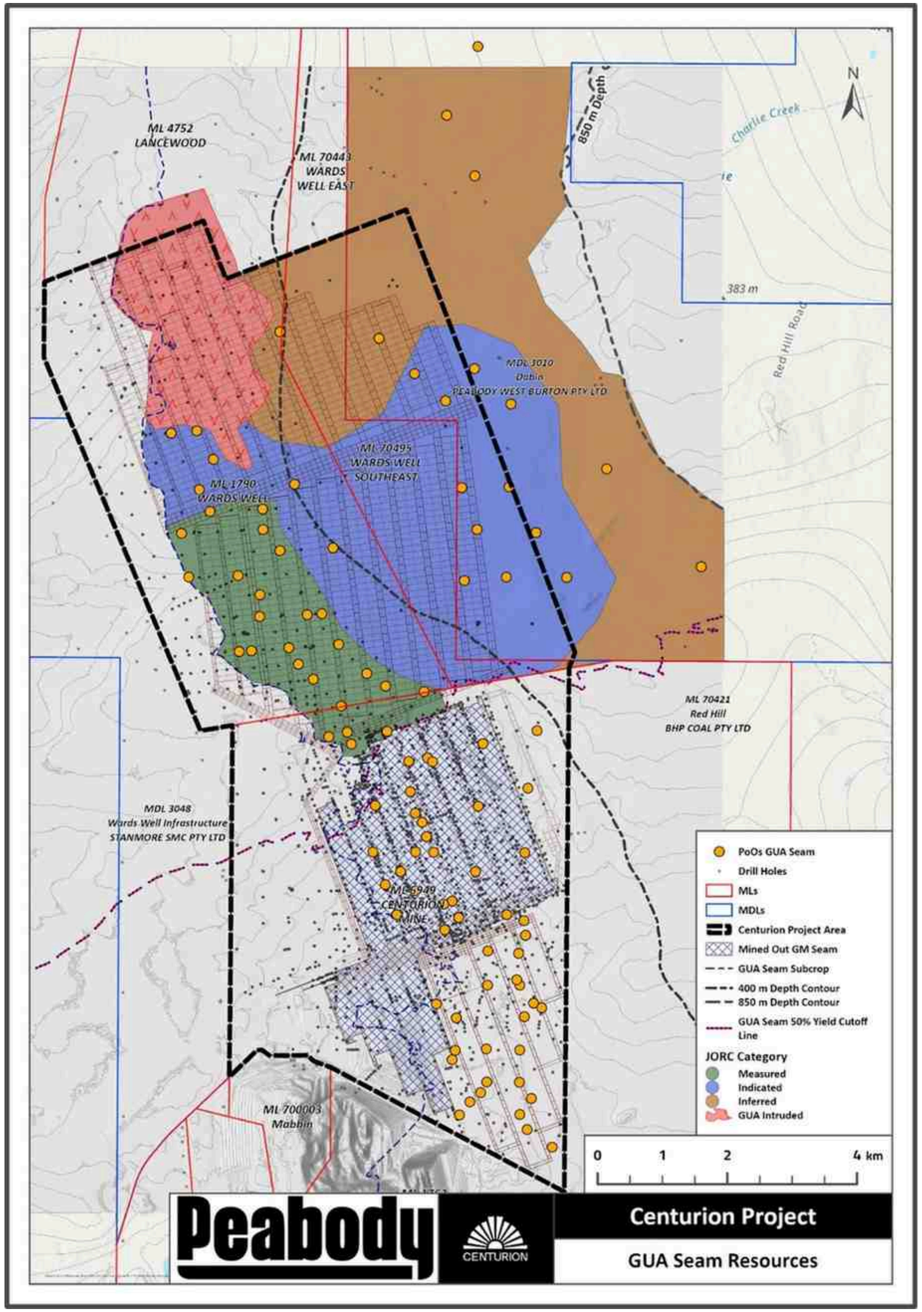

Figure 11-1. GUA Full Seam Resource.

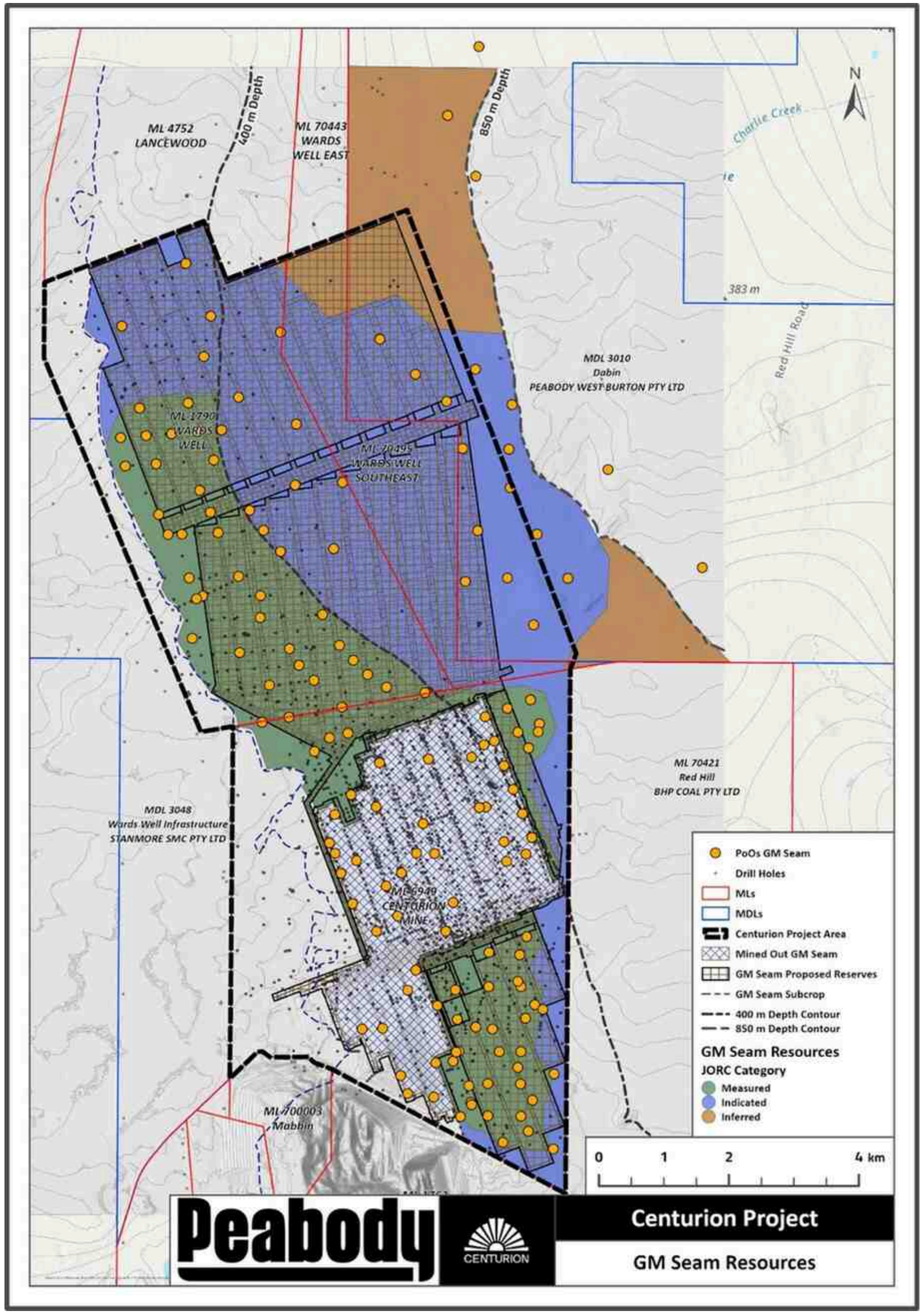

Figure 11-2. GM Full Seam Resource.

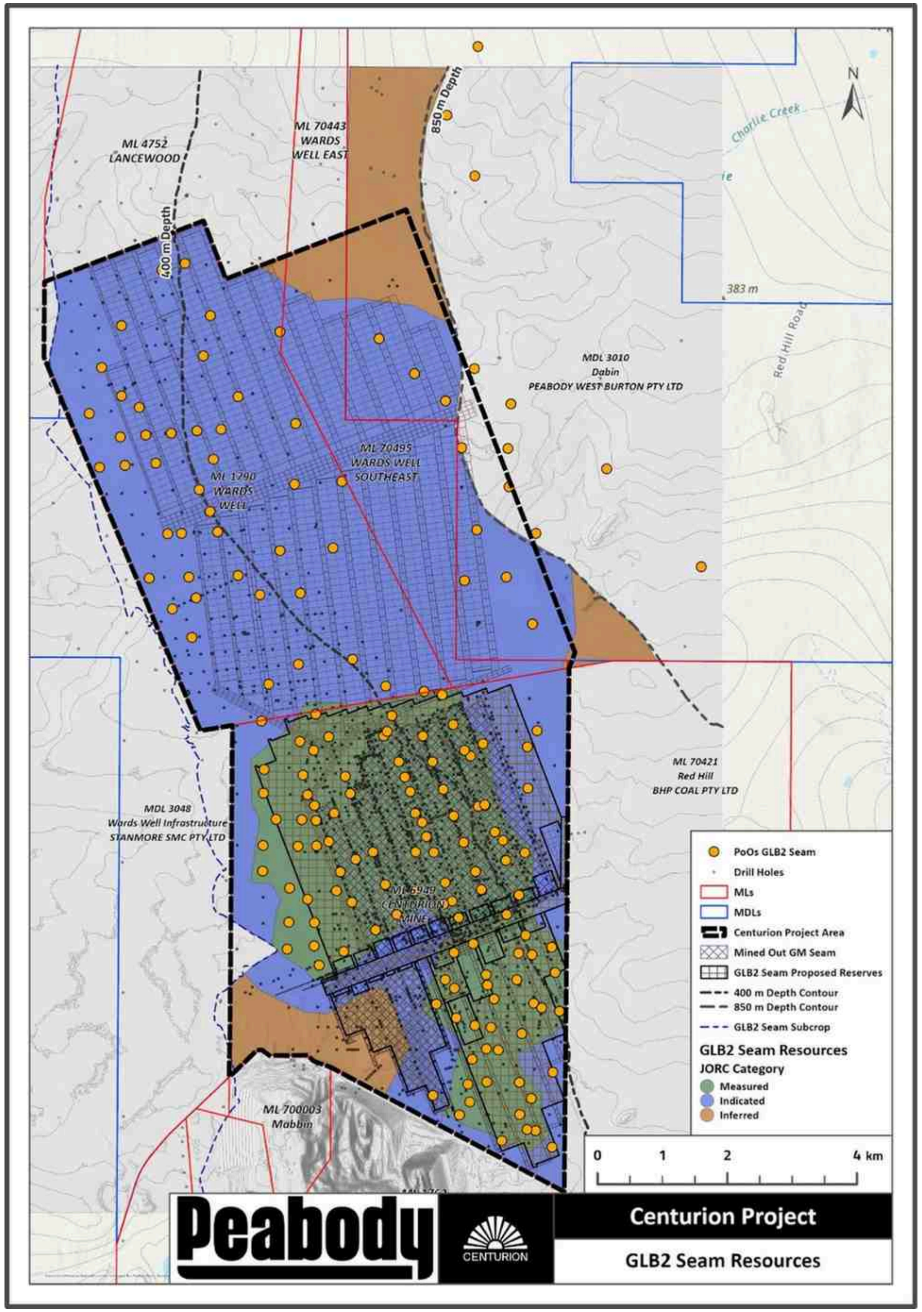

Figure 11-3. GLB2 Full Seam Resource

11.4. Coal Resource Estimates

Resources have been classified and reported in accordance with the Regulation S-K (Subpart 1300). Resources are classified into “Measured”, “Indicated” and “Inferred” categories based on the distribution of borehole intersections and coal quality data.

Resources have been estimated for the full GUA, GM and GLB2 target seams only in the Centurion Project. Other seams are either too thin, lack consistency or do not have sufficient PoOs.

The resources of the Project are given by seam and resource classification in Table 11-7, Resource by lease in Table 11-8, Resource by Project Northern and Southern areas in Table 11-9, and resource by depth ranges in Table 11-10.

The average coal qualities of the resources area shown in Table 11-11.

Estimation of the Coal Resources are mainly determined by geological criteria and property control boundaries along with the potential of current or future economic viability utilizing available mining technologies. The Coal Resource estimates for Centurion provided are on an insitu basis exclusive of the Coal Reserve estimates.

Available Measured and Indicated coal resources for the GM seam and GLB2 (Centurion South only) seam have been converted to reserves and are discussed in Chapter 12.

The in-situ density grid utilized to generate resource estimates was calculation based on the ACARP equation (ACARP project No. C10042) discussed in section 8.2.4 Density Determination.

The long-term coal price projection discussed in Section 19 has been considered in support of the prospects of economic extraction for the coal resources in the future. Along with consideration of the previous historic operations of Centurion mine in the past.

The information of the coal resources and all supporting documents are stored and kept as a record internally. The processes are followed each year at the Centurion Mine to review, update, validate and document the resource estimates.

The Centurion Project contains a total resource estimate of 790 Mt, exclusive of reserves (Table 11-7). The Total Resources is composed of 87 Mt of Measured Resource, 440 Mt of Indicated Resource and 260 Mt of Inferred Resource.

11.5. Coal Resource Statement

Coal resources in Table 11-7, Table 11-8, Table 11-9, Table 11-10, and Table 11-11 are exclusive of reserves and calculated on an in-situ basis for the GUA, GM and GLB2 seams.

Table 11-7. Centurion Coal Resources by Resource Classification

Seam	Measured (Mt)	Indicated (Mt)	Inferred (Mt)	Total (Mt)
GUA	37	110	130	280
GM	38	110	100	250
GLB2	12	220	30	260
Total	87	440	260	790

Table 11-8. Centurion Coal Resources by Lease

		GUA (Mt)			GM (Mt)			GLB2 (Mt)			Total (Mt)
Lease ID	Area Name	Meas	Ind	Inf	Meas	Ind	Inf	Meas	Ind	Inf	
ML1790	Wards Well	32	40	10	19	20	-	-	140	-	260
ML70443	Wards Well NE	-	-	10	-	-	10	-	10	-	30
ML70495	Wards Well SE	-	30	-	-	10	-	-	20	-	60
MDL3010	West Burton	-	40	110	-	60	90	-	30	20	350
ML6949	NGC	5	-	-	19	20	-	12	20	10	90
Total		37	110	130	38	110	100	12	220	30	790

Table 11-9. Centurion Coal Resources by Resource Area

	GUA (Mt)			GM (Mt)			GLB2 (Mt)			Total (Mt)
Lease ID	**Meas**	**Ind**	**Inf**	**Meas**	**Ind**	**Inf**	**Meas**	**Ind**	**Inf**	
Centurion North	32	110	130	19	90	100		200	20	700
Centurion South	5	-	-	19	20	-	12	20	10	90
Total	37	110	130	38	110	100	12	220	30	790

Table 11-10. Centurion Coal Resources by Depth

	GUA (Mt)				GM (Mt)				GLB2 (Mt)				Grand Total (Mt)
Depth Range (m)	**Meas**	**Ind**	**Inf**	**Total**	**Meas**	**Ind**	**Inf**	**Total**	**Meas**	**Ind**	**Inf**	**Total**	
<400	37	30	10	80	33	20	-	50	11	90	10	110	240
400-600	-	50	40	90	5	20	-	30	1	60	-	60	180
600-850	-	30	80	110	-	70	100	170	-	70	20	90	370
Total	37	110	130	280	38	110	100	250	12	220	30	260	790

Table 11-11. Centurion Coal Resources by Resource Classification and Seam Qualities

Seam	Resource Category	Million Tonnes Metric	Average Thickness (m)	In Situ RD (g/cc)	Raw Moisture (adb %)	Raw Ash (ad%)	Raw VM (ad%)	Raw FC (ad%)	Raw Cl (ad%)	Raw Ph (ad%)	Raw TS (ad%)	Raw SE (ad)	Raw CSN
GUA	Measured	37	3.6	1.43	1.7	22.9	22.9	52.7	0.017	0.024	0.51	26.6	6
GUA	Indicated	110	3.6	1.44	1.5	23.6	20.5	54.5	0.012	0.025	0.52	26.7	6
GUA	Inferred	130	3.9	1.46	1.6	24.8	19.6	54.1	0.011	0.020	0.62	26.3	6
GUA	**Resource Total**	**280**	**3.7**	**1.45**	**1.6**	**24.1**	**20.3**	**54.1**	**0.012**	**0.022**	**0.57**	**26.5**	**6**
GM	Measured	38	6.1	1.42	1.3	20.6	21.1	57.1	0.015	0.044	0.43	27.5	6
GM	Indicated	110	7.5	1.41	1.2	18.9	18.8	61.4	0.014	0.041	0.41	28.5	6
GM	Inferred	100	7.7	1.41	1.2	18.3	18.1	62.4	0.014	0.039	0.40	28.7	6
GM	**Resource Total**	**250**	**7.4**	**1.41**	**1.2**	**18.9**	**18.7**	**61.2**	**0.014**	**0.040**	**0.41**	**28.4**	**6**
GLB2	Measured	12	2.7	1.37	1.2	14.5	21.5	62.8	0.017	0.015	0.60	29.9	8
GLB2	Indicated	220	3.6	1.37	1.1	14.6	19.5	64.7	0.013	0.020	0.50	30.1	7
GLB2	Inferred	30	3.6	1.37	1.2	14.1	18.2	66.5	0.013	0.026	0.54	30.4	7
GLB2	**Resource Total**	**260**	**3.6**	**1.37**	**1.2**	**14.5**	**19.4**	**64.8**	**0.014**	**0.021**	**0.51**	**30.1**	**7**
Total Resource		**790**		**1.41**	**1.3**	**19.3**	**19.5**	**59.9**	**0.013**	**0.028**	**0.50**	**28.3**	**6**

11.6. Comments from Qualified Person(s)

The Centurion Project generally has adequate exploration data to determine coal resources. Future routine exploration work will be undertaken to continue supporting the current operation and any future development. This will include drilling for structure, coal thickness, and quality information, along with fault line definition. Therefore, it is the opinion of the QP that there are no current geological or technical factors that are likely to influence the prospect of economic extraction.

12. COAL RESERVE ESTIMATES

12.1. Introduction

The Life of Mine (LOM) Plan is the key process to support reserve reporting. The mine plan uses the longwall mining method with projected layouts for longwall panels and development for mains and gate roads. The mining methods historically adopted by Centurion, and the projected economic results demonstrated that the coal in the mine plan is economically mineable based on current market assumptions. The details regarding the marketing and pricing assumptions are included in sections 16 and 19. The mine plan, which supports the coal reserves, is inside of the boundary where Peabody has control of the coal leases.

The Centurion mine is an existing operation with all required permits, approvals, and infrastructure to carry out ongoing production within ML 6949. The approvals process to gain mining approval for ML 1790 and ML 70495 (Wards Well) is currently being undertaken by Peabody. Development first workings approval is expected to be granted in 2026 with full approval for Longwall mining expected to be gained in 2027. Development is scheduled to commence mining in the Wards Well leases in 2028 with Longwall mining commencing in 2029. MDL 3010 (Dabin) requires conversion from a Mining Development Lease (MDL) to a Mining Lease (ML) and mining approval prior to the commencement of mining 2037.

The key assumptions in the mine plan and economic analysis are supported by the past performance. Unless specified otherwise, the quantity for coal reserves is reported as the saleable product, and the coal qualities are on an air-dried basis.

12.2. Coal Reserve Estimates

Reserve Classification

The geologic model described in section 11.2 is used for the LOM plan. All coal within the LOM plan area is considered either Measured or Indicated resources as discussed in Section 11. The Measured resources within the mine plan are reported as the Proven reserves and the Indicated resources as Probable reserves. There are no other modifying factors that are significant enough to prompt excluding reserve tonnage from the LOM plan or downgrade the reserve classification from proven to probable classification.

Mining Loss and Dilution

The LOM area is laid out with detailed pillar design and barriers between the longwall recovery and mains. The coal pillars and barriers are excluded from reserves. The longwall equipment for the GM Seam is limited to cut the coal seam between 3.2m to 4.5m thick, however the desired cut height has assumed to be 4.3m to ensure face stability and safety of the operators. The longwall equipment will not be able to cut the full seam height as the GM Seam typically ranges between 5.0m to 8.5m in thickness as shown in Figure 12-1 and Figure 12-2 below. Even though some of the top coal will fall into the face conveyor, the assumption is that the portion of the seam exceeding 4.3m thick will be lost during the mining process. The mining height of 3.6m is assumed for the development unit, which is designed to maintain a certain geometry for ventilation control and accessibility of longwall equipment. The mine plan also assumes that 0.5m of coal is left in the floor for development to ensure favorable floor conditions as a claystone material is located below the GM Seam. Therefore, no out of seam dilution has been included as Run-of-Mine (ROM) coal for development. The Longwall will cut to the floor of the GM Seam and ramp up into the development roadways. Based on this, 0.05m of floor dilution and 0.05m of coal loss has been assumed for the Longwall to account for cutting to the floor and ramping up into the gate roads.

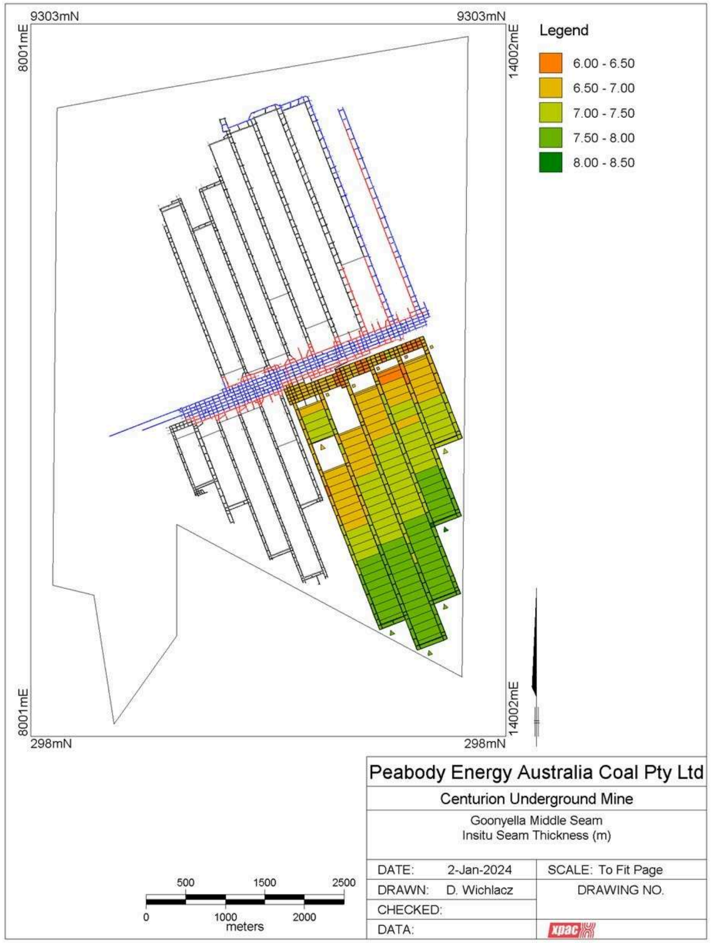

Figure 12-1. Insitu Seam Thickness (m) - GM Seam (GM South)

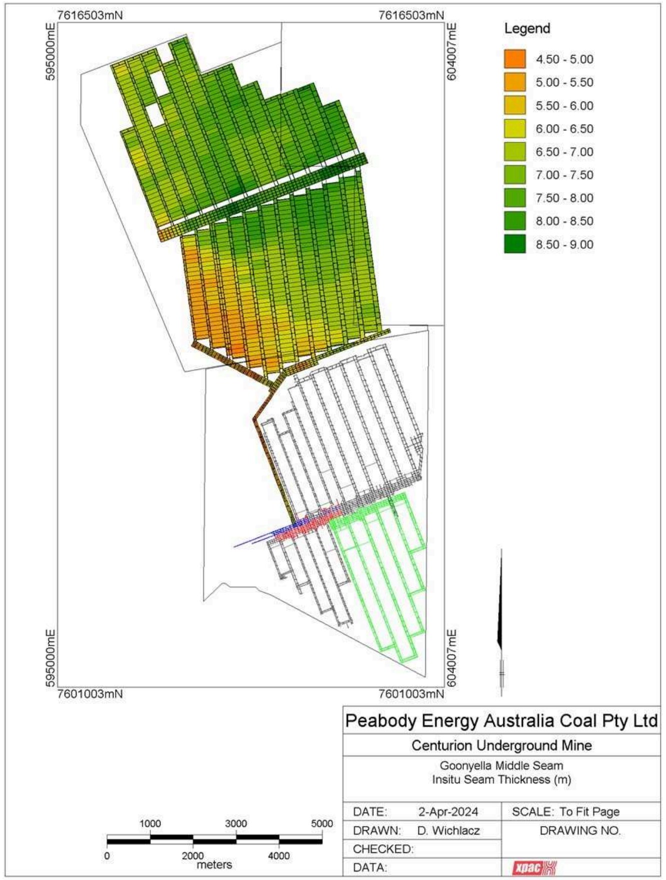

Figure 12-2. Insitu Seam Thickness (m) - GM Seam (Centurion North)

The GLB2 Seam ranges between 2.1m to 3.5m in thickness displayed in Figure 12-3. with the Longwall being designed to operate within this range. Development roadways have been designed to have a cut height of 3.4m for ventilation purposes. Where the seam is less than 3.4m, roof material will need to be cut to meet the height requirements. Similar to the GM Seam, the mine plan also assumes that 0.3m of coal is left in the floor for development to ensure favorable floor conditions.

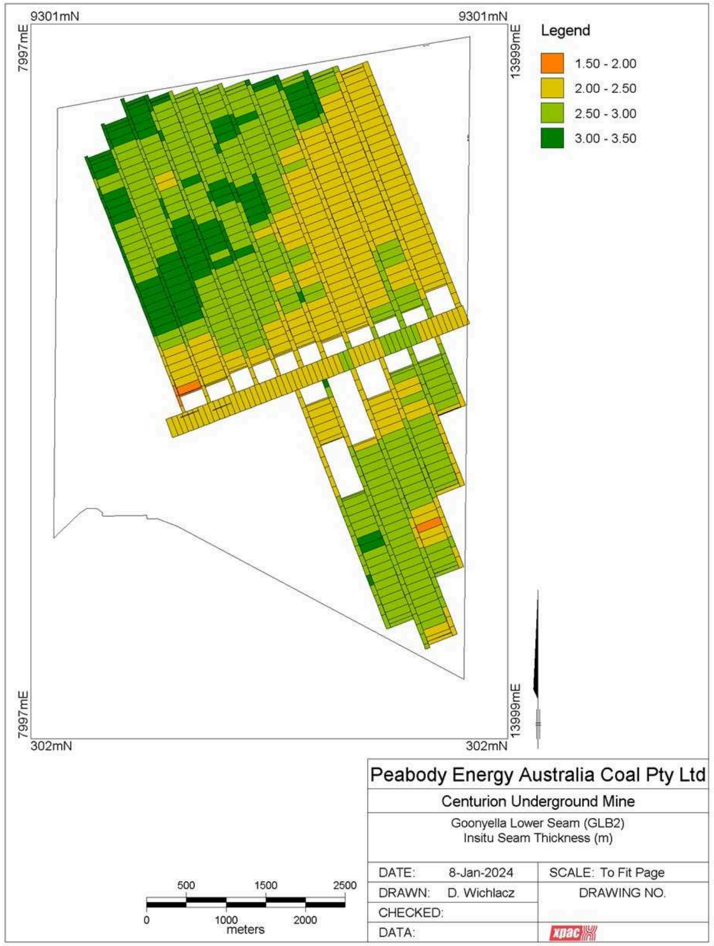

Figure 12-3. Insitu Seam Thickness (m) - GLB2 Seam

The coal density for the GM seam is modeled from the lab test as discussed in Section 8.2.4 which results in a combined average density of 1.37 tonnes per cubic metre for GM South and 1.39 tonnes per cubic metre for Centurion North. The mine plan assumes 2.33t/m3 and 2.35t/m3 respectively for roof and floor rock density. The GLB2 seam results in a combined average density of 1.36 tonnes per cubic metre for insitu coal, and the mine plan assumes 2.45t/m3 and 2.49t/m3 respectively for roof and floor rock density.

Coal Product Quality

Once the coal is fed to the CHPP, the different circuits in the plant separate the product coal from high ash reject material. The wash head ash from the Bore/Core data (without dilution) is very low for the GM cut and GLB2 seams, which will deliver very high yields. When washed through the CHPP the product ash for both the GM cut and GLB2 seams is also very low. This facilitates maximum density washing (1.55SG) through the DMC circuit. The GUA seam has a higher wash head ash, consequently the yield is lower and the product ash higher. The GUA seam will need to be washed to a lower DMC cut point to maintain the 10.5% ash target. Table 12-1. below summarizes the dilution free head ash and the simulated yield and product ash along with the DMC cut point.

Table 12-1. Simulated Yield and Product Ash

Seam	GM Cut	GLB2	GUA
Panels	All	Southern Panels + Northern Resource Area	Northern Resource Area
Wash Head Ash % (ad)	16.3	14.5	24.1
DMC Cutpoint	1.54	1.55	1.42
Yield % (ad) (no dilution)	82.5	83.6	59.8
Product Ash % (ad)	7.8	7.8	10.5

These results are based on the unified Bore/Core database on an in-situ coal basis only. All out of seam dilution is assumed to be disposed as reject during the washing processes. The assumed maximum density for the DMC circuit should be challenged when operational. There is potential to operate at higher DMC cut points, which may increase the yields with a minor increase in product ash.

Table 12-2. below summarizes the impact of coal loss, dilution and product moisture assumptions, which are applied in the mine plan.

Table 12-2. Mine Plan Assumptions

Seam	GM Cut	GLB2
ROM Ash % ad	14.8%	13.3%
Wet Yield %	83.9%	80.1%

Reporting

The assumptions for reserve estimates are verified periodically against actual production. Underground ROM production is measured by the belt scale installed on the drift belt. The clean coal product tonnes and plant yield are monitored and measured by the belt scales at the CHPP. The product coal quality is sample tested using external lab consultants. Additional reconciliation processes include underground channel sampling, coal section surveys, and stockpile surveys.

The information of the coal reserves and all supporting documents are stored and kept as a record internally. The processes are followed every year to review, update, validate and document the reserve estimates.

12.3. Coal Reserves Statement

The LOM plan in section 13.3 is scheduled to resume mining in the first half of 2024. Coal reserves will not be extracted at Centurion until this point in time. Table 12-3. includes coal reserve estimates and key coal quality parameters with an effective date of April 12, 2024.

The total ROM coal quantity and plant yield for the GM South portion of the GM Seam are 21.8 million tonnes and 83.9% respectively, which result in 18.3 million tonnes of coal product including 18.2 million tonnes of proven reserves and 0.1 million tonnes of probable reserves.

Table 12-3. GM Seam (GM South) Coal Reserves Statement

Reserve	Quantity ROM (tonnes in millions)	Quantity Product (tonnes in millions)	Insitu Density (tonnes per cubic metre)	Saleable Product on Air Dry Basis		
				Ash (%)	Sulfur (%)	Volatile Matter (%)
Proven Reserve	21.7	18.2	1.37	7.3	0.48	21.8
Probable Reserve	0.1	0.1	1.37	7.2	0.48	21.6

Reserve	Quantity ROM (tonnes in millions)	Quantity Product (tonnes in millions)	Insitu Density (tonnes per cubic metre)	Saleable Product on Air Dry Basis		
				Ash (%)	Sulfur (%)	Volatile Matter (%)
Total	21.8	18.3	1.37	7.3	0.48	21.8

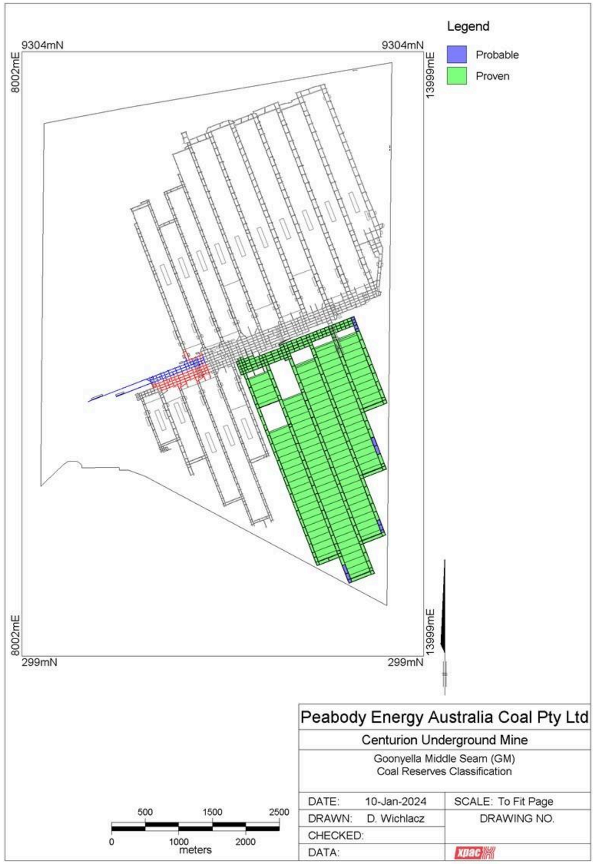

Figure 12-4. Reserve Classification – GM Seam

The total ROM coal quantity and plant yield for the Centurion North portion of the GM Seam are 136.0 million tonnes and 81.3% respectively, which result in 110.6 million tonnes of coal product including 34.1 million tonnes of proven reserves and 76.5 million tonnes of probable reserves.

Table 12-4. GM Seam (Centurion North) Coal Reserves Statement

Reserve	Quantity ROM (tonnes in millions)	Quantity Product (tonnes in millions)	Insitu Density (tonnes per cubic metre)	Saleable Product on Air Dry Basis		
				Ash (%)	Sulfur (%)	Volatile Matter (%)
Proven Reserve	42.4	34.1	1.39	8.7	0.49	22.6
Probable Reserve	93.7	76.5	1.39	7.9	0.46	20.5

Reserve	Quantity ROM (tonnes in millions)	Quantity Product (tonnes in millions)	Insitu Density (tonnes per cubic metre)	Saleable Product on Air Dry Basis		
				Ash (%)	Sulfur (%)	Volatile Matter (%)
Total	136.0	110.6	1.39	8.2	0.47	21.1

The total ROM coal quantity and plant yield for the GLB2 Seam shown in Table 12-4. are 54.8 million tonnes and 81.0% respectively, which result in 44.4 million tonnes of coal product including 23.7 million tonnes of proven reserves and 20.7 million tonnes of probable reserves.

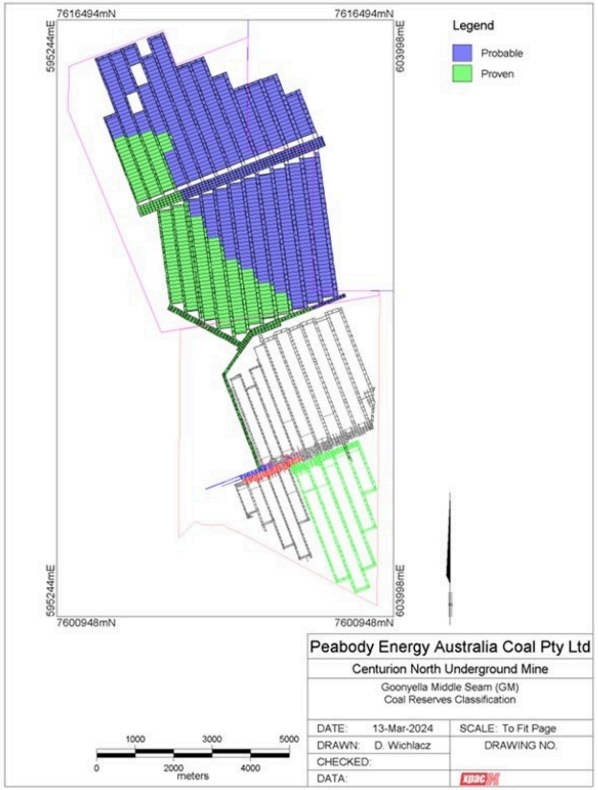

Figure 12-5. Reserve Classification – GM Seam

Table 12-5. GLB2 Seam Coal Reserves Statement

Reserve	Quantity ROM (tonnes in millions)	Quantity Product (tonnes in millions)	Insitu Density (tonnes per cubic metre)	Saleable Product on Air Dry Basis		
				Ash (%)	Sulfur (%)	Volatile Matter (%)
Proven Reserve	29.4	23.7	1.36	7.5	0.52	20.2
Probable Reserve	25.4	20.7	1.36	7.5	0.51	21.1

Reserve	Quantity ROM (tonnes in millions)	Quantity Product (tonnes in millions)	Insitu Density (tonnes per cubic metre)	Saleable Product on Air Dry Basis		
				Ash (%)	Sulfur (%)	Volatile Matter (%)
Total	54.8	44.4	1.36	7.5	0.52	20.6

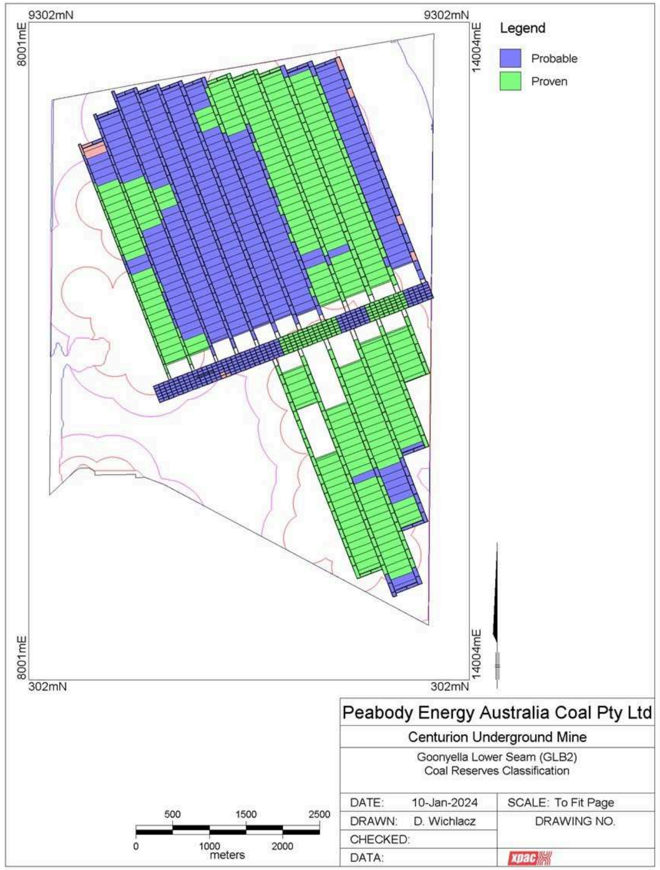

Figure 12-6. Reserve Classification – GLB2 Seam

12.4. Comments from Qualified Person(s)

The geological features around the reserve area are adequately defined, and other factors which could materially affect the reserve have all been addressed. The recent operational history in the nearby panels further demonstrates that the reserve is economically mineable. The coal reserve estimate could be affected by the data accuracy, uncertainty from geological interpretation and mine planning assumptions. Those factors normally don't pose material risks for the overall reserve estimates. However, other external risks, including unexpected geologic hazards, infrastructure or facility failures caused by natural disasters, changes in laws and regulations, and seaborne coal demand and supply, are not controllable by the company and could severely affect the mine-ability of the reserve.

13. MINING METHODS

13.1. Introduction

The mining method best suited for this underground mine is the longwall mining method which has a relatively high recovery rate. The mains and gate roads are required to be developed with the continuous miner prior to the longwall mining. Since the beginning of production at Centurion, this method appears to be relatively safer and more efficient compared to other available methods. Both the GM and GLB2 seams are economic when extracted. For this underground operation, the key consideration includes roof control, subsidence, ventilation, dewatering, mine planning and production schedules, etc.

13.2. Mine Design

Geotechnical Considerations

A design and sign off process by competent geotechnical engineers and the statutory Mining Engineering Manager for the strata control plan is in place at Centurion. These plans are designed to address potential geotechnical issues encountered under current geological and mining conditions, such as mining depth, mining height, and entry widths, etc. The depth of cover in the LOM plan area for GM South and Centurion North are shown in Figure 13-1 and Figure 13.2 respectively. For the GM Seam ranges from 210 to 360m for GM South and 130 to 790m for Centurion North. The depth of cover ranges from 160 to 540m for the GLB2 Seam. The typical roof controls are mainly described here for the development section (*i.e.*, mains and gate roads) and the longwall mining system.

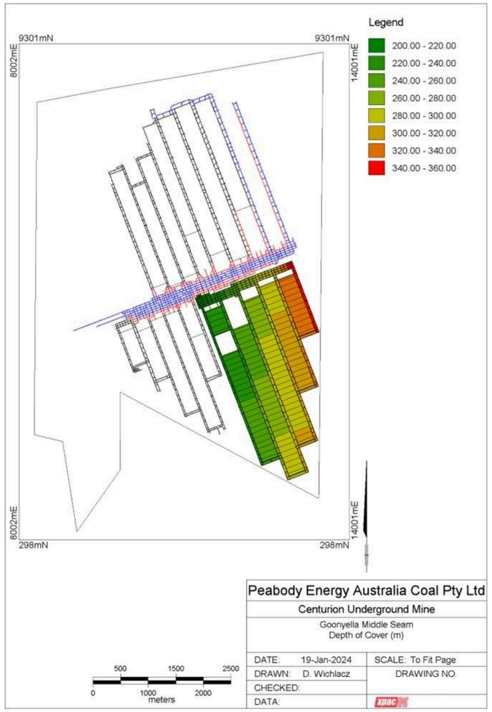

Figure 13-1. Depth of Cover – GM Seam (GM South)

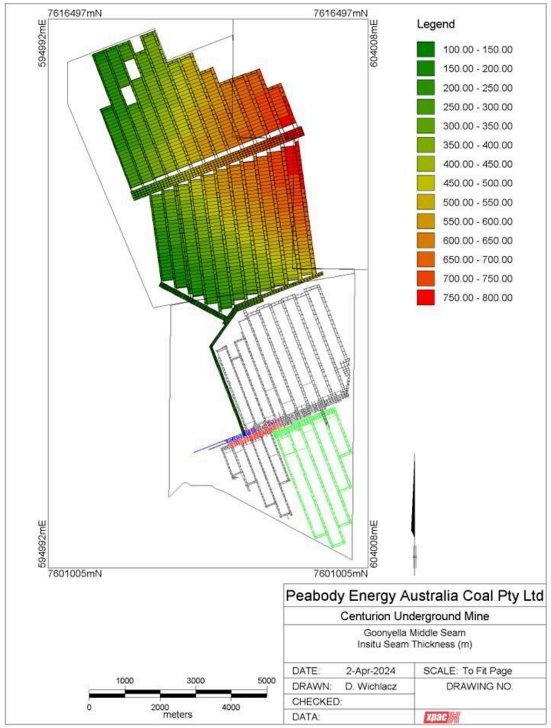

Figure 13-2. Depth of Cover – GM Seam (Centurion North)

For mains development with a five to seven entry system, the typical pillar sizes are 80 metres by 42 metres (center-to-center). The typical entry and crosscut width are 5.4 metres.

The typical longwall gate roads in the GM Seam developed by the continuous miner sections consist of two entries with widths typically 40 to 52 metres (center-to-center) for GM South and 34 to 106 metres for Centurion North. In the GLB2 Seam the gateroad widths typically range from 32 to 66 metres. Crosscut centers are typically 133 metres. The typical entries and crosscuts are 5.4 metres wide. The entries may be mined up to 8.5 metres wide with the installation of additional permanent supports. Figures 13-3. and 13-4. illustrate the dimensions for a typical gate road and mains development.

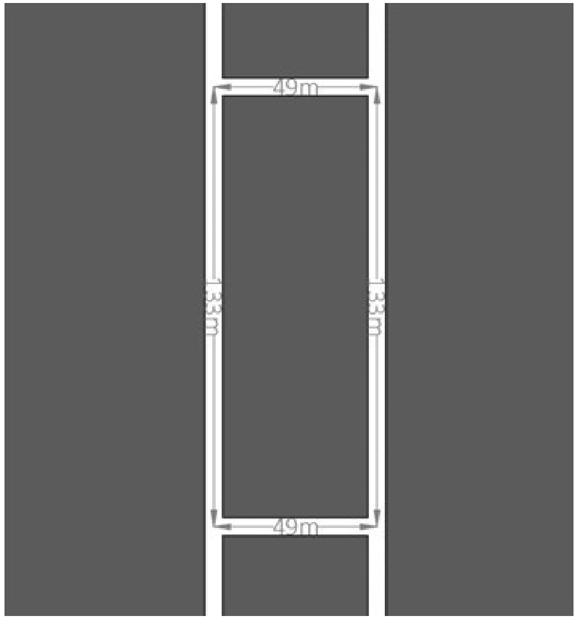

Figure 13-3. Typical Gate Road Development

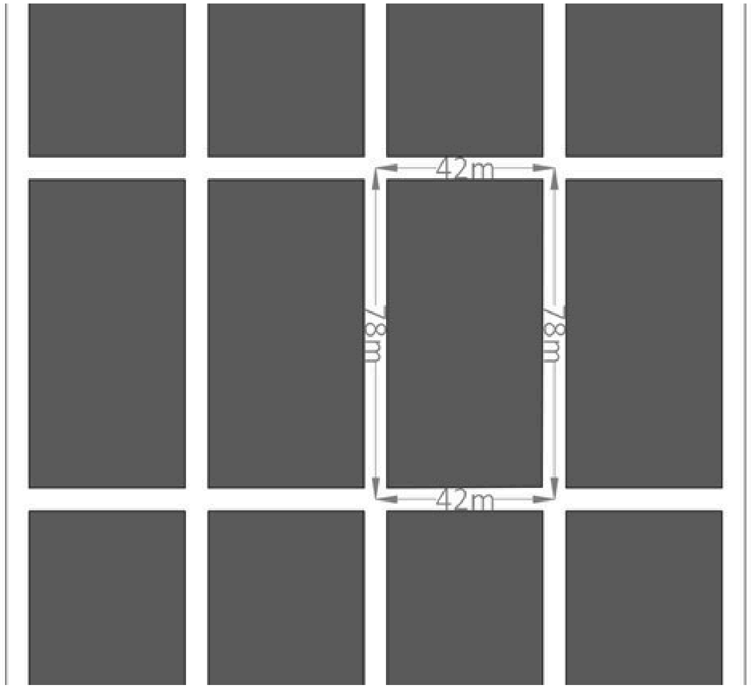

Figure 13-4. Typical Mains Development

The roof control plan approved by competent geotechnical engineers and the statutory Mining Engineering Manager includes the use of primary supports during mains and gate road development, as well as secondary supports at the longwall tailgate. The operation typically uses 6 x 2.1m full resin-grouted bolts per metre advance with roof mesh for the primary roof support. The minimum rib support requirements for development are:

- Less than ~300m DOC – 2 x 1.2m rib bolts/1.0m/side, plus rib mesh modules
- ~300-400m DOC - 3 x 1.2m rib bolts/1.0m/side, plus rib mesh modules

The installation of 1.8m rib bolts as secondary support prior to longwall retreat will be required. At depths beyond 400m the use of 1.8m rib bolts is recommended to avoid the need for secondary support.

Development intersections are supported using roof bolts with 2 x additional long tendons every 2 metres. Other supplemental roof support materials are used as needed, such as timers, pumpable cribs, prop-setter, etc.

Longwall panels are typically 305 metres wide and of various lengths based on panel geometries constrained by faults or coal thickness. Secondary roof support will be required ahead of longwall retreat. Typical Maingate Belt and Travel Roads will require 8m long, pre-tensioned and post grouted tendons at a density of two tendons every two metres. Belt Road intersections require tendons installed at a density of three tendons every 2m. This support is dependent on longwall retreat and horizontal stress direction and may need to be increased in some instances up to 4 tendons per lineal metre. Belt Road intersections will also require the installation of five sets of standing support across the entrance to cut-throughs. Additional rib support will also be required ahead of longwall retreat. The Longwall Tailgate will require standing support installed at 4-5m intervals. The relevant roof control plan provides measures for normal mining encountered in the longwall area.

The other specific roof controls are considered for start-up entries, face recovery, shield recovery, bleeder support, etc. As mining depths increase down-dip then support requirements may change accordingly. This should form part of ongoing mine support review and design. Structured areas should be individually assessed and will likely require potentially elevated levels of secondary support and strata pre-consolidation.

Subsidence Considerations

Centurion Mine has conducted numerous and extensive subsidence surveys over many of the longwall panels. Historic studies provide detailed information and data collected from surface subsidence surveys conducted at the mine. Major subsidence characteristics, including the maximum surface subsidence factor and angle of draw of subsidence, have been discussed based on analysis of measured surface subsidence data. As summarized below, several major subsidence features at Centurion Mine have been characterized, and they are consistent with this specific geological and mining condition.

The maximum surface subsidence occurs in the area near the middle of each longwall panel. Maximum subsidence for the GM Seam is predicted to be 3.2 metres for GM South and 3.15m for Centurion North. The subsidence contours for GM South and Centurion North are presented in Figure 13-5 and Figure 13.6.

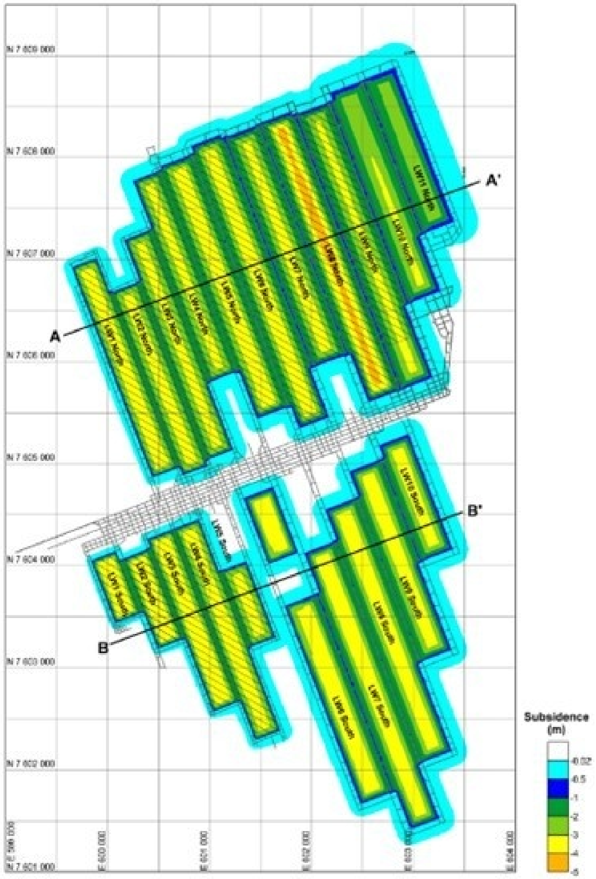

Figure 13-5. GM South (GM Seam) Subsidence Prediction Contours

Figure 13-6. Centurion North (GM Seam) Subsidence Prediction Contours

The angle of draw associated with subsidence is defined as the angle formed between the vertical projection of a line at the panel edge, and a second line that connects from the panel edge to the point of the last measurable surface deformation. The angle of draw from both the surveyed subsidence data and the modelled data is presented in Figure 13-7. A conservative upper bound of 28 degrees was used for the angle of draw. This is a slight increase on the theoretical 26.5 degrees of half depth.

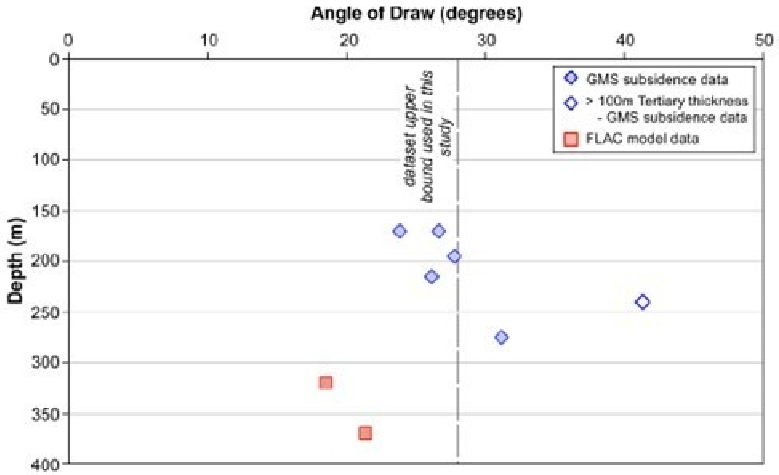

Figure 13-7. Angle of Draw Data

Since subsidence will occur in the areas that will not impact structures, environmental features, or culturally significant sites. The environmental approval with a Subsidence Management Strategy, including the planned subsidence and preventive measures, has been granted for the GM South and GLB2 mine layouts. This work is currently being undertaken for Centurion North mine.

Maintenance requirements are determined through two primary methods:

- Subsidence monitoring; and
- Field surveying.

Field surveying consists of opportunistic observation and systematic surveying. Opportunistic observation occurs through communication with personnel working around the subsidence panels, such as exploration crews, drilling contractors and surveying personnel. Surface cracking through subsidence is noted and communicated to the Environmental Officer. Surface cracking noted through ongoing works are remediated by ripping the affected area on an 'as required' basis. The GM Seam subsidence predictions superimposed onto the topography for GM South are presented in Figure 13-8.

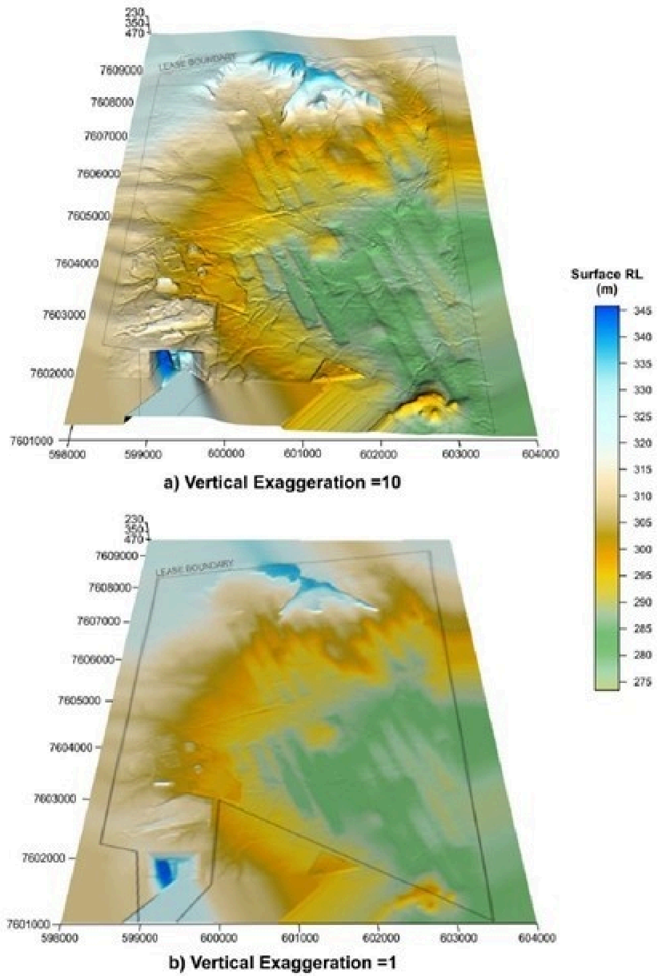

Figure 13-8. GM Seam Subsidence on Topographic Surface

The maximum incremental subsidence for the GLB2 Seam generally ranges from 1.7m to 3.3m depending on single or multi-seam extraction, seam thickness and overburden depth. The incremental subsidence predictions for the GLB2 seam are displayed in Figure 13-9.

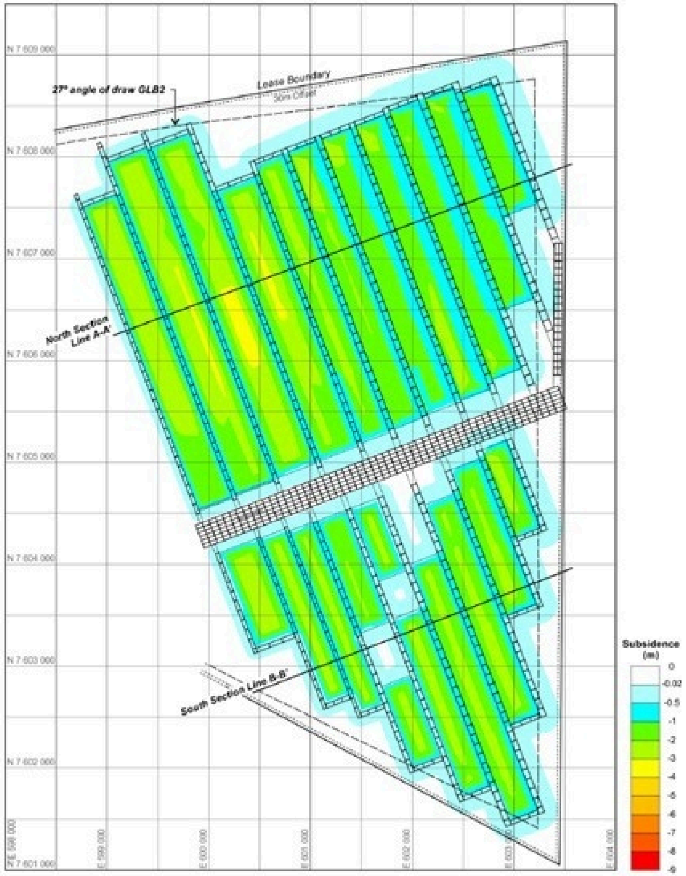

Figure 13-9. GLB2 Seam Subsidence Prediction Contours

The cumulative subsidence in the areas of multi-seam extraction has maximum subsidence generally ranging from 4m to 8m, where the greatest has LTCC that previously took place in the GM Seam and increased seam thickness in the GLB2. The Cumulative subsidence predictions for both seams are displayed in Figure 13-10.

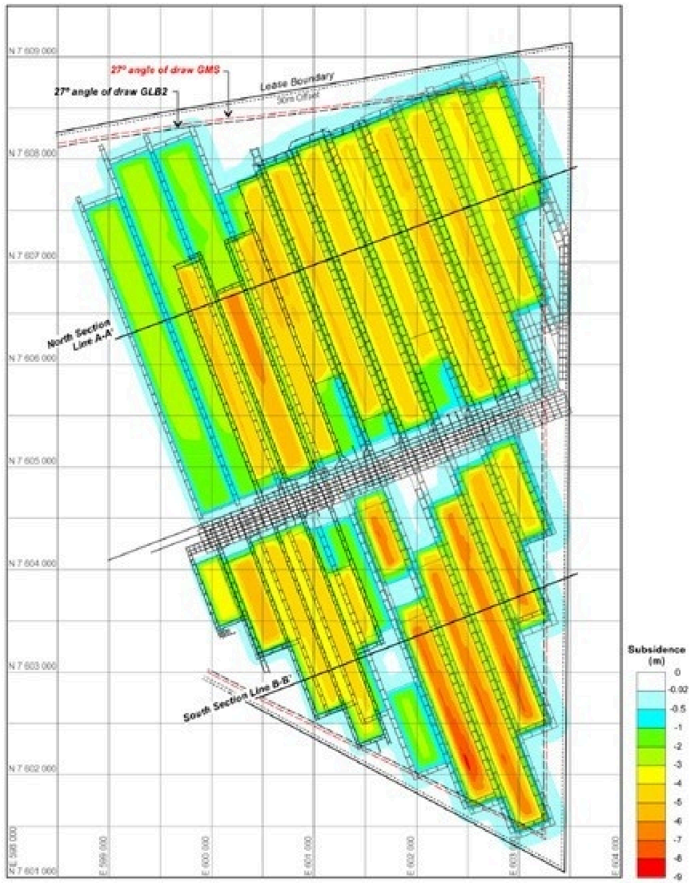

Figure 13-10. GM and GLB2 Seam Cumulative Subsidence Prediction Contours

Ventilation Considerations

Methane is the main hazardous gas released during the mining process. The mine ventilates the underground mine works by utilizing fans installed on the surface in an exhaust system. The main ventilation facilities are listed in Table 13-1. Other underground ventilation controls used include stoppings, seals, tubes, curtains, regulators, auxiliary fans, etc. The operation follows the approved ventilation plan by the statutory Ventilation Officer and Mine Manager to control hazardous gas and dust according to Queensland Coal Mining Regulations. The approved plan defines the minimum required air quantity for different mining sections and processes, minimum air velocities on the longwall face, location, and frequency of methane tests, etc. The monitoring and tracking system, air courses and escape ways are updated routinely on the mine map. The air survey and ventilation model are used to assess any ventilation and mine plan changes.

The current ventilation infrastructure in place to support the mining of the GM seam is outlined in Table 13-1. below. In addition to this, small diameter back return shafts and fans will be required in the perimeter roadway of the longwall panes to assist with the management of methane gas and the goaf fringe.

Table 13-1. Ventilation Facilities

Ventilation Facilities	Cross Sectional Area (m2)	Elevation (meters) Surface	Bottom	Depth (meters)
Centurion Portal 1:7 Men & Materials Drift	23.0	286	182	104
Centurion Portal 1:4 Conveyor Drift	23.0	284	183	101
H9 Shaft (6.0m Diameter)	28.3	301	161	140
H40 Shaft (5.3m Diameter)	22.1	292	42	250

The GLB2 Seam will be ventilated via inter-seam drifts and staple shafts connecting the GLB2 seam workings to the existing GM Seam workings and ventilation infrastructure. Similar to the GM seam, small diameter back return shafts will be required in the perimeter roadway of the longwall panes in the GLB2 Seam, connecting the workings to surface fans.

Centurion North will require a total of five main ventilation shafts for the life of the operation. Centurion North will also require small diameter back return shafts and surface fans in the perimeter roadway of the longwall panels.

Hydrological Considerations

The underground mine water is staged through a series of electric and air pumps to a pit bottom location where 2x100L/sec Truflo Pumps deliver to surface. There are 2 surface water storage dams in series to allow for desilting. Water is reused from these dams in the CHPP.

As mining operations progress down dip, water behind seals is designed to be released through water traps so there is no accumulation of water in sealed areas of the mine up dip from operations. The Southern longwall panels are at a higher elevation than the Northern longwall panels that have been exhausted, hence there is no risk on inundation from goaf water storage. Water levels at the bottom of the Northern longwall panels is regularly monitored and acts as a reserve storage area. Boreholes are in place to allow for pumping as required from electric pumps based on the surface.

Certain areas of Centurion North undermine Basalt aquifers and it is expected that there will be a potential increase in water inflows into the mine workings. High-capacity electric pumps in down dip areas of the mine will be used to pump the mine water directly to the surface.

13.3. Mine Plan

Centurion Mine uses the underground longwall mining method which requires certain geometry and size for economic extraction. The LOM plan for the GM South mine layout is limited by existing workings to the North and West and lease boundary to the South and East. The GM South mine plan has a mine life of ten years (i.e., 2024 to 2029 and 2051 to 2055) with a projection of 22 million tonnes of ROM production and 18 million tonnes of saleable product. The first two years of production are solely development and hence have a lower production output. The average annual production once the longwall has commenced operation is 4.2 million tonnes of ROM coal, and 3.5 million tonnes of saleable product with an average yield of 83%.

The Centurion North mine layout is limited by the existing workings to the south, the sub-crop line to the West, Lease boundary to the North and depth of cover to the East. The Centurion North mine plan has a mine life of thirty years (i.e., 2025 to 2054) with a projection of 136 million tonnes of ROM production and 110 million tonnes of saleable product. The average annual production once the longwall has commenced operation is 5.6 million tonnes of ROM coal, and 4.5 million tonnes of saleable product with an average yield of 82%.

The interburden between the GM and GLB2 seam is approximately 60m thick. The GLB2 Seam mine plan mirrors the GM mine layout however is slightly offset for geotechnical purposes. The GLB2 Seam mine plan has a mine life of eighteen years (i.e., 2050 to 2067) with a projection of 55 million tonnes of ROM production and 45 million tonnes of saleable product. Prior to the commencement of production, two interseam drifts will be constructed from the GM seam to the GLB2 seam using roadheaders and will take approximately one year to complete. The average annual production once the longwall has commenced operation is 4.1 million tonnes of ROM coal, and 3.4 million tonnes of saleable product with an average yield of 81%.

Mining Process

The typical longwall panel is 300m wide equipped with a shearer, hydraulic shields, armored face conveyor, stage loader, crusher, etc. The shearer cuts a 0.9m thick web along the 300m longwall face for every pass it makes. The cutting height is constrained by equipment size and ranges from 3.2m - 4.5m. The mining process generates some dilution from cutting of the floor rock. The ROM coal, including coal and dilution, is crushed, and conveyed to the washing plant for processing. Most of the dilution is separated in the washing plant from coal and then disposed of as refuse. More discussions for the dilution and recovery are included in sections 12.2.2. and 12.2.3.

Continuous miners are used to cut the entries for mains and gate roads. The coal is transported by shuttle cars to the feeder breaker which reduces mined coal to a consistent, easily handled size for conveyance. The Continuous miner cuts and bolts simultaneously with the newly exposed roof being supported according to the approved roof control plan. The Centurion mine is scheduled to employ between two to four continuous miner systems for the current LOM plan.

Production Schedule

The existing Centurion Mine has two designated districts, the Northern Panels, and the Southern Panels. In the GM Seam the Northern panels (LW01N - LW09N) have been extracted along with five panels to the south (LW01S – LW05S). Five longwall panels to the south (LW06S - LW10S) remain to be extracted with panels with lengths ranging from 2,910 metres to 1,100 metres. Centurion North Mine consists of twenty-four longwalls with lengths ranging from 3,840 metres to 1,130 metres. The GLB2 Seam includes eleven longwall panels to the North and five longwalls to the South with lengths ranging from 3,610 metres to 720 metres.

Centurion has one set of Caterpillar longwall mining equipment which is currently being stored on the surface at the mine site. Following the development of LW06S in the GM Seam, the longwall will be transported underground via the men & materials drift and installed to commence production. Longwall production is scheduled to commence in 2026. The first longwall consists of two parts with a step-around due to a geological fault. At this point in time, it has been assumed that that longwall will not be able to mine through the fault and therefore a longwall relocation will need to occur around the fault.

During the development and extraction of GM South, two development units will commence the development of the main headings to access Centurion North longwall panels in 2025. Following the extraction of three panels in GM South, the longwall will be relocated to Centurion North. Once Centurion North has been fully extracted the longwall to be relocated to GM South to extract the remaining two longwall panels in the South. The detailed mining sequence is illustrated in Figure 13-9.

Centurion will operate seven days per week excluding certain holidays. Each operating day is scheduled with two shifts that are twelve hours per shift. Two shifts per week will be utilized for maintenance and setup. The total retreat rate from the GM Seam and GLB2 Seam longwalls is assumed to be an average of 10 metres per day and 11 metres per day respectively. The difference in daily longwall retreat rates is based on the varying cut heights of the two seams. Longwall moves between panels is schedule to take 52 days for the GM Seam and 36 days for the GLB2 Seam.

Continuous miners will typically operate two, twelve-hour production shifts per day, with maintenance occurring on two shifts per week. The continuous miners are assumed to advance 19 metres per day in gate road development and 13 metres per day in mains development. Each continuous miner unit is projected to be idled for 7 calendar days to relocate to a new section. The current LOM plan for the GM Seam assumes three continuous miner units to develop gate roads and mains during 2024 with a fourth unit is required during 2025. After 2026, two development units are scheduled up until 2027 where only one development unit is required for the remaining LOM plan.

The production projection from 2024 to 2030 in this LOM plan is included in Table 13-2. The supporting annual progress stage plan is also shown in Figure 13-11. below.

Table 13-2. GM Seam LOM Plan Production Schedule (100% Ownership Basis)

Production in thousands	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**
ROM Tonnes	111	620	3,867	3,698	5,207	5,049	5,876	6,347	6,090	6,220
Yield	83%	82%	84%	84%	84%	82%	82%	82%	81%	82%
Product Tonnes	92	507	3,258	3,098	4,364	4,118	4,828	5,177	4,917	5,070

Production in thousands	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**
ROM Tonnes	5,111	5,363	5,878	6,571	5,695	6,054	6,116	6,025	5,140	6,865
Yield	84%	79%	80%	81%	82%	83%	83%	82%	83%	83%
Product Tonnes	4,270	4,220	4,711	5,336	4,671	5,003	5,064	4,939	4,243	5,699

Production in thousands	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
ROM Tonnes	5,578	4,656	6,003	4,520	4,540	5,452	5,022	5,005	5,812	5,774
Yield	83%	84%	83%	83%	76%	77%	75%	81%	82%	82%
Product Tonnes	4,648	3,898	5,012	3,768	3,469	4,208	3,760	4,064	4,771	4,706

Production in thousands	2054	2055	Total
ROM Tonnes	3,975	1,974	**160,215**
Yield	83%	83%	**82%**
Product Tonnes	3,306	1,633	**130,830**

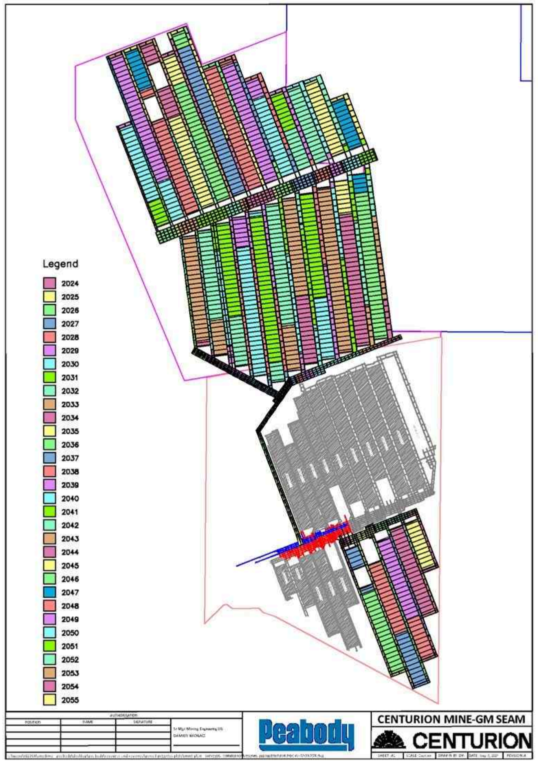

Figure 13-11. GM Seam LOM Mining Sequence

The current LOM plan for the GLB2 Seam assumes that the two inter-seam drifts from the GM Seam down to the GLB2 Seam commences in 2049 and takes approximately one year to complete. Two continuous miner units then commence development of the main headings in 2050. A third continuous miner joins the fleet to develop gate roads and mains from 2051 to 2053. After 2053, two development units are scheduled up until 2056 where the third continuous miner comes back online to assist with developing the southern panels. Two to three continuous miners are required for the remaining LOM plan based on development intensity.

The production projection from 2050 to 2067 in this LOM plan is included in Table 13-3. The supporting annual progress stage plan is also shown in Figure 13-12. below.

Table 13-3. GLB2 Seam LOM Plan Production Schedule (100% Ownership Basis)

Production in thousands	**2050**	**2051**	**2052**	**2053**	**2054**	**2055**	**2056**	**2057**	**2058**	**2059**
ROM Tonnes	4	231	397	232	227	3,317	4,466	4,441	4,535	3,926
Yield	40.0%	39.0%	52.0%	59.0%	65.0%	81.0%	81.0%	81.0%	82.0%	82.0%
Product Tonnes	1	90	207	137	148	2,672	3,631	3,612	3,711	3,218

Production in thousands	**2060**	**2061**	**2062**	**2063**	**2064**	**2065**	**2066**	**2067**	**Total**
ROM Tonnes	4,359	4,286	4,691	3,945	4,571	4,241	3,504	3,394	**54,766**
Yield	82.0%	82.0%	79.0%	81.0%	81.0%	83.0%	84.0%	84.0%	**81%**
Product Tonnes	3,577	3,494	3,724	3,206	3,710	3,514	2,929	2,837	**44,420**

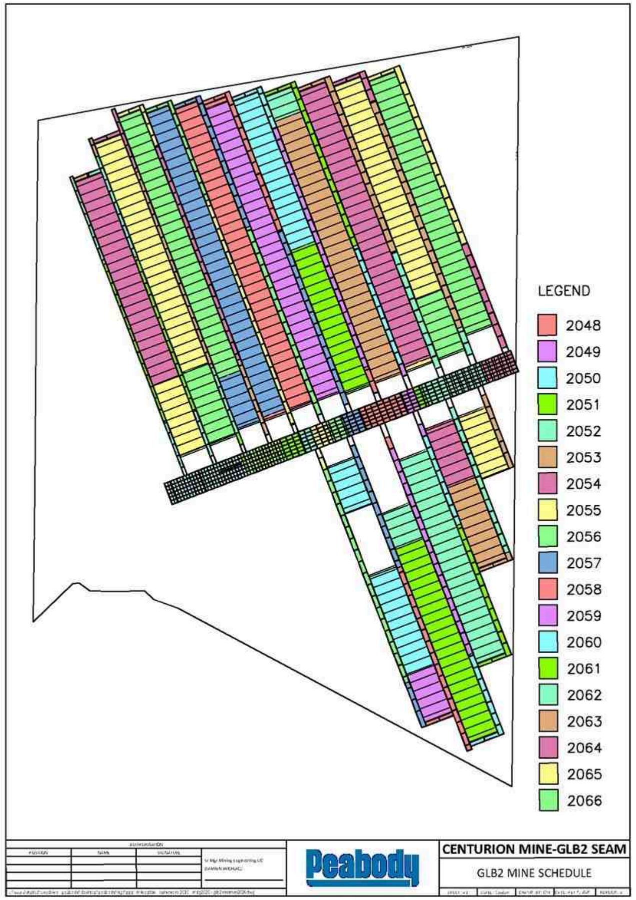

Figure 13-12. GLB2 Seam LOM Mining Sequence

13.4. Mining Equipment and Personnel

The Centurion South & North mine plans estimate 117 hourly and 69 salaried personnel for 2024. Total LOM plan staffing is projected to average 206 hourly and 111 salaried personnel from 2025 onwards. For GLB2 the mine plan estimates 194 hourly and 117 salaried personnel over the LOM. The type of mining equipment utilized is suitable for the geologic and mining conditions experienced and expected at Centurion, based on a long history of successful operation. The major mining equipment required for this mine plan is listed in Table 13-4. The listed equipment along with other supporting equipment is all currently at the mine. The equipment is required to be routinely maintained, overhauled, or replaced based on the operating conditions.

Table 13-4. Major Mining Equipment

Type	Manufacturer/Model	Equipment Description	# of Units
Development	Komatsu 12CM30	Continuous Miner	3
	Komatsu BF-14	Feeder Breaker	2
	Komatsu 10SC32	Shuttle Car	4
	Sandvik LS190	Loader	5
	Torque Titan	Loader	5
	AME Mine Cruisers MK8	Personnel Transporter	10
	AMP Control	Power Center	2
	Howdens 24m3	Ancillary Fan	4
Longwall	CAT EL3000	Shearer	1
	CAT 2m 1501t	Shields	153
	Cat PF6 1242mm	AFC	1
	Cat BSL	Stageloader & Crusher	1
	Kamat	Hydraulic System	1
	AMP Control	Power Center	1

14. PROCESSING AND RECOVERY METHODS

14.1. Introduction

The ROM coal at Centurion needs to be washed prior to shipping to customers to reduce the ash and enhance the coking coal properties. The coal handling and processing plant at Centurion was constructed in 1994 and has been used to process the ROM coal to meet customers' quality requirements.

14.2. Process Selection and Design

The Centurion Coal Handling and Preparation Plant CHPP was commissioned in June 1993 to produce coking coal from the Goonyella Middle Seam for export. The original plant design throughput was 560tph and following the introduction of open cut mining of 2003, plant modifications were made to improve plant throughput, reliability, efficiency, and product quality control. These modifications improved throughput tonnage to a nominal 700tph.

14.3. Coal Handling and Processing Plant

ROM coal is conveyed via the Drift conveyor onto the Raw Coal Stacking conveyor (skyline conveyor) The material is conveyed via the skyline conveyor onto the raw coal stockpile. A magnet is positioned at the head end of the Drift conveyor to remove tramp scrap steel material such as miner picks and roof bolts, and prevents it being discharged onto the Raw Coal Stockpile which has a capacity of 350,000t.

ROM coal is reclaimed by self-feeding during times of high stockpile height and with bulldozer assistance as the stockpile height decreases. The amount of material reclaimed from the stockpile is controlled to enable the continuous operation of the CHPP. All material transported on the Raw Coal Reclaim conveyor passes over a weightometer.

The material reclaimed from the ROM passes over the raw coal scalping screen to remove any -50mm material from entering the rotary breaker. The -50mm material is conveyed to the CHPP feed surge bin. By scalping the feed before the rotary breaker less fine coal is generated. The +50mm material is discharged from the raw coal scalping screen and enters the rotary breaker.

The rotary breaker crushes the +50mm material by lifting it and dropping it onto breaker plates. Material smashed to less than 50mm falls through holes contained in the breaker barrel and discharges to the breaker product conveyor with the -50mm material from the raw coal scalping screens. Material greater than 50 mm repeats the same procedure several times. Any material that has not broken into minus 50 mm material after 6 rotations is discharged from the breaker onto the breaker reject stockpile for removal by front end loader. The rotary breaker relies on the fact that coal is more brittle and breaks easier than rock, thus rejecting some of the rock in the ROM material.

The CHPP consists of two identical modules fed from a common feed conveyor with a total ROM capacity of 700tph. The following description outlines a single module. The deslime screens are used to separate the CHPP feed into two size fractions. The coarse material (plus 1.0wwmm) which is fed to the DMC. The fine material (minus 1.0wwmm) is fed to the deslime cyclones which separate the fines into two fractions. The midsize material (minus 1.0wwmm plus 0.125mm) is fed to spiral circuits and the undersize material (minus 0.125mm) is fed to the flotation circuit.

Product material is collected on the product conveyor and transported to the top of the product stacking conveyor transfer tower. The product conveyor discharge chute is fitted with a sampling device to obtain samples of plant product for monitoring product quality. The material is then conveyed to the tripper where it is divided into two streams by the tripper head chute and falls onto the product coal stockpile which has a capacity of 400,000t.

Product coal is reclaimed by self-feeding during times of high stockpile height and with bulldozers as the stockpile height decreases. Product reclaim recovery is achieved by means of six stockpile activators and coal valves. The coal valves open to allow a free flow of material at the nominated feed rate (max 4500tph) onto the product coal reclaim conveyor. All material transported on the product coal reclaim conveyor passes over a weightometer.

Product coal reclaimed from the product stockpile is conveyed to the 1,000 tonne train loadout bin.

The rejects from all process circuits are collected and pumped to a rejects disposal area where the water is allowed to drain and return to the plant for reuse. When quality allows, spiral rejects can report to product via bypasses in the plant process. The detailed flow sheet, including equipment characteristics and specifications, for the coal processing plant, is shown in Figure 14-1. The general layout of the coal handling and processing plant and related infrastructures are shown in Figure 14-2.

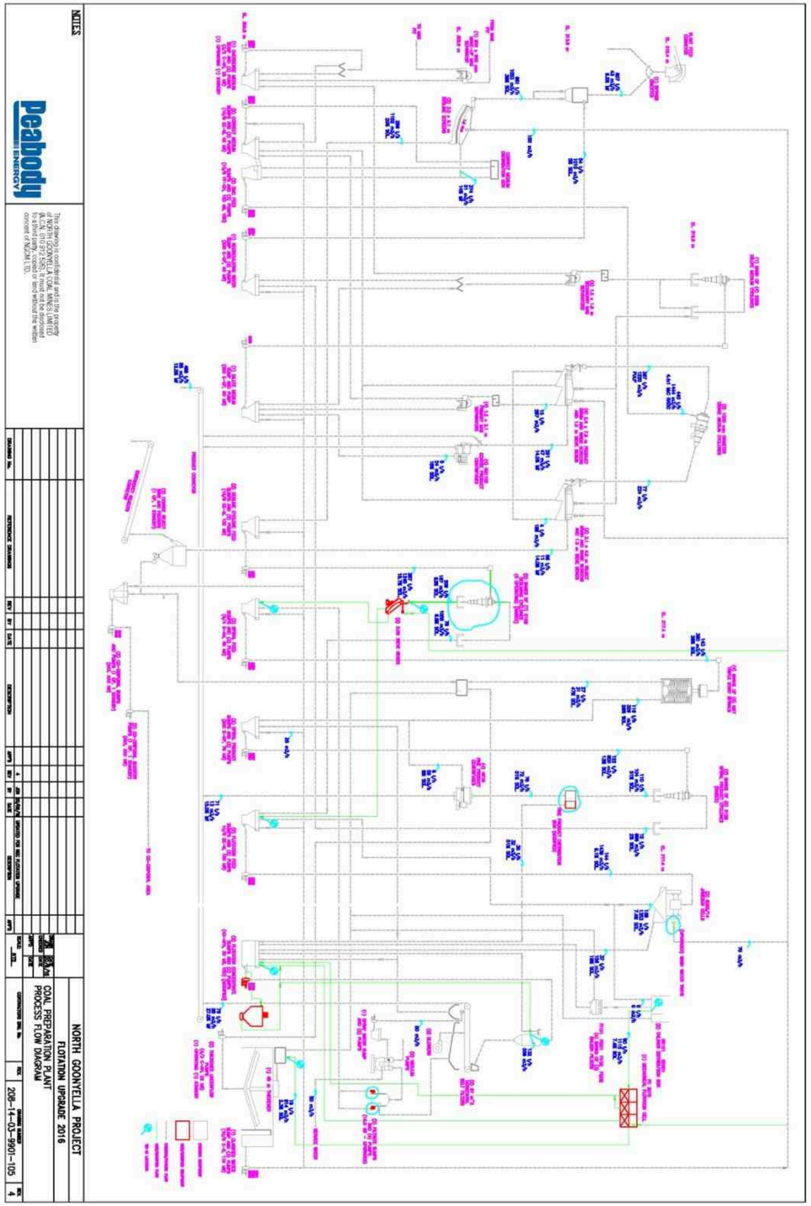

Figure 14-1. Plant Flow Sheet

Figure 14-2. Preparation Plan

14.4. Plant Yield

The plant yield at Centurion is highly correlated to ROM ash. The DMC circuit is normally configured to separate coal from refuse at a maximum cut-point of 1.55SG. The plant yield for the GM cut and GLB2 seams is consistently high, benefiting from maximum density washing. The GUA seam plant yield is lower with the DMC required to operate at lower cut points to maintain a 10.5% ash coking coal product. The undiluted yields ranged from:

- 58% to 87% for the GM cut (weighted average 82.5%)
- 76% to 91% for the GLB2 seam (weighted average 83.6%)
- 40% to 76% for the GUA seam in the Centurion North area (weighted average 59.8%).

The projected ROM yield is shown in section 13.3.2. More detailed discussions are included in sections 10.3, 12.2.2, and 12.2.3.

14.5. Energy, Water, Process Material, Personnel Requirements

The main consumables for the coal processing at Centurion are electricity for crushing, conveyance, coal processing, magnetite for heavy media circuits, and water for coal processing. The typical consumptions are 2800 tonnes of magnetite per year, and 262 megaliters of water per year based on historic records.

The coal handling and processing plant has been in care and maintenance since the underground fire event in 2018. The Centurion CHPP will process development coal on an as required basis until longwall production commences in 2026. The CHPP will then operate 12 hours per day, seven days per week. Required maintenance will be scheduled for one 12 hour shift every three weeks. A total of 26 persons consisting of staff and operators are needed to operate and maintain the processing plant at Centurion.

15. INFRASTRUCTURE

Centurion has extensive surface infrastructure to support the operation and no additional new infrastructure is required for commencement of production. All infrastructure will require routine maintenance and overhauls to ensure availability.

The main infrastructure was built in 1993 and encompassed the coal handling and processing plant, drift access and conveyor haulage, ventilation shafts, coal refuse disposal areas, rail loadout, stockpiles, administration, carpark, bathhouses, workshop, warehouse, and other supporting facilities. A plan showing the layout of surface infrastructure at Centurion is displayed in Figure 15-1.

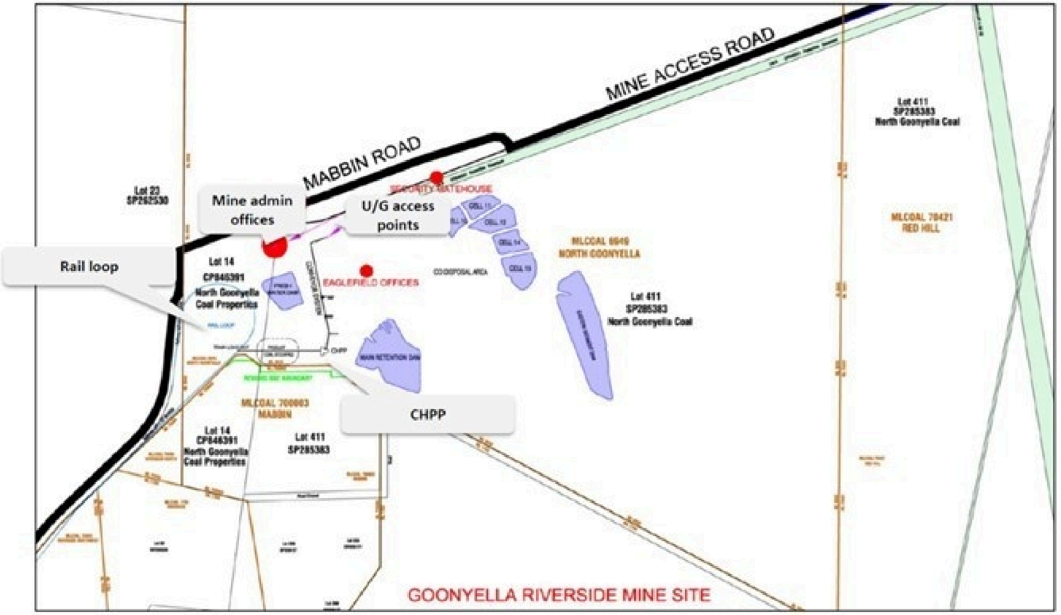

Figure 15-1. Site Infrastructure Layout

All personnel are either from nearby towns, and they drive in or out to the operations or FIFO from Brisbane, Queensland. Most of the employees reside at the Centurion Accommodation Village which is located 19km east of the Centurion Mine and has a capacity of 440 workers. Shown in Figure 15-2.

Figure 15-2. Centurion Accommodation Village

Centurion has established all required roads for off-highway trucks and light vehicles to support daily operations. The Centurion surface facilities are all accessible by paved and/or improved gravel roads. These are capable of being traversed by personnel vehicles and trucks. The North Goonyella Mine Access Road provides access to the Centurion offices and surface infrastructure. Shown in Figure 15-3.

Figure 15-3. Centurion Surface Infrastructure

Product coal is loaded to train via a 1,000t Train Loadout Bin where it loads a train in about three hours and 20 minutes (Figures 15-4 and 15-5). Each train consists of some 120 wagons carrying approx. 10,000mt of coal. The loaded train then travels some 217km to the port of Hay Point where it is bottom dumped to conveyor and onto stockpile at Dalrymple Bay Coal Terminal (DBCT). DBCT is owned by a private company which operates a process of cargo assembly where coal is stockpiled for a named vessel a few days prior to loading. Therefore, Peabody has no dedicated stockpile capacity at the port.

Figure 15-4. Product Stockpile and Loadout Facilities

Figure 15-5. Rail Loop

Shipping of coal to customers usually takes place on an ocean-going vessel shared with other coal suppliers called co-shippers. Typically, Centurion Coking Coal shipment parcels can vary in tonnage from a parcel of two vessel holds (30,000mt to 40,000mt) up to a part capesize vessel (plus 75,000mt)

Rail and port contract arrangements for movement of coal from Centurion Coking Coal to the customer's ship are managed by Peabody Energy Australia for the Goonyella rail and port system and covered under Peabody's current long-term contracts.

The Centurion Plant will process ROM coal to produce a saleable product. Historically, two waste byproducts result from this processing, coarse refuse, and fine refuse (slurry). The rejects to tailings ratio is approximately 2:1.

The combined rejects are currently pumped into a co-disposal area (CDA) in the current operations area and consists of a series of cells as displayed in Figure 15-6.

Figure 15-6. Centurion CDA Locations

The current CDA areas have a life of three years from the commencement of longwall production which will allow the disposal of combined rejects until 2029. Studies and engineering designs have been completed to raise and expand the current CDA to the East as shown in Figure 15-7. Raising and expanding the existing footprint of the current CDA alone will extend the life by 23 years to 2052 and will have sufficient capacity for rejects disposal for the LOM plan for the GM Seam. There are a number of options available to service the GLB2 Seam beyond 2052, however the most likely option is to continue to expand the current CDA to the South-East.

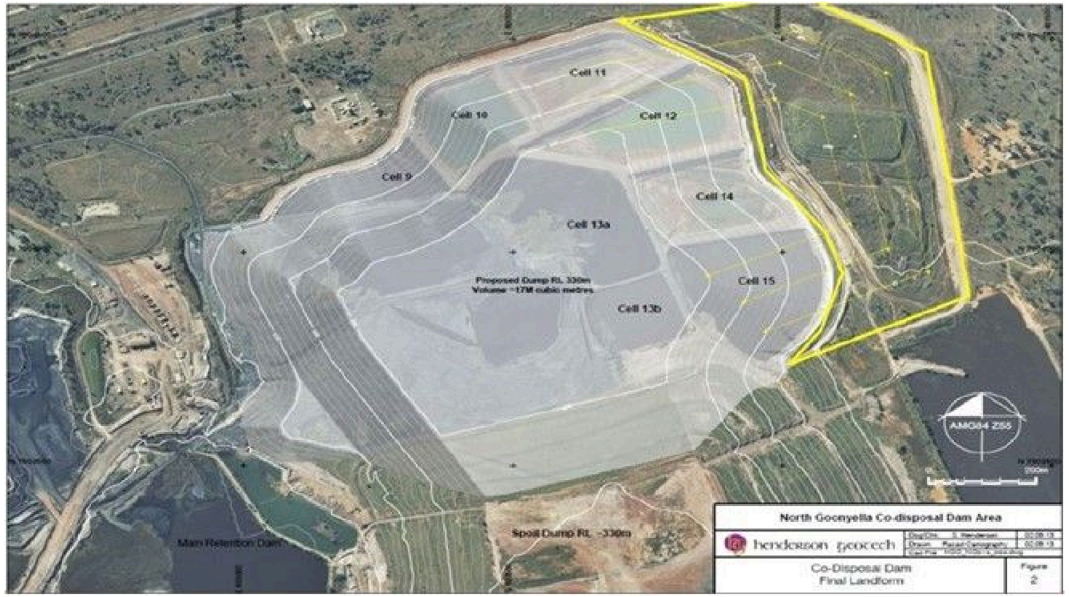

Figure 15-7. Centurion CDA Expansion Design

All refuse storages are monitored, inspected, and certified according to safety and environmental regulations for structures on a mine site. The expansion beyond the active storages for the coarse and slurry refuse storage has been planned and scheduled to meet future production. They will be permitted and constructed through phases in time.

The main water supply for the mine and processing plant is from the mine dewatering system and the Burton Gorge Dam.

Power is supplied by Powerlink infrastructure with CS Energy acting as the service provider. The external 132KV feed is to 2 x 20MVA site transformers which feeds surface infrastructure including the CHPP, surface conveyors and main fans. Power is fed underground via 11KV feeds for redistribution to development operations, panel conveyors, pumping and future longwall. In addition, the main trunk conveyors underground have a 6.6KV direct feed from surface. Full operations at Centurion Mine will have a power demand of 15MWh, this demand means there is redundancy with the 2 x 20MVA site transformers. Peabody is exploring options to internally power the mining operations from coal seam gas to reduce external power demand.

16. MARKET STUDIES AND MATERIAL CONTRACTS

16.1. Introduction

The pricing information used to establish coal reserves has been derived from 3rd party index price forecasts combined with historic and existing sales information, to determine appropriate forward pricing on a mine-by-mine and product-by-product basis. In general, these price forecasts are based on a thorough analytical process utilizing detailed supply and demand models, global economic indicators, projected foreign exchange rates, analyses of price relationships among various commodities, competing fuels analyses, projected steel demand, analyses of supplier costs and other variables.

16.2. Product and Market

Centurion Coking coal is a premium Hard Coking Coal (PHCC) with a mature brand name in the seaborne metallurgical marketplace and is well known in both the Atlantic and Pacific seaborne markets. This coal attracts a premium price based on its excellent coking properties (see typical specifications table below). In fact, customers will use this coal's price as a guide with which to measure other coking coal pricing relativity at time of price settlement. Therefore, we can refer to this coal as a coking coal that can set the Platts Index level for the PLVHCC FOB Australia (PLVHA00) Index and trade on the globalCOAL platform for PHCC's. This gives the owner of the brand a significant marketing benefit in the marketplace. It also means that in selling this coal brand to a particular customer they are more willing to build a purchased portfolio of other Peabody metallurgical coals that might otherwise be more difficult to achieve in the market.

Centurion Coking Coal is mined from the Goonyella Middle Seam of the Moranbah Coal measure of the Bowen Basin coalfield in Queensland and as such results in a coal with high levels of vitrinite content along with high fluidity that makes for very attractive coal plastic properties and low mineral contaminants. These properties are highly valued by the Coke Oven manager and well respected by the Blast Furnace manager for producing a strong coke with high Coke Strength after reaction that performs to high standards. Centurion Coking Coal in particular, allows the coke maker to blend lower quality, cheaper coals in higher proportions in his coke making blend because the coal is seen as an excellent carrying coal thus adding value and making this coking coal a more valuable component of his blend.

Development coal volumes will be used to re-instate Centurion Coking Coal in its prior markets in Asia and Europe over 2024 and 2025 before longwall production in 2026 will enable it to reset its market network amongst its prior established global customer base and attract new customers who value it as a prominent and globally recognized PHCC.

Current Centurion reserves point to a marketable quality for Centurion Coking displayed in Table 16-1. below.

Table 16-1. Centurion Coking Coal – Typical Specification (2023)

Peabody

Centurion Coking Coal

Typical Specification - 2023

Proximate and other analysis		As Received	Air Dried	Dry	Dry Ash Free
Total Moisture	%	10.5			
Moisture in the Analysis Sample	%		1.2		
Ash	%	7.7	8.5	8.6	
Volatile Matter	%	21.3	23.5	23.8	26.0
Fixed Carbon	%	60.5	66.8	67.6	74.0
Total Sulphur	%	0.50	0.55	0.56	0.61
Gross Calorific Value	kcal/kg	7065	7800	7895	8640
Phosphorus in Coal	%	0.045	0.050	0.051	
Hardgrove Grindability Index			85		

Carbonisation Properties		
Crucible Swelling Number - CSN		8.5
Gray-King Coke Type		G7
A-A Dilatometer		
Initial softening temperature	°C	400
Maximum contraction temperatur	°C	440
Maximum dilatation temperature	°C	470
Maximum contraction	%	20
Maximum dilatation	%	90
Gieseler Plastometer		
Initial softening temperature	°C	415
Maximum fluidity temperature	°C	460
Resolidification temperature	°C	495
Plastic range	°C	80
Maximum Fluidity	ddpm	1000

Ultimate Analysis (%)	Dry Ash Free
Carbon	88.5
Hydrogen	4.80
Nitrogen	1.95
Sulphur	0.61
Oxygen	4.1

Ash Analysis (%)	Dry
SiO2	52.5
Al2O3	35.5
Fe2O3	4.0
CaO	1.9
MgO	0.9
Mn3O4	0.04
K2O	0.7
Na2O	0.4
TiO2	1.7
P2O5	1.3
SO3	0.5
BaO	0.1
SrO	0.1
ZnO	0.0

Other	Air Dried

Petrographic Analysis		
Vitrinite reflectance (Rv max)	%	1.25
Vitrinite reflectance (Rv random)	%	1.18
Vitrinite Distribution		
V11	%	35
V12	%	60
V13	%	5
Macerals		
Vitrinite	%	64
Liptinite	%	0
Semifusinite	%	26
Other Inertinites	%	6
Mineral Matter	%	4

Sizing (mm)	% passing
50.0	99
31.5	98
16.0	90
8.0	79
4.0	64
2.0	52
1.0	38
0.50	24
0.25	15

Coke Indices (Pilot Coke Oven Tests)			
JIS Drum DI 30/15	95	ASTM Stability Factor	62
JIS Drum DI 150/15	84	ASTM Hardness Factor	66
Micum M40 (BS)	85	Nippon Steel Reactivity Test	
Micum M10 (BS)	7	CSR	68
IRSID I40	57	CRI	23
IRSID I20	77		
IRSID I10	21	Max. Coking Pressure - PSI	<0.5

16.3. Market Outlook

Peabody's approximately 10 Mtpa of metallurgical production is almost all exported into the seaborne market. Demand for seaborne metallurgical coal is shown in Table 16-2. below and is projected to be ~ 323Mtpa in 2025, growing at ~2.5% CAGR from 2022.

Table 16-2. World Metallurgical Coal Market - Wood Mackenzie Metallurgical Coal Short Term outlook Data published June 2024

Key market data (selected)

	2018	2019	2020	2021	2022	2023	2024	2025
Major Seaborne Exporters (Mt)								
Australia	188.9	172.7	178.5	167.0	160.5	151.3	**158.8**	**170.1**
US	31.0	46.3	52.8	37.8	39.5	43.2	**41.1**	**37.31**
Canada	26.9	28.9	31.8	27.2	27.6	30.8	**30.3**	**28.35**
Mozambique	4.7	8.1	7.2	5.3	5.1	5.9	**4.9**	**4.842**
Mongolia*	17.7	19.7	20.8	10.5	19.2	32.8	**29.6**	**29**
Russia	30.2	31.8	33.1	43.3	57.4	61.3	**61.0**	**65.13**
Other	6.8	8.8	9.1	11.5	12.3	15.7	**15.8**	**16.43**
Total seaborne exports (Mt)	288.5	296.5	312.6	292.2	302.4	308.2	**311.8**	**322.1**
Major Seaborne Importers (Mt)								
Japan	59.6	60.3	60.5	57.9	56.2	53.8	**54.8**	**54.5**
China - seaborne	47.2	55.7	50.1	48.7	48.0	65.7	**60.0**	**54.58**
India	47.1	50.1	58.4	71.8	68.6	72.4	**74.0**	**79.51**
South Korea	37.5	34.7	32.5	34.7	33.0	32.8	**35.3**	**34**
Taiwan	10.5	10.1	10.3	10.6	10.9	9.5	**10.0**	**10.5**
Brazil	16.9	17.3	19.4	14.7	13.7	13.5	**13.7**	**15.5**
Germany	16.4	17.3	17.0	15.9	14.1	15.1	**12.7**	**12.74**
Other	51.1	56.2	59.6	55.2	56.0	55.4	**63.8**	**67.15**
Total seaborne imports (Mt)	286.2	301.6	307.7	309.4	300.6	318.2	**324.3**	**328.5**
Global balance (demand-supply)	-2.3	5.1	-4.9	-17.2	1.8	-10.0	**-12.5**	**-6.4**
GDP Growth % (Y-o-Y)								
Global	2.5%	3.1%	2.9%	5.9%	3.1%	2.3%	**3.2%**	**2.8%**
Brazil	-3.3%	1.1%	1.1%	4.6%	3.0%	0.8%	**1.9%**	**2.3%**
China	6.7%	6.8%	6.6%	8.1%	3.0%	5.7%	**5.1%**	**4.8%**
Eurozone	1.9%	2.4%	1.9%	5.3%	3.6%	0.7%	**1.7%**	**1.7%**
India	8.2%	7.2%	6.8%	8.7%	6.8%	6.4%	**6.6%**	**6.1%**
Japan	0.6%	1.9%	0.8%	2.2%	1.0%	1.2%	**1.0%**	**0.7%**
South Korea	2.9%	3.1%	2.7%	4.1%	2.4%	1.1%	**2.8%**	**1.2%**
US	1.6%	2.4%	2.9%	5.9%	2.1%	1.1%	**2.8%**	**1.9%**

Source: Wood Mackenzie, customs data, IMF

* Mongolian exports are all landborne and are displayed on a clean/washed basis

data sourced from *Wood Mackenzie Metallurgical Coal Short Term outlook Data published June 2024*

Market demand is growing strongly in India and South-East Asia including Indonesia in line with their high rates of macro-economic expansion. In comparison the more mature markets for seaborne metallurgical coal such as Japan and Europe show a declining growth.

Australia is the main supplier of seaborne metallurgical to the world and the market offer covers all quality types from premium Hard (PHCC), Semi-Hard (SHCC), Semi Soft Coking Coals (SSCC) and Pulverized Coal Injection (PCI) coal.

While Australia supplies just over half of the seaborne metallurgical coal demand, it supplies over 2/3 of the premium Hard Coking Coals to the seaborne market.

Mongolian and Russian metallurgical coal is being aggressively promoted to compete in the Chinese and seaborne markets but most of these new supplies will be SSCC or SHCC and so unable to compete with Australian PHCC's such as Centurion Coking Coal. Mongolian coal is currently restricted in access to seaborne export ports and therefore is targeted on the China market. Metallurgical coals from both these regions have different properties to tried and tested Australian coals.

It is clear the supplies for PHCC will struggle to keep up with demand and will retain and likely increase their premium as compared to the SHCC and especially the SSCC coals. Indian demand is focused heavily on the PHCC quality typified by Centurion Coking Coal.

16.4. Material Contracts

Consistent with general coal mining industry in Australia, Peabody maintains a number of supply agreements for various required elements of their operations, including for fuel, electricity, tires and equipment supply and maintenance. It also has commitments with Port and Rail service and infrastructure providers to enable its products to be brought to market.

In terms of sales, the Centurion Mine has no long-term Coal Supply Agreements but have previously been a consistent supplier to several key customers over many years. As a benchmark product, this coal is expected to enter the market without issue.

Centurion has all supply and service contracts in place to provide necessary materials and services for the current and future operation. Due to the price fluctuation recently, some materials are purchased on a non-contract basis. Table 16-3. includes the key purchase arrangements for the operation.

Table 16-3. Materials and Service Contracts

Material Type	Supplier	Comments
Shearer and Longwall Equipment	Hasting Deering	Shearer rebuilds including parts required for longwall
Continuous Miner	Komatsu	Contracts in place to purchase three continuous miners
Electric Power	CS Energy	Contracted supply of retail electricity
Bulk Diesel	Viva Energy Australia	Contracted supply if bulk diesel
Magnetite	Kara Magnetite	Contracted supply of magnetite
Greases and Lubes	Castrol	Contracted supply bulk and packaged products
Roof Bolt	DSI Underground	PO Terms and Conditions, agreed pricing adjustments

17. ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

17.1. Environment Studies

There have been many environmental studies conducted for the Centurion Complex to gain approvals, and there are many further studies currently underway or anticipated to be required to gain future approvals.

The Centurion Complex is in the Bowen Basin, around 40km north of Moranbah in Central Queensland and is comprised of Centurion and Centurion North project areas. Centurion is on Mining Lease (ML) 6949 and was granted on 10 October 1991 under the Mineral Resources Act 1989 (MR Act) authorizing open cut and underground mining. An Environmental Impact Statement (EIS) was prepared and assessed as part of the environmental approvals process in 1992. Mining commenced at Centurion in 1994 and Peabody Energy Australia (PEA) acquired the operation in April 2004. Petroleum License (PL) 504 was granted on 3rd December 2015 and fully overlaps the area of ML 6949.

The underground operations for Centurion are environmentally authorized by EA EPML00815613 that covers all activities within ML 6949 and PL 504. The holder of the tenements and the EA EPML00815613 is Centurion Coal Mining Pty Ltd.

Centurion North is comprised of ML1790 and ML70495 (part of the Ward's Well project which has been subdivided between Peabody and Stanmore) and a portion of MDL3010 (Dabin) which is owned by the West Burton Joint Venture (85% Peabody). A limited amount of environmental disturbance is currently authorized on the Ward's Well portion of Centurion North by EA EPPR00668513 and on the Dabin portion by EA EPPR00497713. The EA for Ward's Well is currently being de-amalgamated by the Department of Environment, Science and Innovation (DESI) to separate the Stanmore and Peabody parts of Ward's Well and will likely be approved in Q3 2024.

The Centurion Mine Progressive Rehabilitation and Closure Plan (PRCP) was submitted to DESI on 29 March 2024 and is currently undergoing assessment.

The Ward's Well PRCP that will be relevant to the Ward's Well portion of Centurion North is to be de-amalgamated by application to DESI and will likely be approved in Q3 2024 along with the de-amalgamated environmental authority. The Dabin portion of Centurion North does not require a PRCP at this time as it is currently an exploration tenement however, a PRCP will be required for the Dabin portion in the future as part of planned project approvals along with the conversion to a mining lease.

Further studies will be required for Centurion North to update previous studies to contemporary assessment and base line data standards and to cover any additional requirements not previously covered by historical studies. Those studies will then be utilized to progress amendments to the environmental authority to condition the planned underground mining activities on the already approved Ward's Well mining leases and to include the additional mining lease that will be required for the Dabin portion of Centurion North. Those amendments will be sought by application to DESI under the Environmental Protection Act. Parts of Centurion North are also expected to require Federal approval under the Environmental Protection and Biodiversity Conservation Act (EPBC Act) which will require similar studies as required by DESI. All baseline data acquisition and study requirements are expected to be completed with sufficient time to obtain the required permitting for Centurion North prior to the planned commencement of production activity.

The Centurion Complex has and will continue to implement environmental management strategies to avoid, mitigate and, where required, offset environmental impacts and provide the strategic context for management for each environmental value. The abovementioned studies and resultant environmental permitting conditions will inform amendments to existing Centurion Management Plans to adapt those strategies for the management of similar matters that will be relevant to mining at Centurion North. Those Management Plans address various aspects of the mining activity such as mine waste and tailings disposal, site monitoring, water management during and after mine closure and mine rehabilitation and closure. The suite of Management Plans includes:

- Waste Management Plan (including Coal Waste Disposal).
- Water Management Plan (including a Site Water Balance).
- Erosion and Sediment Control Plan.
- Rehabilitation Management Plan.
- Mine Closure Plan (PRCPs); and
- Environmental Monitoring Program (including Surface Water and Groundwater monitoring).

17.2. Permitting

At the time of writing this report, all required licenses and permits are in place for all planned activities associated with the operation of Centurion for extraction of GM South and GLB2 coal reserves.

Although extraction of coal from the Ward's Well portion of Centurion North is approved by the granted mining leases, it will be necessary to obtain appropriate environmental conditions relevant to the planned coal extraction activities which will be obtained through amendment of the existing environmental authority. Furthermore, it will be necessary to obtain a new mining lease over the portion of Dabin (MDL3010) that forms part of Centurion North. The amended environmental authority for Ward's Well will also be able to cover the activities on the new mining lease.

Parts of the Ward's Well portion of Centurion North and the new mining lease over Dabin may have significant impacts on Matters of National Environmental Significance in addition to impacting on a groundwater resource which will require assessment and approval under the Federal EPBC Act.

The permitting activities of mining lease application, environmental authority amendment and EPBC Act approval can occur, to some degree, in parallel which will enable the permitting activities to occur in line with or ahead of the planned timing and location of activities requiring each of the permitting aspects.

No matters relating to obtaining permits for mining of Centurion North have been identified that would give rise to an expectation that those permits may not be obtainable.

17.3. Social and Community Impact

Centurion has a Cultural Heritage Management Plan and other agreements in place with the Traditional Owners of the land. Centurion North project area is covered by the same Traditional Owner group such that no new indigenous party arrangements will be required.

Centurion is an active contributor to the local community, making donations to local events and, wherever possible, procuring locally.

Centurion has a range of communication methods in place which enables it to share and exchange information with the local community. These methods include:

- Site open days.
- Phone calls and meetings with landholders.
- Meetings with the Traditional Owners.
- Meetings with the Isaac Regional Council.
- The Peabody Energy website - https://www.peabodyenergy.com; and
- Ad hoc Community Newsletters.

Centurion has a Complaint Response Protocol to respond to all community concerns. Complaints and meetings with stakeholders are logged using Peabody's consultation management system, Consultation Manager.

17.4. Mine Reclamation and Closure

Mine reclamation is a vital part of the mining life cycle that is integrated with the mining process. Contemporary reclamation occurs on an ongoing basis soon after land becomes available (i.e. no longer required for future mining operations) to create a safe, stable and sustainable landform that provides for post mining land use wherever achievable. Progressive reclamation occurs with consultation between the Environmental, Technical Services and Production teams. In any given year, land reclamation activities can vary due to availability of areas, production needs, mine development, weather conditions, or other unforeseen factors.

As part of Centurion's annual financial reporting obligations, a review of the Asset Retirement Obligation (ARO) is undertaken. The ARO estimates the cost of rehabilitating the active parts of the mine, including works to remove mine infrastructure and otherwise meet the statutory relinquishment requirements for the mine. The estimate also includes allowances for post-closure costs such as monitoring, completion surveys, project management and etcetera.

The current estimate for the ARO at Centurion is summarized in Table 17-1. (shown in AUD):

Table 17--17-1. Current ARO Estimate

	Centurion
Support Areas	$34m
Closure Costs	$32m
Ongoing Areas	$0.3m
Total Costs	$66m

These estimates are captured in the Financial Models supporting the Reserve estimates.

In November 2018, the Queensland Parliament passed into law the Mineral and Energy Resources (Financial Provisioning) Act (also known as MERFP). This legislation requires that all approved mining leases develop and submit for approval a Progressive Rehabilitation and Closure Plan (PRCP). Peabody submitted the PRCP for Centurion in Q1 of 2024 and it is under assessment at the time of writing this report.

The main purposes of the PRC Plan are to:

- Require the holder of the EA to plan for how and where activities will be carried out on land in a way that maximizes the progressive rehabilitation of the land to a stable condition; and
- Provide for the condition to which the holder must rehabilitate the land before the EA may be surrendered.

The Environmental Protection Act (Qld) requires that all areas disturbed within the relevant mining tenure must be rehabilitated to a Post-Mining Land Use (PMLU) or managed as a Non-Use Management Area (NUMA). Any undisturbed land within the relevant mining tenure must also be identified as a PMLU. NUMAs will only be considered appropriate where justified or previously approved.

A PRC Plan will consist of two parts:

1. Rehabilitation Planning part; and
2. PRCP Schedule.

The purpose of the Rehabilitation Planning part is to provide evidence and justification to support the development of the proposed PRCP Schedule. The Rehabilitation Planning part must include the information as described below:

- general information about the site and operation
- information about community consultation
- analysis and justification of PMLUs and NUMAs
- justification of timeframes for land being available for rehabilitation and available for improvement
- details of the rehabilitation methodologies and techniques that will be used to develop rehabilitation milestones, management milestones and supporting documentation.

The PRCP Schedule is approved by the administering authority (DESI) and will include maps of final rehabilitation and closure outcomes for the site and tables of time-based milestones for achieving each PMLU and/or NUMA. The PRCP Schedule consists of the following:

- rehabilitation and management milestones
- milestone criteria
- identification of PMLUs or NUMAs
- when land becomes available for rehabilitation and available for improvement

- rehabilitation areas and improvement areas
- milestone completion dates.

The administering authority may impose conditions on the approval of what it considers necessary or desirable. The PRCP schedule operates separately from the Environmental Authority (EA). The EA authorizes the carrying out of an environmentally relevant activity (ERA) and includes conditions to avoid, mitigate, or manage environmental harm that could occur during an activity. The PRCP schedule contains milestones and conditions that relate to the completion of progressive rehabilitation and mine closure. Both the EA and the PRCP schedule apply to the entire life of the mining activities, irrespective of when the underlying tenure expires.

17.5. Comments from Qualified Person(s)

In the opinion of the Qualified Person, the current approach to matters of environmental compliance, permitting and community impacts generally is sound and doesn’t present any current concerns with respect to the reporting of Resources or Reserves.

18. CAPITAL AND OPERATING COSTS

18.1. Introduction

Centurion Mine is an active operation with a long operating history. The LOM plan and financial model have been developed periodically. The coal volumes and product quality are developed from the detailed mine plan with production reflecting historic performance. The manpower requirement, operating cost, and capital are estimated from the historic data and future mine plan requirements on an annual basis.

18.2. Operating Costs

GM Seam – Centurion South & Centurion North

The cost estimates used to establish coal reserves are generally estimated according to internal processes that project future costs based on historical costs and expected future trends. The estimated costs include mining, processing, transportation, royalty, add-on tax, and other mining-related costs. Peabody's estimated mining costs reflect projected changes in prices of consumable commodities (such as steel), labor costs, geological and mining conditions, targeted product qualities, and other mining-related costs. Estimates for other sales-related costs (mainly transportation, royalty, and add-on tax) are based on contractual prices or fixed rates. All reserves in the LOM plan are leased from private parties or the federal government. The royalty expenses are included in the category of Sales Related Costs computed from the projected revenue and contractual rates. Other sales-related costs include barge transport and port handling. An allowance for Safeguard has been included.

Operating costs are projected based on historical operating costs and adjusted based on projected changes in staffing, hours worked, production, and productivity for mining areas in the LOM plan. These operating cost estimates shown in Table 18-1. are based on a substantial operating history and are in the accuracy range of +/ - 15%. No contingency is included.

Table 18-1. LOM Operating FOB Cost Projection Centurion South & North GM Seam (in millions of US$ as real value)

Centurion Complex											
US$M	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034-56
FOB Costs	(14)	(75)	(351)	(373)	(538)	(514)	(478)	(539)	(585)	(599)	(10,339)

GLB2 Seam

The cost estimates used to establish coal reserves are generally estimated according to internal processes that project future costs based on historical costs and expected future trends. The estimated costs include mining, processing, transportation, royalty, add-on tax, and other mining-related costs. Peabody's estimated mining costs reflect projected changes in prices of consumable commodities (such as steel), labor costs, geological and mining conditions, targeted product qualities, and other mining-related costs. Estimates for other sales-related costs (mainly transportation, royalty, and add-on tax) are based on contractual prices or fixed rates. All reserves in the LOM plan are leased from private parties or the federal government. The royalty expenses are included in the category of

Sales Related Costs computed from the projected revenue and contractual rates. Other sales-related costs include barge transport and port handling. An allowance for Safeguard has been included.

Operating costs are projected based on historical operating costs and adjusted based on projected changes in staffing, hours worked, production, and productivity for mining areas in the LOM plan. These operating cost estimates shown in Table 18-2. are based on a substantial operating history and are in the accuracy range of +/ - 15%. No contingency is included.

Table 18-2. LOM Operating FOR & FOB Cost Projection GLB2 Seam (in millions of US$ as real value)

US$M	2047	2048	2049	2050	2051	2052	2053	2054 to 68	Total
FOR Costs	-	-	-	25	82	96	85	4,153	4,440
FOB Costs	-	-	-	9	32	43	40	3,629	3,754
Total Costs	**-**	**-**	**-**	**33**	**114**	**138**	**125**	**7,782**	**8,193**

18.3. Capital Expenditures

GM Seam – Centurion South & Centurion North

Centurion South & North (GM Seam) will require capital expenditures each year for infrastructure additions/extensions, as well as for mining equipment rebuilds/replacements to continue producing coal. The capital expenditures have been projected based on mining equipment and infrastructure requirements as scheduled in the LOM. The capital expenditures are estimated to cover safety, equipment major rebuilds and replacement, conveyance system, infrastructure, etc. The capital expenditures, from 2024 through 2056. are shown in Table 18-3.

The total estimated capital expenditure is $1,672M from 2024 to 2056 with an annual average of $56M. All capital expenditure is considered as needed to maintain current operations. There is no expansion capital required for the current LOM plan. These capital cost estimates are based on a substantial operating history and are in the accuracy range of +/ - 15%. No contingency is included.

Table 18-3. Capital Expenditure Projection GM Seam (in millions of US$ as real value)

Centurion Complex											
US$M	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034-55**
Capex	115	243	92	99	146	100	82	95	91	47	562

GLB2 Seam

Centurion GLB2 Seam will require capital expenditures each year for infrastructure additions/extensions, as well as for mining equipment rebuilds/replacements to continue producing coal. The capital expenditures have been projected based on mining equipment including a new fit for purpose longwall, and infrastructure requirements as scheduled in the LOM. The capital expenditures are estimated to cover safety, equipment major rebuilds and replacement, conveyance system, infrastructure, capitalized development etc. The capital expenditures, from 2047 through to LOM are shown in Table 18-4.

The total estimated capital expenditure is $630M from 2047 to 2064 with an annual average of $35M. All capital expenditure is considered as needed to maintain current operations. There is no expansion capital required for the current LOM plan. These capital cost estimates are based on a substantial operating history and are in the accuracy range of +/ - 15%. No contingency is included.

Table 18-4. Capital Expenditure Projection GLB2 Seam (in millions of US$ as real value)

US$M	2047	2048	2049	2050	2051	2052	2053	2054 to 68	Total
Capex (US$)	3	77	79	47	75	204	36	108	630

19. ECONOMIC ANALYSIS

19.1. Macro-Economic Assumptions

The Peabody Markets & Pricing Committee is responsible to provide the macro-economic assumptions according to internal processes which rely on internal proprietary forecasts, existing contract economics and other third-party research. The sales price for Centurion coal is benchmarked as Low-Volatile Premium Hard Coking Coal (LV PHCC) on the seaborne market. The details for the pricing assumption are shown in Table 19-1. The cost and capital in the economic analysis are on a real basis (no inflation assumptions). The tax rate and discount rate used for the cash flow analysis are assumed to be 29% and 11% respectively.

Table 19-1. Sales Price Assumption

Sales Price	2024	2025	2026	2027	2028	2029	2030	2030 Thru LOM
LV PHCC (US$/Metric Tonne)	210	210	210	210	210	210	210	210

19.2. Cash Flow Model

GM Seam

The cash flow is calculated in detail as shown in Tables 19-2.

The annual cash flow averages ~$207 million for LOM. The NPV at a 11% annual discount rate is computed as $1,608 million. The positive NPV demonstrate the positive economic value for reserves in the LOM plan.

Table 19-2. Cash Flow Analysis GM Seam (in millions of US$ in real value)

	Centurion Complex											
US$M Cashflow	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034-60**	**LOM**
Revenue	19	104	671	638	898	847	994	1,065	1,012	1,043	19,633	26,925
FOB Cost	(14)	(75)	(351)	(373)	(538)	(514)	(478)	(539)	(585)	(599)	(10,339)	(14,405)
Closure Costs & Rehab	-	-	-	-	-	-	-	-	-	-	(44)	(44)
EBITDA	5	29	320	265	360	333	516	526	427	444	9,250	12,476
Tax Payable	-	-	(18)	(44)	(64)	(56)	(114)	(127)	(100)	(104)	(2,532)	(3,160)
Capex	(115)	(243)	(92)	(99)	(146)	(100)	(82)	(95)	(91)	(47)	(562)	(1,672)
Cash Flow	**(110)**	**(214)**	**210**	**122**	**150**	**177**	**320**	**304**	**236**	**293**	**6,156**	**7,644**
Cumulative Cash Flow	**(110)**	**(324)**	**(113)**	**8**	**159**	**336**	**655**	**960**	**1,195**	**1,488**	**7,644**	

* Financial model represents 98% of the coal product for approximately 128.2 million tonnes

GLB2 Seam

The cash flow is calculated in detail as shown in Table 19-3. The annual cash flow averages ~$127 million thru LOM. The coal reserves are projected to be mined out in 2067 with cash flow after 2067 being ARO. The NPV at a 11% annual discount rate is computed as $31 million. The positive NPV demonstrate the positive economic value for reserves in the LOM plan.

Table 19-3. Cash Flow Analysis GLB2 Seam (in millions of US$ in real value)

US$M	2047	2048	2049	2050	2051	2052	2053	2054 to 68	Total
EBITDA (US$)	-	-	-	(24)	(63)	(56)	(61)	3,633	3,429
Working Capital	-	-	-	-	(21)	(16)	91	(54)	(0)
Operating Cashflow	-	-	-	(24)	(84)	(72)	30	3,579	3,429
Capex (US$)	3	77	79	47	75	204	36	108	630
Net Cashflow	**(3)**	**(77)**	**(79)**	**(71)**	**(159)**	**(276)**	**(6)**	**3,471**	**2,799**

19.3. Sensitivity Analysis

GM Seam

The sensitivity analysis is conducted on sales price, FOR cost and capital with the detailed results in Table 19-4. The quality and yield for in situ coal are fairly consistent, and the grade is not included in the sensitivity study. The NPV is calculated using a +/- 15% variance on the variables. The minimum NPV is $1,128 million at a 15% reduction in sales price with all other variables being constant.

Table 19-4. Sensitivity Analysis GM Seam (in millions of US$ as real value)

	Centurion Complex						
NPV Sensitivities	**-15%**	**-10%**	**-5%**	**Base**	**5%**	**10%**	**15%**
Revenue	1,128	1,298	1,460		1,754	1,900	2,046
FOR Costs	1,812	8,404	1,676	**1,608**	1,540	1,472	1,404
Capex	1,721	1,683	1,646		1,570	1,533	1,495

GLB2

The sensitivity analysis is conducted on sales price, FOR cost and capital with the detailed results in Table 19-5. The quality and yield for in situ coal are fairly consistent, and the grade is not included in the sensitivity study. The NPV is calculated using a +/- 15% variance on the variables. The minimum NPV is $15 million at a 15% reduction in sales price with all other variables being constant.

Table 19-5. Sensitivity Analysis GLB2 Seam (in millions of US$ as real value)

NPV Sensitivities	-15%	-10%	-5%	Base	5%	10%	15%
Revenue	15	20	26		36	41	45
FOR Costs	42	38	35	31	28	24	20
Capex	36	34	33		30	28	26

20. ADJACENT PROPERTIES

Of the mining tenures adjacent to Centurion Mine, the only operating coal mine is the BHP Mitsubishi Alliance (BMA) Goonyella Riverside opencut mine to the south, consisting of multiple Mining Leases. To the east of Centurion, BMA hold ML 70241 (“Red Hill”) which also lies to the east of the Goonyella Riverside Mine, and north of a BMA owned and operated underground mine, the Broadmeadow mine.

To the north of the Centurion Mine lie the undeveloped Wards Well and Lancewood MLs owned by Stanmore SMC Pty Ltd (Stanmore). In 2023 Peabody entered into a definitive sale and purchase agreement with Stanmore to purchase the southern part of the Wards Well lease (ML 1790) as well as ML 70495 and part of ML 70433. The transaction is now complete and has satisfied the conditions precedent. This purchase has enabled the connection of the existing Centurion Mine to another Peabody held tenement, MDL 3010 which lies to the east of the Wards Well leases. The mineral property map of the mining tenures surrounding Centurion Mine is shown in Figure 20-1 below.

In addition to the coal mining tenure, the Centurion Mine also adjoins Potential Commercial Area (PCA) 258, a form of Petroleum tenure which is held by Arrow Energy.

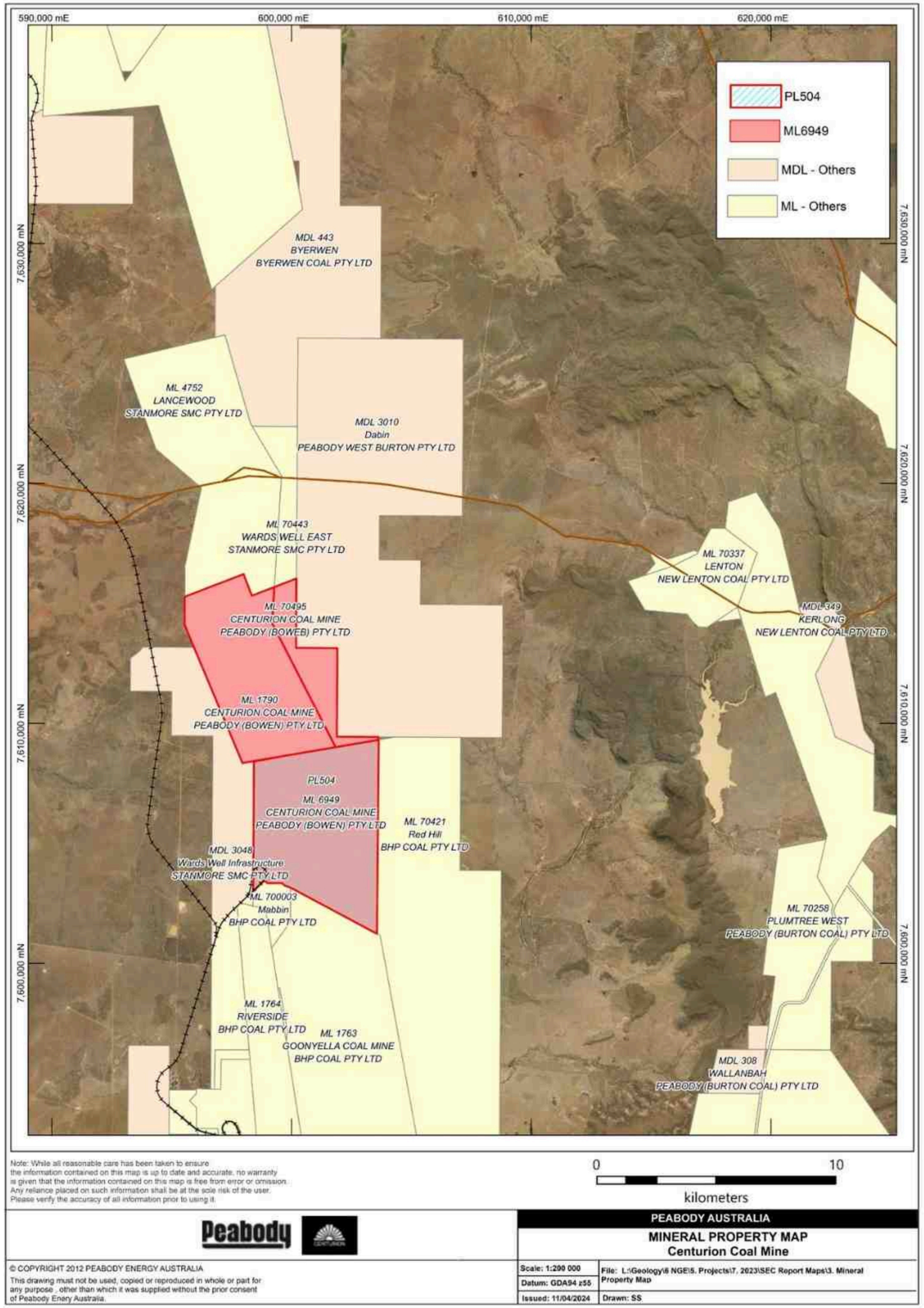

Figure 20-1. Mineral Property Map

21. OTHER RELEVANT DATA AND INFORMATION

21.1. Gas Emissions Management

Underground development and longwall operations depend heavily on effective gas drainage of the seam(s) which have the potential to be a source of gas emission. Prior to initial mining, some drilling activity will take place from the surface to assist with the pre-drainage of the seam in the form of SIS (Surface to in-seam shown in Figure 21-1) wells. All other drilling and draining activities will take place at in-seam level and will commence once access to the area is established and progressively as the mine develops and extracts the GM and GLB2 seams.

Gas drilling and drainage will utilise various methodologies dependent on gas content and coal seam permeability. Primarily, in-seam drilling provides an effective drainage method as it provides targeted drainage with variable drill hole spacing to accommodate local gas variations and structural influence. Typical UIS (Underground in-seam shown in Figure 21-2) drilling and drainage pattern includes lateral drilling in a fan pattern. The borehole spacing is dependent on the level of drainage required, i.e. high gas, short timeframe means a closer spaced/higher cost drilling density.

Each borehole is isolated from its adjacent hole using standpipes and control valves. Pressure and flow monitoring is provided on each borehole to monitor borehole performance. Gas gathering occurs at the confluence of the fan pattern whereby it then enters an underground to surface gas riser borehole.

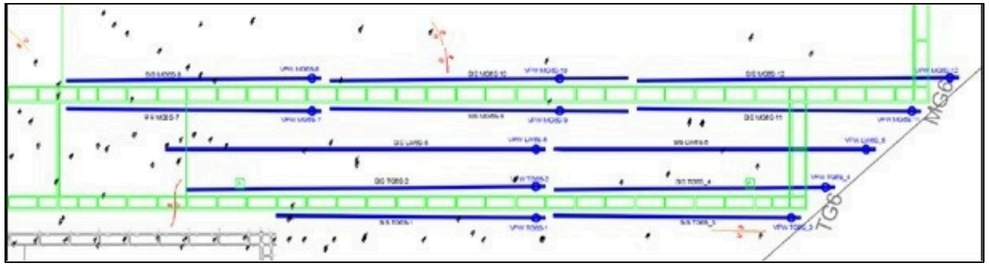

Figure 21-1. Typical SIS Drilling Pattern in Advance of Coal Development

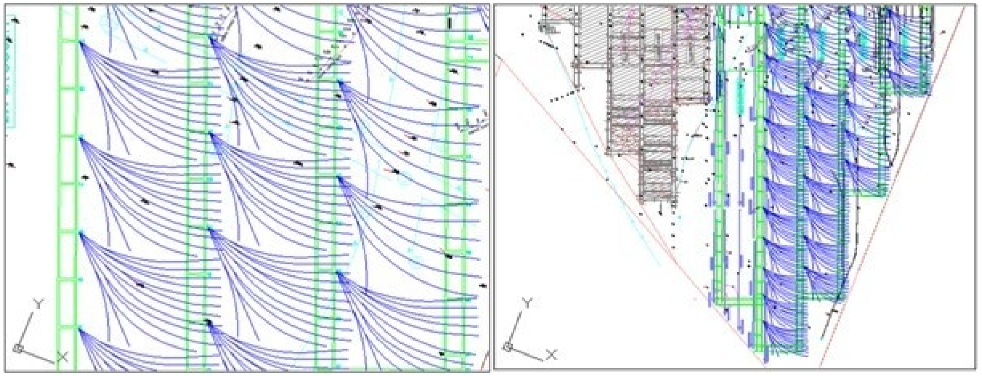

Figure 21-2. Typical UIS Fan Pattern in Advance of Coal Development

Vertical goaf wells will be required post Longwall mining that will extend in the range of ~+200m depth, designed to be consumable, decommissioned and abandoned in coordination with the rate of mining.

21.2. Other Relevant Data

All other data relevant to the associated mineral reserves and mineral resources have been included in the sections of this Technical Report Summary.

22. INTERPRETATION AND CONCLUSIONS

22.1. Geology and Resources

The regional and local geology at Centurion is well understood by the Qualified Person through working experience and historic mining in the area. The exploration data at Centurion has been collected with high-quality standards. The points of observation for structure and coal quality are sufficient for the determination of resource classifications using standards widely adopted in the coal mining industry of the Bowen Basin. The resource areas are under control by Centurion leases. The coal resources at Centurion are estimated to be 790 million tonnes. They have the potential to be converted to reserves with additional exploration and studies in the future.

22.2. Mining and Reserves

The Centurion Mine has a long operating history with all required infrastructure to support future production. All required property control, including coal and surface for the reserve area, has been obtained to support the operation. Centurion is an underground mine using a longwall mining method to extract coal, which is processed by the preparation plant on the surface. The mining and processing methods have been adapted and practiced at Centurion and the related mining industry for many decades. All major equipment is either located at the operation or in the process of being supplied to the operation and it will be adequate to support future production. The LOM plan shows the projected economic viability for the estimated reserves of 173.3 million tonnes.

22.3. Environmental, Permitting and Social Considerations

There have been many environmental studies conducted for the Centurion Complex to gain approvals and there are a number of further studies currently underway or anticipated to required to gain future approvals and permits. Many of these permits require regular monitoring, reporting, and renewals – these activities are a normal undertaking in the business of mining within Queensland, Australia.

Land reclamation is a vital part of the mining life cycle integrated with the mining process. The Centurion management is committed to being compliant with the Company’s Environmental Policy and taking responsibility for the environment, benefiting our communities, and restoring the land for generations that follow.

22.4. Economic Analysis

The LOM plan and financial model have been developed periodically. The coal volumes and product quality are developed from the detailed mine plan with production reflecting historic performance. The manpower requirement, operating cost, and capital are estimated from the historic data and future mine plan requirements on an annual basis, and they are considered accurate to support the reserve estimates.

23. RECOMMENDATIONS

23.1. Geology and Resources

Further exploration work should be evaluated to provide additional geological confidence. This, along with the mine survey and sampling programs, will provide adequate support to the operation for short-term and mid-term planning, production, and coal quality control purposes.

It is recommended to conduct more seismic surveys (2D and/or 3D) to further define faults for future mining areas. Horizontal drilling should be evaluated and possibly conducted from nearby gate roads once they are developed.

It is recommended to continue to have experienced geologists log core holes, measure core recovery, and conduct sampling. All activities should be conducted according to Peabody drilling exploration standards. Any future rotary holes should also be geophysically logged to verify the strata and coal thickness. All geological data should be collated into Peabody's GeoCore database.

Several recommendations were identified from the preparation of the resource estimate. These are:

- Additional points of Observation are recommended to further confidence in the Centurion Project Resource. Infilling the current spacing within lower confidence areas.
- Intrusion and heat affected identification drilling for the GUA seam in the north of the Project area.
- Location of historic downhole verticality data to assist with the accuracy of the interpretation where they are missing.
- An updated DHSA that incorporated both sets of data from Centurion North and South would be of benefit.

23.2. Mining, Processing and Reserves

It is recommended to conduct a reconciliation to further validate the assumptions for loss and dilution during mining and processing. Strip sampling from underground roadways should be used to update coal quality information within the geological model once development operations have commenced. Opportunities to maximize longwall panels should be explored once the extent of faults impacting the mine plan have been further understood from development mining.

The operation should continue to follow the approved roof control and ventilation plan. Any material changes on the plans or from the plans should be assessed, and any related impacts on resource and/or reserve estimates should be incorporated in any future updates.

23.3. Environmental, Permitting and Social Considerations

There have been many environmental studies conducted for the Centurion Complex to gain approvals and there are a number of further studies currently underway or anticipated to required to gain future approvals. It is recommended that the operator continue progressing these studies to satisfy the approvals requirements.

Further studies will be required for Centurion North to update previous studies to contemporary assessment and base line data standards and to cover any additional requirements not previously covered by historical studies. Those studies will then be utilised to progress amendments to the environmental authority to condition the planned underground mining activities on the already approved Ward's Well mining leases and to include the additional mining lease that will be required for the Dabin portion of Centurion North.

Parts of the Ward’s Well portion of Centurion North and the new mining lease over Dabin may have significant impacts on Matters of National Environmental Significance in addition to impacting on a groundwater resource which will require assessment and approval under the Federal EPBC Act.

23.4. Economic Analysis

The ability of Peabody, or any coal company, to achieve production and financial projections is dependent on numerous factors. These factors primarily include site-specific geological conditions, the capabilities of management and mine personnel, the level of success in acquiring coal leases and surface properties, coal sales prices and market conditions, environmental issues, securing permit renewals and bonds, and developing and operating mines in a safe and efficient manner. Unforeseen changes in legislation and new industry developments could substantially alter the performance of any mining company. It is recommended that those factors should be assessed regularly according to the Company’s internal control, and material changes are to be reflected in the future resource and/or reserve estimates.

24. REFERENCES

Draper JJ (2013) Bowen Basin. In: Jell PA (ed) Geology of Queensland. Geological Survey of Queensland, Brisbane, 371–384Elliott, L., 989 The Surat and Bowen Basins. The APEA Journal, 29(1), 398-416

Harrington. H.J., Brakel, A.T., Hunt, J.W., Wells, A.T., Middleton, M.F., O'Brien, P.E., Hamilton, D.S., Beckett, J., Weber, C.R., Radke, S., Totterdell, J.M., Swaine, D.J. and Schmidt, P.W., 1989. Permian coals of eastern Australia. Bureau of Mineral Resources, Australia, Bulletin 231

Bertoli, O., Paul, A., Casley, Z. and Dunn, D., 2013. Geostatistical drill hole spacing analysis for coal resource classification in the Bowen Basin, Queensland. International Journal of Coal Geology, 112, pp.107-113.

Johnson, R. Report No. 204/2/1 February 2003, North Goonyella Coal Project, Eaglefield Opencut Geological Information Package

Johnson, R. Report no. 204/1/13 February 2004. North Goonyella Coal Mine Bowen Basin Central Queensland Southern and Northern Panels 2002/2003 Exploration Report

Peabody (Bowen) Pty Ltd. North Goonyella Mine Later Development Plan Mining Lease 6949 – Five Years (From 1 June 2020 to 31 May 2025).

Peabody Energy, 2015. North Goonyella Coal - Surface Geology Manual.

Peabody Energy. Nth Goonyella Treatment Procedure [Borecore Procedure_issue date 20/01/2014].

SCT 2011, Preliminary Wards Well Southern Area Geotechnical Characterisation, Report No. BHPB3772B

North Goonyella Coal Properties Pty Ltd. 2010 Drilling Program – 100mm Diameter Cores – Coal Test Procedure.

Peabody Energy. North Goonyella Coal. Underground Mapping Standard. Sept 2023.

Sliwa, R., 2014. Structural synthesis for North Goonyella. Prepared by Integrated Geoscience Pty Ltd for Peabody Energy Pty Ltd.

JB Mining Services Pty Ltd, 2013. Wards Well 2013 Model Handover Report. Prepared by JB Mining for BMC Coal Pty Ltd.

JB Mining Services Pty Ltd, August 2020, Report No.GE-RG-T005 Model Handover Wards Week 16092020. Prepared by JB Minig for BHP Coal Pty Ltd,

JB Mining Services Pty Ltd, September 2020, Wards Well Geological Model Peer Review – 15th September Wards Week 16092020. Prepared by JB Mining for BHP Coal Pty Ltd,

Peabody Energy. February 2024. Technical Report Summary Centurion Mine. Feb 2024,

Sliwa, R., 2011 Structural Assessment of Wards Well (ML1790 & MML4752). Prepared by Integrated

25. RELIANCE ON INFORMATION PROVIDED BY THE REGISTRANT

This technical report summary has been prepared by Qualified Persons. In their specific areas of expertise, these Qualified persons have contributed to the appropriate sections of this report. These Qualified Persons have also relied on the information provided by the Company for property control, marketing, material contracts, environmental studies, permitting and macro-economic assumptions as stated in Section 3.2, Section 16, Section 17, and Section 19. As the operation has been in production for many years, the Company has considerable experience in those areas. The Qualified Persons have taken all appropriate steps, in their professional opinion, to ensure that the above information from the Company is sound.