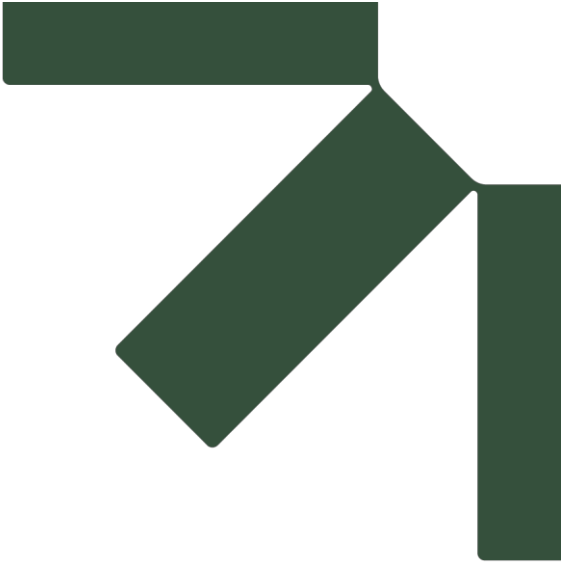




Appendix E Greenhouse Gas Abatement Plan

Centurion North Extension Project

P-EA-100658735 and P-PRCP-100669070_V3

Centurion Coal Mining Pty Ltd

SLR Project No.: 620.042575.00001

31 October 2025



Greenhouse Gas Abatement Plan

P-EA-100658735 and P-PRCP-100669070_V3

Centurion Coal Mining Pty Ltd

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31 October 2025

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Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	31 October 2025	A. Hudson	D. Heuff	B. Brooks

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Centurion Coal Mining Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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1.0 Introduction and Project Details

Centurion Coal Mining Pty Ltd is seeking authority for the development of supporting infrastructure to enable coal seam gas (CSG) extraction and safe underground coal mining operations to support future longwall extraction (the Project). The Project includes CSG exploration, construction of gas risers, service boreholes, sampling boreholes, a bleeder shaft, disturbance for future surface works, construction of gate roads, and Underground In-Seam (UIS) gas drainage works on Mining Lease (ML) 1790.

To obtain authorisation for these activities, an amendment to the Environmental Authority (EA) P-EA-100658735 and Progressive Rehabilitation and Closure Plan (PRCP) P-PRCP-100669070_V3 is required. Further details regarding the Project can be found in the accompanying supporting documents to the EA and PRCP amendment application.

As the Project consists of petroleum and gas activities, it is considered to be a 'medium to high' emission category, as per Table 3 of the Queensland Government's Department of Environment, Science and Innovation (DESI) *Guideline: Greenhouse gas emissions* (2024) (the Guidelines). As such, the EA amendment application is required to be accompanied by the following:

- Greenhouse gas (GHG) emissions inventory;
- GHG emission mitigation and management practices;
- A risk assessment that outlines the scale of expected GHG emissions from the activity and how they are expected to contribute to climate change impacts on Queensland's environmental values; and
- GHG Abatement Plan (GHGA Plan) (this document).

This document provides the GHG Abatement Plan for the Project. A GHG Abatement Plan identifies the GHG emissions to be generated by a project and details ongoing emission mitigation and management measures proposed to be implemented throughout the life of the project to progressively reduce Scope 1 and Scope 2 emissions. This will ensure long-life projects contribute to transitioning to a low carbon global economy.

This GHG Abatement plan is structured as follows:

- Section 1: Introduction;
- Section 2: Project details;
- Section 3: Corporate GHG Strategy;
- Section 4: Project GHG Strategy including GHG emission estimates, reference point, reduction target, reduction program, advancing technologies, monitoring and auditing and reporting; and
- Section 5: GHG Risk Assessment.



2.0 Project Details

The Project is to be located on ML 1790, approximately 40 kilometres north-west of Moranbah, Queensland (**Figure 2.1**). This section provides a description of the activities subject of the GHG Abatement Plan, which includes components of the Pilot Study works and the Extension Project works.

2.1 EA Amendment Works – Pilot Study

A pilot coal seam gas (CSG) exploration and extraction programme (hereafter referred to as the ‘Pilot Study’) involving the construction and operation of 13 vertical wells and 10 lateral wells was the subject of a previous EA amendment (dated 4 February 2025). To support the Pilot Study, proposed surface disturbance works included surface disturbance for drill pads (11.80 ha) and access tracks (0.20 ha), and the development of 0.31 km of new access tracks. The Pilot Study would involve the extraction of groundwater and CSG from the target Goonyella Middle (GM) coal seam.

Table 2.1 provides a summary of estimated GHG emissions over the life of the pilot CSG exploration works, highlighting the flaring of CSG as the primary source of emissions.

Table 2.1 Summary of GHG Emissions for Pilot Works

Scope	Project Phase	Source	FY2025 Tonnes of CO ₂ -e	FY2026 Tonnes of CO ₂ -e	FY2027 Tonnes of CO ₂ -e	Percentage of Total
1	Construction	Combustion of diesel in equipment during drill pad and access track construction	215	n/a	n/a	0.02%
1	Construction	Combustion of diesel in drill rig during construction of vertical and lateral wells	1,000	1,000	n/a	0.23%
1	Operation	Combustion of diesel in generators during operation of vertical and lateral wells	850	3,400	3,400	0.87%
1	Operation	Flaring of CSG ¹	n/a	292,191	302,355	67.64%
1	Operation	Venting of CSG ¹	n/a	134,909	139,601	31.23%
2	n/a	Electricity consumption	0	0	0	0%
Total GHG Emissions (tonnes CO₂-e)			2,065	431,500	445,356	100%
Note: (1) Flaring and venting of CSG reported as per NGERs Standard Conditions for gaseous fuels.						



2.2 EA Amendment Works – Extension Project

Building on the pilot CSG exploration and extraction programme, activities covered under a subsequent EA Amendment (hereafter referred to as the 'Extension Project') follow a comparable methodology for both construction and operation phase.

The activities under the Extension Project expand upon those of the Pilot Study to include:

- Construction of new access tracks;
- Installation of a laydown area;
- Construction of drill pads for Surface-to-Inseam (SIS) wells), Vertical Production Wells (VPW), gas risers, service boreholes, a bleeder shaft, and boreholes for gas conformance, specific gas emissions, spontaneous combustion testing, geotechnical and exploration;
- Drilling and operation of 33 vertical and 33 lateral SIS wells to drain gas from coal seams;
- Construction of gas risers to manage gas transfer to surface facilities;
- Construction of service boreholes to transfer materials from the surface to underground;
- Drilling of boreholes for sampling of gas, coal propensity, geotechnical and exploration;
- Development of a bleeder shaft for mine ventilation and safe gas management;
- Disturbance for future goaf drainage lines;
- Construction of gate roads; and
- Underground In-seam gas drainage.

The details of the Extension Project works are provided in the following sections.



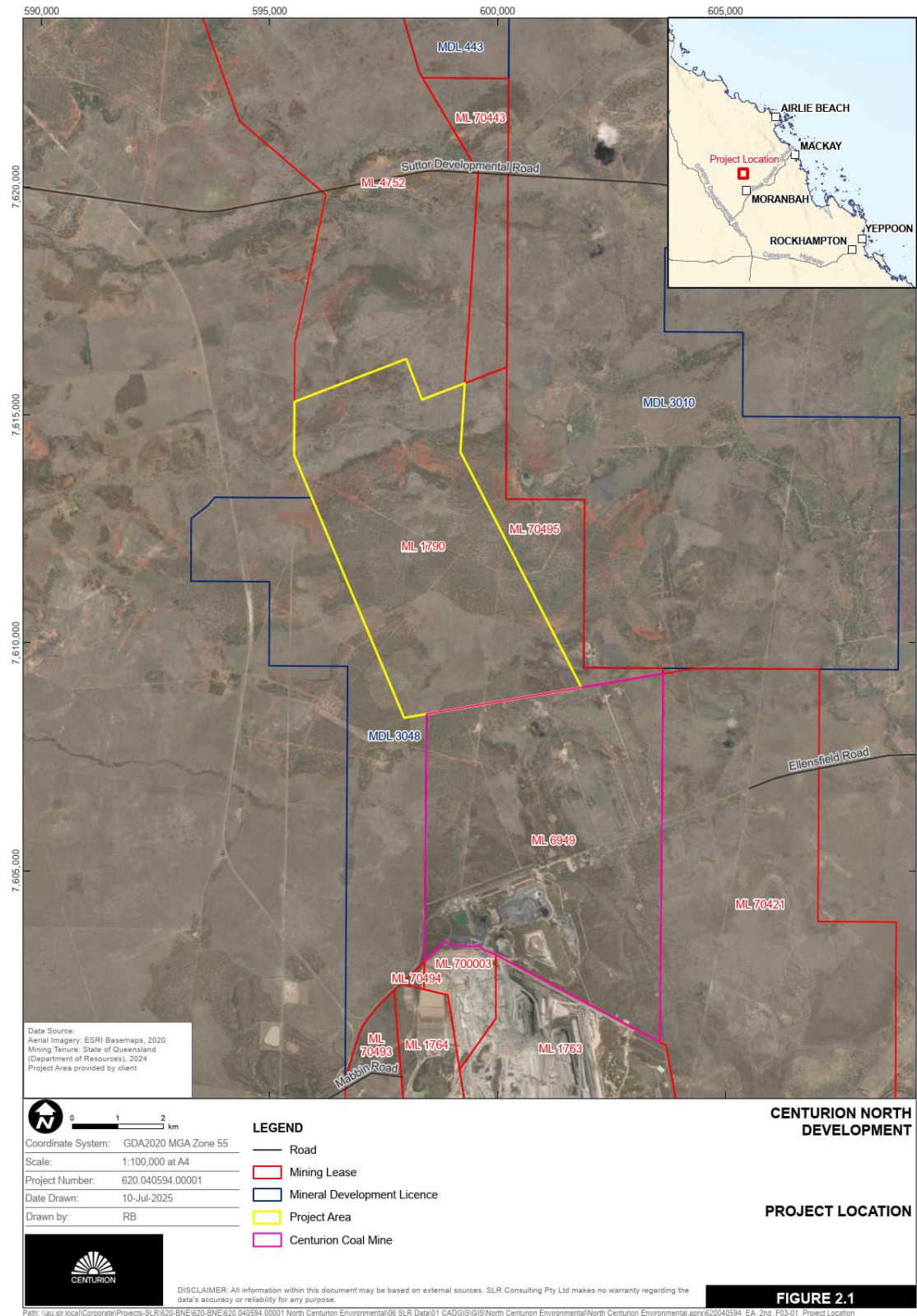


Figure 2.1 Project Location



2.2.1 Surface Activities

The surface activities for the Extension Program will include disturbance areas associated with drill pads for wells and boreholes, ancillary infrastructure and access tracks, as outlined in **Table 2.2**. The locations of surface activities proposed as per the Extension Program are illustrated in **Figure 2.2**.

Table 2.2 Drill pad, ancillary infrastructure and access track disturbance area

Component	Disturbance type	Dimensions (m)	No of pads	Area (ha)
Drill pads for wells and boreholes	Vertical and lateral SIS wells	80 x 80 m	50*	32.00
	VPW design drill pads	30 x 30 m	4	0.36
	Gas risers	80 x 80 m	43	27.52
	Service boreholes	30 x 30 m	24	2.16
	Gas conformance boreholes	30 x 30 m	145	13.00
	Specific gas emission boreholes	30 x 30 m	14	1.26
	Spontaneous combustion testing boreholes	30 x 30 m	14	1.26
	Geotechnical boreholes	30 x 30 m	38	3.42
	Exploration boreholes	30 x 30 m	2	0.18
Ancillary infrastructure and tracks	Bleeder shaft	n/a	1	1.54
	New access tracks	n/a	n/a	23.78
	Laydown area	150 x 150 m	1	1.50
	Disturbance for Future Goaf Drainage Lines	n/a	n/a	59.43
Total New Disturbance**		334 drill pads plus ancillary infrastructure /tracks		167.41 (6.15% of ML 1790 area)
Total New Disturbance accounting for Existing Approved Disturbance***				142.98 (5.25% of ML 1790 area)
* 50 SIS well pads will be constructed, supporting a total of 66 SIS wells. Select pads will accommodate two SIS wells within the one pad footprint. ** Total disturbance area excludes overlapping drill pads. *** Total disturbance area excluding overlapping drill pads and excluding existing approved disturbance footprints within ML 1790.				



2.2.1.1 Drill Pads and Laydown Area

Drill pads are designed to provide stable, prepared surfaces to accommodate drilling operations. Their size and layout vary depending on the type of well or monitoring bore to be drilled, such as SIS wells, gas conformance boreholes or geotechnical boreholes, each tailored to meet specific operational and safety needs. A total of 334 drill pads will be required for the Project.

Drill pads accommodate essential infrastructure, including drilling rigs, fluid management systems, gas management infrastructure, worker amenities and equipment storage. All construction and operation activities will be confined within the designated drill pad boundaries. A separate laydown area will also be established for use during construction and operation.

2.2.1.2 Boreholes

A number of boreholes are proposed to be installed as per the Extension Project, as illustrated in **Figure 2.2**. These boreholes include:

- 43 Gas Risers to facilitate the safe vertical transfer of coal seam gas extracted from underground-in-seam (UIS) drill holes to surface processing infrastructure. Once constructed, the gas risers will allow gas to flow freely to the surface;
- 24 Service Boreholes to transfer materials (i.e. cement, ballast) from the surface directly to underground areas of the mine;
- 145 Gas Conformance Boreholes for sampling of gas content in underground operations from the surface;
- 14 Specific Gas Emission Boreholes for sampling of gas content in underground operations from the surface;
- 14 Spontaneous Combustion Testing Boreholes for sampling of coal propensity to spontaneous combustion;
- 38 Geotechnical Boreholes for sampling of subsurface conditions including rock strength, stratigraphy, groundwater conditions and fault structures; and
- 2 Exploration Boreholes for sampling to determine coal seam thickness and quality for resource modelling purposes.

2.2.1.3 Surface-to-Inseam Wells

Similar to the Pilot Study, the Extension Project also includes an additional program for early development of CSG.

A total of fifty (50) drill pads are proposed for the vertical and lateral wells, and the disturbance area of these drill pads is included in **Table 2.2**. The location of the drill pads is illustrated in **Figure 2.2**.

The program for early development of CSG has been designed as a network of gas extraction wells, extending from the ground surface down to the GM coal seam with lateral in-seam drainage to drain gas ahead of first workings mine development. These wells will be supported by surface infrastructure for CSG processing, monitoring, and control.



Vertical wells are drilled from the surface directly downwards. The lateral wells are drilled near vertically from the surface and are then deviated through a tight radius bend to intercept the target coal seam parallel to the bedding planes (**Image 2.1**). Each lateral well is directionally drilled through the GM coal seam before intercepting the corresponding vertical well. The vertical wells are used for collecting and conveying the CSG and associated water to the surface from within the lateral well.

Vertical Wells

A total of 33 vertical wells will be drilled (**Figure 2.2**). Following development of the drill pads, construction methodology for the vertical wells is as follows:

- The initial step involves drilling a pilot hole (known as spudding). A larger diameter hole (12 ¾" diameter) is then drilled to a shallow depth (~24 m) and a steel casing is installed to prevent the well from collapsing. The hole is then drilled to the target GM coal seam depth (290 - 570 metres below ground level (mbgl)). Drilling fluid (mud) is used to lubricate the bit, control pressure, and carry cuttings to the surface. The cuttings will then be collected at the surface, where they will be disposed of in line with the CCM waste management procedure.
- Casing (such as steel or fibre glass) is run into the hole to the total depth and cemented in place to prevent groundwater and gas from moving outside of the well and between geological layers. Perforations in the casing at the coal seam level allow gas to flow into the well.
- The well is completed with necessary equipment for gas extraction, including pressure control valves and continuous monitoring systems to optimise gas extraction and ensure operational safety.

Lateral Wells

A total of 33 lateral wells will be drilled into the GM coal seam (**Figure 2.2**) from pads located within ML 1790. Following development of the drill pads, construction methodology for the lateral wells follows the same methodology as for vertical wells:

- A vertical section is drilled to a depth above the target GM coal seam (290 - 570m). Then, using directional drilling techniques, the wellbore is deviated from the vertical to horizontal, forming a curve. This requires specialized downhole motors and tools.
- Once the curve is horizontal, it is drilled along the coal seam for a specified distance (e.g. 1000 - 1900 m) to connect with the corresponding vertical well. The horizontal well maximizes exposure to the coal seam, enhancing gas recovery.
- Casing (such as steel or fibre glass) (7 7/8" diameter) is run into the well and cemented to isolate the gas-producing zones. Perforations in the casing at the coal seam level allow gas to flow into the well.
- The horizontal well intercepts the vertical production well where gas is then able to flow from the coal seam to the surface and collected/transported to CSG infrastructure for further use.



Exploration Method

Following drilling of the vertical and lateral wells and installation of the necessary extraction and monitoring equipment, CSG will be extracted as follows:

- Water will be removed from the GM coal seam (seam water) through pumps located at the base of the wells and brought to the surface. Water will pass through the well head to storage tanks before being carted off and added to the CCM water management system.
- Removal of water will result in a reduction in pressure (~40 kPa/day) in the coal seam throughout the lateral well that each vertical well is paired with. It is anticipated that depressurising of the coal seam will take up to 90 days.
- The reduction in pressure within the coal seam allows CSG to be desorbed from the coal. The CSG will migrate through the coal's natural fractures (cleats) through to the perforations in the casing and into the well.
- The desorbed CSG will flow along the lateral well and up into the connected vertical well to the surface, where it will be separated from any remaining water.
- The CSG will pass through a low-pressure pipeline before being used as part of Gas Abatement Projects. It is anticipated that the CSG will comprise >99% methane (CH₄) and data logging will take place to record the amount of CSG produced from the wells. It is anticipated that CSG will be produced at an average rate of 300-500 L/sec from each vertical well for approximately 8 – 10 years.
- Water and gas monitoring data collected during the evaluation will enable the development of decline curves which will better inform the gas-in-place, geological and hydrogeological models for the resource.

Image 2.1 and **Image 2.2** present examples of CSG well schematics.

2.2.1.4 Bleeder Shaft

A bleeder shaft is proposed to be drilled to the GM coal seam from a pad located within ML 1790 (**Figure 2.2**). **Table 2.2** details the disturbance areas associated with the construction and operation of the bleeder shaft.

A vertical shaft will be constructed connecting the surface to the coal seam (depth 450 to 500 mbgl). Blind-boring techniques will be used to create the shaft, which involves drilling a shaft downwards from the surface. The shaft will have a diameter of approximately 2 to 3 m and will be steel lined with a shaft collar for surface protection. Auxiliary fans (centrifugal or axial types) will be installed at the top of the bleeder shaft, which will draw out contaminated air from the mine and exhaust it to the surface.



2.2.1.5 Disturbance for Future Surface Works

The installation of four (4) goaf drainage lines will be constructed at a later date (prior to longwall commencement) (**Figure 2.2**). In preparation for the installation of goaf drainage lines, surface disturbance is proposed, as summarised in **Table 2.2**.

2.2.1.6 Access Tracks

A network of existing access tracks is present across ML 1790 (**Figure 2.2**). Where feasible, these existing tracks will be used to access the proposed drill pads, minimising the need for additional surface disturbance.

However, additional access tracks will be required for drill pad locations not currently accessible. **Table 2.2** details the disturbance areas associated with the new access tracks and **Figure 2.2** shows their proposed locations. New tracks will be designed for all-weather access and constructed using graded and compacted materials. New access tracks will be 5 m wide and suitable for both light and heavy vehicles.

2.2.1.7 Water

Construction water requirements will be sourced from the CCM raw water dam and delivered to construction areas via water truck.

Water collected from the SIS wells during operations will be pumped to holding tanks located on the relevant drill pads. Each holding tank is designed with a capacity of 20 kL, sufficient to accommodate one day of pumping during the initial depressurising phase of the target coal seam. Following depressurisation, the volume of water extracted is expected to decrease significantly as gas production commences. Collected water will then be transported by water truck to the CCM site, where it will be treated and incorporated into the CCM water management system.

2.2.1.8 Power

Construction of the SIS wells, gas risers, boreholes and the bleeder shaft will require power to operate drilling equipment and pumps. It is proposed that on-site diesel generators (60 kV) will be used for all power drilling operations, with one generator in use per drill rig. As 5 drill rigs will be engaged, a total of 5 diesel generators will be required for construction.

During operation, SIS well sites will require electricity for the operation of drill pumps and well pumps. One 60 kV diesel generator will be required per two vertical drill pads.

The operation of the gas risers will require electricity for the operation of gas pumps, instrumentation and well monitoring equipment.

High-voltage connection to the electricity network on ML 6949 will provide power to the bleeder shaft site as well as the provision of electricity to underground via the service boreholes.

2.2.1.9 Amenities

The SIS drill pad sites will include a mobile office and workshop which will be relocated as drilling progresses. Only two drill pad sites will be operating at a given time.

For the remainder of the drill pad sites, no permanent facilities are proposed. Facilities available in ML 6949 will be available for use.



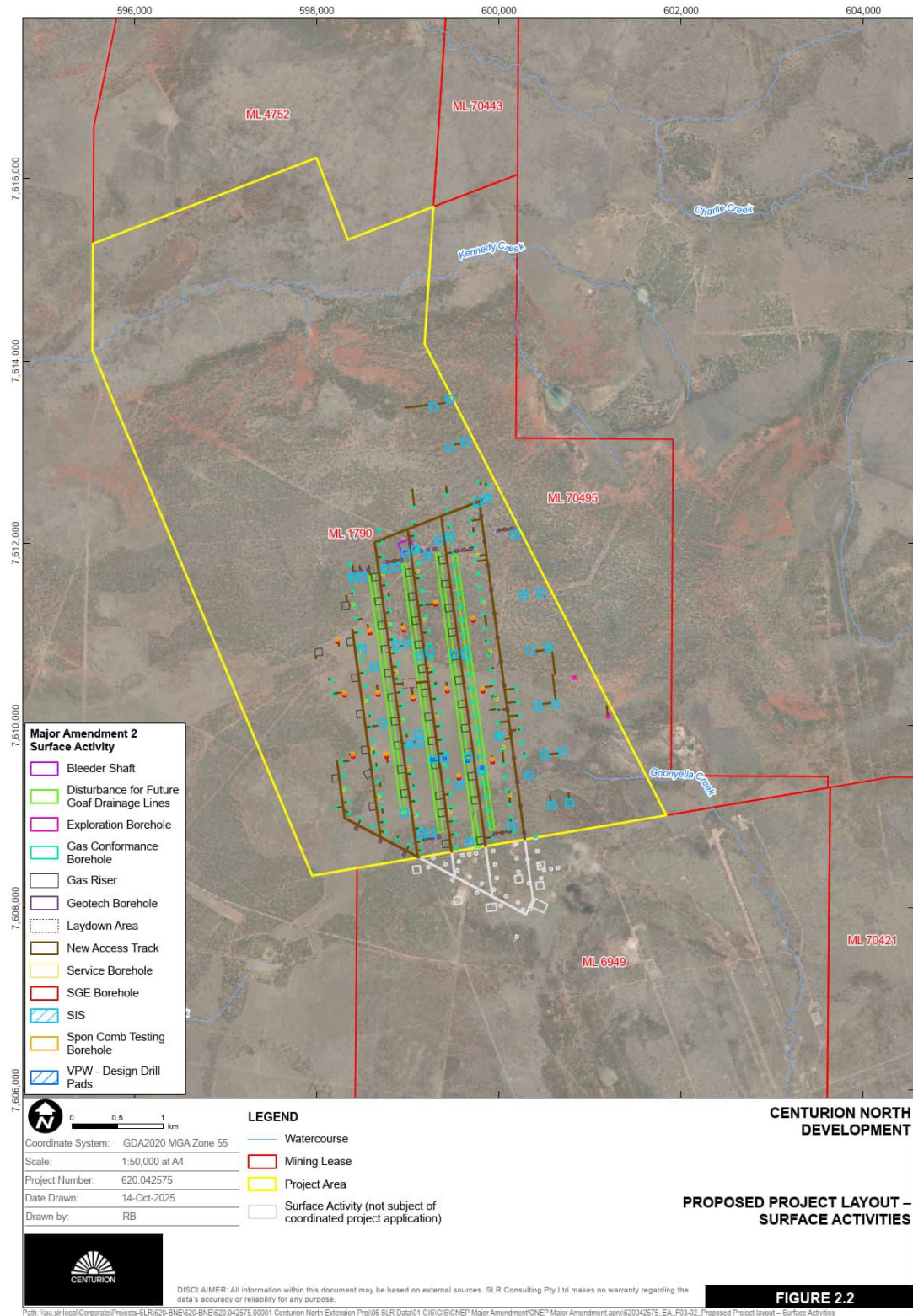


Figure 2.2 Proposed Extension Project Layout – Surface Activities



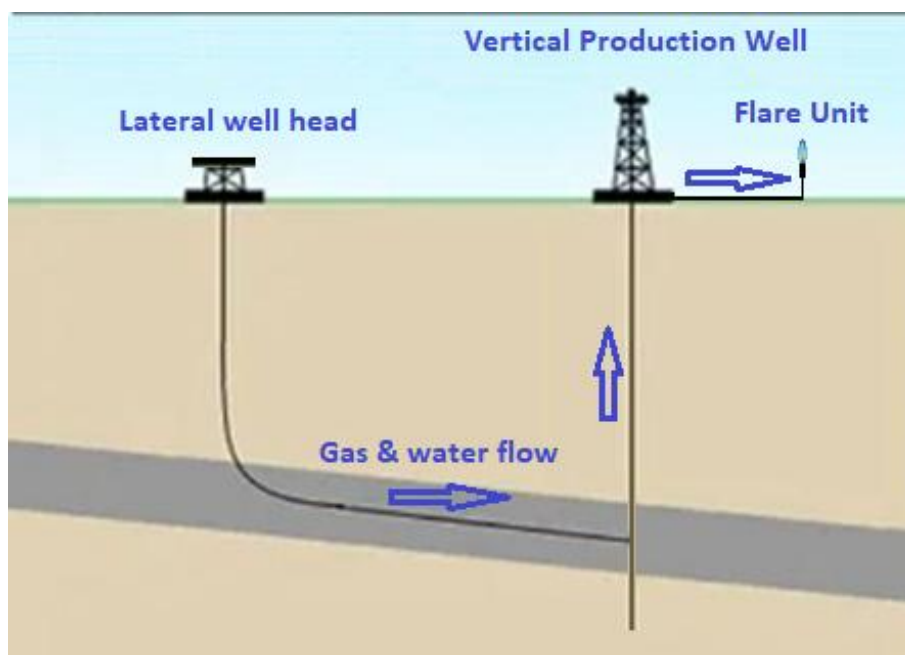


Image 2.1 Schematic of vertical and lateral wells



Image 2.2 Example of drill pad arrangement



2.2.2 Underground Activities

2.2.2.1 Construction of Gate Roads

The Extension Project will involve the construction of four (4) underground gate roads to enable safe and efficient transport of personnel, equipment and extracted materials. The gate roads are designed to advance the development of the mine by establishing the first longwall mining panels while the subsequent mining processes undergo an EIS level assessment.

The gate road development scheduled for installation is illustrated in **Figure 2.3** and will support the extraction of three (3) longwall panels in the future. Gate roads will be constructed using single pass continuous miners to a width of 5.4 m and a ceiling height of 3.6 m.

Roof and rib (sidewall) support (e.g. bolts, mesh and/or shotcrete) will be installed progressively to ensure adequate strata reinforcement. Services such as ventilation systems, conveyor systems, power cables, water pipes, compressed air lines and communication systems will then be installed to ensure the safety of personnel, control of contaminants, conveyance of coal and movement of equipment. Underground roadways are constructed such that they remain stable for the life of the mine and will become unserviceable following extraction of an adjacent longwall panel or if abandoned for a significant time.

2.2.2.2 Management of Coal Materials

Approximately 1 - 2 million tonnes of coal material will be extracted from ML 1790 during the establishment of the proposed gate roads. Initial coal from the Project will be supplied to established customers of Centurion to alleviate any coal quality concerns that may arise from entering a different area of the basin with the advantage of having a good supply of Centurion coal still available (i.e. establishing brand continuity). The extracted coal will be utilised to gain a comprehensive understanding of the coal's properties and characteristics, including quality, quantity and potential for processing. This process provides crucial information for future development, including mining techniques, coal treatment and market evaluation.

The remainder of extracted materials will be stockpiled as raw materials, with processing and sale to occur once EA approval for mining of longwall panels in ML 1790 has been granted.

2.2.2.3 Underground In-seam Gas Drainage

UIS gas drainage is a critical part of underground coal mining operations, particularly in mines with high gas content. Controlled drainage reduces explosion risk and allows for the potential recovery and beneficial use of the captured gas (refer to **Section 2.3**).

UIS gas drainage involves drilling boreholes from the gate roads into the coal seam in a fan pattern. Extracted gas is transferred to gas risers and transported to the surface as part of the integrated gas management system.

2.2.2.4 Power

Power required for the development of the proposed underground roadways and supporting activities will be sourced from the existing CCM underground power supply. No additional power generation will be required for the proposed underground activities.



2.2.2.5 Amenities

The existing, approved CCM underground amenities (e.g. crib facilities, offices, workshops) will be used during the development and operation of the proposed underground activities.

2.2.3 Equipment

Table 2.3 outlines the key machinery and mobile equipment (currently being utilised at the CCM) that will be used in the development, maintenance and operation of all works associated with the Extension Project.

Table 2.3 Equipment requirements for Extension Project

Equipment Description
Earth moving
Dozer such as the Caterpillar D8 for primary surface excavation of drill pads and access tracks
Grader, such as Caterpillar Grader 150
Truck, such as Caterpillar 745 Articulated Truck
Vibratory soil compactor, such as Caterpillar Roller 256B
Vegetation slasher
Water
30kL water truck to provide construction water requirements and collect extracted well water
Power
60kV diesel generators to provide power to well and pump infrastructure
Drill rigs
2 SIS drill rigs
2 vertical exploration drill rigs
1 shaft sinking drill rig
Wellhead equipment
Wellhead assemblies to control the pressure and flow of CSG to the surface
Valves and fittings to control and direct the flow of CSG to the surface
Flares and venting systems for controlled burning of CSG
Pumps
Water pumps to remove water from the coal seam and transport water to the surface from boreholes
Gas pumps for extracting CSG from the well
Mud pumps and systems for drilling fluid circulation
Gas separation and processing equipment
Separators to separate CSG from water and other impurities
Measurement and monitoring devices
Flow meters to measure the amount of CSG being extracted
Pressure gauges to monitor pressure levels in the well
Gas analysers to analyse the composition and quality of the CSG



Equipment Description
Safety and environmental control equipment
Blowout preventers (BOPs) to prevent uncontrolled release of CSG
Monitoring systems for detecting gas leaks and monitoring environmental compliance
Control and automation systems
SCADA systems for remote monitoring and control of gas production
Automation software for optimising gas extraction and processing
Underground mining equipment
Continuous miners (up to 6)
Shuttle cars (up to 6)
Breaker feeders
Auxiliary fans
Graders
Underground personnel transporters
Underground load haul dumps
Underground-to-Inseam drilling equipment
Vacuum pumps
Underground gas pipe reticulation system



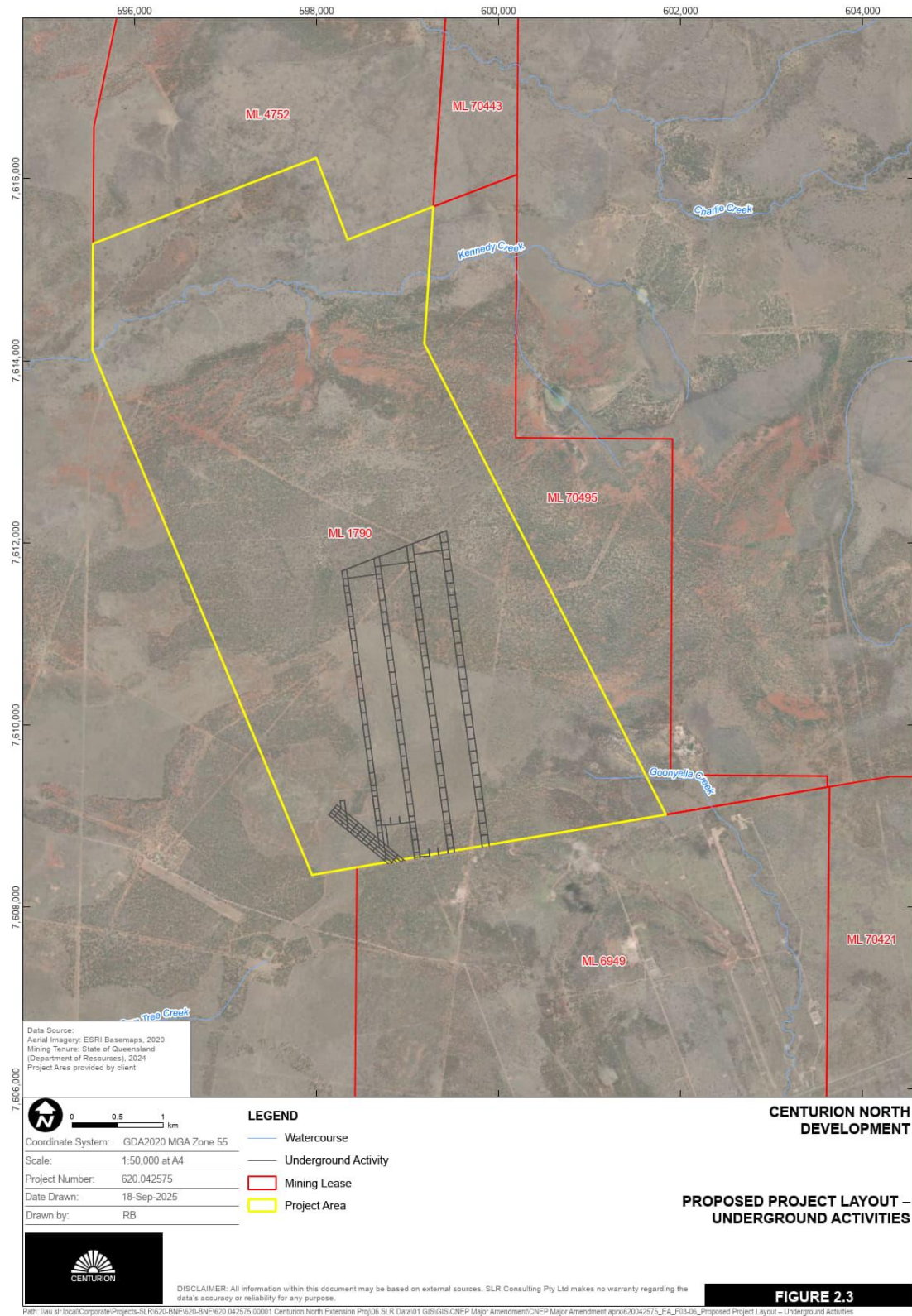


Figure 2.3 Proposed Extension Project Layout – Underground Activities



2.3 Gas Abatement Projects

Peabody is progressing several gas abatement projects aimed at the beneficial use of CSG extracted as part of the Extension Project works, including:

- Transfer of gas via pipeline to a carbon abatement hub (e.g. Moranbah Gas Project or Townsville);
- Clean Energy Fuel Australia Marketing (CEFAM) LNG Project; and
- Generation of electricity through a power station (approval has been granted through a separate process).

It is important to note that these gas abatement initiatives are not included as part of the most recent EA Amendment, however do form part of this GHG Abatement strategy. Peabody will seek separate approvals for these projects as required.



3.0 Corporate GHG Strategy

3.1 Overview

Peabody is reducing GHG emissions from its operations and has established an ambition of achieving net-zero emissions (Scope 1 and 2) by 2050 through setting measurable, near-term emission reduction goals. Peabody's strategy prioritises opportunities to create value through emission reduction at our operations in support of our customers' climate commitments as well as Federal and State climate targets. This includes investment in advancing technology and the development of renewables.

As operators of both thermal and metallurgical mines in the United States and Australia, Peabody's corporate GHG strategy must reasonably balance the regulatory environment, customer expectations, and market segments in which we operate to drive outcomes that support our operations. Peabody believes the transition to a net-zero emissions economy must balance the need for a timely transition with the necessity for affordable, reliable energy and steel.

Peabody continues to responsibly mine its existing domestic thermal coal reserves in the United States, while reducing annual volumes from this segment by 20-40 million tons by 2035 (versus 2021 production), which will result in emission reductions in this segment.

Within the Australian operations, Peabody operates six mines that are subject to the Australian Safeguard Mechanism and are committed to aligning our emission reduction strategy to the targets established by the Clean Energy Regulator. For each Peabody facility, we are assessing emission reduction opportunities that best align with the facility emission and production profiles, as well as the technical and financial feasibility of potential emission mitigation activities.

Peabody currently reports Scope 1 and 2 emissions annually in both our Sustainability report, as well as through the National Greenhouse Gas and Energy Reporting (NGER) Scheme in Australia.

Peabody's Scope 1 direct emissions include consumed diesel fuel and fugitive emissions from our operations, and Scope 2 emissions that result from the consumption of purchased electricity.

After achieving the first emission reduction target of a 15% reduction in Scope 1 and 2 emissions from our 2018 baseline, Peabody has established a target of 20% reduction in Scope 1 and 2 emissions, from a 2023 baseline, by 2030. The new target demonstrates a continued commitment to establish incremental, measurable and actionable targets to reach our net-zero emission aspiration.

Peabody continues to assess future production, emission reduction technologies, operational improvements, and Safeguard Mechanism targets in Australia to ensure each site's abatement strategy supports the long-term economic, social, and environmental sustainability of the organisation.

While Peabody has not established specific targets related to the reduction of Scope 3 emissions, Scope 3 emissions related to the Australian operations will be reported in 2026, in compliance with the recent addition of climate-related metrics to financial disclosure requirements. Further, Peabody will continue to support the research, development and deployment of technology that will reduce emissions within our value chain. These efforts include investments in renewables development on previously mined land through the R3 Renewables joint venture, support of high-efficiency, low-emissions coal-fuelled generation (HELE) and Carbon Capture and Storage (CCS), as well as future coal-derived products.



Table 3.1 illustrates Peabody's scope 1 and 2 emissions from 2021 – 2024 measured at a corporate level. This information is publicly available in the Peabody 2025 Sustainability Report.

Table 3.1 Peabody Scope 1 and 2 emissions from 2021 - 2024

Topic	Unit	2021	2022	2023	2024
CO ₂ Equivalent Emissions Total (Scope 1 & 2)	Tonnes CO ₂ e	6,602,829	6,510,330	6,074,026	5,663,651

3.2 Commitments

Table 3.2 presents a summary of Peabody's GHG emission commitments.

Table 3.2 Summary of Peabody's GHG Abatement Plan

Element	Comments
Peabody emissions reference point	Emission reduction will be measured based on the site-specific emission intensity approved by the Clean Energy Regulator for the Centurion Mine. Adoption of this reference point is considered appropriate for the Project as the aggregated emissions from CCM and Centurion North are reported under the same Safeguard Facility. Emission reduction initiatives will be focused at a Facility level to deliver maximum impact and to support the investment in those initiatives regardless of the source of emissions from the various Facility tenements.
Peabody emissions reduction targets	Centurion Coal Mining Pty Ltd is implementing emission reductions in alignment to the annual targets outlined by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Safeguard Mechanism.
Emission reduction measures	Prioritised use of drained CSG as part of several proposed gas abatement options, with direction to candlestick flares to abate emission from excess CSG and as redundant abatement for gas abatement options to reduce the risk of free venting.
Abatement opportunities / advancing technologies	Utilisation of drained CSG and sale to end users for industrial processes and power generation Utilisation of drained CSG and coal mine waste gas for on-site power generation and future, potential export to utility
Reporting	Annual reporting of emissions in compliance with the <i>National Greenhouse and Energy Reporting Act 2007</i> (NGER Act).



4.0 Project GHG Strategy

This section provides details on the Project's estimated GHG emissions, the reference points, reduction target, monitoring, auditing and reporting.

4.1 GHG Emission Estimates

4.1.1 Greenhouse Gas Inventory

The NGER Act provides a framework for the annual reporting of corporate GHG emissions, energy consumption and production.

DCCEEW's *Australian National Greenhouse Accounts Factors* (NGA Factors 2025) provides a methodology by which corporations estimate GHG emissions associated with their activities, including:

- GHG emissions are reported in units of carbon dioxide equivalent or CO₂e;
- GHG sources are classified as being either 'direct' or 'indirect':
 - Direct emission sources (or Scope 1) are produced from sources within the boundary of an organisation and as a result of that organisation's activities;
 - Indirect emissions are generated as a consequence of an organisation's activity, but which are physically produced by the activities of another organisation. There are two classes of indirect emissions: electricity (Scope 2) and other sources (Scope 3); and
- It is noted that the NGER Act requires the reporting of Scope 1 and Scope 2 emissions, however the reporting of Scope 3 emissions is voluntary.

The focus of this GHG inventory is Scope 1 emissions. Scope 2 emissions are not applicable as the Project electricity requirements will be locally generated using diesel generators and not consumed from the national grid. Furthermore, the Project will not produce a product, therefore there are no downstream Scope 3 emissions. Upstream Scope 3 emissions have not been considered.

In relation to the NGA Factors used in the assessment it is noted that options for the combustion of the extracted gas within the NGA Factors include:

- Coal seam methane that is captured for combustion; and
- Coal mine waste gas that is captured for combustion.

Chapter 3, Part 3.2, Division 3.2.1 of the NGER (Measurement) Determination 2008 (the Determination), refers to available methods for estimating emissions with a differentiation between the release of fugitive emissions during mining operations and those that are released *before* the extraction of coal.

In consultation with the regulating authority, the estimates of emissions associated with flaring have been based on the NGA factor for *coal mine waste gas that is captured for combustion* with the methane component of the CSG associated with the Project, estimated at greater than 99%.

Table 4.1 presents the scope 1 NGA Factors considered in this assessment.



Table 4.1 National Greenhouse Accounts Emission Factors (Scope 1)

Emission Source	Energy Content ⁽³⁾	Emission Factor	Units ⁽²⁾	Source
Scope 1				
Coal Mine Waste Gas that is captured for combustion	0.0377 GJ/m ³	56.8	kg CO ₂ -e/GJ	NGA ⁽¹⁾
Combustion of diesel fuel	38.6 GJ/kL	70.20	kg CO ₂ -e/GJ	NGA ⁽¹⁾
Scope 2				
Electricity use from grid	-	0.71	kg CO ₂ -e/kWh	NGA ⁽¹⁾
Note: (1) NGA – Australian Government’s Department of Climate Change, Energy, the Environment and Water’s National Greenhouse Accounts Factors (2024) (2) kg CO₂-e/GJ – kilograms (KG) of carbon dioxide equivalent (CO₂-e) per gigajoule (GJ) (3) (a) GJ/m³ – gigajoule (GJ) per cubic metre (m³) (3) (b) GJ/kL – gigajoule (GJ) per kilolitre (kL)				

4.1.2 Emission Estimates – Extension Project Works

4.1.2.1 Construction of Drill Pads and Ancillary Infrastructure

Based on information provided in **Section 2.2.1**, a total of 334 drill pads of varying dimensions will be developed as part of the Project and one laydown area with dimension of 150m X 150m will be constructed. Additionally, surface activities for 1 bleeder shaft (1.5 ha), construction of access tracks (20 ha), surface works causing disturbance for future works (69 ha) are also proposed. The total combined footprint for these activities is approximately 150 ha (based on information presented in **Table 2.2**).

Combustion of diesel fuel will be associated with activities undertaken by the dozer, articulated truck, roller and grader during the construction of the drill pads and access tracks.

Based on the NGA Factors provided in **Table 4.1** and estimates of diesel fuel usage, between 1,100 and 2,100 tonnes of CO₂-e emissions are estimated to be associated with the combustion of diesel fuel during the construction of the drill pads and ancillary infrastructure.

For the purposes of this assessment, an average value of 1,600 tonnes of CO₂-e has been used as an estimate of GHG emissions during the construction of the drill pads and access track. It is assumed that these emissions will be released over 18 months. Thus, the following GHG emissions from these sources estimated to result in:

- 1,200 tonnes of CO₂-e during FY2026; and
- 400 tonnes of CO₂-e during FY2027.



4.1.2.2 Establishment of SIS Wells, Boreholes and Bleeder shaft

Five (5) drill rigs will be engaged for the construction of the SIS wells, gas risers, boreholes and the bleeder shaft

The 66 SIS wells will be completed in approximately 15 months, while the construction and installation of gas risers will take approximately 1 year (**Section**). Additionally, the construction and decommissioning of boreholes is anticipated to take approximately 3 years while the installation of the bleeder shaft will take approximately 1 year.

Based on the NGA Factors provided in **Table 4.1** and a diesel fuel consumption of approximately 14 litres per hour per generator unit, GHG emissions are estimated as:

- 7,000 tonnes of CO₂-e during FY2026;
- 4,000 tonnes of CO₂-e during FY2027; and
- 3,200 tonnes of CO₂-e during FY2028.

4.1.2.3 SIS Wells Operation

Flaring of CSG

Based on information about expected gas flow provided by Peabody for the site, the annual production rate of CSG was estimated for the 66 SIS wells.

The combustion of methane by the flaring of CSG, as opposed to the release of CSG directly to the atmosphere, has the benefit of significantly reducing the global warming potential (GWP) of the released gases into the atmosphere due to the conversion through combustion of methane with a GWP of 28 into carbon dioxide with a GWP of 1.

Estimates of GHG emissions associated with the flaring of CSG have been based on:

- The NGA Factor provided in **Table 4.1**; and
- An assumed 95% flare up-time.

Based on the staggering of wells coming online during the project, the flaring of CSG is estimated to produce:

- 76,700 tonnes of CO₂-e during FY2027;
- 290,100 tonnes of CO₂-e during FY2028;
- 250,500 tonnes of CO₂-e during FY2029;
- 77,000 tonnes of CO₂-e during FY2030; and
- 2,200 tonnes of CO₂-e during FY2031.

Venting of CSG

The venting of CSG may occur when the flare is unavailable which is estimated to occur less than 5% of the time.

Based on the assumptions as per those applied in the estimation of GHG emissions associated with flaring with an assumed 5% flare down-time, fugitive emissions due to the venting of CSG is estimated to result in:

- 35,400 tonnes of CO₂-e during FY2027;
- 134,000 tonnes of CO₂-e during FY2028;



- 115,700 tonnes of CO₂-e during FY2029;
- 35,600 tonnes of CO₂-e during FY2030; and
- 1,000 tonnes of CO₂-e during FY2031.

Generators

Electricity will be required to operate the drill pumps and the well pumps. It is also noted that twenty-five 60kV diesel generators will be used to power the operations of the 66 SIS wells and gas risers.

Based on the NGA Factors provided in **Table 4.1** and conservatively assuming that all diesel generators will operate for a period of c. 5 years at a diesel fuel consumption of approximately 14 litres per hour per generator unit, emissions due to generator use has been estimated as:

- 2,100 tonnes of CO₂-e are emitted during FY2026; and
- 8,300 tonnes of CO₂-e are emitted annually during FY2027 until 2031.

Venting of Underground Spent Air

Ventilation for underground areas will be provided via the bleeder shaft ventilation system, wherein spent air will be released directly to the atmosphere. Based on operational information provided by Peabody for ventilation fans, the annual release of GHG from these sources were estimated as:

- 1,500 tonnes of CO₂-e are emitted during FY2028; and
- 3,400 tonnes of CO₂-e are emitted during FY2029 to 2031.

Electricity Consumption

High-voltage connection to the electricity network on ML 6949 will provide power to the bleeder shaft site as well as the provision of electricity to underground activities via the service boreholes during operations. It is assumed that the ventilation system will be the primary consumer of electricity. It is also assumed that the ventilation system consists of several 220 KW ventilation fans. Based on operational data provided by Peabody the following GHG emissions were estimated as:

- 2,400 tonnes of CO₂-e are emitted during FY2028; and
- 6,500 tonnes of CO₂-e are emitted during FY2029 to FY2031.

4.1.2.4 Summary of GHG Emission Estimates – 2025 EA Amendment Works

Table 4.2 provides a summary of estimated Scope 1 GHG emissions over the life of the Project, highlighting the flaring of CSG as the primary source of emissions.



Table 4.2 Summary of GHG Emissions – Extension Project

Scope	Project Phase	Source	FY2026 Tonnes of CO2-e	FY2027 Tonnes of CO2-e	FY2028 Tonnes of CO2-e	FY2029 Tonnes of CO2-e	FY2030 Tonnes of CO2-e	FY2031 Tonnes of CO2-e	Percentage of Total
1	Construction	Combustion of diesel in equipment during drill pad and ancillary infrastructure construction	1,200	400	-	-	-	-	0.1%
1	Construction	Combustion of diesel in drill rig during construction of SIS wells, boreholes and bleeder shaft	7,000	4,000	3,200	-	-	-	1.3%
1	Operation	Combustion of diesel in generators during operation of SIS wells and gas risers	2,100	8,300	8,300	8,300	8,300	8,300	3.9%
1	Operation	Flaring of CSG ¹	-	76,700	290,100	250,500	77,000	2,200	63.0%
1	Operation	Venting of CSG ¹	-	35,400	134,000	115,700	35,600	1,000	29.1%
1	Operation	Venting of underground spent air	-	-	1,500	3,400	3,400	3,400	1.1%
Scope 1 Total (tonnes of CO2-e)			10,300	124,800	437,100	377,900	124,300	14,900	98.6%
2	n/a	Electricity consumption	-	-	2,400	6,500	6,500	6,500	1.4
Total GHG Emissions (tonnes CO2-e)			10,300	124,800	439,500	384,400	130,800	21,400	100%
Note: (1) Flaring and venting of CSG reported as per NGERs Standard Conditions for gaseous fuels.									



4.1.3 Comparison with Australian Emissions

The latest Australian GHG emissions inventory provided in the DCCEEW '*Quarterly Update of Australia's National Greenhouse Gas Inventory: March 2025*' (DCCEEW, 2025) indicates Australia's total GHG emissions (including land use, land use change and forestry activities) was 440.2 million tonnes (Mt) of CO₂-e.

While for the 2025 EA amendment works more than 74% of the Project's CO₂-e emissions occur over the 2-year period FY2028 and FY2029, the already approved 2024 amendment works were anticipated to result in majority of emissions being released in FY 2026 and FY2027 (over 99.8%). Flaring and venting of CSG are anticipated to be the primary sources of GHG contributing towards 91.6% of the 2025 EA amendment emissions and 98.9% of the 2024 EA amendment works.

The summary of emissions provided in **Table 4.2** suggests that the maximum Project-related contribution to GHG emissions in for FY2028 and FY2029 are approximately 0.44 Mt and 0.38 Mt of CO₂-e per year. This represents 0.100% and 0.087% of Australia's 2025 GHG emissions, respectively.

The latest available Queensland's contribution to the 2022 national inventory was estimated to be 124.1 Mt of CO₂-e. The Project's contribution represents 0.354 % to 0.310 % of Queensland's 2022 emissions.

4.2 GHG Emission Reference Point

As noted in **Table 3.2** emission reduction will be measured based on the site-specific emission intensity approved by the Clean Energy Regulator for the Centurion Complex, comprising CCM and Centurion North.

Adoption of this reference point is considered appropriate for the Project due to the aggregated emissions from CCM and Centurion North being reported under the same Safeguard Facility. CCM and Centurion North are considered one complex and emissions are reported as one facility under NGERs. Emission reduction initiatives will be focused at a Facility level to deliver maximum impact and to support the investment in those initiatives regardless of the source of emissions from the various Facility tenements.

The emission intensity factor (EIF) which has been approved by the Clean Energy Regulator for the Facility is 0.3871 CO₂-e t / ROM t. This EIF will be utilized as the production variable for establishing the annual emissions baseline in this reporting. This will ensure that the Safeguard Mechanism applies to the Centurion Complex as GHG emissions would always be above the Safeguard DLF threshold.

Presented in **Table 4.3** is a summary of the breakdown of the Safeguard baseline for the Centurion mine complex and GHG emission estimates for the life of the Project. Project emissions will be aggregated with other complex emissions for NGERs reporting and will be compared to the Safeguard baseline annually to determine if further offsets are necessary to comply with Safeguard requirements.



Table 4.3 Summary of Centurion Complex GHG Emissions and Safeguard Baseline

Parameter	FY2025 (tCO ₂ -e)	FY2026 (tCO ₂ -e)	FY2027 (tCO ₂ -e)	FY2028 (tCO ₂ -e)	FY2029 (tCO ₂ -e)	FY2030 (tCO ₂ -e)	FY2031 (tCO ₂ -e)
Pilot Study Emissions ⁽¹⁾ Email	2,065	431,500	445,356	-	-	-	-
Project Emissions Estimate	-	10,300	124,800	439,500	384,400	130,800	21,400
Safeguard Baseline	140,596	516,495	902,226	1,138,938	1,138,540	652,815	693,496

4.3 GHG Emissions Reduction Target

The interim and long-term Scope 1 GHG emission reduction targets will be in line with the Safeguard Mechanism baseline annual reduction for the Safeguard Facility. **Table 4.4** presents the GHG emission reduction targets under the Safeguard Mechanism for the Facility and these reduction targets are included in the calculation of the Safeguard Baseline numbers presented above in **Table 4.3**.

Table 4.4 GHG Emission Reduction Targets

FY (Jul-Jun)	Reference EIF	Target EIF	Reduction, %
27	0.3871	0.2594	33
28	0.3871	0.2193	43
29	0.3871	0.1824	53
30	0.3871	0.1486	62
31	0.3871	0.1179	70

Emission reductions from the abatement strategy significantly reduce the estimated Safeguard facility emissions, in comparison to an unabated base case in which CSG emissions would not be flared. The facility will continue to assess opportunities to further reduce emissions to attain the targeted emission reductions outlined in the Safeguard Mechanism.

4.4 GHG Emissions Reduction Program

The following GHG emission reduction measures are proposed for the Project:

- Operation of flares at >95% availability;
- Real time monitoring of flare ignition systems with alarms;
- Full-time Gas Drainage Engineer employed to monitor and address performance of gas drainage and flare operation;
- Use of personal methane gas monitors to detect fugitive emissions;
- Tracking response times to alarms;
- Use and maintenance of fuel-efficient plant and equipment;



- Monitoring of diesel use; and
- Operator training.

The GHG emissions inventory for the Project presented in **Table 4.2** suggests that more than 29% of the estimated Project emissions are attributable to vented methane gas which is the most significant opportunity for further reduction of Project emissions by achieving better than the estimated 95% flare operational availability. As such, minimisation of vented CSG will be a key focus of the Project's GHG emission reduction program to further reduce the estimated Safeguard Facility emission exceedances presented in **Table 4.3**.

Centurion Coal Mining Pty Ltd has an active program for the purchase of Queensland based Australian Carbon Credit Units (ACCUs) which it intends to retire in order to settle Project Safeguard Facility emission exceedances for the short duration of this Project.

In this circumstance, the Safeguard Mechanism effectively and significantly incentivises Centurion Coal Mining Pty Ltd to aim to outperform the emission reduction targets outlined in the GHG Abatement Plan. Further reduction initiatives for the Safeguard facility are anticipated to begin having an impact in the longer term, beyond the timeframe of this Project, as they are brought online, under pinned by the successful outcome of this Project.

4.5 Advancing Technologies and Opportunities

Centurion Coal Mining Pty Ltd has overhauled and upgraded or purchased upgraded flare units that have higher reliability and auto-ignition functions for CCM. If the flare stops, the temperature sensor triggers an auto-reignite to immediately re-start flaring. If for any reason the auto-reignite fails, then an alarm is sent to the control room and an operator is dispatched to rectify, response times are generally within 20 minutes. This system will be applied to the Project and is currently being operated for approved gas drainage activities onsite.

4.6 Monitoring and Auditing

Centurion Coal Mining Pty Ltd currently undertake the following monitoring and assurance actions for GHG emissions:

- Monthly review of incoming and outgoing reports. This includes disclosure to internal key stakeholders of set annual emission intensity targets and Safeguard Baseline, and how Centurion Coal Mining is tracking against them;
- Quarterly report review of activity data and emission estimates;
- Annual review and summary report as outlined in **Section 3.0**; and
- Targeted third-party voluntary assurance engagements on NGER emissions and energy estimates.

Annual review and voluntary assurance engagements are undertaken at the completion of each financial year, to align with the reporting requirements of the NGERs Act, and are completed prior to the submission of facility emissions reports to the Clean Energy Regulator, due annually on 31 October.



5.0 GHG Risk Assessment

The risk that impacts of GHG emissions associated with the Project will have a material change on Queensland's Climate Outcomes is considered Low (**Table 5.1**).

Table 5.1 Greenhouse Gas Risk Assessment

Potential Impact	Likelihood	Consequence	Risk Rating	Justification
Fugitive emissions of GHG associated with the Project will contribute to climate change	Possible (3)	Minor (1)	Low	Although any contribution to GHG may contribute to climate change in theory, it is unlikely that the scale of the contribution of fugitive emissions of greenhouse gases from the project would result in a material change in climate outcomes. Nonetheless, all practicable strategies to reduce the risk of fugitive emissions of CSG throughout the life of the Project should be implemented.



