# Hail Creek Coking Coal (HCOC) Eastern Margin Extension – EPBC Referral

# Attachment C

**EPBC REFERRAL GREENHOUSE GAS ASSESSMENT (SLR, 2025h)**

# Hail Creek Open Cut Eastern Margin Extension

## EPBC Referral - Greenhouse Gas Assessment

### Hail Creek Coal Holdings Pty Limited

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Prepared by:

**SLR Consulting Australia**

SLR Project No.: 626.30128.00020

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## Revision Record

| Revision | Date | Prepared By | Checked By | Authorised By |
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| V2.0 | 15 August 2025 | K Lawrence | J A Cox | K Lawrence |
| V3.0 | 10 December 2025 | N Shahbazi | K Lawrence | K Lawrence |
| | | | | |

# Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Hail Creek Coal Holdings Pty Limited (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.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

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# Acronyms and Abbreviations

| Abbreviation or term | Description |
|---|---|
| % | percent |
| ACCU | Australian carbon credit units |
| ANREU | Australian National Registry Emissions Unit |
| $CH_4$ | methane |
| $CO_2$ | carbon dioxide |
| $CO_2$-e | $CO_2$ equivalents |
| Cth | Commonwealth of Australia |
| DCCEEW | Department of Climate Change, Energy, the Environment and Water |
| DETSI | Department of Environment, Tourism, Science and Innovation |
| DISER | Department of Industry, Science Environment and Resources (now DETSI) |
| EA | Environmental Authority |
| EP Act | *Environmental Protection Act 1994* |
| ERBC Act | *Environment Protection and Biodiversity Conservation Act 1999* |
| ERF | Emissions Reductions Fund |
| FY | financial year |
| GCAA | Glencore Coal Assets Australia |
| GHG | greenhouse gas |
| GJ | gigajoule |
| ha | hectares |
| HCC | Hail Creek Holdings Pty Limited |
| HCOC | Hail Creek Open Cut |
| LPG | liquid petroleum gas |
| ML | Mining Leases |
| Mtpa | million tonnes per annum |
| $N_2O$ | nitrous oxide |
| NCAS | National Carbon Accounting System |
| NDC | Nationally Determined Contribution |
| NGA | National Greenhouse Accounts |
| NGER Act | *National Greenhouse and Energy Reporting Act 2007* |
| ROM | Run of Mine |
| $SF_6$ | sulfur hexafluoride |
| SLR | SLR Consulting Australia Pty Ltd |
| TAGG | Transport Authorities Greenhouse Group |
| UN | United Nations |
| UNFCCC | United Nations Framework Convention on Climate Change |

# 1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) was engaged by Hail Creek Holdings Pty Limited (HCC), a subsidiary of Glencore Coal Assets Australia (GCAA) to prepare a greenhouse gas (GHG) assessment for the proposed extension of Hail Creek Open Cut (HCOC) mine (the Action), located in the Bowen Basin in Central Queensland.

HCOC is authorised through Environmental Authority (EA) EPML00661913 and Mining Leases (MLs) 4738 and 700026. Construction of HCOC commenced in December 2001. HCC became the operator of HCOC in August 2018.

Coal is mined using conventional open-cut strip-mining methods, with approval to produce up to 20 million tonnes of product coal per annum (Mtpa). Coal is also approved to be mined by underground methods, however to date, the mine has not utilised underground mining methods for mining.

Due to changes in mine sequencing, improvements in mining efficiency and further resource definition, the Project proposes an extension to the approved mining footprint in four distinct areas, as shown in **Figure 1**.

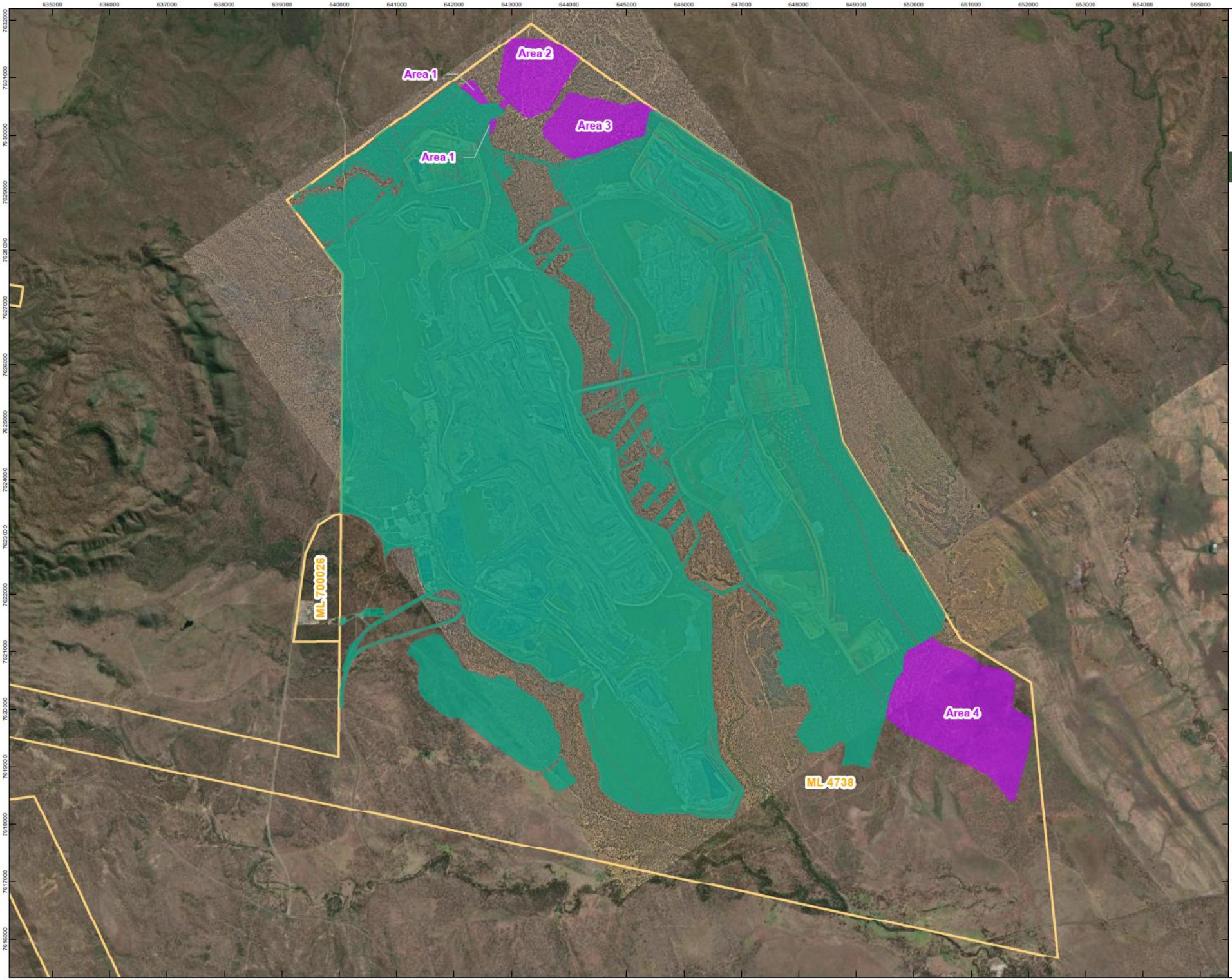
HCC is seeking approval for the Project from the Queensland Department of Environment, Tourism, Science and Innovation (DETSI), under Section 226 of the *Environmental Protection Act 1994* (EP Act). The Project may also require approval from the Commonwealth Minister for the Environment and Water under Part 3, Division 1 provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) should the Project be determined to be a controlled action.

The Action for which a controlled action determination is being sought under the EPBC Act involves mining operations within the individual areas provided below:

- Kemmis Pit Extension (Area 1) - clearing and mining of an additional 6.3 hectares (ha) of surface disturbance, comprising two small polygons of approximately 4.5 ha and 1.8 ha, to extend the currently approved footprint of Kemmis Pit;
- Homevale Pit and Hail Creek Diversion (Area 2) - clearing and mining of 136.6 ha for a new ‘Homevale Pit’ located in the corner of ML4738 to the north;
- Exevale Pit Extension (Area 3) - clearing and mining of an additional 140.3 ha of surface disturbance to extend the currently approved footprint of Exevale Pit; and
- Carrinyah Pit Extension (Area 4) - clearing and mining of an additional 396.0 ha of surface disturbance to extend the currently approved footprint of Carrinyah Pit.

A total additional approximate 679.2 ha of land is proposed to be disturbed.

An analysis of the potential greenhouse gas (GHG) emissions that would arise from the Proposed Action has been undertaken to inform the EPBC Act referral. This report presents a summary of the predicted GHG emissions that will arise from the Action, should it be approved, along with the proposed mitigation and management measures to be implemented.




HAIL CREEK

EPBC REFERRAL

**FIGURE 1**
**PROPOSED AMENDMENT AREAS**

LEGEND

- EA Authorised Extent of Disturbance
- EA Amendment Proposed Extent of Disturbance
- Mining Lease

0 0.5 1 km

| | |
|---|---|
| Coordinate System: | GDA2020 MGA Zone 55 |
| Scale: | 1:60,000 at A3 |
| Project Number: | 626.30128 |
| Date: | 24-Mar-2025 |
| Drawn by: | AS |

SLR

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# 2.0 Legislative and Policy Context

There are concurrent legislative frameworks for the regulation of GHG emissions at both the Commonwealth and State levels.

## 2.1 Commonwealth

Commonwealth regulatory frameworks for the management and reduction of GHG emissions include the Australian Carbon Credit Unit (ACCU) Scheme and the Safeguard Mechanism established under the *National Greenhouse and Energy Reporting Act 2007* (NGER Act).

The ACCU Scheme aims to provide incentives for a range of organisations and individuals to adopt new practices and technologies to reduce their emissions, and to provide a legal obligation for Australia's top emitters to maintain their emissions below their emissions limit (or baseline) (defined by the Safeguard Mechanism). It allows for the generation of ACCUs, which are a tradeable financial product, with one ACCU representing one tonne of carbon dioxide equivalents ($CO_2$-e) that would have otherwise been released to the atmosphere.

The Australian National Registry Emissions Unit (ANREU) is an online system that allows users to track ownership and transactions of emissions units, including ACCUs. Organisations and individuals can own, transfer, cancel, deliver, surrender or relinquish ACCUs via ANREU.

The Safeguard Mechanism was established under the NGER Act and applies to facilities with direct Scope 1 emissions of more than 100,000 tonnes of $CO_2$-e per year, which are defined as "covered facilities". HCOC is a covered facility under the Safeguard Mechanism.

This framework establishes a baseline against which a facility's emissions reported under the NGER Act are compared. During 2022 – 2023, major reforms to the Safeguard Mechanism were enacted to reflect Australia's emissions reduction targets set out in the *Climate Change Act 2022* (Cth) and its Nationally Determined Contribution (NDC) under the Paris Agreement, which are currently as follows:

- Reducing Australia's net greenhouse gas emissions to 43% below 2005 levels by 2030;
- Reducing Australia's net greenhouse gas emissions by 62–70% below 2005 levels by 2035 to support the transition to net zero; and
- Reducing Australia's net greenhouse gas emissions to zero by 2050.

These reforms require covered facilities to deliver a proportional share of Australia's 2030 climate target. Following the reforms, baselines will decline in a predictable and gradual way across all covered facilities. The reforms are based on emission intensity, production-adjusted, and subject to legislated decline rates.

The decline rate for Safeguard baselines is currently as follows:

- 4.9% per year to 2029 - 2030; and
- 3.285% from 2030 onwards.

It is anticipated that further refinements to the Safeguard Mechanism may be required to support achievement of Australia's 2035 NDC.

If a facility exceeds its baseline, they have the option to surrender ACCUs or Safeguard Mechanism Credits (SMCs) to offset emissions. If a facility's emissions are less than its baseline, it will be awarded SMCs which it can choose to bank for future use or sell to other Safeguard facilities.

## 2.2 Queensland Government

### 2.2.1 Queensland Climate Action Plan

The Queensland Government has committed to action on climate change through the Queensland Climate Action Plan, and also in 2024 committed to the following renewable energy targets[1] and emissions reduction targets[2]:

- 50% renewable energy target by 2030;
- 70% renewable energy by 2032;
- 80% renewable energy by 2035;
- 30% emission reduction below 2005 levels by 2030;
- 75% emissions reduction below 2005 levels by 2035; and
- Zero net emissions by 2050.

The current Queensland Government however has announced its intent to reappeal the above renewable energy targets, while still supporting Australia's net-zero goal by 2050[3]. The current policy favours an energy portfolio that combines fossil fuel generation with selective renewable projects, emphasising grid reliability and economic stability. Under the recently released Energy Roadmap, State-owned coal-fired power stations will continue to operate longer than previously planned, with gas also playing a bigger role in the energy mix to support the grid. There is also an increased focus on private investment for renewables and firming capacity, with the establishment of the Queensland Energy Investment Fund.

The Queensland Government is also developing the following six sector emissions reduction plans to ensure all industries are engaged in realising a net zero future:

- Energy;
- Resources;
- Agriculture and land;
- Transport;
- Industry; and
- Built environment.

### 2.2.2 Guideline: Greenhouse Gas Emissions

In May 2024, DETSI released the *Guideline Greenhouse Gas Emissions* (the Guideline) (DETSI 2025), which clarifies existing application requirements under the EP Act and provides information about how to meet these requirements in relation to GHG emissions. The Guideline sets out the minimum expectations for GHG emissions information to be provided with applications for new EAs and applications to amend existing EA's and was referred to in preparing the GHG Assessment report provided as supporting information for the EA Amendment Application for the Action.

### 2.2.3 HCOC Approvals

There are no specific conditions contained within the HCOC EA relating to the management of GHG emissions.

[1] *Energy (Renewable Transformation and Jobs) Act 2024*

[2] *Clean Economy Jobs Act 2024*

[3] *Energy Roadmap, October 2025*

# 3.0 HCOC Coal Production and Export Markets

## 3.1 Annual Extraction and Production Rates

Both coking and bituminous (thermal) coal are produced by HCOC. **Table 1** presents the proposed Run of Mine (ROM) coal extraction rates for the mine plan split between the currently approved and Action mining areas.

The timing of the Project's production quantities and associated GHG emissions is subject to the required approvals being granted. The expected coal product throughputs from the current mine plan, split between the currently approved and Action mining areas, are presented in **Table 2**. As indicated by **Table 2**, the combined coking and thermal coal annual production rates are well within the current EA production limit of 20 Mtpa ROM coal.

**Table 1 HCOC ROM Extraction Rates**

| Year | Estimated ROM Extraction Rate (tonnes/annum) | | |
|---|---|---|---|
| | Mine Plan Excluding Action | Action Only | Mine Plan Including Action |
| 2026 | 9,563,920 | 457,629 | 10,021,550 |
| 2027 | 9,056,405 | 571,668 | 9,628,074 |
| 2028 | 8,051,756 | 1,776,499 | 9,828,255 |
| 2029 | 4,790,676 | 2,595,376 | 7,386,053 |
| 2030 | 5,599,540 | 1,536,809 | 7,136,349 |
| 2031 | 5,398,946 | 2,532,846 | 7,931,792 |
| 2032 | 6,200,122 | 1,764,636 | 7,964,759 |
| 2033 | 5,380,130 | 771,249 | 6,151,379 |
| 2034 | 3,289,915 | 2,787,365 | 6,077,280 |
| 2035 | 362,357 | 3,500,214 | 3,862,571 |
| 2036 | 0 | 4,252,443 | 4,252,443 |
| 2037 | 0 | 3,873,888 | 3,873,888 |
| 2038 | 0 | 2,497,038 | 2,497,038 |
| **Total** | **57,693,767** | **28,917,661** | **86,611,429** |

**Table 2 HCOC Coal Production Rates**

| Year | Estimated Coal Production Rate (tonnes/annum) | | |
|---|---|---|---|
| | Mine Plan Excluding Action | Action Only | Mine Plan Including Action |
| **Coking Coal** | | | |
| 2026 | 5,269,592 | 260,689 | 5,530,281 |
| 2027 | 5,293,759 | 293,236 | 5,586,995 |
| 2028 | 4,664,791 | 837,636 | 5,502,427 |
| 2029 | 3,071,726 | 1,398,743 | 4,470,470 |
| 2030 | 3,538,838 | 1,014,392 | 4,553,230 |
| 2031 | 3,710,154 | 1,219,555 | 4,929,709 |
| 2032 | 4,330,218 | 446,099 | 4,776,317 |
| 2033 | 3,616,283 | 483,121 | 4,099,404 |
| 2034 | 1,969,372 | 1,791,101 | 3,760,473 |
| 2035 | 281,731 | 2,147,392 | 2,429,123 |
| 2036 | 108,794 | 2,609,640 | 2,718,433 |
| 2037 | 100,680 | 2,430,107 | 2,530,787 |
| 2038 | 59,156 | 1,619,482 | 1,678,638 |
| **Total** | **36,015,093** | **16,551,193** | **52,566,286** |
| **Thermal Coal** | | | |
| 2026 | 2,781,165 | 108,916 | 2,890,082 |
| 2027 | 2,443,669 | 162,763 | 2,606,431 |
| 2028 | 2,254,257 | 525,698 | 2,779,955 |
| 2029 | 1,253,062 | 656,595 | 1,909,657 |
| 2030 | 1,225,228 | 308,975 | 1,534,203 |
| 2031 | 1,152,479 | 731,851 | 1,884,331 |
| 2032 | 1,466,852 | 739,304 | 2,206,156 |
| 2033 | 1,103,182 | 196,486 | 1,299,669 |
| 2034 | 854,342 | 666,794 | 1,521,136 |
| 2035 | 141,410 | 897,221 | 1,038,632 |
| 2036 | 41,371 | 1,084,422 | 1,125,793 |
| 2037 | 36,306 | 915,406 | 951,711 |
| 2038 | 1,073,656 | 501,369 | 1,575,025 |
| **Total** | **15,826,978** | **7,495,801** | **23,322,779** |

## 3.2 Export Markets

HCOC's export market countries for the 2022 - 2024 calendar years are listed in **Table 3**. HCOC's primary export market is Asia, with China being the largest export destination over the past three years. It is anticipated that future export destinations for HCOC coal will continue to follow similar patterns. However, as coal sales are market-driven, export destinations may change in the future.

The countries that HCOC coal has been exported to, as identified below, all have NDCs under the Paris Agreement, or have followed international standards recognised by the UNFCCC and published their own NDCs document in support of the Paris Agreement.

**Table 3 HCOC Saleable Coal Export Destinations**

| Export Destination | NDC Status |
|---|---|
| Brazil<br>Chile<br>China<br>India<br>Indonesia<br>Japan<br>South Africa<br>South Korea<br>Thailand<br>Republic of Türkiye<br>Ukraine<br>Uruguay<br>Vietnam | NDC published |
| Belgium<br>France<br>Germany<br>Italy<br>Luxembourg<br>Netherlands<br>Poland<br>Spain | EU member; NDC submitted as part of the EU bloc |
| Hong Kong | Hong Kong is not a separate Party to the Paris Agreement; its climate actions are included under China's NDC. |
| Taiwan | Taiwan is not recognised as a sovereign state by the United Nations (UN). As a result, they are not a member of the UN and cannot participate in the UNFCCC, which oversees the Paris Agreement. However, Taiwan has followed the international standards recognised by the UNFCCC and published their own NDCs document in support of the Paris Agreement. |

Historically, the top five export market countries for HCOC coal are (in order of largest to smallest):

1 China
2 Japan
3 South Korea
4 Vietnam
5 Republic of Türkiye

# 4.0 GHG Assessment Methodology

## 4.1 Overview

The calculation of GHG emissions from the Action has been performed in a five-stage desktop assessment process:

1 Definition of the Action boundary (i.e. the Action disturbance footprint);

2 Identification of GHG emission sources within the Action during construction and operation;

3 Identification of emission calculation methods and emission factors for each source;

4 Identification of the activity data for each emission source required for the calculations; and

5 Calculation of estimated GHG emissions.

Emissions were predominately calculated based on the NGER Measurement Determination (NGER Measurement Determination 2008) and the Australian National Greenhouse Account Factors (DCCEEW 2025).

The GHG emissions estimated for the Action were compared against the most recent publicly available state and national GHG emissions to assess their potential contribution to Australia's emissions inventory and thus their potential impact on Australia's ability to meet GHG reduction targets and policies.

A number of assumptions have been relied upon in compiling the GHG emission inventory for the Action. GHG emissions from the key sources identified for the Action have been estimated based on the current emission factors published for use in reporting GHG emissions under the NGER Scheme, which rely on estimates of the level of intensity of each activity (referred to as activity data). This includes parameters such as projected fuel consumption rates and electricity consumption. The activity data used in the calculations has been compiled based on the current available Action design information and in consultation with HCOC management. The basis of the emission estimates and activity data are detailed in the relevant subsections in **Section 4.4**.

## 4.2 Boundary Definition

The boundaries adopted for the GHG emission inventory compiled for the Action as part of this GHG assessment are as follows:

- As there is no construction phase associated with the Action other than land clearing, which is part of normal operational activities for the mine, a separate emission inventory for construction has not been compiled;
- GHG emissions will occur during decommissioning and rehabilitation of the mine at the end of its life. Due to the uncertainty regarding the timing and activity data relevant to the mine closure and rehabilitation, and given that the Action would not significantly impact the scale of emissions, GHG emissions associated with the end-of-life phase of the mine and associated infrastructure have not been estimated as part of this study;
- The assessment has considered Scope 1, Scope 2 and Scope 3 emissions associated with the Action; and
- The geographical boundary set for the Scope 1 and Scope 2 emissions considered in the GHG assessment covers the HCOC site. All related activities outside of this

geographical boundary with significant GHG emissions have been addressed under Scope 3.

## 4.3 Identification of GHG Emission Sources

GHG emission sources were identified through a review of previous GHG emission inventories compiled for the HCOC, and the Action description. The potential emissions associated with the Action that were considered in preparing this GHG assessment are listed below. In relation to Scope 3 emissions, the assessed emission sources are limited to the main sources of GHG emissions associated with the proposed future HCOC operations (Action only, and for the mine plan including the Action).

- Scope 1:
  - Land clearing;
  - Fossil fuel combustion in mobile and fixed plant;
  - Consumption of oils and greases;
  - Fugitive emissions from extraction of coal; and
  - Emissions associated with the leakage of $SF_6$ from switchgear.
- Scope 2:
  - Electricity consumption.
- Scope 3:
  - Production and supply of fuels consumed;
  - Transmission losses associated with electricity consumption;
  - Emissions associated transfer of product coal via rail to Dalrymple Bay Coal Terminal;
  - Emissions associated with transfer of product coal via ship from Dalrymple Bay Coal Terminal to overseas ports; and
  - Emissions associated with combustion of product coal.

There will also be GHG emissions from HCOC associated with the following activities/sources, however due to the Action having minimal impact compared to current emissions, and thus their expected small contribution to overall emissions (likely <1%), they were deemed to not be material to the assessment and were excluded from the emission inventory:

- Refrigerant leakage from cooling systems; and
- Emissions from the on-site and off-site treatment and disposal of solid and liquid waste.

The emission sources that were included in the emission calculations are summarised in **Table 4**.

**Table 4 Action Scope 1, Scope 2 and Scope 3 GHG Emission Sources**

| Emission Source | Scope 1/ Scope 2 Reportable under NGER | Scope 1 | Scope 2 | Scope 3 |
|---|---|---|---|---|
| Vegetation clearing | No | ✓ | × | × |
| Fugitive emissions from extraction of coal | Yes | ✓ | × | × |
| Use of diesel fuel | Yes | ✓ | × | ✓ |
| Use of unleaded petrol | Yes | ✓ | × | ✓ |
| Consumption of electricity | Yes | × | ✓ | × |
| Transmissions losses from purchased electricity | No | × | × | ✓ |
| Storage of sulphur hexafluoride gases | Yes | ✓ | × | × |
| Use of oils and greases | Yes | ✓ | × | ✓ |
| Transport of product by rail and ship | No | × | × | ✓ |
| Usage of product coal by end user | No | × | × | ✓ |

## 4.4 Calculation Methods and Emission Factors Used

A summary of the emission estimation methods and sources of emission factors used is provided in **Table 5**. Further information is provided below.

### 4.4.1 Vegetation Clearing

Clearing of vegetation results in GHG emissions as it eliminates carbon sinks - plants and soil that naturally absorb and store carbon dioxide - and releases the stored carbon into the atmosphere when that biomass is removed or decomposes. Vegetation clearing emissions are not reportable under the NGER Scheme and no emission calculation methodologies or emission factors are given for GHG emission estimation for land clearing in the *Measurement Determination 2008* or the National Greenhouse Accounts (NGA) Factors Workbook published each year.

GHG emissions from vegetation clearing associated with the Action have been calculated using the Department of Industry, Science Environment and Resources (DISER) FullCAM model to derive an emission factor in t $CO_2$-e per hectare cleared. FullCAM was developed under the National Carbon Accounting System (NCAS) at the then Australian Greenhouse Office to provide a dynamic account of the changing stocks of carbon in Australia's land systems since 1970 by integrating data on land cover change, land use and management, climate, plant productivity, and soil carbon over time. FullCAM estimates carbon stock change and GHG emissions at fine spatial and temporal scales, and uses a wide range of spatially referenced data.

The FullCAM model was run with reference to the *Requirements for use of the Full Carbon Accounting Model (FullCAM) with the Emissions Reduction Fund (ERF) methodology determination: Carbon Credits (Carbon Farming Initiative—Avoided Clearing of Native Regrowth) Methodology Determination 2015* (DISER 2020).

### 4.4.2 Fugitive Emissions from Coal Mining

Historically, fugitive emissions from the extraction of coal at HCOC have been estimated using the default Method 1 emission factor from the NGER Measurement Determination.

Since 2022, HCOC has conducted drilling programs and technical studies to develop a gas assignment model for the in-situ methane ($CH_4$) and $CO_2$ in place at HCOC, prior to extraction of coal, which has allowed HCOC to first commence reporting under Method 2 for the FY23/24 period. This gas assignment model has also been used to estimate the site-specific fugitive emissions each year of the proposed Action when extracting coal. The resulting annual $CH_4$ and $CO_2$ emission estimates were provided to SLR for use in compiling the Scope 1 emissions inventory.

**Table 5 GHG Emission Calculation Methodologies**

| Emission Source | Details | Emission Factors |
|---|---|---|
| Vegetation clearance | Loss of carbon sink | FullCAM (DISER 2020) |
| Diesel Use - stationary | Power generation and off-road equipment | Schedule 1, Part 3, NGER Measurement Determination 2008 (Compilation No. 19) |
| LPG Use - Stationary | | |
| Diesel Use - transport | Road registered vehicles | Schedule 1, Part 4, Division 4.3, NGER Measurement Determination 2008 (Compilation No. 19), Heavy duty (Euro I) |
| Gasoline Use - transport | | Schedule 1, Part 4, Division 4.2, NGER Measurement Determination 2008 (Compilation No. 19), post-2004 vehicles |
| Consumption of petroleum-based oils and greases | - | Schedule 1, Part 3, NGER Measurement Determination 2008 (Compilation No. 19) |
| $SF_6$ leakage | Gas-insulated switchgear and circuit breaker applications | Part 4.5, Chapter 4, NGER Measurement Determination 2008 (Compilation No. 19) |
| Fugitive emissions | Fugitive $CH_4$ and $CO_2$ associated with extracted ROM coal | Method 2 HCOC gas assignment model for the in-situ $CH_4$ and $CO_2$ |
| Electricity consumption | Power generation (Scope 2) and transmission losses (Scope 3) | Location-based approach, using forecasted emission factors from *Australia's Emissions Projections 2023* (DCCEEW 2024) out to 2040. For 2040 to 2050, it was assumed that the emission factors will continue to decline linearly to zero by 2050, in line with Australia's commitment to net zero emissions by 2050 |
| Product coal transport | Rail | Aurizon Emissions Calculator (https://www.aurizon.com.au/sustainability/environment/emissions-calculator) |
| | Ship | Mobile Combustion Greenhouse Gas Protocol Transport Calculation Tool, version 2.7 |
| Combustion of product coal by end user | Bituminous coal<br>Coking coal | National Greenhouse Accounts Factors (DCCEEW 2025) |



# 5.0 Estimated GHG Emissions for the Proposed Action

## 5.1 Scope 1 and Scope 2 Emissions

The annual estimated Scope 1 and Scope 2 GHG emissions for the Action (i.e. emissions associated with the mining of coal within the proposed extension areas only) are presented in **Figure 2** and **Table 6**.

**Figure 2** shows that the main sources of Scope 1 emissions over the life of the Action would be associated with fugitive emissions from coal extraction (63%), and the consumption of diesel in non-road registered vehicles (35%). Scope 2 emissions from the generation of electricity consumed as a result of the Action are estimated to be just over 1% of the total Scope 1 and Scope 2 emissions.

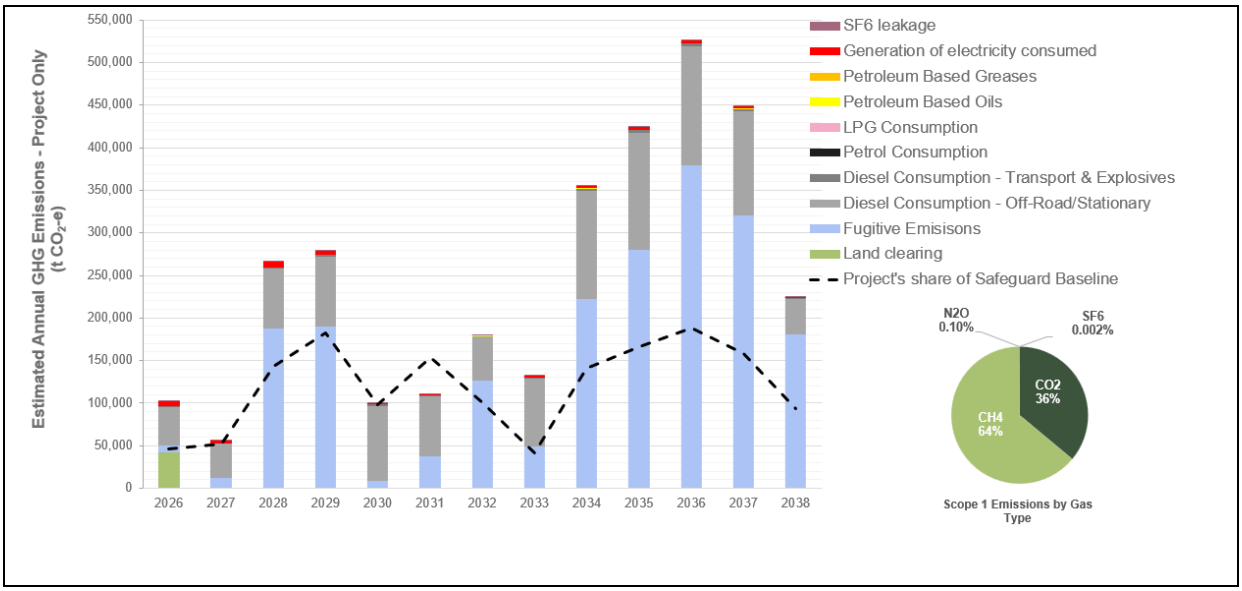
Based on the threshold for medium to high Scope 1 and Scope 2 GHG emission category emitting applications set out in the Guideline of 25,000 tonnes $CO_2$-e or more per year (DETSI 2025), the Action is classified as a **medium to high emitter**.

The total Scope 1 emissions estimated from the Action correlates to an approximate average emissions intensity value of 0.1095 t $CO_2$-e per t ROM coal.

The Action's net Scope 1 emission intensity will be subject to HCOC's requirements under the Safeguard Mechanism, and it is expected that the Action's net Scope 1 emissions (and intensity) will be materially lower than the gross emissions (and intensity) estimates presented herein. The Project's net Scope 1 emission intensity under the Safeguard Mechanism is estimated to be 0.0526 t $CO_2$-e per t ROM coal which is approximately 48% of the gross emissions intensity estimates presented above.

In addition, as noted in **Section 3.0** the combined coking and thermal coal annual production rate projections for the mine plan including the Action are well below the current EA limit of 20 Mtpa ROM coal (see **Table 2**). The GHG emission projections for the ongoing operations at HCOC are therefore also well below the levels that would occur if mining was to occur at the approved production rate.

**Figure 2 Estimated Annual Scope 1 and 2 GHG Emissions – Action Only**



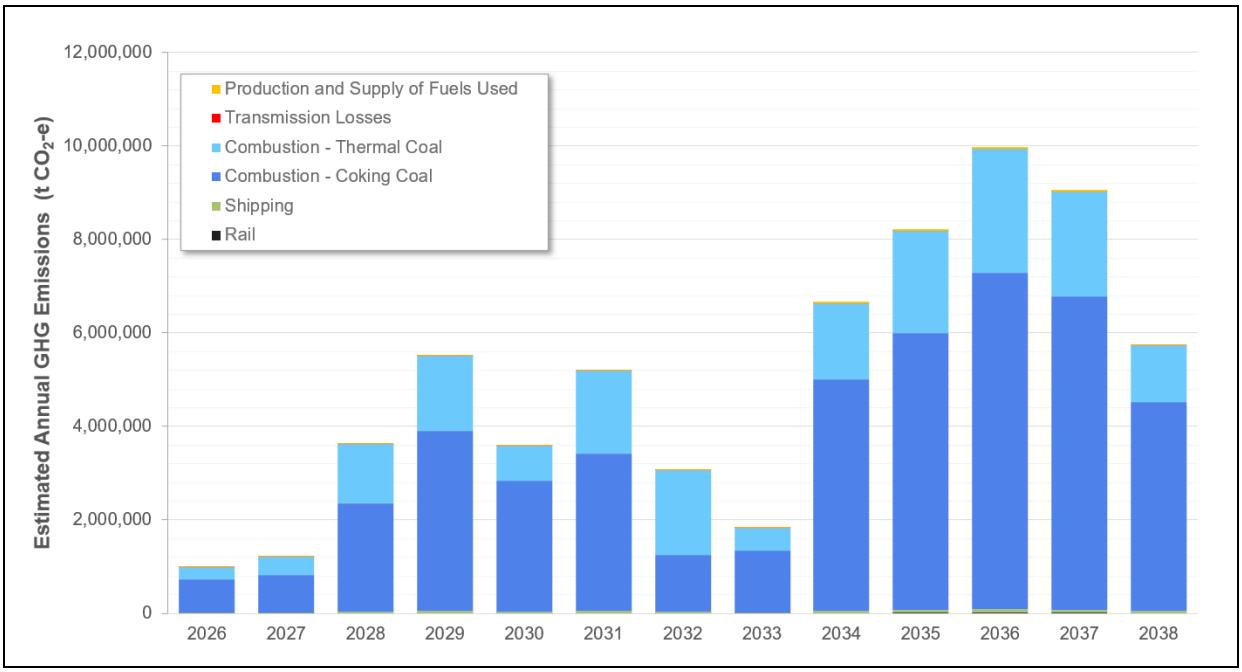
## Table 6 Estimated Annual Scope 1 and 2 GHG Emissions (Action Only)

| Mine Plan Schedule | Estimated Scope 1 Emissions (t $CO_2$-e) for the Action | | | | | | | | | | | Estimated Scope 2 Emissions for the Action (t $CO_2$-e) | Total Estimated Scope 1 + 2 Emissions for the Action (t $CO_2$-e) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Vegetation Clearing | Fuel Combustion | | | | Fugitive Emissions | | | Oils and Greases | $SF_6$ Leakage | Total Scope 1 Emissions | | |
| | | $CO_2$ | $CH_4$ | $N_2O$ | Total | $CO_2$ | $CH_4$ | Total | | | | | |
| 2026 | 42,335 | 45,706 | 67 | 134 | 45,907 | 405 | 7,742 | 8,147 | 116 | - | 96,505 | 5,731 | 102,236 |
| 2027 | - | 40,689 | 59 | 118 | 40,866 | 464 | 11,668 | 12,132 | 97 | | 53, 094 | 2,631 | 55,725 |
| 2028 | - | 71,863 | 105 | 210 | 72,179 | 629 | 186,721 | 187,350 | 178 | | 259,706 | 5,946 | 265,652 |
| 2029 | - | 83,431 | 123 | 245 | 83,799 | 953 | 189,284 | 190,237 | 208 | | 274,244 | 5,164 | 279,408 |
| 2030 | - | 89,116 | 130 | 259 | 89,505 | 702 | 8,174 | 8,876 | 226 | | 98,606 | 1,877 | 100,483 |
| 2031 | - | 71,152 | 103 | 206 | 71,461 | 1,960 | 35,959 | 37,919 | 210 | | 109,590 | 1,099 | 110,689 |
| 2032 | - | 52,174 | 76 | 151 | 52,401 | 1,019 | 125,441 | 126,460 | 162 | | 179,024 | 638 | 179,662 |
| 2033 | - | 80,202 | 117 | 234 | 80,553 | 396 | 48,879 | 49,275 | 298 | | 130,127 | 1,551 | 131,678 |
| 2034 | - | 128,589 | 188 | 375 | 129,152 | 1,003 | 221,580 | 222,583 | 579 | | 352,315 | 3,179 | 355,494 |
| 2035 | - | 139,870 | 205 | 409 | 140,483 | 1,173 | 279,139 | 280,312 | 592 | | 421,387 | 3,068 | 424,455 |
| 2036 | - | 142,070 | 208 | 415 | 142,693 | 1,413 | 377,896 | 379,309 | 621 | 17 | 522,640 | 3,310 | 525,950 |
| 2037 | - | 124,248 | 182 | 363 | 124,793 | 759 | 319,973 | 320,732 | 608 | 17 | 446,149 | 2,470 | 448,620 |
| 2038 | - | 41,770 | 61 | 122 | 41,953 | 232 | 180,904 | 181,135 | 461 | 17 | 223,566 | 1,428 | 224,994 |
| **Annual Average** | **3,257** | **85,452** | **125** | **249** | **85,827** | **854** | **153,335** | **154,190** | **335** | **4** | **243,612** | **2,930** | **246,542** |
| **Total Life of Action** | **42,335** | **1,110,879** | **1,622** | **3,243** | **1,115,744** | **11,106** | **1,993,362** | **2,004,468** | **4,357** | **50** | **3,166,954** | **38,093** | **3,205,047** |

## 5.2 Scope 3 Emissions

The annual estimated Scope 3 GHG emissions are presented for the life of the Action in **Table 7** and **Figure 3**, which show that the main source of Scope 3 emissions from the Action are estimated to be associated with the combustion of the product coal, comprising approximately 93% of the total estimated Scope 3 emissions.

**Figure 3 Estimated Annual Scope 3 GHG Emissions – Action Only**



## Table 7 Annual Estimated Scope 3 Emissions (Action only)

| Mine Plan Schedule | Estimated Scope 3 Emissions (t $CO_2$-e) for the Action | | | | | | |
|---|---|---|---|---|---|---|---|
| | Production and Supply of Fuels* | Product Transport by Rail | Product Transport by Ship | Combustion - Coking Coal | Combustion - Thermal Coal | Transmission Losses | Total Scope 3 |
| 2026 | 11,475 | 1,054 | 7,967 | 719,737 | 265,373 | 777 | 1,006,384 |
| 2027 | 10,206 | 1,301 | 9,830 | 809,596 | 396,568 | 335 | 1,227,834 |
| 2028 | 18,036 | 3,889 | 29,388 | 2,312,630 | 1,280,854 | 728 | 3,645,525 |
| 2029 | 20,942 | 5,863 | 44,305 | 3,861,791 | 1,599,781 | 626 | 5,533,307 |
| 2030 | 22,374 | 3,775 | 28,527 | 2,800,635 | 752,812 | 221 | 3,608,342 |
| 2031 | 17,905 | 5,566 | 42,065 | 3,367,070 | 1,783,141 | 194 | 5,215,940 |
| 2032 | 13,141 | 3,381 | 25,553 | 1,231,636 | 1,801,299 | 98 | 3,075,108 |
| 2033 | 20,269 | 1,939 | 14,650 | 1,333,848 | 478,735 | 222 | 1,849,663 |
| 2034 | 32,640 | 7,011 | 52,983 | 4,945,050 | 1,624,629 | 424 | 6,662,737 |
| 2035 | 35,449 | 8,685 | 65,630 | 5,928,735 | 2,186,062 | 236 | 8,224,796 |
| 2036 | 36,035 | 10,537 | 79,630 | 7,204,955 | 2,642,172 | 276 | 9,973,605 |
| 2037 | 31,606 | 9,543 | 72,116 | 6,709,282 | 2,230,368 | 494 | 9,053,408 |
| 2038 | 10,985 | 6,050 | 45,717 | 4,471,227 | 1,221,576 | 143 | 5,755,698 |
| **Global Emissions** | | | | | | | |
| Annual Average | 21,620 | 5,276 | 39,874 | 3,515,091 | 1,404,875 | 367 | 4,987,104 |
| **Total** | **281,062** | **68,594** | **518,359** | **45,696,189** | **18,263,369** | **4,773** | **64,832,347** |
| **Inside Australia** | | | | | | | |
| Annual Average | 4,324 | 5,276 | - | - | - | 367 | 9,968 |
| **Total** | **56,212** | **68,594** | **-** | **-** | **-** | **4,773** | **129,580** |
| **Outside Australia** | | | | | | | |
| Annual Average | 17,296 | - | 39,874 | 3,515,091 | 1,404,875 | - | 4,977,136 |
| **Total** | **224,850** | **-** | **518,359** | **45,696,189** | **18,263,369** | **-** | **64,702,767** |

* For the purposes of categorising emissions as inside/outside of Australia, a 20/80 split was assumed based on the Australian refinery share of petroleum product sales in the 2024-25 financial year being reported as 23%, with the remainder imported (from: https://www.energy.gov.au/energy-data/australian-petroleum-statistics).



## 5.3 Summary

A summary of the estimated emissions is provided in **Table 8**, including estimates of:

- The total average annual scope 1, 2 and 3 (within Australia only) emissions as a percentage of Australia's annual national emissions for the latest reported year; and
- The total average annual scope 1,2 and 3 (within and outside Australia) emissions as a percentage of annual global emissions.

The estimated annual average Scope 1, 2 and 3 emissions within Australia from the Action (256,510 t $CO_2$-e) represent approximately 0.057% of Australia's 2022 emissions. The estimated annual average Scope 1, 2 and 3 emissions within and outside Australia from the Action (5,233,646 t $CO_2$-e) represent approximately 0.011% of the estimated global 2021 emissions.

**Table 8 Summary of Estimated GHG Emissions for the Action**

| Parameter | | Value | |
|---|---|---|---|
| Average annual scope 1 GHG emissions (tonnes $CO_2$-e) | (a) | | 243,612 |
| Total scope 1 GHG emissions (tonnes $CO_2$-e) | (b) | | 3,166,489 |
| Average annual scope 2 GHG emissions (tonnes $CO_2$-e) | (c) | | 2,930 |
| Total scope 2 GHG emissions (tonnes $CO_2$-e) | (d) | | 38,093 |
| Average annual scope 3 GHG emissions, reporting emissions within Australia and outside Australia separately (tonnes $CO_2$-e) | (e) | (within Australia) | 9,968 |
| | | (outside Australia) | 4,977,136 |
| Total scope 3 GHG emissions, reporting emissions within Australia and outside Australia separately (tonnes $CO_2$-e) | (f) | (within Australia) | 129,580 |
| | | (outside Australia) | 64,702,767 |
| Total GHG emissions (tonnes $CO_2$-e) | sum of (b), (d) and (f) | | 68,036,929 |
| Total average annual scope 1, 2 and 3 (within Australia only) emissions as a percentage of Australia's annual national emissions for the latest reported year, using the Department's published estimates for the Paris Agreement inventory [a] | - | | 0.057% |
| Total average annual scope 1,2 and 3 (within and outside Australia only) emissions as a percentage of annual global emissions, using global emissions data for the latest year reported available from the Climate Watch's Historical GHG emissions site [b] | - | | 0.011% |

a. ageis.climatechange.gov.au/ (446.4 Mt $CO_2$-e reported for year ending 2024, as per https://www.dcceew.gov.au/sites/default/files/documents/nggi-quarterly-update-december-2024.pdf.)

b. www.climatewatchdata.org/ghg-emissions?end_year=2024&start_year=1990 (49.51 Gt $CO_2$-e reported for 2022)

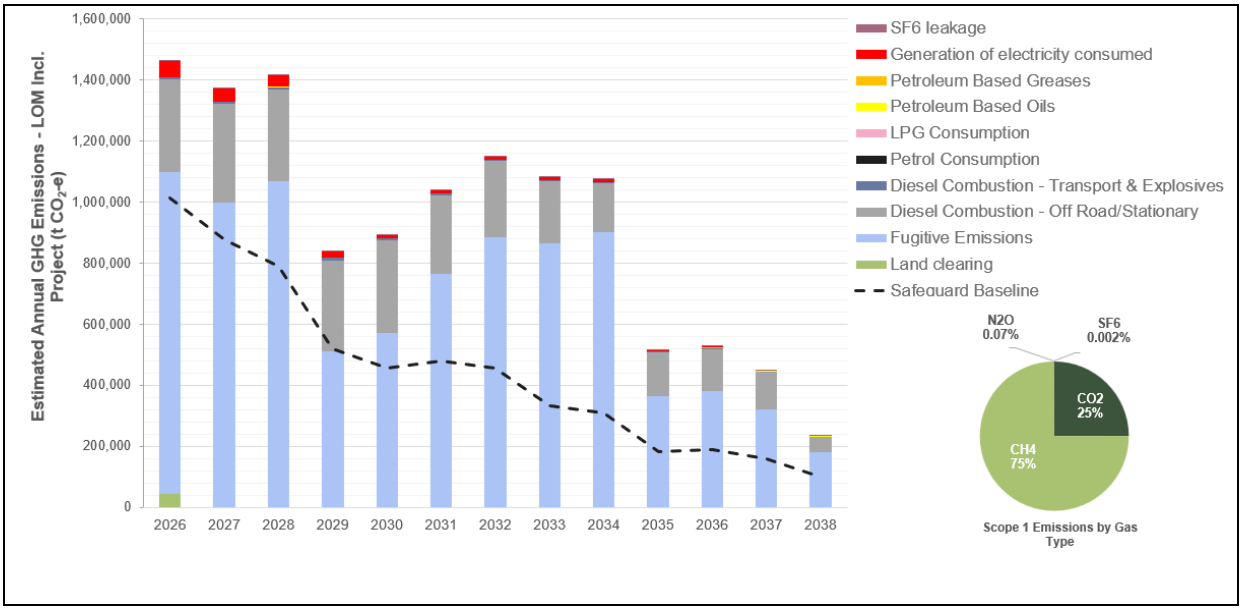
# 6.0 Management Measures

## 6.1 Safeguard Mechanism

As described in **Section 2.1**, HCOC is subject to the requirements of the Safeguard Mechanism, which has recently undergone significant reform. The Safeguard Mechanism reform is part of the Commonwealth Government's measures to achieve the national emission reduction target of 43% by 2030. Scope 1 GHG emissions associated with the Action will be included in the site's Safeguard Baseline assessments and reporting requirements as part of the overall HCOC operations.

Error! Reference source not found. presents the anticipated HCOC Safeguard Mechanism baseline, based on the site's approved site-specific emissions intensity determination, which represents the net annual Scope 1 emissions. This figure presents the estimated Scope 1 emissions from the HCOC operations (inclusive of the Action). Scope 1 emissions (excluding land clearing emissions) above this baseline will need to be mitigated or offset under the Safeguard Mechanism.

**Figure 4 Estimated Annual Scope 1 and 2 Emissions – Mine Plan Including the Action**




It is expected that the Action's net Scope 1 emissions (and intensity) will therefore be materially lower than its gross emissions (and intensity). As a covered facility, the Action will contribute proportionately to Australia's emissions reduction obligations through the Safeguard Mechanism, with declining baselines ensuring commensurate reductions in line with national targets and Australia's NDC commitments under the Paris Agreement.

## 6.2 Glencore's Climate Change Strategy

Glencore's Climate Change Strategy is to responsibly manage the decline of its global thermal coal portfolio. As the world moves towards a low-carbon economy, Glencore is focused on supporting the energy needs of today whilst investing in its transition metals portfolio. The metals Glencore produces, sources and markets will support the global ambition to decarbonise.

Consistent with the commitment to responsibly manage the decline of its thermal coal portfolio, Glencore has established total Scope 1, 2 and 3 emissions reduction targets, with a 15% reduction by the end of 2026, a 25% reduction by 2030, and a 50% reduction by the end of 2035, against a 2019 baseline, with a longer-term ambition of achieving net zero emissions by the end of 2050. These targets are comparable to the emission reduction objectives outlined in the QLD Climate Action Plan of:

- 30% emission reduction below 2005 levels by 2030;
- 75% emissions reduction below 2005 levels by 2035; and
- Zero net emissions by 2050.

Glencore's 2024-2026 Climate Action Transition Plan (Glencore 2024) outlines its position on climate and energy transition and the strategies it currently proposes to use to manage its transition, including:

- Recognising that thermal coal for electricity generation remains a necessary source of energy in many countries – providing grid stability, supporting energy access and security, and contributing to socioeconomic development in many markets. Glencore supports regulatory efforts to transition towards cleaner power generation and to reduce underlying demand for fossil fuels.
- To support anticipated global energy needs, Glencore plans to continue to progress select brownfield coal investments at existing mines but will continue to align with the Group emissions reduction targets and commitment to a managed decline of the coal portfolio overall.
- To continue driving improved operational performance in its industrial activities through a strong focus on identifying and delivering cost-effective emissions reduction opportunities.
- To continue to evolve technical and economic assessments to identify emissions reduction opportunities across the portfolio. This enables Glencore to identify and implement investments in abatement opportunities that are practically and commercially viable. Where opportunities are deemed not sufficiently ready, Glencore will continue to collaborate with industry and OEM partners to study and invest in research and development to drive technology maturation and scale requirements to improve commerciality.
- To identify and invest in value-enhancing growth opportunities in Glencore's metals portfolio that meet market requirements, including a focus on commodities fundamental for the transition to a low-carbon economy, such as copper, nickel, zinc, aluminium and cobalt.

## 6.3 Abatement Plan

Under the Guideline (DETSI 2025), EA applications for operations that exceed the threshold for medium to high emitters must also contain a GHG Abatement Plan. Where the amendment is for an EA that already has a GHG abatement plan in place, the application may include an amended GHG abatement plan.

HCC's plan to continue mining incorporates measures to maximise energy efficiency and minimise GHG emissions. HCC has also prepared a draft GHG Abatement Plan for the Action, which sets out the emissions management and reduction measures to be implemented for the Action.



HCC will continue to investigate means of reducing the emission intensity of its operations (including the Project) by maintaining current practices for fossil fuel minimisation, and investigating emerging technologies and further efficiencies for fossil fuel and open cut fugitive emissions reduction, such as:

- Continue to implement operational control efficiencies such as minimising haul distances, and optimising ramp gradients, payload management and scheduling activities to optimise equipment use.
- Continue to assess technologies to improve efficiencies and reduce emissions including through equipment purchase strategies, fuel switching, fleet electrification, open-cut pre-drainage, and use of electricity from renewable sources and consider implementation where reasonable and feasible.

# 7.0 Conclusions

The Action will generate an estimated 3.20 Mt $CO_2$-e of Scope 1 and 2 emissions related to the extraction and processing of ROM coal over the life of the Action.

Fugitive emissions are estimated to contribute 63% of the Action Scope 1 and 2 emissions, while diesel emissions from non-road registered vehicles are estimated to contribute 34%.

HCOC is subject to the requirements of the Safeguard Mechanism, which has recently undergone significant reform. The Safeguard Mechanism reform is part of the Commonwealth Government's measures to achieve the national emission reduction target of 43% by 2030. Scope 1 GHG emissions associated with the Action will be included in the site's Safeguard baseline assessments and reporting requirements as part of the overall HCOC operations. It is therefore expected that the Action's net Scope 1 emissions (and intensity) will be materially lower than the gross emissions (and intensity) estimates presented in this report.

Queensland's renewable energy targets are not considered to be substantially impacted by the Action as all product coal from the Action is proposed to be exported to offshore end users.

The Action is also estimated to generate a total of 64.83 Mt $CO_2$-e of Scope 3 emissions. The majority of these emissions will be generated by offshore customers when the product coal is combusted for electricity generation/steelmaking. Emission reduction strategies regarding Scope 3 emissions are the consideration of the respective countries that demand thermal and coking coal.

HCOC will continue to operate as a Safeguard facility. A draft GHG abatement plan has been developed for the Action in accordance with the Guideline (DETSI 2025) that sets out GHG emissions management and reduction measures for the Action.

# 8.0 References

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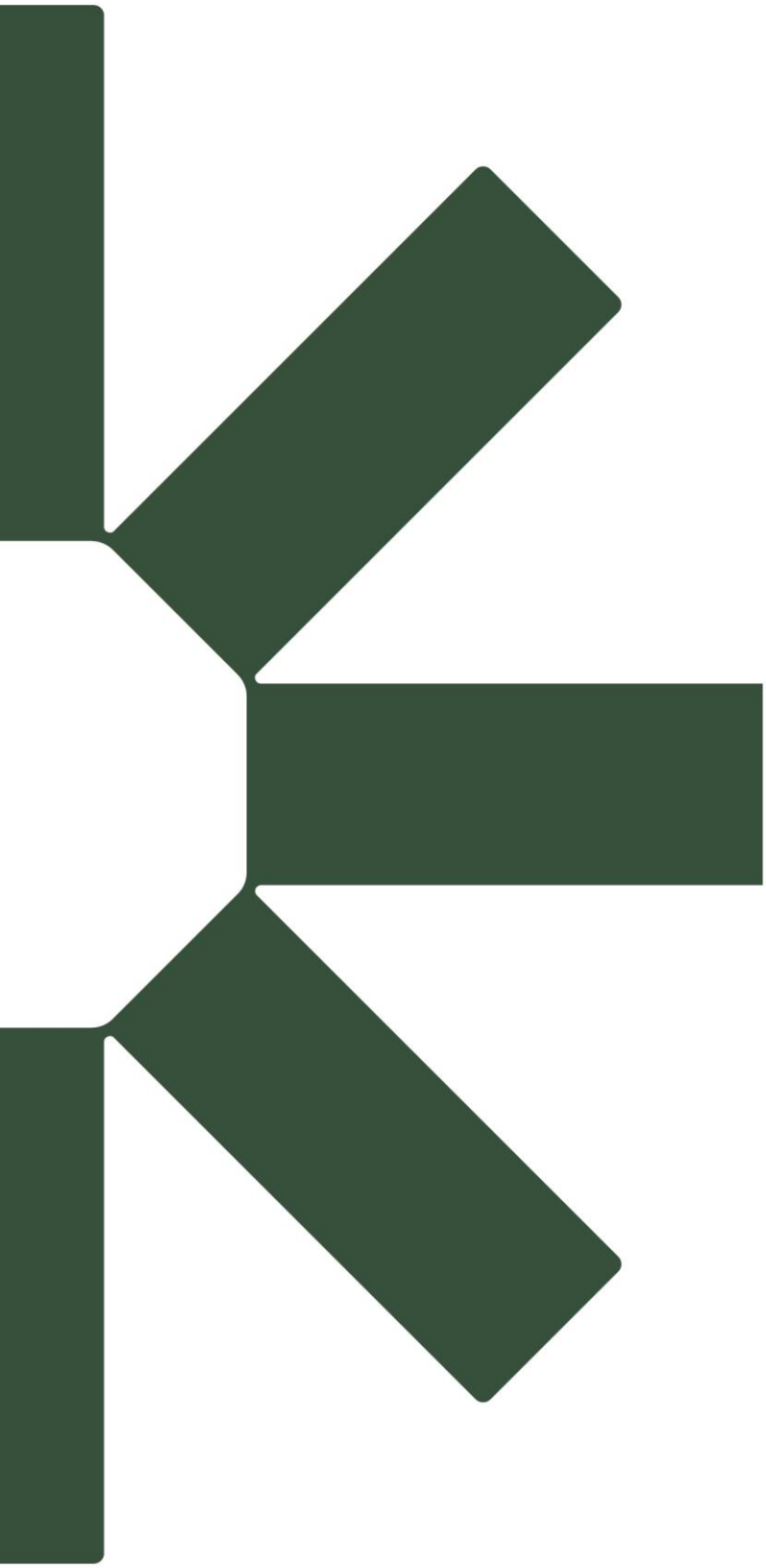

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