



Wilpinjong Coal Mine



Appendix C Greenhouse Gas Assessment

Peabody

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1 INTRODUCTION

The Wilpinjong Coal Mine is an existing open cut coal mining operation located approximately 40 kilometres north-east of Mudgee within the Mid-Western Regional Local Government Area (LGA), in central New South Wales (NSW) (Figures 1 and 2).

Wilpinjong Coal Pty Ltd (WCPL), a wholly owned subsidiary of Peabody Energy Australia Pty Ltd, is the owner and operator of the Wilpinjong Coal Mine.

The Wilpinjong Coal Mine originally operated under Project Approval (PA 05-0021) that was granted by the Minister for Planning under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) on 1 February 2006.

On 24 April 2017, WCPL was granted Development Consent (SSD-6764) for the Wilpinjong Extension Project. This consent provides for the continued operation of the Wilpinjong Coal Mine at rates of up to 16 million tonnes per annum of run-of-mine (ROM) coal, until 2033, and provides access to approximately 800 hectares (ha) of open cut extensions.

Development Consent (SSD-6764) has superseded Project Approval (PA 05-0021), which was surrendered by WCPL on 8 April 2020.

This Greenhouse Gas Assessment has been prepared to accompany the Modification Report for the proposed extension of the existing Pit 8 (Pit 8 Extension) within Exploration Licence 9399 and development of associated supporting infrastructure and facilities (the Modification). This Greenhouse Gas Assessment assesses the likely greenhouse gas emissions of the Modification, including consideration of Commonwealth and NSW climate change policy settings, guidelines and programs, and presents WCPL's plan for Wilpinjong Coal Mine greenhouse gas mitigation and adaptation, reflective of the status of the Modification.

This Greenhouse Gas Assessment was prepared in accordance with the *NSW Guide for Large Emitters – Guidance on how to prepare a greenhouse gas assessment as part of NSW environmental planning processes* (the Guide) (NSW Environment Protection Authority [NSW EPA], 2025).

1.1 WILPINJONG COAL MINE

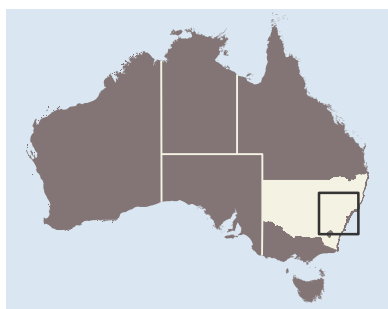
The Wilpinjong Coal Mine produces thermal coal products which are transported by rail to domestic customers for use in electricity generation and/or to port for export. Open cut mining operations are undertaken 24 hours per day, seven days per week.

The Wilpinjong Coal Mine is located within the Mid-Western Regional LGA, generally within the existing Mining Leases (ML) 1573, ML 1779, ML 1795 and ML 1846 (Figure 3).

The approved Wilpinjong Coal Mine includes some eight named open cuts (i.e. Pits 1-8), plus significant ancillary and supporting infrastructure (Figure 3).

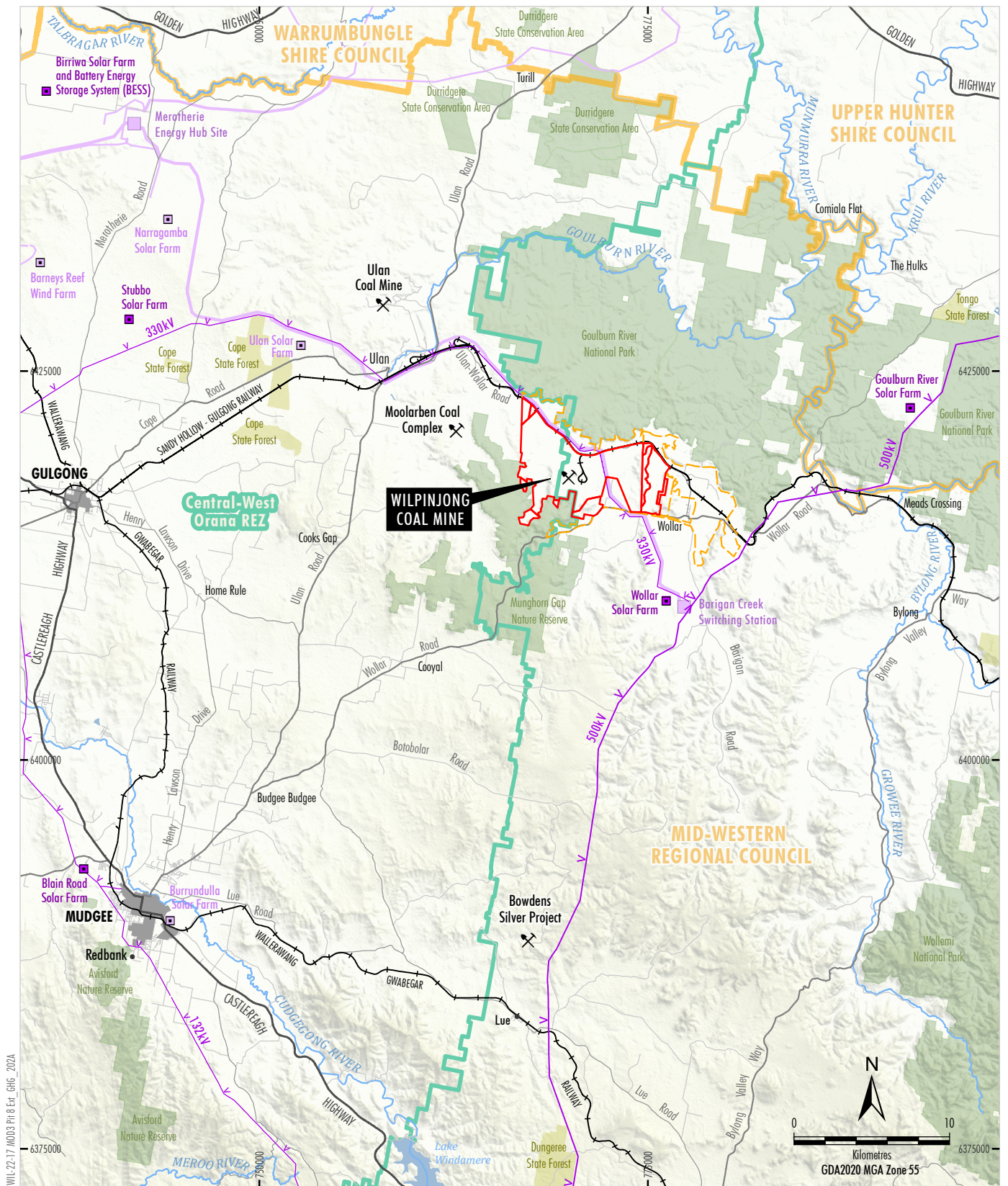
This infrastructure includes ROM coal storage, coal handling and processing, rail spur, rail loading, internal roads, pipelines, electricity distribution, workshops and water management structures.

Open cut coal mining at the Wilpinjong Coal Mine has been, or is currently undertaken in Pit 1 through to Pit 8, and early mining areas are under differing stages of mine rehabilitation.



Peabody
WILPINJONG COAL MINE
Regional Location

Figure 1



Source: NSW Spatial Services (2025); EnergyCo (2025)

LEGEND

- National Park, Nature Reserve or State Conservation Area
- State Forest
- Local Government Area
- Central-West Orana Renewable Energy Zone (REZ)
- Central-West Orana REZ Transmission Project Preferred Corridor
- Central-West Orana REZ Transmission Project Energy Hub
- Proposed Energy Generation Site
- Existing/Approved Energy Generation Site
- High Voltage Electricity Transmission Line
- Mining Lease Boundary
- Exploration Licence Boundary
- Mining Operation

Peabody
WILPINJONG COAL MINE
Sub-Regional Location

Figure 2

1.2 OVERVIEW OF THE MODIFICATION

Mining operations at the Wilpinjong Coal Mine under Development Consent (SSD-6764) are currently approved until 31 December 2033. Since the approval of the Wilpinjong Extension Project and the issue of Development Consent (SSD-6764), WCPL has continued to review and refine detailed life-of-mine planning.

As an outcome of this planning process, WCPL has elected to avoid direct disturbance of the existing Cumbo Creek corridor and the Rocky Hill complex which are currently approved to be mined in Pit 4 and Pit 8, respectively, under Development Consent (SSD-6764).

In this context, the Modification would provide access to some additional coal resources to augment ROM coal production and would also include an additional six months of mining operations to backfill the final voids and shape the final landform (i.e. mining operations would continue until 30 June 2034).

The Modification would comprise the following components (Figure 4):

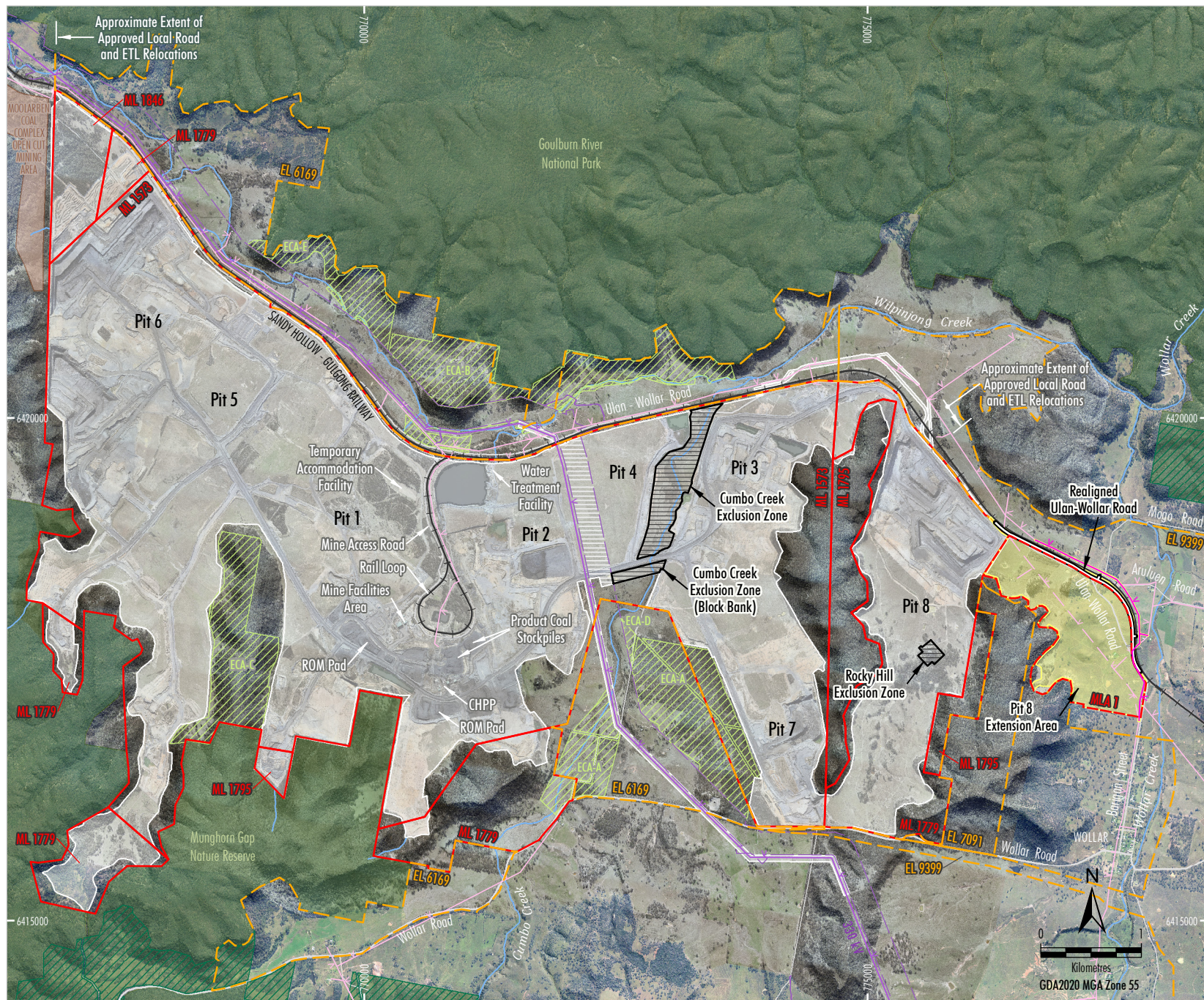
- open cut mining within the Pit 8 Extension area;
- extraction of approximately 14 million tonnes (Mt) of ROM coal from the Pit 8 Extension area;
- development of ancillary infrastructure to support open cut mining activities;
- realignment of some public infrastructure to facilitate the Pit 8 Extension (e.g. sections of public roads, local low voltage powerlines and telecommunication services);
- in-pit crushing of waste rock for use as construction and/or stemming material;
- an additional six months of mining operations to backfill final voids and shape the final landform (i.e. mining operations until 30 June 2034); and
- development of additional water management infrastructure (e.g. dams, drains, pumps and pipelines).

The Modification would also include the proposed avoidance of direct disturbance of the existing Cumbo Creek corridor and the Rocky Hill complex which are currently approved to be mined in Pit 4 and Pit 8 respectively. This avoidance would sterilise more than 7 Mt of approved ROM coal and reduce the approved Wilpinjong Coal Mine surface development footprint by approximately 50 ha.

There would be no changes to the following approved components of the Wilpinjong Coal Mine for the Modification:

- mining method;
- timeframe for ROM coal production;
- maximum annual ROM coal and waste rock production;
- coal washing and handling systems;
- product coal transport systems;
- water supply and disposal methods; and
- hours of operation.

A detailed Modification description is provided in Section 3 of the Modification Report. A discussion of why the Modification is required, the history of Wilpinjong Coal Mine approvals, consideration of alternatives, and the consequences of not proceeding with the Modification are also detailed in Sections 1, 2 and 7 of the Modification Report.



- LEGEND**
- Existing Local Electricity Transmission Line
 - Existing Local Electricity Transmission Line to be Removed
 - Existing TransGrid Electricity Transmission Line
 - EnergyCo Transmission Project (SSI-48323210)
 - National Park or Nature Reserve
 - Existing Biodiversity Offset Transferred to the National Parks and Wildlife Service (NPWS) Estate
 - Enhancement and Conservation Area
 - Exploration Licence Boundary (EL)
 - Mining Lease Boundary (ML)
 - Proposed Mining Lease Application Boundary (MLA)
 - Approved/Existing Surface Development Area
 - EnergyCo Construction Easement (CWOREZ)
 - Mine Exclusion Area
 - Modification Indicative Development Footprint
 - Indicative Public Road Realignment
 - Indicative Local Electricity Transmission Line Realignment

Source: WCPL (2025); EnergyCo (2024); NSW Spatial Services (2025)
 Orthophoto Mosaic: WCPL (July 2024 - Nov 2022)

Peabody
 WILPINJONG COAL MINE
 General Arrangement
 Incorporating the Modification

Figure 4

1.3 GREENHOUSE GASES AND INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE SECTORS AND SUBSECTORS

1.3.1 Relevant Greenhouse Gases and Global Warming Potential

In the context of the Modification, the most relevant greenhouse gases are carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).

Greenhouse gas emissions are typically standardised by expression as a carbon dioxide equivalent (CO₂-e) based on their Global Warming Potential (GWP). The GWP is determined by the differing periods that greenhouse gases remain in the atmosphere and their relative absorption of outgoing infrared radiation. The GWP of CH₄ is 28 (i.e. one tonne [t] of CH₄ emissions has 28 times the potential to contribute to global warming than one t of CO₂ emissions), while the GWP of N₂O is 265 (Commonwealth Department of Climate Change, Energy, the Environment and Water [Cth DCCEEW], 2024a).

To simplify greenhouse gas accounting, the emissions of these greenhouse gases (typically estimated in t) are converted to tonnes of carbon dioxide equivalent (t CO₂-e) before being summed to determine total greenhouse gas emissions. This can be expressed as:

$$t \text{ CO}_2\text{-e} = t \text{ CO}_2 \times 1 + t \text{ CH}_4 \times 28 + t \text{ N}_2\text{O} \times 265$$

1.3.2 Greenhouse Gas Emission Scope

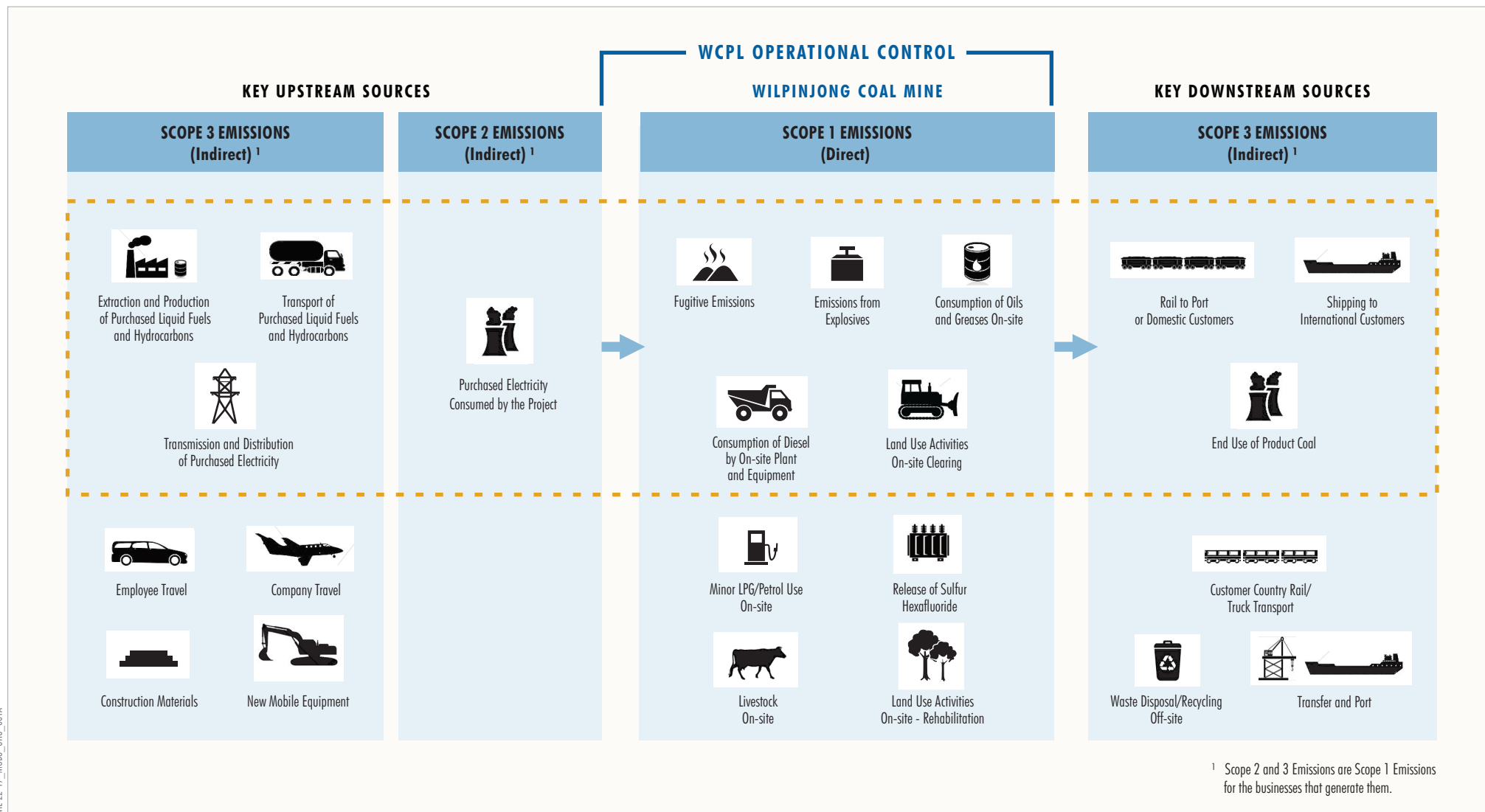
The Greenhouse Gas Protocol (GHG Protocol) (World Business Council for Sustainable Development and World Resources Institute [WBCSD and WRI], 2024) contains methodologies for calculating and assessing greenhouse gas emissions. As recognised in the definition of "GHG Protocol" in the Guide (NSW EPA, 2025):

The GHG Protocol is a widely recognised and widely used accounting standard for measuring and managing greenhouse gas emissions. It provides guidelines and methodologies for organisations and governments to quantify and report their greenhouse gas emissions accurately and consistently. The GHG Protocol helps track emissions, set emission goals, and develop strategies to address climate change.

The GHG Protocol covers the accounting and reporting of the seven greenhouse gases covered by the *Kyoto Protocol*, including the three greenhouse gases most relevant to the Modification as described above (Section 1.3.1).

Under the GHG Protocol, an entity's operational boundaries are established by identifying emissions associated with its operations, categorising them as direct or indirect emissions, and identifying the scope of accounting and reporting for indirect emissions. Three 'Scopes' of emissions (Scopes 1, 2 and 3) are defined for greenhouse gas accounting and reporting purposes. This is explored further below.

A diagrammatic representation of the three greenhouse gas emission Scopes and key elements included in this Modification's greenhouse gas assessment is presented on Figure 5.



Scope 1 – Direct Greenhouse Gas Emissions

Direct greenhouse gas emissions are defined as emissions that occur from sources that are owned or controlled by the entity (WBCSD and WRI, 2024). Direct greenhouse gas emissions are emissions that are principally the result of the following types of activities undertaken by an entity:

- Generation of electricity, heat or steam – these emissions result from combustion of fuels in stationary sources (e.g. boilers, turbines and furnaces).
- Physical or chemical processing – most of these emissions result from the manufacture or processing of chemicals and materials (e.g. production of cement, ammonia and aluminium, or waste processing).
- Transportation of materials, products, waste, and employees – these emissions result from the combustion of fuels in mobile combustion sources (e.g. trucks, trains, ships, aeroplanes, cars, motorcycles and buses) owned/controlled by the entity.
- Fugitive emissions – these emissions result from intentional or unintentional releases (e.g. equipment leaks from joints, seals, and gaskets; CH₄ emissions from coal mines and venting; hydrofluorocarbon emissions during the use of air conditioning and refrigeration equipment; and CH₄ leakages from gas transport) (WBCSD and WRI, 2024).

The Modification's key Scope 1 emissions can be categorised into the following sectors using the Intergovernmental Panel on Climate Change (IPCC) Sectors as applied within Australia's national emission projections:

- **Stationary Energy (Excluding Electricity Generation) – Mining**
(i.e. off-road mobile equipment diesel consumption associated with mining operations – approximately 74.5 percent [%]).
- **Fugitives – Open Cut Coal Mines**
(i.e. fugitive gaseous emissions that are liberated during mining from the exposed coal seams – approximately 10.4%).
- **Land Use, Land Use Change and Forestry**
(i.e. emissions associated with progressive land clearing in advance of mining – approximately 12.8%).
- **Industrial Processes and Product Use**
(i.e. emissions associated with the use of explosives and other materials – approximately 2.3%).

Scope 2 – Electricity Indirect Greenhouse Gas Emissions

Scope 2 emissions are a category of indirect emissions that account for greenhouse gas emissions associated with the generation of purchased electricity consumed by the entity.

Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the entity (WBCSD and WRI, 2024). Scope 2 emissions physically occur at the facility where the electricity is generated (WBCSD and WRI, 2024). Entities report the emissions associated with the generation of purchased electricity (consumed in equipment or operations owned or controlled by the entity) as Scope 2.

Scope 3 – Other Indirect Greenhouse Gas Emissions

Scope 3 emissions are indirect emissions other than scope 2 emissions that are generated in the wider economy, which occur due to the activities of a facility but from sources not owned or controlled by that facility's business. The United States Environmental Protection Agency (United States EPA) (2024a) helpfully defines Scope 3 emissions as follows:

Scope 3 emissions are the result of activities from assets not owned or controlled by the reporting organization, but that the organization indirectly affects in its value chain. An organization's value chain consists of both its upstream and downstream activities. Scope 3 emissions include all sources not within an organization's scope 1 and scope 2 boundary. The scope 3 emissions for one organization are the scope 1 and 2 emissions of another organization. Scope 3 emissions, also referred to as value chain emissions, often represent the majority of an organization's total greenhouse gas (GHG) emissions.

Some examples of Scope 3 emissions provided in the GHG Protocol are those from the extraction and production of purchased materials, transportation of purchased fuels, and use of sold products and services (WBCSD and WRI, 2024).

The GHG Protocol notes that reporting Scope 3 emissions can result in double counting of emissions. For example, greenhouse gas emissions from the burning of coal to produce energy are the Scope 3 emissions of the mines approved to produce the coal, as well as the Scope 1 emissions of the businesses that burn the coal to generate electricity. Those emissions will also be the Scope 2 emissions of the businesses that purchase the electricity.

The Modification's key Scope 3 emissions would be largely categorised as:

- **Category 4 – Upstream Transportation and Distribution**
(i.e. transport of purchased liquid fuel, hydrocarbons and electricity – approximately 0.2%)
- **Category 9 – Downstream Transportation and Distribution**
(i.e. transport of coal to third-parties – approximately 2%).
- **Category 11 – Use of Sold Products**
(i.e. end use of product coal – approximately 97.8%).

Airen Consulting (Attachment A) has estimated some key downstream Scope 3 emissions associated with emissions from distribution of product coal to domestic customers and the Port of Newcastle, international shipping, as well as the combustion of product coal.

1.4 ASSESSMENT REQUIREMENTS

1.4.1 Environment Protection Authority Assessment Guidance

Under its Climate Change Policy and Action Plan, the NSW EPA is taking further action to help the NSW Government achieve its greenhouse gas emission reduction targets.

In January 2025, NSW EPA released the Guide, following a period of consultation from May to July 2024. The Guide requires proponents of major greenhouse gas emitting projects to assess emissions and mitigation opportunities, both in the short-term and long-term. The Guide sets out a description of NSW's emission reduction objectives, types of greenhouse gases, and the NSW EPA's suggested greenhouse gas assessment and mitigation requirements to be addressed in Environmental Impact Statements and Modification Reports. The Guide also includes a description on how measures to avoid or reduce emissions should be identified and evaluated, including setting out the NSW greenhouse gas mitigation hierarchy.

WCPL also notes that the evolution of NSW guidance materials is set to continue during the assessment of the Modification (i.e. NSW EPA has indicated that sectoral guidance and best practice guidance for NSW coal mines are also currently in preparation) (NSW EPA, 2024).

1.4.2 Classification of the Modification for the Purposes of the Guide

Section 2.3 (Box 3) of the Guide provides guidance on how the Guide applies to modification proposals:

Box 3. GHG assessment boundary for the modification proposals

The GHG assessment boundary for the project defines which emission sources and activities are included and excluded in the assessment.

For a modification proposal:

- *The assessment boundary must be defined to account for any emission increases or decreases at the premises related to the project. It must define which emission sources and activities are included in the assessment and which are excluded. This will allow the overall impact of the GHG emissions resulting from the modification to be assessed.*
- *The 25,000 tonne CO₂-e threshold relates to additional GHG emissions expected to be emitted due to the modification of the licensed premises, not the entire premises. For example, if the existing premises emits more than 25,000 tonnes CO₂-e per annum, but the modification will not increase GHG emissions by an additional 25,000 tonnes CO₂-e per annum, then that modification would not be subject to the assessment requirements within this guide.*

The Modification is expected to generate Scope 1 and 2 greenhouse gas emissions exceeding 25,000 t CO₂-e per year in some operational years (Section 3.4). Therefore, the Modification meets the assessment threshold outlined in the Guide.

Section 4.7 of the Guide also states that:

For projects with scope 1 and 2 emissions exceeding 100,000 t CO₂-e per year at any time over the operational life of the project, mitigation assessments must be verified by an independent expert review.

Given the Modification incremental emissions would not exceed 100,000 t CO₂-e per year in any operational year, an independent peer review of the mitigation assessment is not required.

Notwithstanding, this Greenhouse Gas Assessment includes consideration of mitigation measures in Section 3.3, consistent with the principles outlined in the Guide.

2 LEGISLATIVE AND POLICY CONTEXT

2.1 GLOBAL

The international framework addressing greenhouse gas emissions, and the global response to climate change, commenced with adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992.

The UNFCCC has close to global membership, with 198 Parties (UNFCCC, 2024a). While a number of negotiating sessions are held each year, the largest is the annual Conference of the Parties (UNFCCC, 2024a). Two of the most important progressions of the UNFCCC were at the third Conference of the Parties (in 1997) and the 21st Conference of the Parties (in 2015), with the adoption of the *Kyoto Protocol* and the *Paris Agreement*, respectively.

The *Kyoto Protocol* entered into force in 2005 and imposed limits on the greenhouse gas emissions of developed countries listed in Annex 1 to the UNFCCC, with an initial commitment period of 2008 to 2012 (UNFCCC, 2024b). The UNFCCC requires parties to submit national inventories of greenhouse gas emissions and report on steps taken to implement the *Kyoto Protocol* (UNFCCC, 2024b). The *Doha Amendment* to the *Kyoto Protocol* was adopted at the 18th Conference of the Parties (in 2012), which included a second commitment period of 2013 to 2020 (UNFCCC, 2024b). The *Doha Amendment* entered into force in December 2020 (UNFCCC, 2024b).

The goal of the *Paris Agreement* is to limit global temperature increases to well below 2 degrees Celsius (°C) above preindustrial levels (UNFCCC, 2024c). In order to achieve that goal, Parties aim to reach peak global emissions as soon as possible, "so as to achieve a balance between anthropogenic emissions by sources and removals by sinks in the second half of this century" (UNFCCC, 2024d).

The *Paris Agreement* does not specify how global emission reductions are to be achieved. It requires Parties to prepare, communicate and maintain nationally determined contributions (NDCs) and to pursue domestic measures to achieve them (UNFCCC, 2024d; UNFCCC, 2024e). The NDCs are to be communicated every five years, with each successive NDC to represent a progression beyond the previous NDC. "Intended" NDCs were submitted in 2015. First, updated, enhanced and second NDCs were submitted before 2024, with a new round of NDCs due to be submitted in 2025 and another round due in 2030 (UNFCCC, 2024e).

Scope 1 greenhouse gas emissions from the Modification, as well as any Scope 2 and 3 emissions related to the Modification that will be emitted in Australia, would be accounted for and managed in accordance with Australia's domestic law adopted to implement Australia's NDC. Greenhouse gas emissions produced by the end use of Modification coal overseas would be accounted for and managed in accordance with the laws that have been adopted to implement the NDCs of the countries to which the coal is exported. The NDCs of key countries to which WCPL currently exports coal and the key countries to which coal from the Modification is expected to be exported (expected export countries) are described in Section 3.5.2.

At the 24th Conference of the Parties to the UNFCCC (in 2018), the *Katowice Climate Package* was agreed. The *Katowice Climate Package* contains, among other things, detailed guidance on the features of NDCs and the information each country should provide to improve transparency regarding NDCs, as well as highlighting the need to ensure that double counting of greenhouse gas emissions is avoided (UNFCCC, 2024e).

At the 26th Conference of Parties (held in 2021), the *Glasgow Climate Pact* was reached. The *Glasgow Climate Pact* reaffirms the long-term global goal to hold the increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. The agreement also invites Parties to consider further actions to reduce non-CO₂ greenhouse gas emissions, including CH₄, by 2030 (UNFCCC, 2024a).

A country is assisted to meet the emission targets provided for in its NDC by utilising the international trading (or crediting) mechanisms established by Article 6 of the *Paris Agreement*. The effect of Article 6 is that a country that overachieves against its NDC targets can gain greenhouse gas emission credits to sell to other countries, and, conversely, if it falls short, it can purchase international credits approved under the *Paris Agreement* to meet its NDC target.

2.2 NATIONAL

Australia's first NDC under the Paris Agreement communicated a greenhouse gas emission reduction target of 26% to 28% below 2005 levels by 2030 (Commonwealth of Australia, 2015).

In 2022, the Commonwealth *Climate Change Act 2022* (Climate Act) was introduced to outline Australia's greenhouse gas emissions reduction targets. Section 10(1) of the Climate Act states:

- (1) *Australia's greenhouse gas emissions reduction targets are as follows:*
- (a) *reducing Australia's net greenhouse gas emissions to 43% below 2005 levels by 2030:*
 - ...
 - (b) *reducing Australia's net greenhouse gas emissions to zero by 2050.*

Section 3 of the Climate Act defines the objects of the Act:

- (aa) *to advance an effective and progressive response to the urgent threat of climate change drawing on the best available scientific knowledge; and*
- (a) *to set out Australia's greenhouse gas emissions reduction targets which contribute to the global goals of:*
 - (i) *holding the increase in the global average temperature to well below 2°C above pre-industrial levels; and*
 - (ii) *pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels; and*
- (b) *to promote accountability and ambition by requiring the Minister to:*
 - (i) *prepare annual climate change statements; and*
 - (ii) *cause copies of those statements to be tabled in each House of the Parliament; and*
- (c) *to ensure that independent advice from the Climate Change Authority informs:*
 - (i) *the preparation of annual climate change statements; and*
 - (ii) *the greenhouse gas emissions reduction targets to be included in a new or adjusted nationally determined contribution.*

Australia's first NDC under the *Paris Agreement* was updated to commit to further reductions in emissions to achieve the national greenhouse gas target of 43% below 2005 levels by 2030 and reaffirmed the target to achieve net zero emissions by 2050 (Commonwealth of Australia, 2022).

Australia's third NDC is currently under development and must be announced in 2025. Relevant considerations in setting Australia's next NDC, include (Cth DCCEEW, 2025):

- global trade and investment trends;
- the pace and scale of technology development and deployment;
- development of new industries in Australia, including as part of a future made in Australia; and
- our ability to play a positive global role through ambition and practical delivery.

The Australian Government has indicated it will set an ambitious and achievable 2035 emissions reduction target that accelerates climate action, consistent with Australia's global peers (Cth DCCEEW, 2025). It is noted that the Modification does not seek an extension to the timeframe for ROM coal production at the Wilpinjong Coal Mine (i.e. ceases ROM coal production on 31 December 2033).

The Climate Act does not impose specific requirements on WCPL to implement measures to reduce, avoid and monitor greenhouse gas emissions. Nevertheless, the Climate Act is considered and addressed in this Greenhouse Gas Assessment.

2.2.1 Assessment

National Greenhouse Account Factors

Australia's National Greenhouse Accounts (NGAs) are prepared by the Cth DCCEEW. The Cth DCCEEW publishes the greenhouse gas emission factors used in preparing the NGAs. The *National Greenhouse Accounts Factors: 2024* (Cth DCCEEW, 2024a) is the latest such publication and has been used to calculate the Modification emission projections (Attachment A).

2.2.2 Reporting

National Greenhouse and Energy Reporting Scheme

The Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act) is a national framework for reporting greenhouse gas emissions, energy production and energy consumption by corporations. The greenhouse gas emissions and energy data reported under the NGER Act is used by the Commonwealth Government in compiling Australia's national greenhouse gas emission inventory to meet its reporting obligations under the UNFCCC.

Under the NGER Act, corporations that have operational control of facilities must report their greenhouse gas emissions and energy data if they meet the thresholds for reporting. The thresholds are:

- a) emitting 25,000 t CO₂-e of greenhouse gas emissions or producing or consuming 100 terajoules (TJ) of energy (for an individual facility); or
- b) emitting 50,000 t CO₂-e of greenhouse gas emissions or producing or consuming 200 TJ of energy (cumulatively for all facilities under the operational control of the corporation).

Reporting requirements of the NGER Act include both Scope 1 and Scope 2 emissions. To avoid the potential double counting of emissions, the NGER Act does not cover Scope 3 emissions. The Wilpinjong Coal Mine has triggered the reporting requirements of the NGER Act and WCPL reports on its greenhouse emissions each financial year under its entity WCPL (which is the relevant "controlling corporation" for the purposes of reporting under the NGER Act). WCPL would continue to comply with its reporting obligations under the NGER Act, should the Modification be approved.

2.2.3 Mitigation

A range of legislation and policies, including the Safeguard Mechanism (which has legislative effect via the NGER Act), the Renewable Energy Target and the National Energy Productivity Plan have been implemented to help Australia meet its greenhouse gas commitments.

In October 2021, the previous Australian Government published *Australia's Long Term Emissions Reduction Plan* (Commonwealth of Australia, 2021) (the Plan), which includes a range of policy initiatives to deliver net zero greenhouse gas emissions by 2050. The Plan is focused on reducing the cost of low emissions technologies whilst increasing their availability nationwide. As explained below, it is noted that the current Australian Government is developing a Net Zero 2050 plan.

The NGER Act introduced a single national reporting framework for the reporting and dissemination of corporations' greenhouse gas emissions and energy use. The Safeguard Mechanism (underpinned by the Commonwealth *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015* [Safeguard Rule]) was established through the NGER Act and provides baseline emissions and offset requirements for applicable facilities that emit over 100,000 t CO₂-e per year, which currently includes the existing Wilpinjong Coal Mine and would extend to include the Modification, should it be approved.

The Safeguard Mechanism sets a baseline level of emissions for facilities. If a facility exceeds its baseline level, it is required to surrender to the Clean Energy Regulator (CER) Australian Carbon Credit Units (ACCUs) (or following recent reforms, alternatively Safeguard Mechanism Credit units [SMCs]) equivalent to the exceedance.

In 2023, the Commonwealth Government introduced reforms to facilitate greater abatement and offset requirements for Safeguard Mechanism facilities (discussed further below).

Reformed Safeguard Mechanism

The Safeguard Mechanism Reforms (Cth DCCEEW, 2024b) introduced an amendment to the NGER Act and other legislation (including the Climate Act) to establish a framework to give effect to key elements of the reforms, such as introducing a requirement for facilities to achieve greenhouse abatement via annual downward adjustment of baseline levels.

There are three main types of safeguard facility baselines:

- standard (as applies to the Wilpinjong Coal Mine facility);
- landfill; and
- sectoral (i.e. electricity generators).

Standard baselines are determined based on the amount of product each facility produces in a financial year.

The reforms apply a decline rate to a facility's baseline so that baselines are reduced predictably and progressively over time (initially 4.9% per annum until the end of Financial Year [FY] 30) on a proportionate trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030, and net zero by 2050 (Cth DCCEEW, 2024c) in combination with other greenhouse gas reduction measures in the economy.

At the end of each year, the facility's baseline will therefore be calculated via its:

- production quantities;
- the emissions-intensity values for each product it produces; and
- the decline rate.

It is noted that the target of 43% reduction by 2030 is tied to 2005 emission levels. Table 1 below summarises the Safeguard Mechanism baseline decline rate which has been calculated with sufficient headroom allowance for higher than expected growth at new and existing Safeguard facilities (Cth DCCEEW, 2024b).

Table 1
Safeguard Baseline Decline Rate

Financial year	Decline rate	Emission reduction contribution
2023–24	4.9%	95.1%
2024–25	4.9%	90.2%
2025–26	4.9%	85.3%
2026–27	4.9%	80.4%
2027–28	4.9%	75.5%
2028–29	4.9%	70.6%
2029–30	4.9%	65.7%
2030–ongoing*	3.285%	62.4%

Source: CER (2025a)

* The decline rate indicated in the above table for 2030 onwards is indicative. From 2030 decline rates will be set in 5-year blocks by the Cth DCCEEW.

Schedule 1 of the Safeguard Rule defines a range of products produced at Safeguard Mechanism facilities. For each product, Schedule 1 sets out one or more metrics (each of which is a production variable), the units relevant to those production variables and the circumstances in which they are applicable to the particular Safeguard Mechanism facility. This includes the assignment of a default emission intensity for each production variable. A facility's baseline is therefore adjusted annually based on actual site production metrics.

Because of the high diversity of existing emission intensities in the coal sector, a hybrid approach was adopted for existing coal mines. In this case, the ROM coal Safeguard Emissions Intensity is calculated by progressively decreasing the proportion of site-specific emissions intensity, which has the effect of achieving a 50% application of the default ROM coal production variable by FY30.

WCPL also notes that ROM coal is listed in Schedule 2 of the Safeguard Rule as a 'trade-exposed production variable'. However, a conservative approach has been adopted herein to assessing greenhouse gas emissions such that no adjustment has been made for trade-exposed production (despite the fact that the Modification's ROM coal production may be trade-exposed and that WCPL may seek a determination to that effect from the CER in due course should the Modification be approved).

Pursuant to transitional arrangements under the Safeguard Rule, the default ROM coal production variable has been set at 0.0653 tonnes of carbon dioxide equivalent per tonnes of run-of-mine coal (t CO₂-e / t ROM coal). In accordance with Subdivision C of the Safeguard Rule, a responsible emitter can apply to the CER for an Emissions Intensity Determination (EID). WCPL has applied to the CER for an EID for the Wilpinjong Coal Mine.

The EID for the Wilpinjong Coal Mine for ROM coal is 0.009093 t CO₂-e / t ROM coal, significantly lower than the default ROM coal production variable (CER, 2025b). Further consideration of the Modification emission estimates in comparisons with key emissions reduction targets is provided in Section 3.

Wilpinjong Coal Mine is and will continue to be a designated large facility as defined by the NGER Act. The Safeguard Mechanism therefore applies to WCPL and will continue to apply to Wilpinjong Coal Mine including the Modification.

Net Zero Plan

The Commonwealth Government is currently developing a Net Zero Plan in conjunction with developing and setting Australia's 2035 emission reduction targets. It is noted that the Modification does not seek an extension to the timeframe for ROM coal production and the Wilpinjong Coal Mine would cease coal production prior to 2035 (i.e. 31 December 2033).

The Australian Government recognises several major steps for decarbonising the economy that will apply differently across each emissions sector depending on the availability of cost-effective low emissions technologies (Cth DCCEEW, 2025). These steps are (Cth DCCEEW, 2025):

1. *increasing the materials and energy efficiency of the economy (including through circular economy principles);*
2. *decarbonising and growing the electricity grid using renewables to unlock greater decarbonisation across other sectors by electrifying activities wherever possible;*
3. *switching remaining activities to hydrogen, low-carbon liquid fuels, and other replacements for fossil fuels;*
4. *innovation to expand low and zero emission technology options and reduce their costs; and*
5. *scaling up nature-based and technological carbon sequestration.*

While the Net Zero Plan is still under development, the broad steps listed above have been considered in considered in Section 3.3.

Sector Pathways Review

In the *Sector Pathways Review*, the Commonwealth Climate Change Authority (CCA) examined potential technology transition and emissions pathways in six key emission sectors to support Australia's transition to net zero emissions by 2050 (CCA, 2024a):

- electricity and energy;
- transport;
- industry and waste;
- agriculture and land;
- resources; and
- the built environment.

The CCA identified the range of emissions reductions that are achievable through the deployment of available and prospective technologies, and examined the relevant barriers, opportunities and enablers for each key sector. Part 1 of the *Sector Pathways Review* addresses the Resources sector, which incorporates Australian mining, oil and gas industries (CCA, 2024a).

Key findings of Part 1 of the Sector Pathways Review (Resources) of potential relevance to the Modification include (CCA, 2024a):

Decarbonisation of the (Resources) sector requires widespread electrification, and deployment of fugitive abatement technologies in oil, gas and coal mining operations.

...

Electrification can play a significant role in reducing emissions from fuel combustion in the sector. Electric mining haulage and equipment is at pilot scale, with widespread adoption expected after 2030.

...

Based on available technologies, several sources of emissions across the sector are expected to remain largely unabated while the activities continue. There are few opportunities to significantly reduce fugitive emissions from surface coal mines.

...

Barriers to electrification and deployment of fugitive abatement measures across the sector include high upfront capital costs, integration challenges within existing facilities and the lack of access to a sufficient firm supply of renewable electricity.

...

Section R.2.2.2 (Emissions reduction levers for mining haulage and equipment) of the *Sector Pathways Review* identifies that combustion of diesel fuels in mining haulage and equipment accounts for approximately 14% of the Australian resources sector emissions (CCA, 2024a).

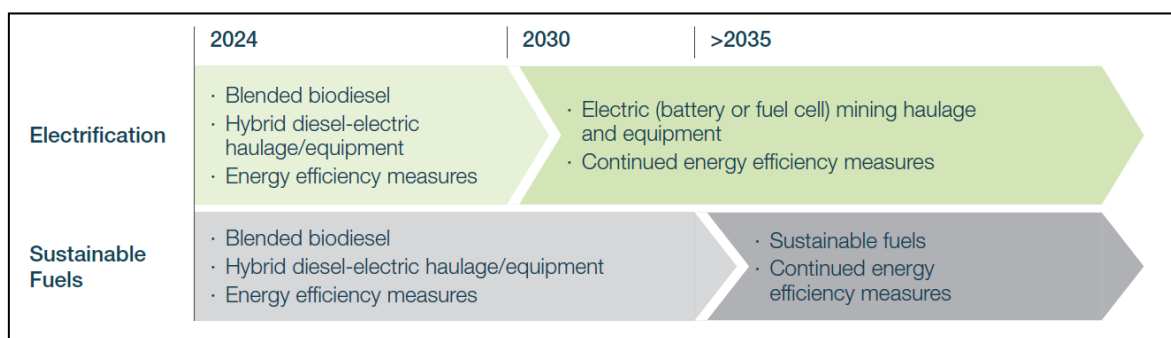
Key emission reduction levers for reducing emissions from mining haulage and equipment, summary readiness and potential barriers to adoption as identified by the CCA (2024a) are reproduced in Table 2.

Table 2
Key Mining Haulage and Equipment Emissions Reduction Levers

Emissions Reduction Levers		Readiness	Barriers of Adoption
Electrification of haulage and equipment	Battery and tethered electric trucks and mining equipment. Trolley assist systems where haul trucks are connected to an overhead cable to power the electric drive.	Demonstration	- low technology maturity; - high capital expenditure; - integration of the required supporting infrastructure to existing mines; - lack of supply of electric haulage and equipment; and - lack of supply of firm renewable electricity.
Fuel cell electric trucks	Hydrogen fuel cell-powered haulage trucks and mining equipment.	Demonstration	- low technology maturity; - high capital expenditure; and - lack of supply of renewable hydrogen.
Sustainable fuels	Fuel switching to more lower carbon fuels such as biodiesel or renewable diesel.	Commercial	- high operational expenditure; and - lack of supply of sustainable fuels.

After: CCA, 2024a

Figure R.4 of the *Sector Pathways Review* provides a schematic diagram illustrating two key prospective alternative decarbonisation pathways for mining and haulage equipment, reproduced below as Figure 6.



After: CCA, 2024a

Figure 6
Prospective Decarbonisation Pathways for Mining and Haulage Equipment

WCPL notes that the approved Wilpinjong Coal Mine and the Modification would both cease coal production in 2033 and therefore decarbonisation pathways involving electrification or sustainable fuels are unlikely to be relevant to the site in this timeframe.

The CCA also noted the following potential limitations with respect to the electrification pathway for mining and haulage equipment (CCA, 2024a):

A key prerequisite for mine site electrification is access to a sufficient supply of flexible but firmed electricity. Significantly higher electricity demand and increased variability of demand loads are expected as mines electrify. The ability to provide sufficient electricity, either from onsite generation or the grid, to support the electrification of mines has been identified as a key concern by industry.

Electrification of a mine site also requires significant enabling infrastructure, including: charging stations, transmission lines and overhead power lines for trolley assist systems. The dynamic nature of some mining operations presents a challenge for the installation of such semi-permanent infrastructure due to continually evolving mine plans.

The CCA also noted the following potential limitations with respect to the sustainable fuel pathway for mining and haulage equipment (CCA, 2024a):

Various mining companies have proposed the use of sustainable fuels as a long-term decarbonisation strategy due to their benefits as drop-in fuels and the operational flexibility they offer. However limited supply of sustainable fuels (and no current domestic supply chain) and expected competition from other sectors with limited alternatives, such as aviation, introduce uncertainty around the viability of this pathway to decarbonise mining haulage.

...

The authority observed there is an information gap relating to the future production, use and import of biofuels in Australia.

Key emission reduction levers for reducing emissions from mining haulage and equipment, summary readiness and potential barriers to adoption as identified by the CCA (2024a) are considered in Section 3.3.

2.2.4 Offsets

The Commonwealth CCA's (2024b) *Targets, Pathways and Progress* paper describes that some sectors have very hard-to-abate emissions and may be unable to achieve net zero, whereas the land sector already achieves net negative emissions by removing carbon from the atmosphere.

In the *Targets, Pathways and Progress* paper, the CCA (2024b) provides a description of Australia's approach to achieve net zero, which is to balance both continuing emissions and offsets or carbon sequestration in a manner that is economically responsible and reflective of the constraints and opportunities available to the various sectors of the Australian economy. Australia has also declared that it will utilise Article 6 of the *Paris Agreement* (international trading of emission allowances) to meet its mitigation targets.

The CCA also articulates that Australia's ambition is not to achieve zero emissions by 2050, it is rather to achieve net zero emissions by 2050 and articulates that Australia will continue to rely (as it has to date) to a large degree on the land use sector to remove carbon from the atmosphere and offset emissions that continue to occur elsewhere in the economy.

2.3 STATE

2.3.1 Legislation and Policies

NSW Government

The NSW Government released the *NSW Climate Change Policy Framework* (NSW Office of Environment and Heritage, 2016), which committed NSW to the long-term objective of achieving net zero emissions by 2050.

NSW Climate and Energy Action published the *Net Zero Plan Stage 1: 2020 – 2030* (NSW Department of Planning, Infrastructure and Environment [NSW DPIE], 2020) (the Net Zero Plan) in March 2020, which describes how, over the next decade, the NSW Government intends to work towards its objective of achieving net zero emissions by 2050, and an objective to reduce emissions by 70% by 2035, compared to 2005 levels. For example, the Net Zero Plan supports a range of initiatives which includes reducing emissions from the mining and use of coal. In this regard, the Net Zero Plan specifically identifies the Coal Innovation Program (noting that investment in this Program is underway) and relevantly states:

New South Wales' \$36 billion mining sector is one of our biggest economic contributors, supplying both domestic and export markets with high quality, competitive resources. Mining will continue to be an important part of the economy into the future and it is important that the State's action on climate change does not undermine those businesses and the jobs and communities they support.

The Net Zero Plan has been supported by *Net Zero Plan Stage 1: 2020 – 2030 implementation update*, which address the policies under the Net Zero Plan as well as emissions reduction projections for NSW (NSW DPIE, 2021).

The NSW Government has subsequently enshrined in legislation whole-of-government climate action in the *Climate Change (Net Zero Future) Act 2023* (Net Zero Future Act).

The Net Zero Future Act legislates:

- guiding principles for action to address climate change that consider the impacts, opportunities and need for action in NSW (Section 2.3);
- emissions reduction targets for NSW, comprising:
 - 50% reduction on 2005 levels by 2030;
 - 70% reduction on 2005 levels by 2035; and
 - net zero by 2050.

- an objective for NSW to be more resilient to a changing climate; and
- establishing an independent, expert Net Zero Commission (NZC) to monitor, review, report on and advise on progress towards these targets.

It is noted that the Modification does not seek an extension to the timeframe for ROM coal production at the Wilpinjong Coal Mine and would cease prior to 2035 (i.e. coal production would cease by 31 December 2033).

Neither the Net Zero Future Act nor any other relevant policies in NSW impose specific requirements on the Modification to implement measures to reduce, avoid and monitor greenhouse gas emissions. Generally speaking, any specific requirements for the Modification to implement measures to reduce, avoid and monitor greenhouse gas emissions would likely be contained in any modified Development Consent granted under Part 4 of the EP&A Act for the Modification, consistent with the current approach for the Wilpinjong Coal Mine. The Development Consent (SSD-6764) imposes requirements on WCPL with respect to greenhouse gas management at the Wilpinjong Coal Mine.

Table 3 provides the Guiding Principles and Objectives of the Net Zero Future Act and indicates that WCPL generally concurs with the application of these guiding principles to development in the State.

It is noted that this Greenhouse Gas Assessment does not identify all of the documents which comprise the suite of NSW policies, programs and guidelines concerning greenhouse gas emissions and climate change. For example, other potentially relevant documents in this regard may include the 2020 NSW Energy Package Memorandum of Understanding between the Commonwealth and NSW Governments, which relevantly had the aim of achieving emissions reductions. It is also noted that additional NSW policies, programs or guidelines may potentially be released prior to the determination of the Modification.

NSW Environment Protection Authority

The NSW EPA's *Climate Change Policy* (NSW EPA, 2023a) outlines the NSW EPA's role in environmental regulation in NSW and how the NSW EPA is expanding its focus to explicitly regulate the causes and consequences of climate change.

As identified in the NSW EPA's Climate Change Policy, section 6 of the *Protection of the Environment Administration Act 1991* (POEA Act) outlines the NSW EPA's statutory objectives to protect the environment and human health. These objectives include:

- to protect, restore and enhance the quality of the environment in NSW, having regard to the need to maintain ecologically sustainable development; and
- to reduce the risks to human health and prevent the degradation of the environment.

The NSW EPA also notes, on page 15, that these objectives "extend to protecting the environment and human health from climate change". It further notes that the NSW EPA is required to consider these statutory objectives when exercising licensing functions under the NSW *Protection of the Environment Operations Act 1997* (POEO Act). The POEO Act is the key piece of environment protection legislation administered by the NSW EPA, with the Wilpinjong Coal Mine constituting a "scheduled activity" under Schedule 1 of the POEO Act which requires licensing by the NSW EPA under an Environment Protection Licence (EPL). WCPL currently holds EPL 12425 for the Wilpinjong Coal Mine and would seek any variations required to cover the Modification should it be approved.

Table 3
Guiding Principles and Objectives of the Net Zero Future Act

NSW Guiding Principles and Objectives	WCPL Position
<i>There is a critical need to act to address climate change, which is a serious threat to the social, economic and environmental wellbeing of New South Wales.</i>	✓
<i>Action to address climate change should be taken as early as possible to minimise the cost and adverse impacts of climate change.</i>	✓
<i>Action to address climate change should be taken in a way that—</i> (a) <i>is fiscally responsible, and</i> (b) <i>promotes sustainable economic growth, and</i> (c) <i>considers the economic risks of delaying action to address climate change, and</i> (d) <i>considers the impact on rural, regional, and remote communities in New South Wales.</i>	✓
<i>Action to address climate change should be consistent with the right to a clean, healthy and sustainable environment.</i>	✓
<i>Action to address climate change should be consistent with the principles of ecologically sustainable development described in the Protection of the Environment Administration Act 1991, section 6(2).</i>	✓
<i>Action to address climate change should involve appropriate consultation with affected persons, communities and stakeholders.</i>	✓
<i>Action to address climate change should take into account the following—</i> (a) <i>the knowledge and perspectives of Aboriginal communities,</i> (b) <i>the best available science,</i> (c) <i>the knowledge of rural, regional and remote communities in New South Wales,</i> (d) <i>the need to support local communities, including Aboriginal communities, who may be affected by the action, including by—</i> (i) <i>considering the impact on local employment and industries, and</i> (ii) <i>diversifying local economies, and</i> (iii) <i>encouraging local procurement, and</i> (iv) <i>optimising job creation and employment transition opportunities, and</i> (v) <i>considering the impact on the amenity of local communities,</i> (e) <i>the need for education and skills diversification,</i> (f) <i>the need to ensure essential utilities and infrastructure are provided, including energy, water, telecommunications and transport,</i> (g) <i>the impact of the action on consumer costs in New South Wales, including energy costs,</i> (h) <i>the need to reduce the risk climate change poses to human health,</i> (i) <i>equity and social justice impacts on socially disadvantaged groups and economically vulnerable regions,</i> (j) <i>the need to reduce the risk climate change poses to the survival of all species.</i>	✓
<i>Action to address climate change should take into account the impact on animals.</i>	✓
<i>The Government of New South Wales is responsible for—</i> (a) <i>urgently developing and implementing strategies, policies and programs to address climate change, and</i> (b) <i>ensuring the Government of New South Wales pursues best practice in addressing climate change.</i>	N/A
<i>The adaptation objective is that New South Wales is more resilient to a changing climate.</i>	✓
<i>The Premier and the Minister must ensure New South Wales achieves the target by 30 June 2050 to reduce net greenhouse gas emissions in New South Wales to zero.</i>	N/A

After: Part 2 of the Net Zero Future Act.

Section 9 of the POEA Act imposes a statutory duty on the NSW EPA to develop environmental quality objectives, guidelines and policies to ensure environment protection. This includes protection of the environment from climate change. In this regard, the NSW EPA's Climate Change Policy identifies, on page 15, that its main purpose is to address both:

- the NSW EPA's statutory objectives to protect, restore and enhance the quality of the environment in NSW, and to reduce the risks to human health and prevent the degradation of the environment, under section 6(1) of the POEA Act; and
- the NSW EPA's statutory duty to develop environmental quality objectives, guidelines and policies to ensure environment protection from climate change under section 9(1)(a) of the POEA Act.

The delivery of the NSW EPA's *Climate Change Policy* is through an accompanying plan (i.e. the *Climate Change Action Plan 2023–26* [NSW EPA, 2023b]) that sets out specific actions the NSW EPA will take over the next three years and the stronger regulatory action taken over the medium to longer term to support the NSW Government's climate change commitments and policies.

2.3.2 Reporting

NSW Government/Net Zero Commission

Under the Net Zero Future Act the NSW Government has established a NZC in 2024.

The NZC has a number of responsibilities under the Net Zero Future Act, including providing annual reporting to the Government on NSW's progress towards the State's greenhouse gas emission reduction primary targets (and interim targets), and adaptation to climate change.

2.3.2.1 2024 Annual Report – Net Zero Commission

The NZC prepared its first annual report in 2024 (NZC, 2024). In this initial report the NZC calculated that the NSW Resources Sector on net accounted for 12% of State emissions. The Resources Sector is one of the lower emitting sectors in NSW, according to data presented by the NZC (NZC, 2024):

- **Electricity Sector** (largest contributor) – contributes some **40%** of NSW emissions and this sector's emissions have reduced some **28%** since 2005.
- **Transport Sector** (2nd largest contributor) – contributes some **22%** of NSW emissions and this sector's emissions have reduced some **1%** since 2005.
- **Agriculture Sector** (3rd largest contributor) – contributes some **20%** of NSW emissions and this sector's emissions have reduced some **5%** since 2005.
- **Industry and Waste Sector** (4th largest contributor) – contributes some **18%** of NSW emissions and this sector's emissions have reduced some **26%** since 2005.
- **Resources Sector** (5th largest contributor) – contributes some **12%** of NSW emissions and this sector's emissions have reduced some **34%** since 2005.
- **Built Environment Sector** (smallest contributor) – contributes some **7%** of NSW emissions and this sector's emissions have increased some **92%** since 2005.
- **Land Sector** (negative emissions) – is the only sector analysed with negative emissions (**-19%**), with acceleration of emissions abatement in this NSW sector being observed since 2005.

Further consideration of NSW sectoral emissions performance is provided in Section 3.5.

New South Wales Environment Protection Authority

The NSW EPA reports progress against its climate change action plan in its NSW EPA Annual Report and will review its climate change policy and action plan in 2026, in line with the reporting cycles for the NSW EPA's strategic planning and *NSW State of the Environment* reports (NSW EPA, 2023a).

It is anticipated that licensed facilities in NSW will also progressively be required to expand their annual environmental reporting to include greenhouse gas emissions in accordance with applicable EPL condition updates (Section 2.3.1).

2.3.3 Mitigation and Adaptation

NSW Government

Major emissions reductions initiatives in NSW to reduce greenhouse gas emissions include the:

- NSW Electricity Infrastructure Roadmap, which will deliver a modern energy system for the State and unlock investment in renewable energy;
- NSW Net Zero Industry and Innovation Program, which will help reduce emissions from NSW's industrial sector and invest in new clean technologies for the future;
- NSW Electric Vehicle Strategy, which will accelerate the uptake of electric vehicles;
- NSW Hydrogen Strategy, which will support the growth of a hydrogen industry;
- NSW Waste and Sustainable Materials Strategy, which will reduce emissions through better waste and materials management; and
- NSW Primary Industries Productivity and Abatement Program, which will drive sustainable land management, boost productivity and help reduce emissions.

In a Ministerial Statement regarding the *Net Zero Plan Stage 1: 2020-2030 implementation updates*, the NSW Government stated (NSW Government, 2024):

While acknowledging that sectors of the NSW economy will decarbonise at different rates, the Government's policy is that all sectors need to ratchet down their emissions to meet NSW's legislated targets and the targets that will be established for 2040 and 2045.

Some sectors require long lead-times to secure emissions reductions. The Government's policy is that entities involved in assessment and decision-making processes under the planning system – including the NSW Department of Planning, Infrastructure and Housing (DPHI) and the Independent Planning Commission (IPC) – should consider NSW's emissions-reduction targets and, to the extent relevant, the Climate Change Act's guiding principles when examining new developments.

NSW's emissions reduction targets are considered in this assessment (Sections 3.5).

NSW Environment Protection Authority

The NSW EPA's *Climate Change Action Plan 2023-26* (NSW EPA, 2023b) includes an action to progressively place greenhouse gas limits on new or existing licenced facilities, informed by emission targets to be identified for key industries and implemented in consideration of reporting under the NGER Act (i.e. to reduce duplication of reporting).

The NSW EPA has three current major greenhouse gas/climate change focus areas (NSW EPA, 2023b):

1. Inform and plan:

- *work with industry, government and experts to improve the evidence base on regulating climate change;*
- *embed climate change into planning and regulatory decisions;*
- *support licensees to prepare, implement and report on climate change mitigation and adaptation management plans; and*
- *work with Aboriginal people and our Environment Youth Advisory Council to improve the EPA's evolving climate change response.*

2. Mitigate:

- *establish cost-effective emission reduction targets for key industry sectors;*
- *provide industry with best-practice guidelines to support it to reduce its emissions; and*
- *phase in greenhouse gas emission limits on licences for key industry sectors.*

3. Adapt:

- *develop resilience programs and best-practice adaptation guidance; and*
- *harness citizen science and develop and implement community education programs.*

Best Practice Checklist for Greenhouse Gas Abatement by NSW Coal Mines

Katestone Environmental Pty Ltd (Katestone) was commissioned by the NSW Department of Planning and Environment (now NSW Department of Planning, Housing and Infrastructure [NSW DPHI]) to develop a benchmarking checklist of current best practices for the abatement of greenhouse gas emissions from coal projects in NSW to assist NSW DPHI with the review of air quality and greenhouse gas management plans submitted under Conditions of Consent (Katestone, 2023).

Katestone (2023) defines current best practice, as practice that will make a material contribution to greenhouse gas emissions reduction. The benchmarking checklist addresses current best practice for (Katestone, 2023):

Policy, targets, and systems.

- Scope 1 emissions (i.e. largely from fuel combustion and fugitive coal seam gas).
- Scope 2 emissions (i.e. offsite electricity generation emissions).
- Scope 3 emissions (i.e. largely from coal combustion).

Katestone (2023) regards current best practice as:

...practice that will make a material contribution to GHG emissions reduction.

Key extracts from this document that are considered of potential relevance to the mitigation measure evaluation (Section 3.3) are reproduced for each of these aspects below.

Policy, Targets and Systems

Katestone (2023) highlights best practice measures for the setting of strategic corporate targets, and the importance of Scope 3 emissions reduction ambition:

Best practice GHG abatement starts with a commitment by a company's Board to achieving net zero GHG emissions by 2050 or sooner...

The strategic targets established by a mining company need to conform with the targets and actions necessary to meet the goals of the Paris Agreement. They should be based on an understanding of the mine or company's carbon footprint and emissions profile, be realistic, and have demonstrable and measurable actions and investments to achieve the targets.

...

Many of the largest global and Australian mining companies are setting targets for reducing their CO₂ emissions.

...

Many of these companies are focusing solely on net zero for Scope 1 and Scope 2 emissions; however, emissions along the value chain can represent a company's biggest GHG impact and its greatest opportunity for emissions reduction.

Reducing Emissions from Fuel Combustion

Katestone (2023) highlights five key areas of relevance to reducing fuel combustion emissions:

- **Vehicle Selection, Operation, and Maintenance** – *The procurement of new fuel-efficient vehicles is a key stage of mine operations that offers companies a chance to reduce greenhouse gas emissions and costs, and this is a selling point for such vehicles. ... Driver training combined with driver behaviour monitoring systems and engine control units optimised for fuel efficiency and emissions control should be expected best practice in mining operations. ...*
 - **Renewable Fuels** – *Biodiesel has been recognised as a best practice low carbon emissions alternative to diesel in the mining industry for over a decade. ... Current barriers to widespread application of biodiesel in the mining industry are the lack of supply of suitable quantities of biodiesel, and its higher cost relative to diesel.*
 - **Alternative drive trains** – *The use of battery electric vehicles (BEV), fuel cell electric vehicles (FCEV) and diesel-electric hybrid vehicles (HV) represents emerging best practice in the mining industry. ...*
 - **Automation** – *The mining industry is rapidly transitioning to automation where practicable to increase efficiency of processes. Automation can improve fuel efficiency and result in emissions reduction through standardising of speed, braking, or acceleration of vehicles or plant, while advances in artificial intelligence (AI) and machine learning is likely to be able to be used to optimally respond to changing conditions.*
 - **Mine Site Design, Planning, and Operation** – *Best practice Life of Mine Planning (LOMP) for operational efficiency (and hence emissions minimisation) involves the design of loading, transit, and unloading areas to minimise unnecessary slowing or stopping of heavy trucks, (Crittenden et al. 2016).*
- ...

Reducing Fugitive Emissions

Katestone (2023) highlights key current limitations with respect to reducing fugitive emissions from open cut mining:

Open cut coal mines are required to annually report their fugitive emissions of CH₄ in the National Greenhouse and Energy reporting system (NGERS), but are not currently required to do anything about them, as there is no current best practice for capturing and destroying these emissions.

Best practice at this time would involve compensatory ecological offsets that sequester carbon.

Reducing Scope 2 Emissions

Katestone (2023) highlights key opportunities to address Scope 2 emissions, including renewable electricity sources:

- **Renewable Electricity** – Purchasing of renewably generated electricity rather than electricity generated from fossil fuels, will reduce the actual Scope 2 emissions from a mine site or company, although this will only be recognised in NGERs through the declining State emissions factor as the proportion of renewable electricity generation increases over time. Some mining companies have explicit Power Purchase Agreements (PPA) with renewable electricity generators which allows them to lock in a price for renewable electricity supply....

Reducing Scope 3 Emissions

Katestone (2023) highlights key opportunities to address Scope 3 emissions, including product combustion:

- **Combustion** – Scope 3 emissions from the combustion of exported coal are not accounted for in company (NGERs), NSW, or Australia's inventories. However, they still contribute significantly to the accumulation of atmospheric carbon dioxide and to a changing climate that is likely to negatively affect Australia. Current best practice is investment by mining companies to help their international customers reduce their emissions.

Residual Emissions Reduction

Katestone (2023) highlights key opportunities to address residual emissions, after the application of reasonable and feasible site reduction measures:

Residual emissions are any GHG emissions which remain after a project or organisation has implemented all technically and economically feasible opportunities to reduce emissions in all scopes and from all sources. To achieve net zero emissions for a project or organisation, the residual emissions must be either reduced to zero, or balanced out through the purchasing of offsets.

It is unlikely that coal mining companies will be able to completely decarbonise operations; consequently, the purchasing of certified and validated offsets presents a feasible best practice method for coal mine operations to achieve net zero emissions.

New South Wales Greenhouse Gas Emissions Projections 2024 – Method Paper

The NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) has projected future trends in greenhouse gas emissions and the *NSW greenhouse gas emissions projections 2024 - Methods Paper* (NSW DCCEEW, 2025a) summarises NSW emissions trends and describes the assumptions and methodologies applied in preparing NSW's projections.

In completing its greenhouse gas sectoral projections, NSW DCCEEW has made assumptions regarding the potential availability and adoption of alternative technologies to diesel powered mining equipment, as follows (NSW DCCEEW, 2025a):

Open-cut mines operating post-2042 are assumed to replace non-road diesel equipment with clean technology starting in 2032. The abatement to be achieved post-2030 by replacing diesel-powered mobile plant and equipment was modelled on a mine-by-mine basis accounting for the extent of emissions projected for the mine and the forecast remaining mine life.

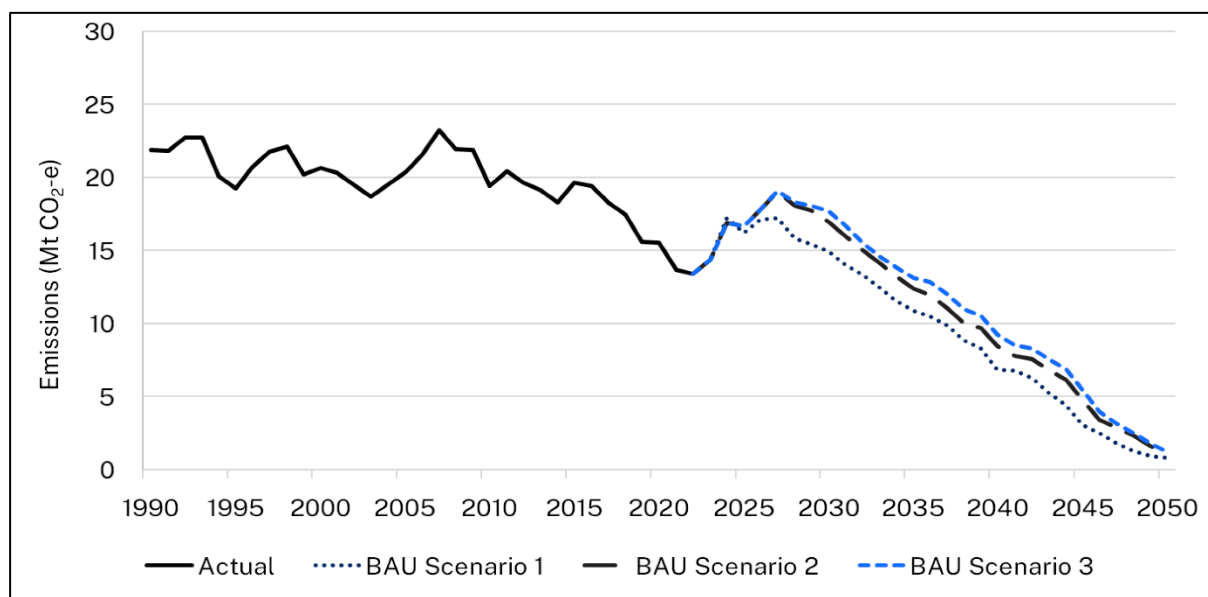
It is noted that the Wilpinjong Coal Mine incorporating the Modification would cease coal production in 2033, and therefore alternatives to diesel-powered equipment are not applicable.

Consideration of the technical readiness and commercial readiness of alternative diesel replacement technologies, the likely timing of alternative technologies being available in relation to the Modification is provided in Section 3.3.

NSW DCCEEW has also included projection updates for various future ROM coal production scenarios including:

- *Scenario 1 – production forecasts for all currently approved coal mine operations only*
- *Scenario 2 – Scenario 1 plus production forecasts for all coal mine modification and state significant development (SSD) applications that are currently under assessment with the Department of Planning, Housing and Infrastructure (DPHI)*
- *Scenario 3 – Scenario 2 plus production forecasts for all coal mine modification and SSD proposals for which scoping reports have been submitted to the DPHI.*

Scenario 3 includes the Modification as outlined in the Scoping Letter, which proposed an additional 34 Mt of ROM coal (WCPL, 2024). Since then, the Modification has been revised and reduced to an additional 14 Mt of ROM coal. As a result, Scenario 3 conservatively overstates the Modification in NSWs' projections. Figure 21, replicated as Figure 7 below, illustrates the projected emissions under all three scenarios and would decline rapidly from the late 2020s.



After: NSW DCCEEW, 2025a

Figure 7
NSW Scope 1 Emissions for Coal Mining Showing Inventory Estimates (1990–2022) and Business-As-Usual Emissions Projections for 3 Scenarios Developed for the 2024 Update

2.3.4 Offsets

The NSW Government has many climate policies and programs that interact with, or rely upon, a market for carbon offsets. In its submission to the Independent Review of ACCUs (NSW Government, 2022), it stated:

NSW relies on ACCUs for many of its policies

The NSW Government relies on Australian Carbon Credit Units (ACCUs) being robust and trusted by the community and has an interest in ensuring that confidence in the domestic carbon market is restored. ...

Key NSW policies and programs relevant for the ACCU market include:

- the Primary Industries Productivity and Abatement Program (PIPAP), which supports NSW farmers and land managers to optimise productivity, reduce emissions, access carbon markets and seize new market opportunities. ...
- the Vehicle Emissions Offset Scheme, which will provide consumers with the opportunity to offset their CO₂ emissions at the point of registration renewal. The NSW Government will be purchasing ACCUs on behalf of consumers who have chosen to offset their vehicle emissions
- the National Parks and Wildlife Service, under the Carbon Positive by 2028 plan, will generate revenue for park management through the sale of premium carbon credits (ACCUs with biodiversity co-benefits)
- programs that work with stakeholders who purchase ACCUs or other carbon credits as part of their decarbonisation pathways, such as the Net Zero Industry and Innovation Program and the Business Decarbonisation Support Program
- NSW Government agencies who currently or may in the future purchase ACCUs to offset their emissions
- ...

In addition, the NSW Government also advocates for carbon farming in NSW (NSW Climate and Energy Action, 2025):

Carbon farming is an essential part of taking action on climate change. Storing carbon in plants and soil is one of the most cost-effective means of removing carbon from the atmosphere. This removal will be needed alongside emissions reduction activities to avoid the most severe impacts of climate change.

In its 2024 emission projections report, the NSW DCCEEW also provided the following context for Safeguard Mechanism facilities (NSW DCCEEW, 2025a):

The Australian Government's reform of the Safeguard Mechanism requires significant emission reductions across multiple sectors, designed to help deliver a proportional share of Australia's 2030 climate target. Industrial facilities will need to meet their Safeguard Mechanism declining emissions baseline obligations through a combination of onsite reduction and surrender of Australian carbon credit units (ACCUs) or Safeguard Mechanism credits (SMCs) (Cth DCCEEW 2023a).

How each facility in New South Wales will meet their obligations is not known at this stage. However, there are onsite abatement potential assumptions across multiple sectors in NSW's emissions projections.

The NZC also states the following with respect to offsets and the NSW resources industry (NZC, 2024):

The Safeguard Mechanism aims to incentivise the most cost-effective abatement activities by requiring facilities to keep emissions below their baseline, while facilities that remain below their baseline can sell credits to others. Facilities that do not meet requirements can purchase offsets in the form of Australian Carbon Credit Units or Safeguard Mechanism Credits. The Safeguard Mechanism sets a baseline decline rate of 4.9 per cent per year until 2030. However, prevailing and expected price levels in credit markets may not be sufficient to incentivise some options to reduce emissions, and some emitting mines are not covered in the Safeguard Mechanism because their emissions are below the inclusion threshold.

2.4 CORPORATE

2.4.1 Peabody Greenhouse Gas Policy

Decarbonisation Goals

Peabody Energy Corporation (Peabody) recognises the effects of climate change must be addressed and that a concerted global effort is required to reduce greenhouse gas emissions (Peabody, 2022).

Peabody acknowledge that, in collaboration with its stakeholders, Peabody has a responsibility to reduce its greenhouse gas emissions to fulfill its ambition of achieving net zero emissions by 2050 (Peabody, 2022). Applying emission reduction technology to existing resources and infrastructure must balance the need for a timely transition with the necessity for steel and affordable, reliable energy (Peabody, 2025).

Peabody is committed to responsibly mining its existing thermal coal reserves, recognising the role coal continues to play in meeting growing global energy demand (Peabody, 2025).

Peabody believes the most effective path to reducing greenhouse gas emissions is through measurable, incremental near-term targets (Peabody, 2025). In 2024, Peabody met its initial short-term goal, reducing Scope 1 and Scope 2 greenhouse gas emissions by 15% from its 2018 baseline. The company has now set a new target to reduce Scope 1 and Scope 2 emissions by 20% from its 2023 baseline by 2030 (Peabody, 2025).

This reduction is expected to be driven primarily by the strategic lever of decreasing production in the United States thermal coal segment, in line with projected demand along with expanding methane mitigation and utilisation strategies to meet compliance requirements (Peabody, 2025).

Additional emission reduction levers include (Peabody, 2025):

- *Incorporating the risks and opportunities in each mine's emission profile to optimize emission and energy performance*
- *Prioritizing emission reduction initiatives that create value and mitigate risk, especially in relation to the cost structure of each of our mines*
- *Minimizing dependence on purchased offsets through effective emission reduction*

Emission Intensity Reduction Targets

Emissions intensity reduction obligations, as set by the Safeguard Mechanism, apply to the Wilpinjong Coal Mine and WCPL will be required to reduce its 'baseline' emissions intensity based on a facility-specific ratio and the default 4.9% per year emissions intensity reduction through to FY30 (i.e. Safeguard facilities with a high facility-specific emissions intensity will have to reduce emissions more aggressively compared to facilities with lower historical emissions intensity).

The emissions intensity reduction obligations set by the Safeguard Mechanism at present for the Wilpinjong Coal Mine would apply to the Modification as well, given the Modification relates to an existing Safeguard facility.

2.4.2 Mitigation

Fugitive Emissions Abatement

Fugitive emissions accounted for approximately 64% of Peabody's Scope 1 emissions in FY24 (Peabody, 2025). Peabody's current emission reduction opportunities it is exploring for its mines include (Peabody, 2025):

- coal seam gas drainage;
- flaring;
- gas sales;
- power generation;
- sealing underground mining areas; and
- regenerative thermal oxidation.

Fuel Emissions Abatement

Diesel emissions accounted for approximately 26% of Peabody's Scope 1 emissions in FY24, with the majority emitted at the Coppabella, Moorvale and Middlemount Coal Mines (Peabody, 2025).

Peabody has invested in adopting the DRIFTEX electric vehicle for the Metropolitan Coal Mine, a solution designed to improve underground mining operations. Developed to reduce carbon emissions, noise and particulate matter, the DRIFTEX significantly improves worker safety and environmental performance by replacing diesel powered underground fleet (Peabody, 2025).

In addition, Peabody will continue to support the research, development and deployment of technology that will reduce emissions within its value chain. These efforts include investments in renewables development on previously mined land through the R3 joint venture and support of high-efficiency, low-emissions coal-fuelled generation. Peabody also invests in carbon capture technologies by funding the not-for-profit organisation Low Emission Technology Australia. This organisation focuses on identifying, researching and developing technologies that reduce and remove greenhouse gas emissions.

Abatement initiatives specific for the Wilpinjong Coal Mine are further described in Section 3.3.

2.4.3 Adaptation

WCPL would prepare a Climate Change Mitigation and Adaptation Plan in consultation with the NSW EPA for the Wilpinjong Coal Mine, should the Modification be approved (Section 3.8).

2.4.4 Offsets

The adoption of carbon offsets (i.e. ACCUs in this context) may in some cases be the most reasonable and feasible opportunity to address difficult to abate emissions in the short-to-medium-term at any material scale. WCPL expects to continue to rely on carbon credits to meet the majority of its Safeguard Mechanism obligations for the foreseeable future (Section 3.7).

3 GREENHOUSE GAS EMISSIONS ASSESSMENT AND MITIGATION PLAN

3.1 ASSESSMENT BOUNDARY

The Greenhouse Gas Assessment for the Modification adopts a practical boundary, encompassing key Scope 1, Scope 2, and Scope 3 emission sources (Figure 5). This approach prioritises material emissions from the proposed mining activity (i.e. those significant to the Modification's environmental impact) while also evaluating whether these emissions would occur if the Modification were not implemented.

Greenhouse gas emission scope boundaries for the Modification are discussed in Section 1.4. A summary of key potential greenhouse gas emissions sources considered for the Modification is provided in Table 4 and illustrated schematically on Figure 5.

3.1.1 Scope 1 Emissions

For the Wilpinjong Coal Mine, as an open-cut mining operation, Scope 1 emissions primarily result from diesel consumption in mining equipment, such as haul trucks, excavators and dozers, which dominate its greenhouse gas profile. Additional minor Scope 1 emissions within the assessment boundary include fugitive emissions from mining activities and carbonaceous material, carbon sink loss due to land clearing, explosive use and grease and oil use. Emissions from liquid petroleum gas, petrol, oil, grease and any incidental release of sulfur hexafluoride arising from high-voltage electrical equipment were evaluated but deemed negligible and excluded from the assessment boundary (Attachment A).

Emission reductions from on-site rehabilitation activities or offsetting have also been excluded from the assessment boundary to ensure a conservative estimate of emissions.

3.1.2 Scope 2 Emissions

Scope 2 emissions arise from the consumption of purchased electricity used in equipment or operations owned or controlled by the entity. These emissions, classified as indirect, are generated off-site at power plants or other facilities supplying the electricity and are attributed to the entity based on its energy usage.

The existing Wilpinjong Coal Mine receives electricity from a 66 kilovolt supply system owned and operated by Essential Energy. Power is distributed by overhead cable or underground cable where necessary.

For the Wilpinjong Coal Mine, Scope 2 emissions primarily arise from electricity consumption at the coal handling and processing plant, lighting and amenities in the accommodation camp, mining machinery, and other surface and service infrastructure. These emissions are included within the assessment boundary.

3.1.3 Scope 3 Emissions

Scope 3 emissions potentially incorporate a very wide range of sources that are both upstream and downstream of the Modification (Figure 5).

Upstream Scope 3 emissions, including extraction, production and transport of purchased liquid fuels and hydrocarbons along with transmission and distribution of purchased electricity have been included in the assessment boundary but are minimal when compared to downstream Scope 3 sources. Other upstream Scope 3 emissions including employee and company travel, construction materials and new mobile equipment have not been included.

Table 4
Summary of Key Potential Greenhouse Gas Emission Sources

Component	Direct Emissions	Indirect Emissions	
	Scope 1	Scope 2	Scope 3
Diesel consumption (including during decommissioning and construction activities)	Emissions from the combustion of diesel to fuel mobile and stationary plant equipment.	N/A	Upstream third-party emissions attributable to the extraction, production and transport of diesel consumed.
Oil and grease consumption (including during decommissioning and construction activities)	Emissions from the use of oil and grease as lubricants in mobile and stationary plant equipment.	N/A	Upstream third-party emissions attributable to the extraction, production and transport of oil and grease consumed.
Land (vegetation) clearing	Loss of carbon sink due to removal of vegetation.	N/A	N/A
Explosives	Emissions from the use of explosives.	N/A	N/A
Fugitive	Fugitive emissions resulting from the extraction of coal and carbonaceous material.	N/A	N/A
Post-mining	Fugitive emissions from post mining activities such as the release of residual gases from stockpiling of coal.	N/A	N/A
Electricity consumption for the processing of ROM coal and other on-site uses	N/A	Emissions from the consumption of purchased electricity used during mining activities, processing of ROM coal and operation of site infrastructure.	Upstream third-party emissions from the extraction, production and transport of fuel burned for the generation of electricity consumed, and the electricity lost in delivery in the transmission and distribution network.
Product coal transport	N/A	N/A	Downstream third-party emissions from the combustion of diesel used during domestic rail transport and international shipping.
Combustion of product coal	N/A	N/A	Downstream third-party emissions from the combustion of product coal from the Modification.

After: Airen Consulting (2025).

Downstream Scope 3 emissions are highly variable, influenced by factors such as the destination country, transportation methods, handling processes, and the efficiency of coal use. The assessment boundary for downstream Scope 3 emissions includes railing product coal to domestic consumers and the port of Newcastle, international shipping, combustion of product coal and upstream distribution of liquid fuel, hydrocarbons and electricity. Other downstream sources, such as waste disposal, customer country rail/truck transport, and port operations, are excluded due to their negligible contribution.

3.1.4 Modification Stages

The Greenhouse Gas Assessment boundary must account for emissions from all relevant stages of a project lifecycle. As outlined in the Guide, the assessment should address greenhouse gas emissions associated with each applicable stage, including:

- *construction, including demolition, land clearing and excavation*
- *operation*
- *decommissioning*
- *closure*
- *post-closure activities, such as remediation and rehabilitation (where relevant).*

While the Modification includes the realignment of some public infrastructure to facilitate the Pit 8 Extension, a construction stage has not been separately itemised in this Greenhouse Gas Assessment, as the Wilpinjong Coal Mine is already operational, and any associated construction activities have been factored into the early operational years of the Modification (i.e. FY27).

Decommissioning, closure, and post-closure activities remain generally consistent with the Approved Wilpinjong Coal Mine Development Consent (SSD-6764), however an extra six months of backfilling operations has been included in the Modification case.

3.2 GREENHOUSE GAS EMISSIONS ESTIMATION METHODOLOGY AND SCENARIOS

The Wilpinjong Coal Mine's direct and indirect greenhouse gas emissions have been estimated by Airen Consulting (2025) for the five scenarios described below in Table 5 using published emission factors from the NGA Factors where possible (Cth DCCEEW, 2024a).

Where NGA Factors were not available (e.g. for rail and ship transport), greenhouse gas emissions have been estimated based on emissions projections for the same activities for similar projects consistent with the Safeguard Rule as well as relevant guidance for land clearing (Transport Authorities Greenhouse Group, 2013).

Emission factors for electricity usage were obtained from *Australia's emissions projections 2024* (Cth DCCEEW, 2024c). These emission factors are based on projections for the decarbonisation of the NSW electricity grid over time.

The energy contents, emission factors and activity data used to estimate the greenhouse gas emissions are detailed in Attachment A.

Table 5
Greenhouse Gas Scenario Descriptions

Scenario	Inclusion of Cumbo Creek and Rocky Hill	Incremental ROM Coal Production	Description of Scenario	Purpose of Scenario
Baseline Scenario 1	No	0	Continuation of Wilpinjong Coal Mine operations, excluding the mining of Cumbo Creek and Rocky Hill (FY27 to FY33). This is referred to as the 'business-as-usual' scenario in the Guide.	This scenario provides the most conservative baseline for comparison to the Modification scenario as the Modification ROM coal increment is approximately 14 Mt.
Baseline Scenario 2	Yes	Baseline 1 + 7.9 Mt ROM Coal	Continuation of Wilpinjong Coal Mine operations, consistent with Development Consent (SSD-6764), including extraction of the approved Cumbo Creek and Rocky Hill (FY27 to FY33). This is an alternative 'business-as-usual' scenario.	This scenario incorporates the approved extraction of ROM coal from Cumbo Creek and Rocky Hill and is a less conservative baseline as the Modification ROM coal increment is approximately 7.9 Mt. Consistent with a conservative Economic Assessment comparison.
Modification Scenario	No	Baseline 1 + 14 Mt ROM Coal	Continuation of Wilpinjong Coal Mine operations, consistent with the Modification proposal (FY27 to FY33). This is referred to as the 'modified business' scenario in the Guide.	This scenario provides a conservative estimate of Wilpinjong Coal Mine emissions inclusive of the Modification.
Modification Only Scenario 1	No	+14 Mt ROM Coal	The incremental increase in emissions due to the Modification when compared against Baseline 1. This is referred to as the 'Project only' scenario in the Guide.	This scenario provides a conservative assessment of Modification-related emissions, assessing the total incremental increase of 14 Mt of ROM coal without considering the emission reductions associated with avoiding Cumbo Creek and Rocky Hill.
Modification Only Scenario 2	Yes	+6.1 Mt ROM Coal	The incremental increase in emissions due to the Modification when compared against Baseline 2. This is an alternative, less conservative 'Project only' scenario.	This scenario captures the net emissions impact of the Modification, accounting for the emission reductions associated with sterilising Cumbo Creek and Rocky Hill. Consistent with a conservative Economic Assessment comparison which also considers the value of foregone coal in the currently approved mine footprint.

3.3 MITIGATION MEASURES

WCPL notes that the Guide provides that future emission abatement opportunities should not be pursued ‘at any cost’ (NSW EPA, 2025):

Emissions reductions are often achieved through efficiency measures or new technologies and processes that may provide cost savings or returns on investment in the short, near or long term. However, mitigation measures may also result in costs to the proponent. While it is not expected that emissions reductions be pursued at any cost, it is expected that the proponent will consider plausible cost-recovery options and other benefits gained to help balance the costs and improve the financial viability of measures. The overall mitigation assessment must consider the cost of abating emissions...

The NSW EPA (2025) provides further guidance regarding decision making regarding the potential feasibility of abatement measures for an individual operation, and the importance of preferred options being cost-effective:

Decisions with respect to achievability will have regard to technical, logistical and financial considerations. Technical and logistical considerations include a wide range of issues that will influence the feasibility of an option: for example, whether a particular technology is compatible with an enterprise’s production processes. Financial considerations relate to the financial viability of an option. It is not expected that reductions in emissions should be pursued ‘at any cost’. Nor does it mean that the preferred option will always be the lowest-cost option. However, it is important that the preferred option is cost-effective. The costs need to be affordable in the context of the relevant industry sector within which the enterprise operates. This will need to be considered on a case-by-case basis through discussions with the EPA.

It is also noted that the Principles of the Net Zero Future Act also require a polycentric evaluation of the risk of delay and potential impacts on sustainable growth and regional communities, and the effective integration of social, economic and environmental considerations in decision-making processes (Table 3).

3.3.1 Modification Emission Context

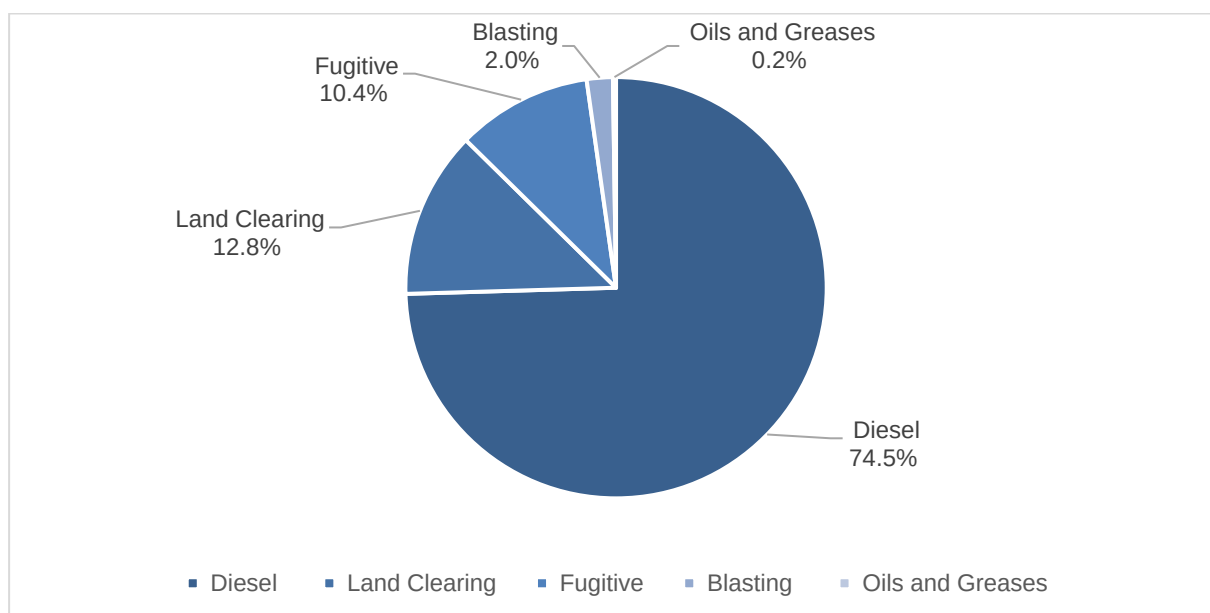
Consistent with the current stage of the Wilpinjong Coal Mine (i.e. an established and operational site), WCPL has focused its mitigation measure evaluation on the most material potential Scope 1 greenhouse gas emission sources associated with the Modification.

Graph 1 provides a summary of Scope 1 emission sources for the Modification Scenario, disaggregated by key source as percentage contributions. Diesel consumption is by far the largest contributor to Scope 1 emissions (74.5%), with haul trucks, dig units and dozers accounting for the majority of this use.

The Wilpinjong Coal Mine has been operational since 2006, and therefore has undergone progressive procurement and replacement of major mobile mining equipment in alignment with its operational demands.

Major equipment purchases have already occurred with the expectation that coal extraction will ramp down and cease in 2033. As a result, opportunities for significant equipment replacement or major rebuilds are limited during the life of the Modification. No major capital fleet purchases would be required to undertake the operational activities associated with the Modification.

It is important to note that the Modification would increase ROM coal extraction on net by approximately 6.1 Mt compared to the approved Wilpinjong Coal Mine Development Consent (SSD-6764) and does not seek an extension to the timeframe for ROM coal production (i.e. ceases on 31 December 2033).



Note: Totals do not add due to rounding.

Graph 1
Breakdown of Total Predicted Scope 1 Emissions for the Modification Scenario by Source

It is also important to note that the Modification would include the revegetation of Pit 8 Extension with native vegetation, however, conservatively this has not been accounted for in the assessment (i.e. would act to offset potential Modification land clearing emissions over time).

3.3.2 Existing Greenhouse Gas Management and Mitigation Measures

Condition 19, Schedule 3 of the Wilpinjong Coal Mine Development Consent (SSD-6764) requires:

19. *The Applicant shall:*

...

- (b) *implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site;*

WCPL currently mitigates greenhouse gas emissions from the Wilpinjong Coal Mine in accordance with the Wilpinjong Coal Mine Air Quality Management Plan, which has been prepared in accordance with Condition 20, Schedule 3 of the Wilpinjong Coal Mine Development Consent (SSD-6764).

The fuel consumption and fuel efficiency of all mobile and fixed equipment are a key consideration during mine planning and equipment procurement. Table 6 summarises existing mine planning and fleet operation mitigation measures.

Table 6
Summary of Existing Mitigation Measures

Greenhouse Gas Emissions Mitigation Hierarchy	Description of Current Mitigation Measures
Avoid	Minimising the re-handling of material (i.e. coal, overburden and topsoil).
Reduce	- Optimising the design of haul roads to minimise the distance travelled between the pit and the coal handling and processing facility. - Maintaining the fleet in good operating order. - Optimisation of dozer pushing (i.e. increasing the amount of material moved by dozers). - Increasing the bucket size on excavators to move more material with each bucket load.
Substitute	Introduction of new, more efficient equipment to site (e.g. mobile equipment fleet upgrade).
Offset	Consistent with the Safeguard Mechanism, WCPL surrenders ACCUs and/or SMCs when the Wilpinjong Coal Mine total covered emissions exceed its baseline emissions number. In FY24 WCPL surrendered 14,606 ACCUs.

After: (WCPL, 2022), (CER, 2025a), (NSW EPA, 2025).

Other potential mitigation and management measures to reduce greenhouse gas emissions that may be considered by WCPL include (WCPL, 2022):

- investigate areas to minimise electricity consumption of site;
- conduct a review of alternate energy sources;
- provide energy and awareness programs for staff and contractors; and
- minimise the production of waste generate on-site.

Existing greenhouse gas emission reduction measures that are applied at the Wilpinjong Coal Mine in accordance with the Air Quality Management Plan have been adopted as 'business as usual' for the purposes of the estimation of all scenarios in the Greenhouse Gas Calculations (Attachment A) and have not been separately itemised. All existing greenhouse gas management and mitigation measures would continue for the Modification.

Note in accordance with the Guide, any carbon offsets WCPL proposes to use in the future have not been included in any scenario.

3.3.3 Additional Greenhouse Gas Management and Mitigation Measures

For the identification and evaluation of potential greenhouse gas mitigation measures, WCPL has adopted a qualitative approach, appropriate to the current stage of Modification planning (i.e. conceptual design for the environmental approvals phase) and duration of the proposal (i.e. ROM coal extraction to 2033).

WCPL's focus for this assessment has been primarily on the largest contributing sources (and hence largest potential opportunities for abatement) of Modification Scope 1 greenhouse gas emissions.

WCPL have identified potential greenhouse gas mitigation measures for the Modification from a range of sources, including:

- existing technical experience and exposure to emerging abatement measures and technologies on other mine sites, including open cut coal mines and other open cut mining sectors;
- consideration of the greenhouse gas abatement measures being applied at other coal mines in NSW as described in relevant (Air Quality and) Greenhouse Gas Management Plans;
- reference to Australian and interstate publications on greenhouse gas abatement, including CCA's *Sector Pathways Review Targets* (CCA, 2024a) and *Pathways and Progress* paper (CCA, 2024b) (Section 2.2);
- reference to available specific best-practice guidance material, including the *Best Practice Checklist for Greenhouse Gas Abatement by NSW Coal Mines* (Katestone, 2023) (Section 2.3.3); and
- consideration of greenhouse gas mitigation measure adoption assumptions by NSW DCCEEW in its *NSW greenhouse gas emissions projections 2024 - Methods Paper* (NSW DCCEEW, 2025a) (Section 2.3.3)

Key potential Scope 1 mitigation measures that have been identified and considered by WCPL are summarised in Table 7. WCPL acknowledges that the list of technologies provided in Table 7 is not exhaustive.

WCPL has qualitatively assessed identified mitigation measures in seven categories (Table 8):

- **Technical Readiness** – The stage of a technology's development, ranging from feasibility studies to technology demonstrations.
- **Commercial Readiness** – The stage of a technology's commercial application, ranging from small-scale trials to widespread industry adoption. Considers the likelihood of the technology becoming commercially viable over the Modification life.
- **Capital Expenditure** – Anticipated capital investment required to implement the technology at the Wilpinjong Coal Mine.
- **Operational Expenditure** – Anticipated ongoing costs to operate the technology at the Wilpinjong Coal Mine when compared to current mining activities.
- **Abatement Effectiveness** – Anticipated greenhouse gas abatement achieved when compared to current mining activities.
- **Site Specific** – Considers the technology's suitability based on Wilpinjong Coal Mine's geology, terrain, mine plan and the likely marginal cost of abatement in the context of the proposal's duration (i.e. ROM coal extraction to 2033).
- **Modification Specific** – Considers the technology's relevance based on the Wilpinjong Coal Mine remaining life-of-mine and if the technology could be reasonable and feasibly integrated in the Wilpinjong Coal Mine, including the Modification.

Table 7
Summary of Identified Scope 1 and 2 Mitigation Measures

Mitigation Measure	Greenhouse Gas Emissions Mitigation Hierarchy	Description of Mitigation Measure	Effectiveness of Mitigation Measure at the Wilpinjong Coal Mine
Scope 1 – Alternative Fuel			
Premium Diesel	Reduce	Premium diesel is diesel augmented with fuel-efficiency additives to help keep the fuel system clean, minimise corrosion and reduce friction on moving parts in the fuel delivery system. Reported efficiency gains vary from a 2% to 14% reduction in fuel consumption (AMPOL Australia, 2024). Other sources indicate fuel savings of up to 3% (Viva Energy, 2025). Premium diesel is typically marginally more expensive (approximately 0.5% increase relative to conventional diesel) than diesel without any additives, however, the relative cost can vary depending on the supplier and the nature of the supply contract. Given the estimated annual average diesel fuel consumption of 32,300 kilolitres (kL) per annum over the operational life of the Wilpinjong Coal Mine (including the Modification), a nominal 2% fuel efficiency saving (excepting blasting consumption) would represent approximately 650 kL per annum reduction.	Efficiency gains are potentially very small (e.g. 2%) but premium diesel can be broadly applied to all diesel engines (diesel emissions contribute 74.5% to total Scope 1 emissions) for modest additional cost and therefore may warrant a reasonable and feasible marginal abatement cost evaluation for the Modification. May be unsuitable for blasting use (separate storage required).
Renewable Diesel	Substitute	Renewable diesel (i.e. hydrogenated vegetable oil) can be manufactured from a variety of feedstocks, is already commercially available globally, and is present in small volumes in the Australian fuel market, albeit it does not meet current Australian density standards for diesel fuel. Reported emission reduction rates for renewable diesel, compared to conventional diesel, range from 75% to 90% (Neste, 2024; Volvo Penta, 2024). However, these reductions are highly variable and depend largely on the feedstock used (United States EPA, 2024b). Based on consultation with suppliers to date, the cost of a contracted renewable diesel supply would come at a price premium of approximately 400% relative to conventional diesel.	Current supply options are limited and is currently cost-prohibitive. Cost may improve with Australian industry development but unlikely to become a reasonable and feasible mitigation measure during the life of the Modification.

Table 7 (Continued)
Summary of Identified Scope 1 and 2 Mitigation Measures

Mitigation Measure	Greenhouse Gas Emissions Mitigation Hierarchy	Description of Mitigation Measure	Effectiveness of Mitigation Measure at the Wilpinjong Coal Mine
Biodiesel	Substitute	Biodiesel is fuel derived from organic feedstocks and is manufactured through a process of transesterification. It is typically blended with conventional diesel in proportions such as B5 (5% biodiesel) or B20 (20% biodiesel) as diesel vehicles (in particular large mining haul trucks) compatibility with biodiesel varies significantly (Australian Clean Energy Finance Corporation and the Minerals Research Institute of Western Australia, 2022). While compatible with many existing diesel engines, higher blends may require equipment modifications or enhanced maintenance protocols. Biodiesel imports and domestic production in Australia declined significantly in 2016, primarily due to fluctuating feedstock prices affecting production profitability (United States Department of Agriculture, 2022). Renewable diesel has largely supplanted biodiesel as the preferred drop-in fuel prospect for the mining industry, primarily due to its chemical similarity to conventional diesel.	The effectiveness of biodiesel in reducing greenhouse gas emissions is limited by safe engine blend limits. Is currently cost-prohibitive and being phased out in place of renewable diesel. Very unlikely to become a reasonable and feasible mitigation measure during the life of the Modification.
Hydrogen Derived Fuel	Substitute	Alternative to conventional diesel, hydrogen-derived fuels require integration with compatible fuel cells or modified combustion engines to enable effective use. WCPL considers it is highly unlikely that Australian green hydrogen production and associated hydrogen derived fuel technologies (including cost of supply, fuel transport, safety controls, truck and excavator hydrogen derived fuel technology) would be reasonably and feasibly available for application to the Modification.	Commercial readiness, energy conversion efficiency limitations and the infrastructure required remain significant limitations for hydrogen-derived fuels. Unlikely to become a reasonable and feasible mitigation measure during the life of the Modification over the life of the Modification.

Table 7 (Continued)
Summary of Identified Scope 1 and 2 Mitigation Measures

Mitigation Measure	Greenhouse Gas Emissions Mitigation Hierarchy	Description of Mitigation Measure	Effectiveness of Mitigation Measure at the Wilpinjong Coal Mine
Scope 1 – Hybrid Equipment			
Diesel-Kinetic Storage-Electric Loaders	Reduce	Diesel-kinetic storage-electric wheeled loaders are equipped with regenerative braking or retarding systems and are an emerging technology in Australia, designed to improve fuel efficiency by recovering energy during deceleration. It has been reported that the addition of regenerative braking to an electric-drive diesel powered loader can reduce fuel consumption by up to 45% compared to a conventional diesel powered mechanical-drive loader (Komatsu, 2024).	Hybrid loaders can reduce fuel consumption through regenerative braking. However, loaders currently have limited application on-site (e.g. at the ROM pad). Not considered a reasonable and feasible mitigation measure for the Modification given the limited application and existing loaders are unlikely to be replaced.
Diesel-Battery-Electric Haul Truck	Reduce	Diesel-battery-electric haul trucks typically feature a primary diesel engine supported by a supplementary electric motor-generator system. This system can recover energy through regenerative braking and provide additional power during high-demand periods, such as acceleration. It has been reported that the addition of regenerative braking to an electric-drive diesel powered ultra-class haul truck could reduce fuel consumption and carbon emissions by up to 25% (First Mode, 2024).	Diesel-hybrid-electric haul trucks have the potential to reduce fuel consumption through regenerative braking and other hybrid energy storage technologies. However, these systems may present safety implications that require further assessment. At the Wilpinjong Coal Mine, major equipment purchases have largely already been made, limiting the scope for additional acquisitions. The adoption of this technology is unlikely to become a reasonable and feasible mitigation measure during the life of the Modification.
Scope 1 – Electrification			
Excavator and/or Shovel Electrification	Substitute	Mining-scale grid-connected excavators, powered by electricity, are currently being trialled and developed in Australia (BHP, 2024; Liebherr, 2023a; Liebherr, 2023b). These excavators require reliable access to grid power and the installation of substantial supporting infrastructure, including high-voltage supply lines, transformers, power outlets, and cable management systems. Compared to conventional diesel units, grid-connected excavators may also result in reduced operational flexibility due to their fixed power source.	Grid connected electrical hydraulic excavators would require major capital-intensive infrastructure and has implications for site electrical demand and distribution. Given current market availability and WCPL does not anticipate replacing its existing excavator fleet, the adoption of this technology is unlikely to become a reasonable and feasible mitigation measure during the life of the Modification.

Table 7 (Continued)
Summary of Identified Scope 1 and 2 Mitigation Measures

Mitigation Measure	Greenhouse Gas Emissions Mitigation Hierarchy	Description of Mitigation Measure	Effectiveness of Mitigation Measure at the Wilpinjong Coal Mine
Trolley Assist	Reduce	Trolley-assist haul trucks are specialised mining vehicles designed to draw power from an overhead electrical supply, supplementing their conventional diesel-electric propulsion systems. By electrifying key segments of the haul route (particularly during energy-intensive activities such as uphill hauling) trolley-assist systems can reduce overall diesel consumption, lower greenhouse gas emissions, and improve haulage efficiency.	The feasibility of trolley-assist systems is highly dependent on mine layout and topography. These systems require significant capital investment and are subject to operational constraints. Implementation also has implications for site-wide electrical demand and power distribution infrastructure. Trolley-assist technology is not considered a reasonable or feasible mitigation measure for the Modification.
Battery-Electric Haul Trucks	Substitute	Battery electric haul trucks are fully electric vehicles that operate without a diesel engine, relying instead on onboard batteries recharged via mobile or static charging systems. By replacing diesel engines with electric motors, these trucks eliminate diesel exhaust emissions and particulates, offer higher energy efficiency and reduced maintenance requirements due to fewer moving parts. Battery-electric haulage equipment is not currently a commercially available technology, however CCA (2024a) suggests the adoption of battery-electric technology is likely to become commercially viable by 2030 (Figure 6).	Battery-electric haul trucks are not considered a reasonable and feasible mitigation for the Modification given current development status of the technology and WCPL already has a suitable haul truck fleet in place.
Scope 1 – CH₄ Management			
Coal Seam Pre-Drainage	Reduce	Coal seam pre-drainage is the process of extracting high-purity gas, primarily CH ₄ , through various drainage methods and transporting it to the surface via a network of pipelines. CH ₄ would then be utilised or destroyed.	Wilpinjong Coal Mine has very low in-situ fugitive gas content. Liberating gas from the coal matrix at such low starting concentrations is physically challenging and coal seam pre-drainage is not considered reasonable and feasible for the Modification.
Scope 2 – Renewable Electricity			
Renewable Electricity Supply	Substitute	Augment current electrical supply systems with a renewable energy source (e.g. solar farm, wind farm) to provide a proportion of electricity demand.	Electricity consumption accounts for approximately 1.5% of the estimated Scope 1 and 2 emissions (Attachment A) and establishment of on-site renewable electricity supply is not considered reasonable and feasible for the Modification.

Table 7 (Continued)
Summary of Identified Scope 1 and 2 Mitigation Measures

Mitigation Measure	Greenhouse Gas Emissions Mitigation Hierarchy	Description of Mitigation Measure	Effectiveness of Mitigation Measure at the Wilpinjong Coal Mine
Carbon-Neutral Electricity Contract	Offset	The purchase of carbon-neutral electricity supply is typically an offset measure, in that the carbon emissions associated with supply of power to the Wilpinjong Coal Mine could be offset by a Climate Active certified electricity supplier.	Electricity consumption accounts for 1.5% of the Scope 1 and 2 emissions (Attachment A) at the Wilpinjong Coal Mine. It should be noted that Cth DCCEE (2024) projects ongoing decarbonisation of the NSW electricity grid, with emission factors expected to be 0.51, 0.15, and 0.03 t CO ₂ -e per megawatt-hour by 2025, 2030, and 2040 respectively (i.e. the benefits of establishing a carbon-neutral electricity supply contract will decline over time as the grid itself progressively decarbonises). Not considered reasonable and feasible mitigation measure for the Modification.

Table 8
Qualitative Assessment of Mitigation Measures

Mitigation Measure	Technical Readiness	Commercial Readiness	Capital Expenditure	Operational Expenditure	Abatement Effectiveness	Site Specific	Modification Specific
Scope 1 – Alternative Fuel							
Premium Diesel							
Renewable Diesel							
Biodiesel							
Hydrogen Derived							
Scope 1 – Hybrid Equipment							
Diesel-Kinetic Storage-Electric Loaders							
Diesel-Battery-Electric Haul Truck							
Scope 1 – Electrification							
Excavator and/or Shovel Electrification							
Trolley Assist							
Battery-Electric Haul Trucks							
Scope 1 – CH₄ Management							
Coal Seam Pre-Drainage							
Scope 2 – Renewable Electricity							
Renewable Electricity Supply							
Carbon-Neutral Electricity Contract							

Quantitative Evaluation Colour Key:

Most Positive	Positive	Neutral	Negative	Most Negative
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Of the mitigation measures identified, the use of premium diesel is the only opportunity identified that WCPL considers warrants further reasonable and feasible evaluation (e.g. marginal cost of abatement analysis) for implementation at the Wilpinjong Coal Mine in the period to 2033, including the Modification.

Further quantitative analysis would be undertaken to estimate additional capital and operational costs (including any implications for blasting) and anticipated greenhouse gas emission reductions to identify whether premium diesel is a reasonable and feasible mitigation measure for the Wilpinjong Coal Mine. This analysis would be included as part of the Wilpinjong Coal Mine Greenhouse Gas Mitigation and Adaptation Plan, to be developed post-approval in consultation with the NSW EPA (Section 3.8).

Therefore, Modification emissions have conservatively been estimated based on no further reasonable and feasible mitigation measures being adopted.

3.4 GREENHOUSE GAS ASSESSMENT

Annual Scope 1 and 2 greenhouse gas emissions estimated by Airen Consulting (2025) for each Modification only scenario are summarised in Table 9. The threshold for large emitters of 25,000 t CO₂-e (i.e. 0.025 million tonnes of carbon dioxide equivalent [Mt CO₂-e]) is projected to be exceeded by the Modification in six future years for the Modification Only Scenario 1 and four future years for the Modification Only Scenario 2 (highlighted in bold).

Table 9
Summary of Scope 1 and 2 Emissions for Modification Only Scenarios 1 and 2 per Financial Year

Financial Year	Scope 1 and 2 Emissions (Mt CO ₂ -e/year)	
	Modification Only Scenario 1	Modification Only Scenario 2
FY27	0.004	0.004
FY28	0.022	0.022
FY29	0.034	0.021
FY30	0.056	-0.006
FY31	0.076	0.047
FY32	0.071	0.053
FY33	0.054	0.058
FY34 [^]	0.055	0.057
FY35 [^]	0.000	0.002
FY36 [^]	0.000	0.001
FY37 [^]	0.000	0.001

Source: Airen Consulting (2025).

[^] Decommissioning years.

The greenhouse gas emissions estimated by Airen Consulting (2025) for each scenario are summarised in Table 10.

Accounting for the emissions avoided through sterilisation of Cumbo Creek and Rocky Hill (i.e. the difference between Modification Only Scenarios 1 and 2), approximately 0.11 Mt CO₂-e of Scope 1 greenhouse gas emissions are avoided as a result of WCPL electing not to mine these approved areas.

Table 10
Summary of Emissions per Scope for All Scenarios

Period	Scenario	Scope 1 (Mt CO ₂ -e)	Scope 2 (Mt CO ₂ -e)	Scope 3 (Mt CO ₂ -e)
Annual Average*	Baseline Scenario 1	0.076	0.003	10.164
	Baseline Scenario 2	0.094	0.003	12.369
	Modification Scenario	0.122	0.003	12.749
	Modification Only Scenario 1	0.045	0.001	3.566
	Modification Only Scenario 2	0.028	0.000	1.380
Total	Baseline Scenario 1	0.559	0.019	71.153
	Baseline Scenario 2	0.678	0.021	86.589
	Modification Scenario	0.934	0.024	89.264
	Modification Only Scenario 1	0.368	0.005	24.976
	Modification Only Scenario 2	0.256	0.003	9.677

Source: Airen Consulting (2025).

* Excludes decommissioning phase

3.4.1 Wilpinjong Coal Mine Safeguard Mechanism Baseline

The Modification would be incorporated into the Wilpinjong Coal Mine and reported as a single facility under the NGER Act with one baseline under the Safeguard Mechanism.

The Safeguard Mechanism baseline value may change over time in accordance with the provisions of the NGER Act and the applicable rules and regulations. WCPL would be required to retire ACCUs or SMCs for any exceedance of the baseline.

3.4.2 Greenhouse Gas Emissions Intensity

Baseline Scenario 1

The estimated emission intensity per unit of production (i.e. including both Scope 1 and 2 greenhouse gas emissions) for the Baseline Scenario 1 is estimated to be approximately 0.015 million tonnes of carbon dioxide equivalent per million tonnes of run-of-mine coal (Mt CO₂-e / Mt ROM coal) (Attachment A).

Modification Scenario

The estimated emission intensity per unit of production (i.e. including both Scope 1 and 2 greenhouse gas emissions) for the Modification Scenario are estimated to be approximately 0.018 Mt CO₂-e / Mt ROM coal (Attachment A). The increase in estimated emission intensity for the Modification Scenario compared to the Baseline Scenario 1 is due to the somewhat higher strip ratio of the Pit 8 extension area.

Modification Only Scenario 1

The estimated emission intensity per unit of production (i.e. including both Scope 1 and 2 greenhouse gas emissions) for the Modification Only Scenario 1 is estimated to be approximately 0.025 Mt CO₂-e / Mt ROM coal (Attachment A).

3.5 MODIFICATION ALIGNMENT WITH KEY EMISSION REDUCTION TARGETS AND GOALS

3.5.1 Scope 1 and Scope 2 Emissions

National

Airen Consulting's calculations indicate the average greenhouse gas emissions intensity for the Modification Scenario would be approximately 0.018 Mt CO₂-e / Mt ROM for Scope 1 and Scope 2 emissions (Attachment A).

Due to the historically low emissions intensity of production at the Wilpinjong Coal Mine, the existing EID for ROM coal is 0.009093 t CO₂-e / t ROM (CER, 2025b) (Section 2.2.3). This ranks Wilpinjong as having the second-lowest emissions intensity among approximately 70 Australian coal mining facilities with published EIDs (Chart 1).

The emissions intensity at Wilpinjong Coal Mine is significantly lower than the industry default value of 0.0653 t CO₂-e / t ROM, as specified under the Safeguard Rule (Section 2.2.3). This low emissions intensity is attributable to both very low fugitive emissions and also low strip ratios characteristic of operations at the Wilpinjong Coal Mine.

Under the Modification Scenario, the Wilpinjong Coal Mine emissions intensity would remain well below the Safeguard Mechanism default ROM coal production variable (0.0653 t CO₂-e / t ROM), and relative to other current Australian ROM coal EIDs, would rank approximately 9th (excluding the existing Wilpinjong Coal Mine) out of approximately 70 facilities (based on historical data determinations) (Chart 1).

It is also notable that the average annual emissions intensity trajectory is relatively flat over the life of the Modification (relative to each t of ROM coal produced) (Chart 2), which is largely because the CH₄ content of mined coal seams remains low throughout the whole Wilpinjong Coal Mine domain.

Large facilities under the NGER Act have declining emissions baselines to 2050, in line with Australia's NDC under the *Paris Agreement* (i.e. reducing net greenhouse gas emissions to 43% below 2005 levels by 2030 and net zero by 2050) (Section 2.3.3).

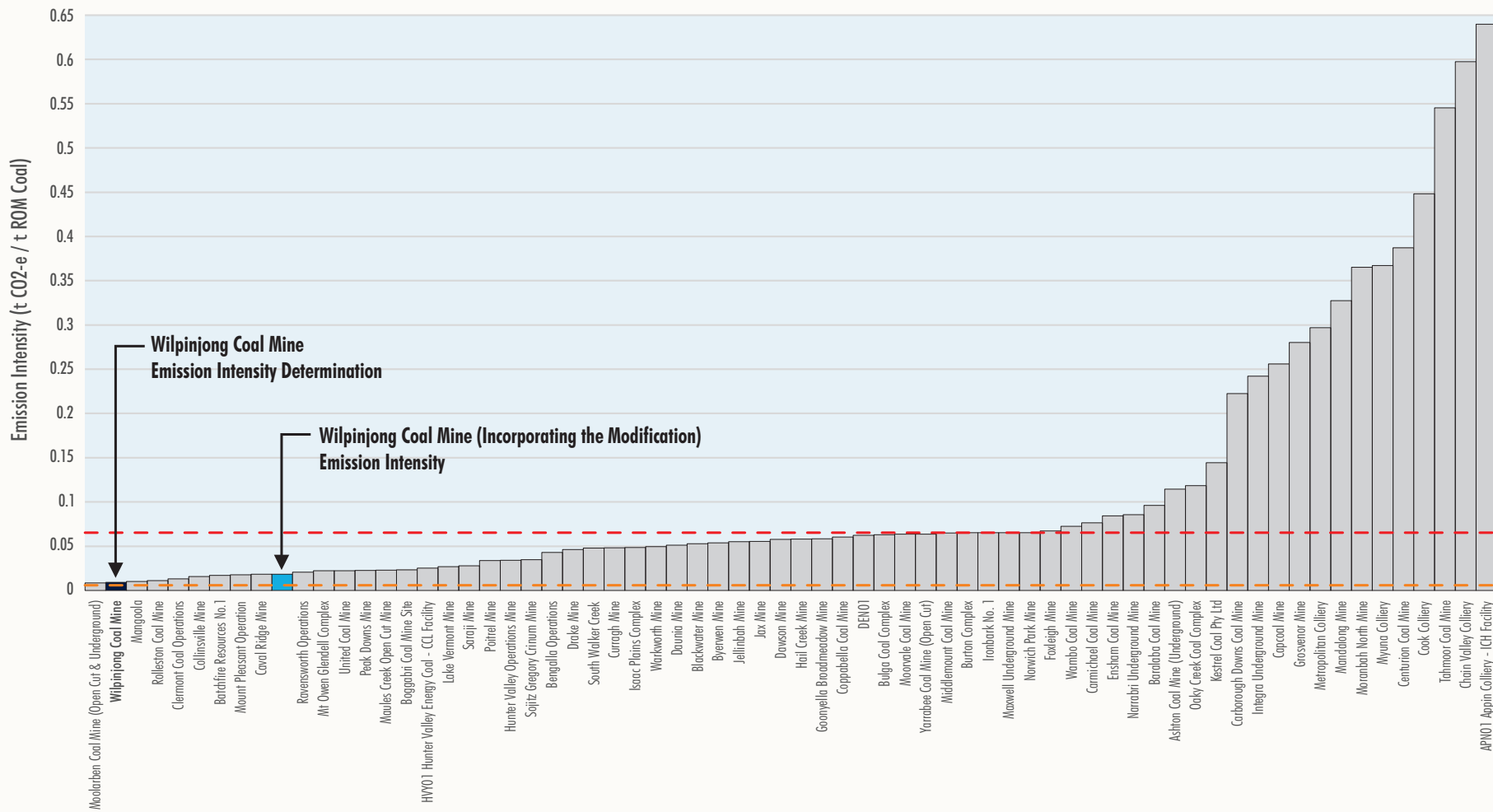
However, due to the methodology used to calculate baseline emission intensity (i.e. the gradual transition from a site-specific factor to the full industry average) the baseline emission intensity for the Wilpinjong Coal Mine is projected to increase over the short term, including during the Modification. This initial rising baseline trend highlights the very low emissions intensity of Wilpinjong compared to the industry average of 0.0653 t CO₂-e / t ROM coal.

Chart 3 illustrates that based on current WCPL projections it is anticipated the Wilpinjong Coal Mine would generate SMCs over the Modification life.

Further discussion on estimated SMCs and ACCUs that are generated/required over the life of the Wilpinjong Coal Mine incorporating the Modification is provided in Section 3.7.

Under the Safeguard Mechanism, WCPL is required to surrender ACCUs or SMCs when Wilpinjong Coal Mine's covered emissions exceed the prescribed declining baseline emissions.

WCPL is and would continue to meet its obligations under the Safeguard Mechanism, including for the Modification, by retiring ACCUs or SMCs as required.



Source: After CER (2025a); Aircon Consulting (2025)

LEGEND

- — — — — Safeguard Mechanism Default Safeguard Emission Intensity
- — — — — Safeguard Mechanism Best Practice Emission Intensity



WILPINJONG COAL MINE
Australian Coal Mine Emissions Intensity Determinations
and Estimated Modification Scenario Emission Intensity

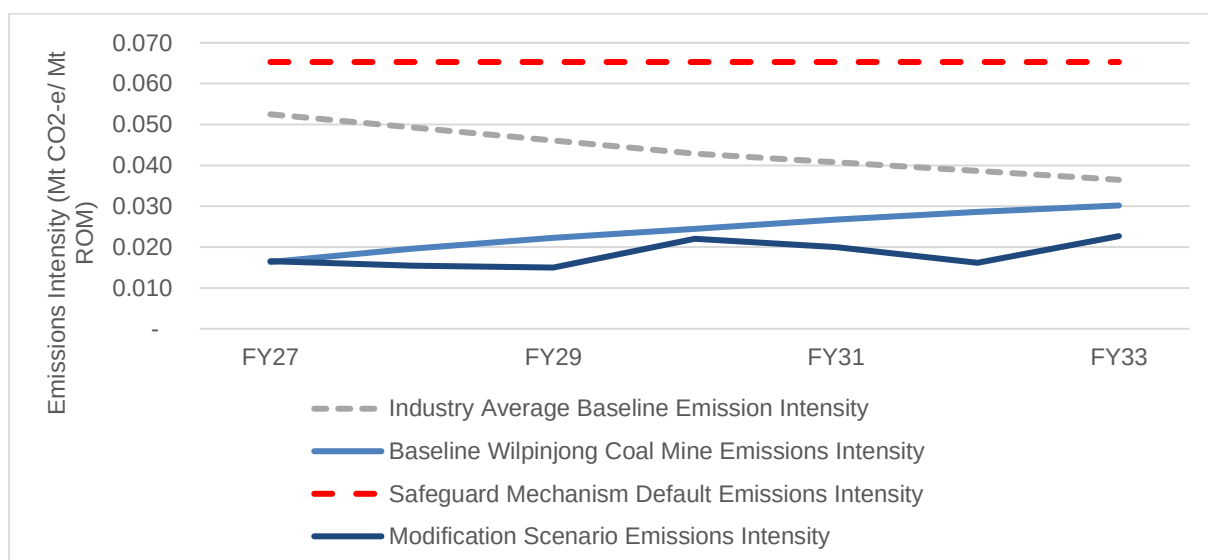


Chart 2
Wilpinjong Coal Mine Safeguard Site-Specific Intensity Decline Rate and Estimated Modification ROM Coal Emissions Intensity

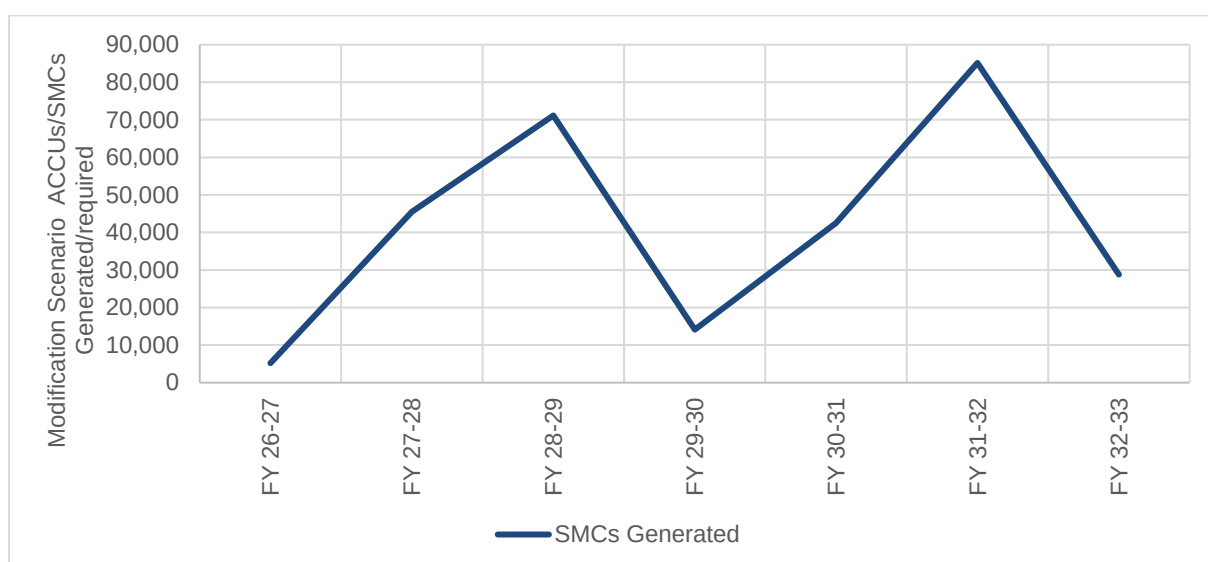


Chart 3
Estimated Modification Scenario ACCU/SMC Demand Projection

State

NSW's net emission reduction targets as legislated in the Net Zero Future Act are as follows (Section 2.3):

- 50% reduction on 2005 levels by 2030;
- 70% reduction on 2005 levels by 2035; and
- net zero by 2050.

These targets can be represented graphically as shown on Chart 4. The Net Zero Future Act emission reduction targets established by NSW for 2030 and 2035 are more ambitious than the current Commonwealth targets as set out in Australia's first (updated) NDC (NSW EPA, 2025). However, when considered over whole of the relevant periods between 2005 and 2030 (2% per annum), 2030 and 2035 (4% per annum) and 2035 and 2050 (2% per annum) the annual emission reduction rates are generally comparable to, or lower than, the reformed Safeguard Mechanism decline rates (Table 1).

The relative performance of various NSW economic sectors excluding the significant influence of the land use sector was assessed against the NSW interim emission reduction targets (Chart 5). This comparison reveals the resources sector is the only emitting sector which had an average reported emission reduction rate of approximately 2% per annum, consistent with the average decline rate required to meet the NSW net zero target between 2005 and 2030.

The observed reduction in reported resource sector emissions between 2005 and 2022 occurred prior to the introduction of the reformed Safeguard Mechanism in 2023, which will act to drive further industry net emission reductions.

The Safeguard Mechanism decline rates have been derived to allow for future growth at both existing and new Safeguard facilities (Cth DCCEEW, 2024b). Based on the above, the Safeguard Mechanism emission decline rates are more ambitious than the average rate of emissions decline that is required between 2005 and 2030 to achieve the NSW interim 2030 target of 50%.

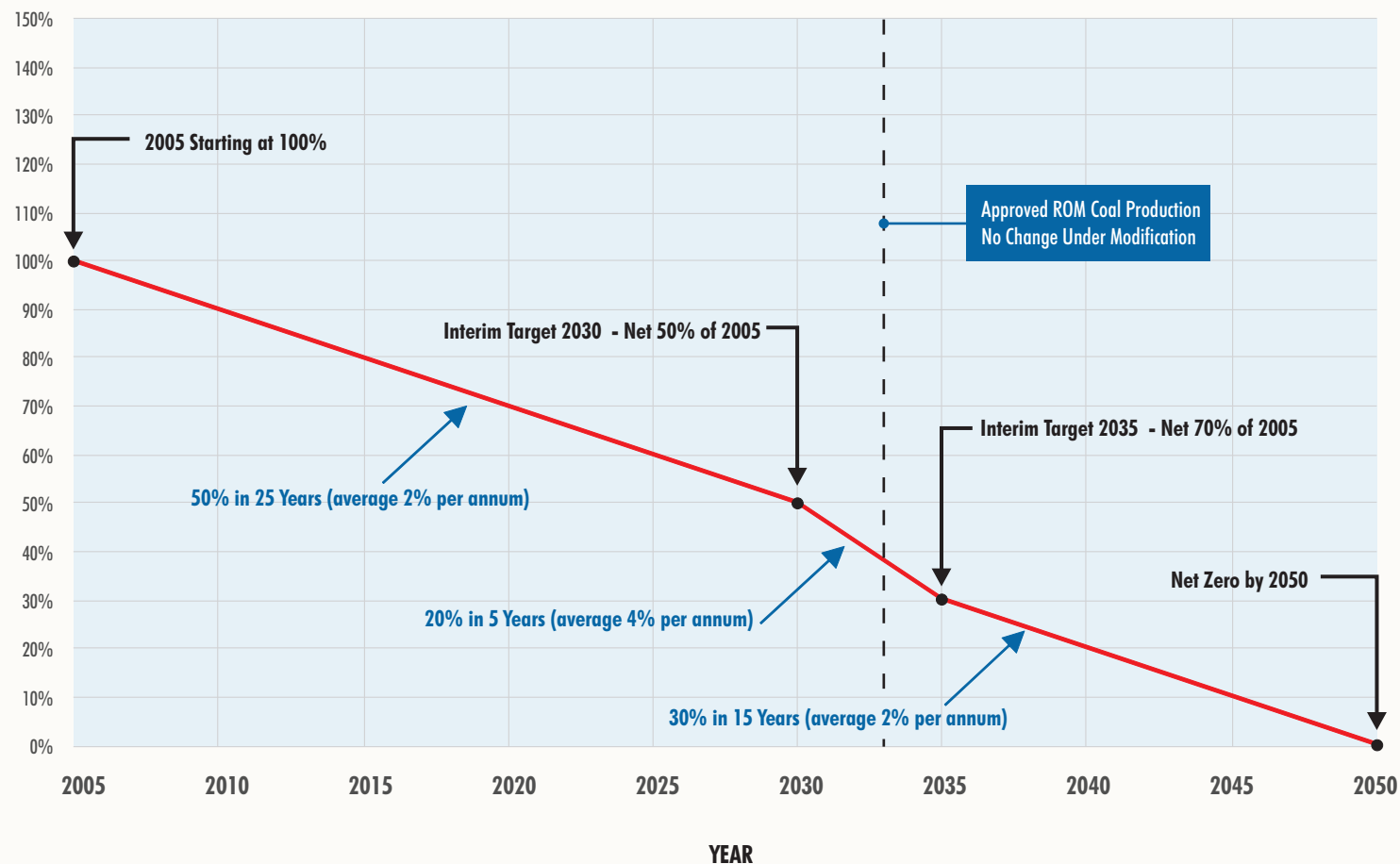
The Scope 1 emissions intensity at Wilpinjong Coal Mine is significantly lower than the industry default value of 0.0653 t CO₂-e / t ROM, as specified under the Safeguard Rule (Section 2.2.3). This low emissions intensity is attributable to both very low fugitive emissions and also low strip ratios characteristic of operations at the Wilpinjong Coal Mine.

Under the Modification Scenario the Wilpinjong Coal Mine emissions intensity would remain well below the Safeguard Mechanism default ROM coal production variable (0.0653 t CO₂-e / t ROM), and relative to other current NSW ROM coal EIDs, would rank approximately 4th (excluding the existing Wilpinjong Coal Mine) out of approximately 26 facilities (based on historical data determinations) (Chart 6).

It is noted that the Modification does not seek an extension to the timeframe for ROM coal production at the Wilpinjong Coal Mine and would cease ROM coal production prior to 2035 (i.e. ceases ROM coal production on 31 December 2033). Given the Wilpinjong Coal Mine current and proposed emission intensities are well below the industry average, ongoing coal production from the Modification would make a meaningful contribution to NSW emission reduction targets relative to production at higher emission intensity mines (Chart 6).

The Net Zero Emissions Dashboard provides NSW emissions projections for three scenarios (NSW Government, 2025):

- Business as usual (BAU) scenario – this scenario accounts for major factors impacting NSW emissions including past state policies but excludes the impact of actions under the Net Zero Plan and related Government policies and programs.
- Program/policy abatement as originally designed scenario – this scenario takes the BAU scenario and adjusts the emissions trajectory to align with NSW emissions reduction targets of 50% below 2005 levels by 2030, 70% below 2005 levels by 2035 and Net Zero by 2050 as set out in the Net Zero Future Act.
- Program/policy abatement as currently tracking scenario – this scenario adjusts the as designed scenario to reflect increased uncertainties in expected emissions reductions under certain programs and policies.



Source: Metropolitan Coal(2025)

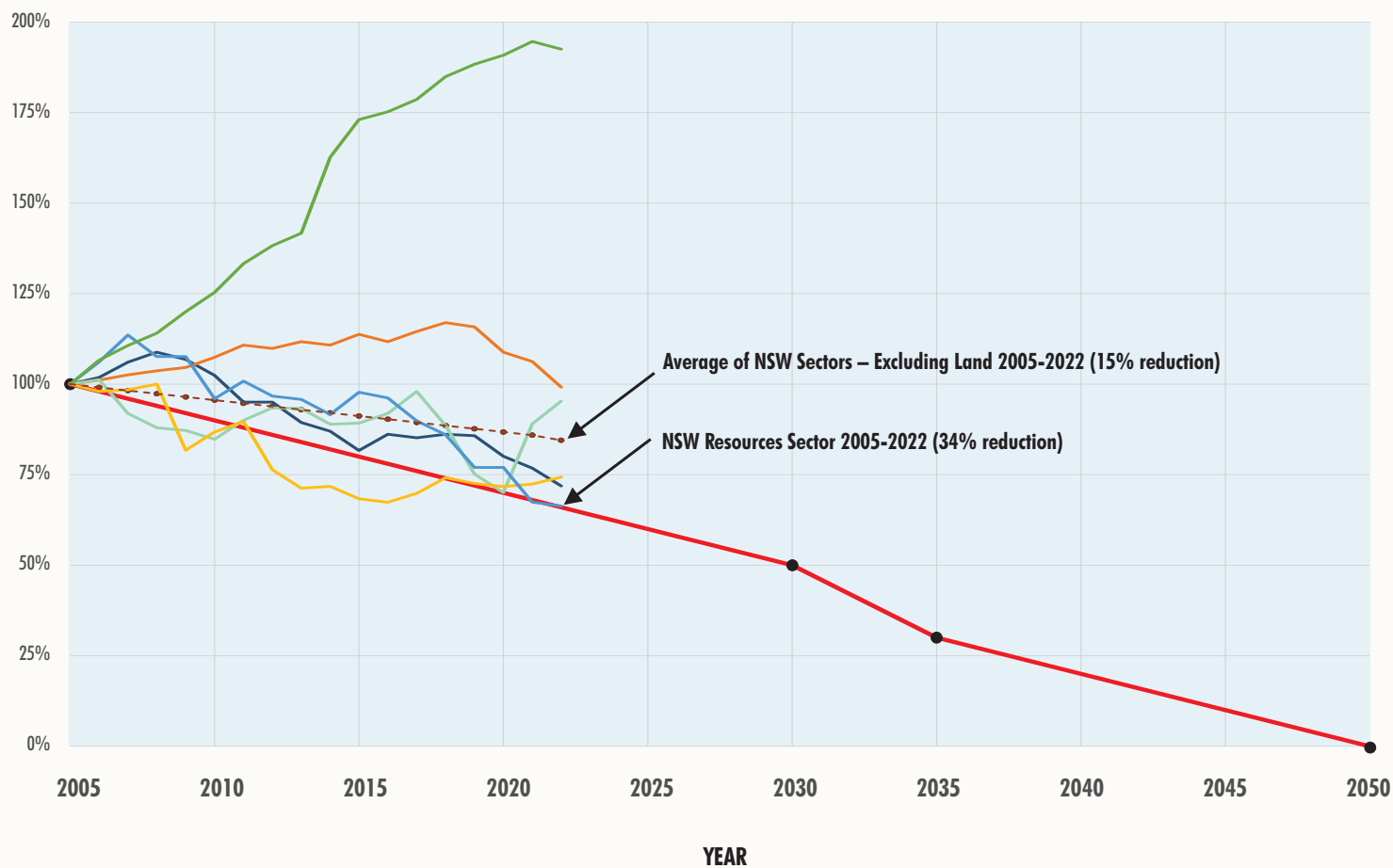
LEGEND
 NSW Net Zero Interim Targets

Peabody

WILPINJONG COAL MINE

NSW Net Zero Interim Targets
as Annual Average Net Reduction Rates

WIL-22-17_M003_GHG_003A



Source: After NZC (2024)

- LEGEND
- Electricity Generation
 - Transport
 - Agriculture
 - Industry and Waste
 - Resources
 - Built Environment
 - NSW Average (excluding Land)
 - NSW Net Zero Targets

Peabody

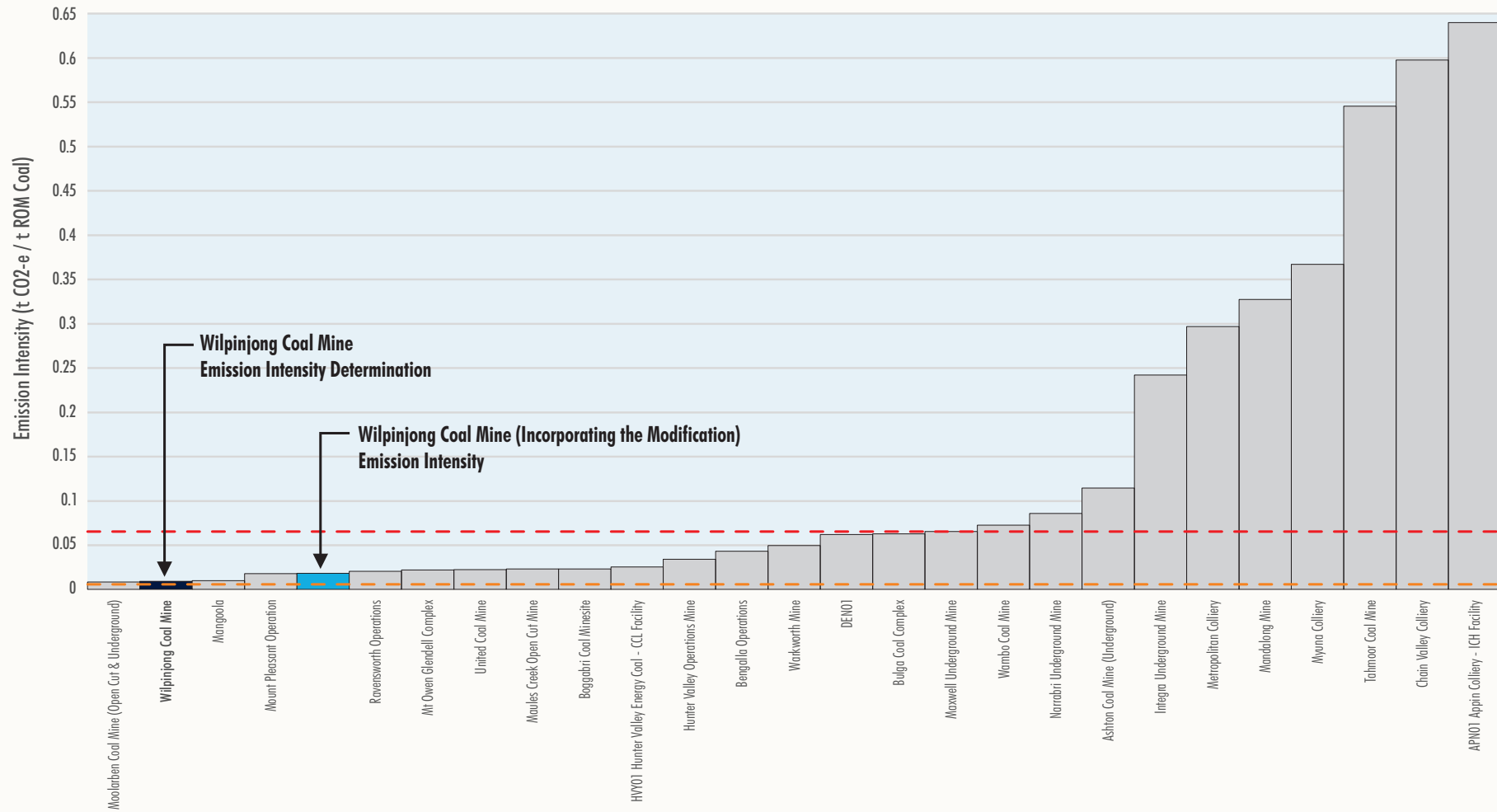
WILPINJONG COAL MINE

NSW Sectoral Performance 2005-2022

(Excluding Land Sector)

- Compared to NSW Net Zero Targets

Chart 5



Source: After CER (2025a); Aircon Consulting (2025)



WILPINJONG COAL MINE
NSW Coal Mine Emissions Intensity Determinations
and Estimated Modification Scenario Emission Intensity

WCPL understands that emissions from the Wilpinjong Coal mine for the approved mine life and production rate are already accounted for in the above projections by the NSW DCCEEW. The Wilpinjong Coal Mine (including the Modification) would not change the approved maximum annual production rate or mine life, and on this basis would not be a material change to the NSW DCCEEW modelling projections for NSW.

The Wilpinjong Coal Mine, under the Modification Scenario, is projected to generate average annual Scope 1 greenhouse gas emissions of 0.122 Mt CO₂-e, while the Modification Only Scenario 1 would result in 0.045 Mt CO₂-e per year (Attachment A). In the context of broader emissions profiles, these contributions are minor, representing 0.113% and 0.041% of New South Wales' total 2022 greenhouse gas emissions, respectively (Attachment A).

The proportion of Scope 1 emissions from the Modification Only Scenario 1 compared to projected NSW emissions under the 'Current Policy' scenario in 2030 is presented in Table 11. In this year, the Modification Only Scenario 1 would account for approximately 0.066% of total projected Scope 1 emissions. It would contribute around 0.167% of fugitive emissions from NSW open cut coal mines and approximately 0.344% of emissions from NSW stationary energy sources (Attachment A).

As ROM coal production at the Wilpinjong Coal Mine is scheduled to cease by 2033, the mine will not materially contribute to NSW Scope 1 emissions in 2035 as the site would be in the closure stage.

Table 11
Comparison of Modification to NSW and National Projections

Year	Statistic (Mt CO ₂ -e)	Modification Scenario		Modification Only Scenario 1	
		Estimated Emissions (Mt CO ₂ -e)	Proportion of Emissions	Estimated Emissions (Mt CO ₂ -e)	Proportion of Emissions
Total Projected NSW Scope 1 Emissions for 'Current Policy' Scenario (Mt CO ₂ -e) (NSW DCCEEW, 2025b)					
2030	82.970	0.113	0.136%	0.055	0.066%
2035	57.438	0.009	0.016%	-	-
Projected Scope 1 NSW Fugitive Emissions for Coal Mining - Surface Mines for 'Current Policy' Scenario (Mt CO ₂ -e) (NSW DCCEEW, 2025b)					
2030	1.798	0.010	0.556%	0.003	0.167%
2035	1.650	-	-	-	-
Total Projected NSW Scope 1 Stationary Energy Emissions for 'Current Policy' Scenario (Mt CO ₂ -e) (NSW DCCEEW, 2025b)					
2030	13.088	0.086	0.657%	0.045	0.344%
2035	10.438	0.009	0.086%	-	-
Total Projected Australia Scope 1 Emissions for 'with additional measures' Scenario (Mt CO ₂ -e) (Cth DCCEEW, 2025)					
2030	351.410	0.113	0.032%	0.055	0.016%
2035	301.260	0.009	0.003%	-	-

After: Airen Consulting (2025).

3.5.2 Scope 3 Emissions

The estimated greenhouse gas emissions of the Modification can be considered in the context of global greenhouse gas emissions associated with anthropogenic sources. Emissions from power generation (including the combustion of coal and gas), transport (e.g. automobiles, aeroplanes and ships), agriculture for food production and industrial processes (e.g. steel production) all contribute to global emissions.

Comparison of Modification Scenario annual average Scope 1, Scope 2 and Scope 3 emissions during mining (approximately 12.874 Mt CO₂-e per annum on average) to the total anthropogenic greenhouse gas emissions globally in 2021 estimated at approximately 49,600 Mt CO₂-e indicates that it would constitute approximately 0.026% of global emissions per annum over the life of the Modification (Attachment A).

The Modification Only Scenario 1 annual average Scope 1, Scope 2 and Scope 3 emissions during mining represent 0.006% of the estimated 49,600 Mt CO₂-e emitted globally in 2021 (Attachment A).

Nationally, the Modification Scenario (including Scope 1, Scope 2 and Scope 3 emissions) would account for 1.551% of Australia's 2022 emissions, while Modification Only Scenario 1 would contribute 0.370% (Attachment A). It should be noted that the majority (i.e. approximately 98%) of these emissions arise from the end use of the coal and would therefore be reported as Scope 1 emissions by NSW electricity generators, Scope 2 emissions by NSW electricity consumers, and Scope 3 emissions by the Wilpinjong Coal Mine.

Under the *Paris Agreement*, each Party is required to prepare, communicate and maintain NDCs that will contribute to the long-term goals of the *Paris Agreement* (UNFCCC, 2024d).

It is important to note that under the *Paris Agreement*, each NDC reflects the country's ambition for reducing emissions, taking into account its domestic circumstances and capabilities (UNFCCC, 2024e). Each country will have its own range of opportunities and priorities to trade off various alternative emission reduction (and carbon sink) options having regard to the economic priorities and physical attributes of the country.

Table 12 provides a high-level summary of the NDCs under the *Paris Agreement* of the expected export countries for Wilpinjong Coal Mine product coal. It should be noted that, under the *Paris Agreement*, these NDCs are successive and are to be updated every five years, with the next round of NDCs due by the end of 2025 (UNFCCC, 2024e). The review mechanisms under the *Paris Agreement*, therefore, provide for increasing the stringency of emission control measures as required over time to achieve the goals of the *Paris Agreement*.

Given the highly variable nature of the international coal market, it is inherently difficult to predict the percentage of Modification product coal that would be sold into each potential international market.

Notwithstanding, based on historical data of coal product sales, WCPL anticipates the Modification would provide approximately 50% of its product coal to international customers, primarily China, Japan and Indonesia. The remainder would be used for electricity generation in Australia.

It should be noted that all emissions scenarios developed by the IPCC, including those outlined in the *IPCC Special Report on Global Warming of 1.5 °C*, include coal as part of the global primary energy mix during the life of the Modification (to 2035) and through to 2050. The proportion of coal in energy production varies by scenario, ranging from approximately 10 to 15% by 2030 and 4 to 5% by 2050 (IPCC, 2018).

Table 12
Product Coal Destination and Associated NDC

Country	Summary of NDC
Australia	A 43% reduction in greenhouse gas emissions below 2005 levels by 2030. Net zero emissions by 2050.
China	Achieve 65% reduction in CO ₂ emissions in per unit of gross domestic product from the 2005 level in 2030. Net zero CO ₂ emissions by 2060.
Japan	A 46%, 60% and 73% reduction in greenhouse gas emissions below 2013 emissions by 2030, 2035 and 2040 respectively. Net zero by 2050.
Indonesia	A 31.89% reduction in greenhouse gas emissions compared to the BAU projection by 2030 (unconditional with domestic resources). A 43.20% reduction in greenhouse gas emissions compared to the BAU projection by 2030 (conditional with international support). Net zero emissions by 2060

After: Government of Australia (2022); Government of China (2022); Government of Japan (2025); Government of Indonesia (2022).

3.6 POTENTIAL IMPACTS OF CLIMATE CHANGE

Potential impacts of climate change (including the potential impacts on the locality) are discussed in Section 6.11 of the Modification Report.

3.7 APPLICATION OF GREENHOUSE GAS OFFSETS

In FY24, WCPL surrendered 14,606 ACCUs for the Wilpinjong Coal Mine. Chart 3 provides a conservative estimate of the potential carbon credit or carbon offset requirements of the Modification Scenario in the absence of any further reasonable and feasible emission reductions being adopted for the Wilpinjong Coal Mine (Section 3.3).

Over the life of the Modification, this estimate indicates generation of approximately 292,297 t of SMCs and 0 t of carbon liabilities over the life of Wilpinjong Coal Mine, including the Modification (Table 13).

Table 13
Estimated Annual ACCU/SMC Predictions for the Modification Scenario

Financial Year	Modification Scenario	
	Estimated Generated Carbon Liabilities (t)	Generated SMCs (t)
FY27	0	5,191
FY28	0	45,483
FY29	0	71,114
FY30	0	14,116
FY31	0	42,496
FY32	0	85,144
FY33	0	28,753

These estimates have been incorporated into the Economic Assessment based on ACCU price projections (Appendix K of the Modification Report).

3.8 ADAPTIVE MANAGEMENT

Condition 20, Schedule 3 of the Wilpinjong Coal Mine Development Consent (SSD-6764) requires the development of an Air Quality (and greenhouse gas) Management Plan for the Wilpinjong Coal Mine.

WCPL anticipates that the existing Air Quality Management Plan will either be updated or replaced with a new Climate Change Mitigation and Adaptation Plan in consultation with the NSW EPA. Should the Modification be approved, WCPL anticipates that the Development Consent conditions for the Modification would reflect contemporary NSW EPA guidance on the content of a Climate Change Mitigation and Adaptation Plan, including:

- Measures to avoid and reduce Modification greenhouse gas emissions applying the NSW EPA's mitigation hierarchy (avoid, reduce, substitute and offset).
- Commitment to monitoring, reporting and reviewing performance of greenhouse gas abatement measures and emissions.
- Expected impacts of the Safeguard Mechanism Baseline on year-to-year emissions.
- Comparison of emissions to NSW Government's legislated emissions reduction targets.
- Strategies to offset excess greenhouse gas emissions.
- A timetable for periodic review of the Climate Change Mitigation and Adaption Plan and associated proposed mitigation, reporting and the overarching greenhouse gas management goals of WCPL.

4 CONCLUSION

Since the approval of the Wilpinjong Extension Project and the issue of Development Consent (SSD-6764), WCPL has continued to review and refine detailed life-of-mine planning. As an outcome of this planning process, WCPL has elected to avoid direct disturbance of the existing Cumbo Creek corridor and the Rocky Hill complex which are currently approved to be mined in Pit 4 and Pit 8, respectively, under Development Consent (SSD-6764).

This avoidance would sterilise more than 7 Mt of approved ROM coal and reduce the approved Wilpinjong Coal Mine surface development footprint by approximately 50 ha.

In this context, the Modification would provide access to some additional coal resources to augment ROM coal production and would also include an additional six months of mining operations to backfill the final voids and shape the final landform (i.e. mining operations would continue until 30 June 2034).

The Modification would result in a total of approximately 14 Mt of ROM coal being extracted from the Pit 8 Extension area. This assessment has estimated the potential Scope 1, Scope 2 and Scope 3 greenhouse gas emissions for the Modification.

The greenhouse gas calculations completed for this assessment indicate the average greenhouse gas emissions intensity of the Wilpinjong Coal Mine incorporating the Modification would be approximately 0.018 Mt CO₂-e / t ROM coal for Scope 1 and Scope 2 emissions, compared to an estimated 0.015 Mt CO₂-e / t ROM coal based on Baseline Scenario 1.

The predicted ROM coal emissions intensity of the Wilpinjong Coal Mine incorporating the Modification compares favourably with other published Australian and NSW coal mine EIDs, and the analysis conducted for this assessment indicates that the Modification would make a meaningful contribution to NSW emission reduction targets relative to production at higher emission intensity mines.

Wilpinjong Coal Mine has evaluated greenhouse gas abatement strategies qualitatively within this assessment in terms of their technical readiness, commercial readiness, capital expenditure, operational expenditure, abatement effectiveness, site specificity and Modification specificity. Of the mitigation measures identified, the use of premium diesel is the only option currently considered for further reasonable and feasible evaluation (e.g. marginal cost of abatement analysis) in the period to 2033, including the Modification. Further quantitative analysis would be undertaken to estimate additional capital and operational costs, anticipated greenhouse gas emission reductions to identify whether it is a reasonable and feasible mitigation measure for the Wilpinjong Coal Mine, should the Modification be approved.

The Wilpinjong Coal Mine (under the Modification Scenario), contribution to NSW emissions would be relatively small, as estimated annual average Scope 1 and 2 emissions from the Wilpinjong Coal Mine during the life of the Modification represent approximately 0.113% of the estimated total greenhouse gas emissions in NSW from 2022 (Attachment A). Similarly, the Wilpinjong Coal Mine (under the Modification Scenario) Scope 1, 2 and 3 would contribute approximately 1.551% of Australia's annual greenhouse gas emissions from 2022 (Attachment A).

Reformed Safeguard Mechanism decline rates have been derived by Cth DCCEEW to conservatively account for future growth at both existing and new facilities and are more aggressive than the average rate of emissions decline that is required between 2005 and 2030 (2%) to achieve the NSW interim 2030 target of 50% (Cth DCCEEW, 2024b). It is anticipated that the Wilpinjong Coal Mine (incorporating the Modification) would generate approximately 292,297 SMCs and would not require retirement of any additional ACCUs or SMCs over the life of the Modification.

If the Modification is approved and proceeds, the Modification's contribution to global climate change effects would be proportional to its contribution to global greenhouse gas emissions. Greenhouse gases directly generated at the Wilpinjong Coal Mine (i.e. Scope 1 emissions) and indirect emissions associated with the on-site use of electricity (i.e. Scope 2 emissions) including the Modification have together been estimated at approximately 0.045 Mt CO₂-e per year during operations. These emissions would be small in the context of global greenhouse gas emissions.

The estimated Scope 1, Scope 2 and Scope 3 emissions associated with the Wilpinjong Coal Mine (including the Modification) would represent approximately 0.026% of the total anthropogenic greenhouse gas emissions globally (excluding land use change) in 2021.

It is noted that the Modification does not seek an extension to the timeframe for ROM coal production at the Wilpinjong Coal Mine and would cease ROM coal production prior to 2035 (i.e. ceasing on 31 December 2033). It is considered that the Modification would make a meaningful contribution to NSW emission reduction targets because the Wilpinjong Coal Mine is a relatively low emissions intensity mine relative to its peers in NSW (and in Australia).

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**ATTACHMENT A
GREENHOUSE GAS CALCULATIONS REPORT**



WILPINJONG COAL MINE PIT 8 EXTENSION MODIFICATION

Greenhouse Gas Calculations Report

Final | Revision 2

3 August 2025

Project: 23038

Wilpinjong Coal Mine Pit 8 Extension Modification

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Title	Wilpinjong Coal Mine Pit 8 Extension Modification
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Acronyms and definitions

Abbreviation	Definition
CER	Clean Energy Regulator
CO ₂	Carbon dioxide
CO ₂ -e	Carbon dioxide equivalent
COP	Conference of the Parties
EPA	NSW Environment Protection Authority
EP&A Act	Environmental Planning and Assessment Act 1979
FY	Financial Year
GHG	Greenhouse gas
Guide	NSW Guide for Large Emitters
ha	Hectares
Measurement Determination	National Greenhouse and Energy Reporting (Measurement) Determination 2008
Mt	Million tonnes
Mt CO ₂ -e/y	Million tonnes of CO ₂ equivalent per year
Mt CO ₂ -e	Million tonnes of CO ₂
Mt CO ₂ -e/Mt ROM coal	Million tonnes of CO ₂ equivalent per million tonnes of ROM coal
NDC	Nationally Determined Contribution
Net Zero Future Act	Climate Change (Net Zero Future) Act 2023
NGA	National Greenhouse Accounts
NGER Act	National Greenhouse Gas and Energy Reporting Act 2007
NSW	New South Wales
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
PA	Project Approval
ROM	Run-of-mine
SSD	State Significant Development
TJ	Terajoules
WCPL	Wilpinjong Coal Pty Limited
WRI	World Resources Institute
%	Per cent

1 Introduction

Wilpinjong Coal Pty Ltd (WCPL), a subsidiary of Peabody Energy Australia Pty Ltd, is seeking approval for a modification to operations at the Wilpinjong Coal Mine. Specifically, WCPL is proposing to modify Development Consent (SSD-6764) for the Wilpinjong Coal Mine to facilitate extensions of the existing Pit 8 (Pit 8 Extension) within Exploration Licence 9399 and development of associated supporting infrastructure, herein referred to as the Modification. Approval is sought via an application to be made under Section 4.55(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This report provides estimates of the greenhouse gas (GHG) emissions from the Modification.

1.1 Approved Operation

The Wilpinjong Coal Mine is an existing open cut coal mining operation located approximately 40 kilometres northeast of Mudgee within the Mid-Western Regional Local Government Area, in central New South Wales (NSW). The mine produces thermal coal products which are transported by rail to domestic customers for use in electricity generation and/or to port for export. Open cut mining operations are undertaken 24 hours per day, seven days per week.

The approved Wilpinjong Coal Mine includes some eight named open cuts (i.e. Pits 1-8), plus significant ancillary and supporting infrastructure. This infrastructure includes run-of-mine (ROM) coal storage, coal handling and processing, rail spur, rail loading, internal roads, pipelines, electricity distribution, workshops and water management structures.

The Wilpinjong Coal Mine originally operated under Project Approval (PA 05-0021) that was granted by the Minister for Planning under Part 3A of the EP&A Act on 1 February 2006. On 24 April 2017, WCPL was granted Development Consent (SSD-6764) for the Wilpinjong Extension Project. This Development Consent (SSD-6764) provides for the continued operation of the Wilpinjong Coal Mine at rates of up to 16 million tonnes per annum of ROM coal, until 2033, and provides access to approximately 800 hectares (ha) of open cut extensions. Development Consent (SSD-6764) has superseded the Project Approval (PA 05-0021), which was surrendered by WCPL on 8 April 2020.

1.2 Modification Description

WCPL is seeking to modify Development Consent (SSD-6764) to facilitate the Pit 8 Extension within Exploration Licence 9399 and development of associated supporting infrastructure and facilities. This Modification is sought under Section 4.55(2) of the EP&A Act.

The Modification would comprise the following components:

- open cut mining within the Pit 8 Extension area;
- extraction of approximately 14 million tonnes (Mt) of ROM coal from the Pit 8 Extension area;
- development of ancillary infrastructure to support open cut mining activities;
- realignment of some public infrastructure to facilitate the Pit 8 Extension (e.g. sections of public roads, local low voltage powerlines and telecommunication services);
- in-pit crushing of waste rock for use as construction and/or stemming material;
- an additional six months of mining operations to backfill final voids and shape the final landform (i.e. mining operations until 30 June 2034); and
- development of additional water management infrastructure (e.g. dams, drains, pumps and pipelines).

The Modification would also include the proposed avoidance of direct disturbance of the existing Cumbo Creek corridor and the Rocky Hill complex which are currently approved to be mined in Pit 4 and Pit 8 respectively. This avoidance would sterilise more than 7 Mt of approved ROM coal and reduce the approved Wilpinjong Coal Mine surface development footprint by approximately 50 ha.

There would be no changes to the following approved components of the Wilpinjong Coal Mine for the Modification:

- mining method;
- timeframe for ROM coal production;
- maximum annual ROM coal and waste rock production;
- coal washing and handling systems;

- product coal transport systems;
- water supply and disposal methods; and
- hours of operation.

Figure 1 shows the location of the Wilpinjong Coal Mine and surrounding features. It also illustrates the key features related to the Modification, including the proposed Pit 8 Extension boundary.

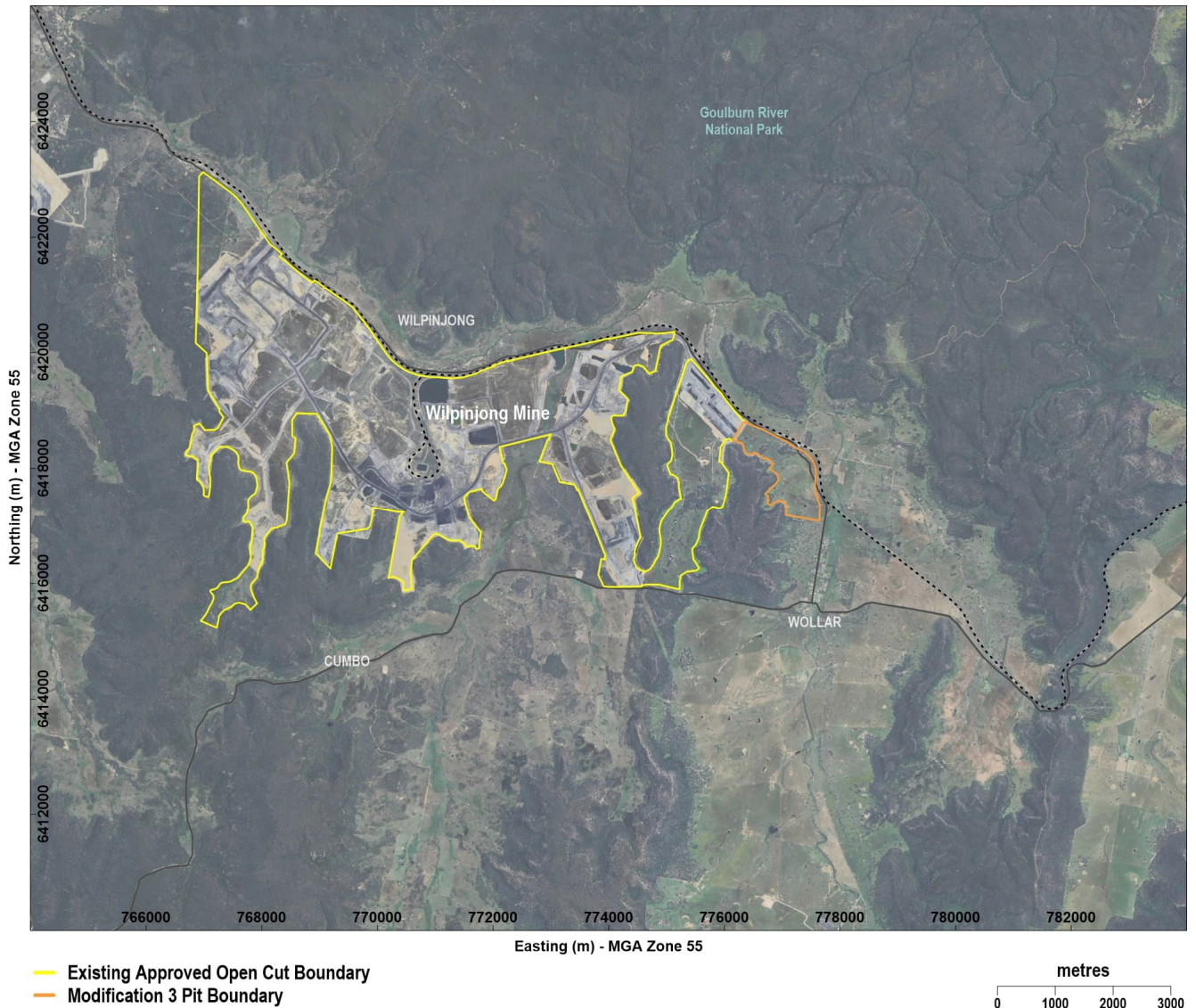


Figure 1 Location of the Wilpinjong Coal Mine and surrounds

1.3 Report Structure

The report is structured as follows:

- Section 1 provides the background to the Wilpinjong Coal Mine and Modification.
- Section 2 outlines the key legislative and policy assessment requirements for GHG.
- Section 3 provides estimates of the GHG emissions.

2 Policy Setting

2.1 Overview

GHG is a collective term for a range of gases that are known to trap radiation in the upper atmosphere, where they have the potential to contribute to the greenhouse effect (global warming). GHGs include:

- Carbon dioxide (CO₂); by far the most abundant GHG, primarily released during fuel combustion.
- Methane; generated from the anaerobic decomposition of carbon-based material (including enteric fermentation and waste disposal in landfills).
- Nitrous oxide; generated from industrial activity, fertiliser use and production.
- Hydrofluorocarbons; commonly used as refrigerant gases in cooling systems.
- Perfluorocarbons; used in a range of applications including solvents, medical treatments and insulators.
- Sulphur hexafluoride; used as a cover gas in magnesium smelting and as an insulator in heavy duty switch gear.

It is common practice to aggregate the emissions of these gases to the equivalent emission of carbon dioxide. This provides a simple figure for comparison of emissions against targets. Aggregation is based on the potential of each gas to contribute to global warming relative to CO₂ and is known as the global warming potential. The resulting number is expressed as carbon dioxide equivalents (or CO₂-e).

GHG emissions that form an inventory can be split into three categories known as “Scopes”. Scopes 1, 2 and 3 are defined by the Greenhouse Gas Protocol (World Resources Institute [WRI], 2004) and can be summarised as follows:

- Scope 1 – Direct emissions from sources that are owned or operated by the organisation (examples include combustion of diesel in company owned vehicles or used in on-site generators).
- Scope 2 – Indirect emissions associated with the import of energy from another source (examples include importation of electricity or heat).
- Scope 3 – Other indirect emissions (other than Scope 2 energy imports) which are a direct result of the operations of the organisation but from sources not owned or operated by them (examples include business travel, by air or rail, and product usage).

The purpose of differentiating between the scopes of emissions is to avoid the potential for double counting, where two or more organisations assume responsibility for the same emissions.

2.2 Federal Policy

2.2.1 Conference of Parties

The 21st yearly session of the Conference of Parties (COP), held in Paris in 2015, was pivotal for developing an international treaty on climate change. It resulted in “The Paris Agreement”, an agreement “to achieve a balance between anthropogenic (human induced) emissions by sources and removals by sinks of greenhouse in the second half of this century”. Subsequent COPs have sought to develop policy architecture to deliver on the commitments of COP21. In particular, following COP21, international agreements were made to:

- Keep global warming well below 2.0 degrees Celsius, with an aspirational goal of 1.5 degrees Celsius (based on temperature pre-industrial levels).
- From 2018, countries are to submit revised emission reduction targets every five years, with the first being effective from 2020, and goals set to 2050.
- Define a pathway to improve transparency and disclosure of emissions.
- Make provisions for financing the commitments.

The *Climate Change Act 2022* operates as umbrella legislation to implement Australia’s net-zero commitments. It codifies Australia’s net 2030 and 2050 GHG emissions reductions targets under the Paris Agreement including targets to cut emissions by 43 per cent (%) by 2030 from 2005 levels and achieve net zero emissions by 2050.

2.2.2 National Greenhouse and Energy Reporting Act 2007

The Federal Government uses the *National Greenhouse and Energy Reporting Act 2007* (NGER Act) legislation for the measurement, reporting and verification of GHG emissions in Australia. This legislation is used for a range of purposes, including international GHG reporting. Under the NGER Act, constitutional corporations in Australia which exceed thresholds for GHG emissions or energy production or consumption are required to measure and report data to the Clean Energy Regulator (CER) on an annual basis. The *National Greenhouse and Energy Reporting (Measurement) Determination 2008* (Measurement Determination) identifies several methodologies to account for GHGs from specific sources relevant to the Modification. This includes emissions of GHGs from direct fuel combustion (fuels for transport energy purposes), emissions associated with consumption of power from direct combustion of fuel (e.g. diesel generators), and from consumption of electricity from the grid.

The Measurement Determination provides methods, criteria, and measurement standards for calculating and reporting GHG emissions and energy data under the NGER Act. It covers Scope 1 and Scope 2 emissions and energy production and consumption. However, the calculation methodologies have been based primarily on the National Greenhouse Accounts (NGA) Factors as these are referred to in, for example, the Secretary's Environmental Assessment Requirements where relevant, for the purposes of project assessment. The NGA Factors provide methods for the estimation of GHG emissions. Whilst drawing on the Measurement Determination, the NGA Factors can be applied to a broader range of emissions estimates.

2.2.3 Safeguard Mechanism

The Safeguard Mechanism has been in place since 1 July 2016 and is a legislated framework that applies to all facilities that emit more than 100,000 tonnes of CO₂-e of Scope 1 emissions (emissions produced on-site) in a year. The Safeguard Mechanism places a limit on the amount of GHGs Australia's largest industrial facilities can emit by assigning each facility covered by the Mechanism a 'baseline'. Each year, every large facility within the Safeguard Mechanism reports their emissions to the CER. Any facility that emits more GHGs than allowed by their baseline has to take actions to reduce their emissions. For example, through purchasing Australian Carbon Credit Units.

Reforms to the Safeguard Mechanism took effect from 1 July 2023. Under these reforms, new baseline emissions numbers ('baselines') for designated large facilities are set on a declining trajectory aligned with achieving Australia's emissions reduction targets set out in the *Climate Change Act 2022* and its Nationally Determined Contribution (NDC) under the Paris Agreement. The decline rate for Safeguard baselines is currently 4.9% per year to 2030, followed by 3.285% per year thereafter. Wilpinjong Coal Mine is a Safeguard facility and will need to manage its emissions in accordance with the Safeguard Mechanism's emissions reduction targets.

2.3 State Policy

The NSW Government has a Climate Change Policy which sets the objective of achieving net-zero emissions by 2050. The policy does not impose any specific requirements on the public, nor on developments undertaken by private companies but intends to achieve net-zero emissions through a combination of consultative policy development intended to avoid duplication of Commonwealth frameworks. The *Climate Change (Net Zero Future) Act 2023* (Net Zero Future Act) legislates the NSW approach to addressing climate change and delivering net zero by 2050. The Net Zero Future Act sets a path to 2050 with emissions reduction targets. The Net Zero Future Act legislates:

- Guiding principles for action to address climate change that consider the impacts, opportunities and need for action in NSW.
- Net emissions reduction targets for NSW (50% reduction on 2005 levels by 2030, 70% reduction on 2005 levels by 2035, and net zero by 2050).
- An objective for NSW to be more resilient to a changing climate.
- Establishing an independent, expert Net Zero Commission to monitor, review, report on and advise on progress towards these targets.

In January 2025, the NSW Environment Protection Authority (EPA) finalised their GHG assessment requirements in the "NSW Guide for Large Emitters" (NSW EPA, 2025) (Guide). The Guide outlines the assessment requirements for new projects likely to have large emissions and proposed modifications of existing facilities likely to significantly increase their emissions. There are two main tests to determine the applicability of the Guide. These consider whether the project is a large emitter, and if these emissions will be "significant" based on the development type. The potential applicability and requirements of the Guide are discussed in Section 3.

3 Greenhouse Gas Emissions

3.1 Overview

The level of assessment of the Modification has been informed by the Guide (NSW EPA, 2025). The assessment requirements of the Guide are applicable to a project if it meets the following three criteria:

- The project proposal requires development assessment and approval, or a change to an approval, under the EP&A Act.
- The project involves one or more scheduled activities under Schedule 1 of the *Protection of the Environment Operations Act* and / or will be carried out at an existing licensed premises
- The project is likely to emit 25,000 tonnes or more of scope 1 and 2 emissions CO₂-e in any financial year (FY) during the operational life of the project (based on planned operational throughput and as designed).

As will be shown below, the Modification meets the EPA's definition of a "large" emitter by the criteria above, so the Guide is applicable. The emission aspects of the assessment are outlined below.

3.2 Assessment Boundary and Scenarios

The assessment boundary was developed to include all significant Scope 1, 2 and 3 emissions. The completeness principle states that all relevant emission sources within the chosen inventory boundary need to be accounted for so that a comprehensive and meaningful inventory is compiled (WRI, 2004).

Emission sources include the dominant sources at coal mining operations that are often targeted by mitigation measures and of interest to stakeholders. Table 1 lists the sources that have been included and excluded from the assessment. The source exclusions represent activity data that are not readily available and where activity data for these sources is unlikely to generate sufficient emissions to materially change impacts or influence decision-making outcomes.

Table 1 Source inclusions and exclusions

Activity	Description	Scope
Included sources		
Diesel usage	Combustion of diesel fuel from on-site mobile and stationary plant and equipment	1, 3
Fugitive	Fugitive emissions from the extraction of coal including post-mining emissions	1
Blasting	Detonation of explosives used for blasting	1
Vegetation removal	Loss of carbon sink from vegetation removal	1
Oils and greases	Emissions from oils and greases.	1, 3
Electricity	Electricity usage	2, 3
Transport (rail)	Transport of product coal by rail to port	3
Transport (shipping)	Transport of product coal by ship to market	3
Energy production	Combustion of thermal coal in power generators by end users	3
Excluded sources		
Combustion of fuel for energy	Combustion of diesel or petrol from on-site plant and equipment for power generation	1
Industrial processes	Sulphur hexafluoride (high voltage switch gear) Hydrofluorocarbon (commercial and industrial refrigeration)	1
Land use activities	Land use activities, including on-site rehabilitation or use of livestock on-site.	1
Solid waste	Solid waste to landfill	3
Other transit processes	Transit emissions including customer country rail/truck transport and transfer from port.	3
Other material or equipment	Purchase of construction materials or new mobile equipment.	3
Business travel	Employees travelling for business purposes	3
Employee travel	Employees travelling between their place of residence and Wilpinjong Coal Mine	3

Five emission scenarios have been considered:

- “Baseline Scenario 1” being the approved mine excluding Cumbo Creek and Rocky Hill.
- “Baseline Scenario 2” being the approved mine including Cumbo Creek and Rocky Hill.
- “Modification Scenario” being the Baseline Scenario 1 plus Modification.
- “Modification Only Scenario 1” being the Modification Scenario minus Baseline Scenario 1.
- “Modification Only Scenario 2” being the Modification Scenario minus Baseline Scenario 2.

Two baselines have been considered in this assessment as the Modification involves the relinquishment of some approved coal extraction. In this context the Modification Only Scenario 1 represent the incremental emissions of the Modification pit extension, whereas Modification Only Scenario 2 represents the net incremental emissions of the Modification when this relinquishment of approved coal extraction is considered.

Emissions have been considered for the operational life of the Modification (FY27 to FY33). For completeness, potential emissions associated with decommissioning have also been considered (FY34 to FY37).

3.3 Estimated Emissions

The GHG inventory in this document has been calculated in accordance with the principles of the GHG Protocol and the Guide (NSW EPA, 2025). The initial actions for a GHG inventory are to determine the sources of GHG emissions, assess their likely significance and set a boundary for the assessment. Creating an inventory of the likely GHG emissions has the benefit of determining the scale of the emissions and providing a baseline from which to assess options that may be reasonable and feasible for GHG reduction. The results of this assessment are presented in terms of the previously mentioned ‘Scopes’ to help understand the direct and indirect impacts of the Modification.

The GHG Protocol (and similar reporting schemes) dictates that reporting Scope 1 and 2 sources is mandatory, whilst reporting Scope 3 sources is optional. Reporting significant Scope 3 sources is recommended. Scope 3 emissions are a consequence of the activities of the company, although occur from sources not owned or controlled by the company. Some examples of Scope 3 activities include the extraction and production of purchased materials, transportation of purchased fuels, and use of sold products (i.e. burning of coal) and services. The inventory for this assessment includes all significant sources of GHGs (Scopes 1, 2 and 3) associated with the Modification, as discussed in Section 3.2.

GHG emissions associated with operation of Wilpinjong Coal Mine are well understood, given that the mine is currently operating. Future projections of production, fuel, oil and grease usage, vegetation removal, blasting, fugitives and electricity usage (from WCPL) were used to determine the estimated GHG emissions from the Modification. Table 2 shows the emission estimation methodologies for the key emission sources.

Table 2 Greenhouse gas emission estimation methodologies

Activity	Description	Scope(s)	Emission Estimation Methodology
Diesel usage	Combustion of diesel fuel from on-site mobile and stationary plant and equipment	1, 3	Emission factors from NGA Factors (NSW Department of Climate Change, Energy, the Environment and Water [DCCEEW], 2024a).
Fugitive	Fugitive emissions from the extraction of coal	1	Measurement Determination Chapter 3, Part 3.2. Division 3.2.3, Subdivision 3.2.3.2, Method 2. Fugitive emissions estimations have been undertaken using the site gas assignment model.
Blasting	Detonation of explosives used for blasting	1	Emission factors from NGA Factors (NSW Department of Climate Change, 2008). Blasting emissions are not reported in the more recent NGA Factors publications.
Vegetation removal	Loss of carbon sink from vegetation removal in construction	1	Calculated using "Carbon Gauge" developed by the Transport Authorities Greenhouse Group (Transport Authorities Greenhouse Group, 2013). Vegetation of "Class D Open woodlands" and "Class I Grasslands". Biomass class set to "Class 3:100-150 (tonnes of dry matter per hectare [t dry matter/ha])" based on site location.
Oils and greases	Emissions form oils and greases	1, 3	Emission factors from NGA Factors (NSW DCCEEW, 2024a).
Electricity	Electricity usage	2, 3	Emission factor projections from NSW DCCEEW (2024b).
Transport (rail)	Transport of product coal by rail to port	3	<i>National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015</i> Schedule 1, Part 21, Division 3, Subdivision 50.
Transport (shipping)	Transport of product coal by ship to market	3	<i>National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015</i> Schedule 1, Part 24, Division 2, Subdivision 55A.
Energy production	Combustion of thermal coal in power generators by end users	3	Emission factors from NGA Factors (NSW DCCEEW, 2024a).

Table 3 shows the estimated emissions due to all identified GHG generating activities associated with the Wilpinjong Coal Mine for the Baseline Scenario 1, Modification Scenario and Modification Only Scenario 1. The direct annual GHG emissions from the Modification Only Scenario 1 are estimated to be 0.045 million tonnes of carbon dioxide equivalent per year (Mt CO₂-e/y), on average. Full details of the calculations by source and year are provided in **Appendix A**.

Table 3 Estimated GHG emissions for the Baseline Scenario 1, Modification Scenario and Modification Only Scenario 1

Year	Annual Emission (Mt CO ₂ -e)								
	Baseline Scenario 1 "Business as usual"			Modification Scenario "Modified business"			Modification Only Scenario 1 "Project only"		
	Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3
FY26-27	0.150	0.007	18.591	0.154	0.007	18.806	0.004	0.000	0.213
FY27-28	0.121	0.005	17.197	0.142	0.006	18.764	0.021	0.001	1.552
FY28-29	0.101	0.003	14.611	0.134	0.004	18.030	0.033	0.001	3.388
FY29-30	0.057	0.001	6.985	0.113	0.002	9.553	0.055	0.000	2.546
FY30-31	0.043	0.001	5.419	0.119	0.002	11.397	0.075	0.001	5.925
FY31-32	0.036	0.001	4.622	0.106	0.002	12.674	0.070	0.001	7.980
FY32-33	0.023	0.000	3.720	0.083	0.001	0.020	0.053	0.000	3.358
FY33-34 [^]	0.009	0.000	0.002	0.064	0.000	0.016	0.055	0.000	0.014
FY34-35 [^]	0.009	-	0.002	0.009	-	0.002	-	-	-
FY35-36 [^]	0.005	-	0.001	0.005	-	0.001	-	-	-
FY36-37 [^]	0.005	-	0.001	0.005	-	0.001	-	-	-
Average*	0.076	0.003	10.164	0.122	0.003	12.749	0.045	0.001	3.566
Total	0.559	0.019	71.153	0.934	0.024	89.264	0.368	0.005	24.976

[^] Decommissioning years.

* Excludes decommissioning years.

Figure 2 shows the estimated Scope 1 and 2 GHG emissions for the Baseline Scenario 1, Modification Scenario and Modification Only Scenario 1.

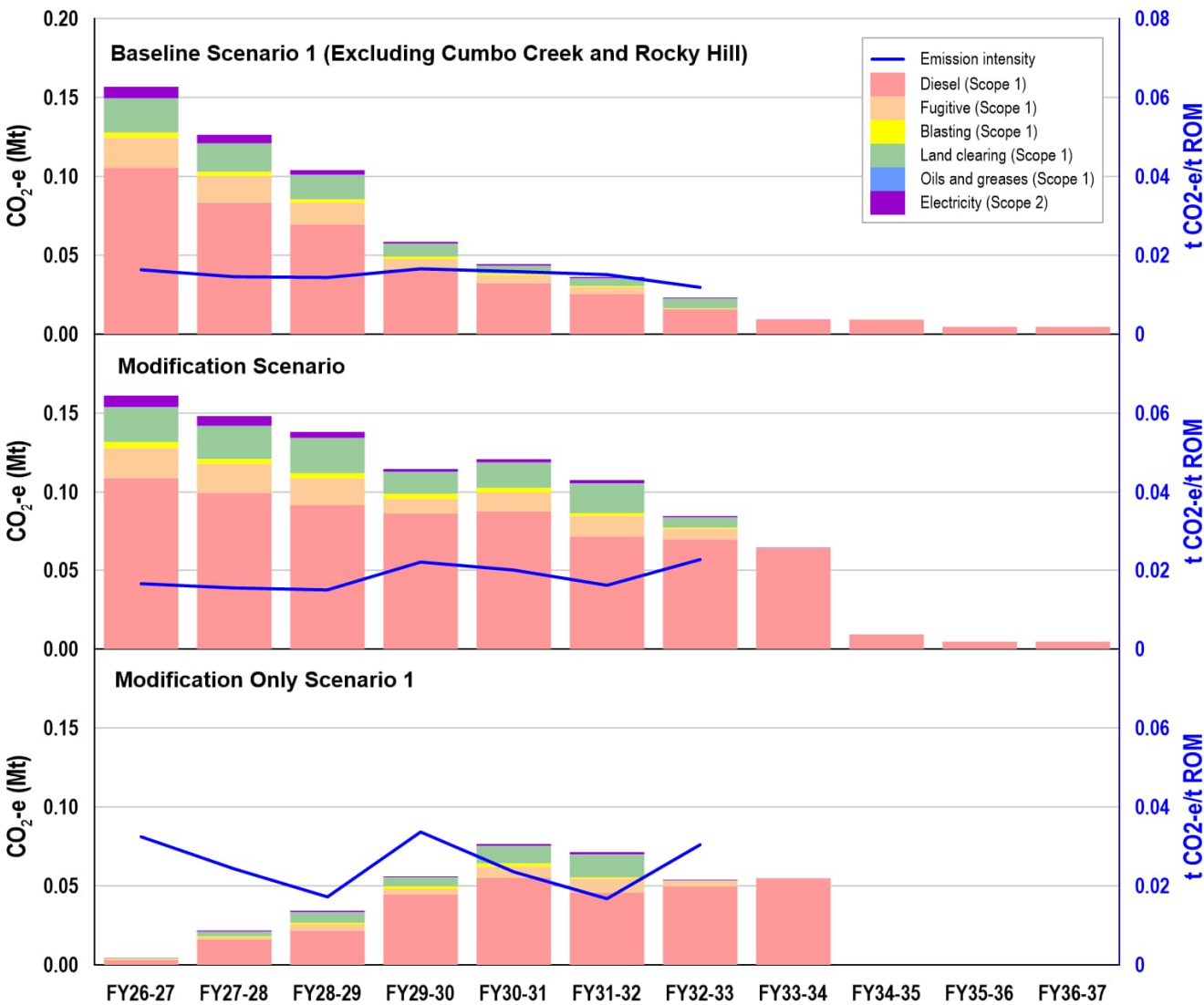


Figure 2 Estimated GHG emissions for Scenario 1

Figure 3 shows the breakdown of annual average Scope 1 and 2 GHG emissions by source, presented as percentage contributions under the Modification Scenario. Diesel usage is the most significant emission source.

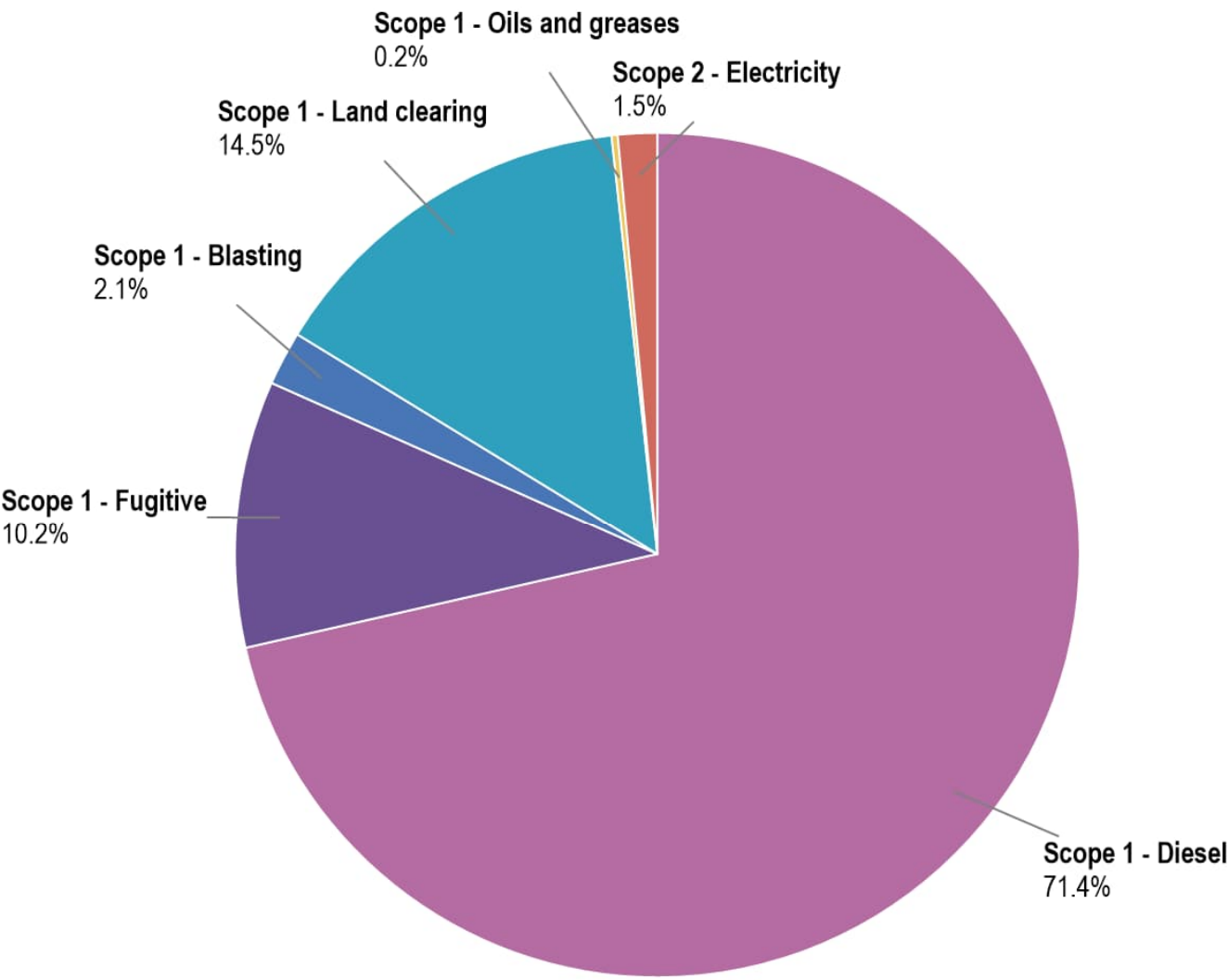


Figure 3 Estimated GHG emission sources for the Modification Scenario (Scope 1 and Scope 2)

Table 4 shows the estimated emissions due to all identified GHG generating activities associated with the Wilpinjong Coal Mine for the Baseline Scenario 2 and Modification Only Scenario 2. The direct annual GHG emissions from the Modification, under this scenario, are estimated to be 0.028 Mt CO₂-e/y, on average.

Table 4 Estimated GHG emissions for the Baseline Scenario 2 and Modification Only Scenario 2

Year	Annual Emission (Mt CO ₂ -e)					
	Baseline Scenario 2 "Business as usual"			Modification Only Scenario 2 "Project only"		
	Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3
FY26-27	0.150	0.007	18.591	0.004	0.000	0.213
FY27-28	0.121	0.005	17.197	0.021	0.001	1.552
FY28-29	0.115	0.003	14.611	0.020	0.001	3.388
FY29-30	0.118	0.003	15.432	0.005	-0.001	-5.827
FY30-31	0.072	0.002	9.303	0.047	0.000	2.076
FY31-32	0.053	0.001	7.729	0.052	0.001	4.901
FY32-33	0.026	0.000	3.720	0.057	0.000	3.358
FY33-34^	0.008	0.000	0.002	0.057	0.000	0.014
FY34-35^	0.008	-	0.002	0.002	-	0.000
FY35-36^	0.004	-	0.001	0.001	-	0.000
FY36-37^	0.004	-	0.001	0.001	-	0.000
Average*	0.094	0.003	12.369	0.028	0.000	1.380
Total	0.678	0.021	86.589	0.256	0.003	9.677

^ Decommissioning years.

* Excludes decommissioning years.

Table 5 presents the estimated Scope 1 and Scope 2 GHG emissions intensity for the Modification Scenario and Modification Only 1 Scenario across the operational years. The average emissions intensity is lower under the Modification Scenario (0.018 million tonnes of carbon dioxide equivalent per million tonnes of run-of-mine coal [Mt CO₂-e/Mt ROM coal]) compared to the Modification Only 1 Scenario (0.025 Mt CO₂-e/Mt ROM coal). The higher emissions intensity in the Modification Only 1 Scenario is primarily due to higher strip ratios that occur in the Modification area. For comparison, in FY24 the Wilpinjong Coal Mine had an emission intensity of 0.015 Mt CO₂-e/Mt ROM coal.

Table 5 Estimated GHG emissions intensity for the Modification Scenario and Modification Only Scenario 1

Year	CO ₂ -e Emissions per unit of Production (Mt CO ₂ -e/Mt ROM Coal)					
	Baseline Scenario 1		Modification Scenario		Modification Only Scenario 1	
	ROM Coal (Mt)	CO ₂ -e Emissions per unit of Production (Mt CO ₂ -e/Mt ROM Coal)	ROM Coal (Mt)	CO ₂ -e Emissions per unit of Production (Mt CO ₂ -e/Mt ROM Coal)	ROM Coal (Mt)	CO ₂ -e Emissions per unit of Production (Mt CO ₂ -e/Mt ROM Coal)
FY26-27	9.595	0.016	9.731	0.017	0.136	0.032
FY27-28	8.674	0.015	9.570	0.015	0.896	0.024
FY28-29	7.229	0.014	9.218	0.015	1.989	0.017
FY29-30	3.536	0.017	5.199	0.022	1.663	0.034
FY30-31	2.791	0.016	6.038	0.020	3.247	0.024
FY31-32	2.398	0.015	6.659	0.016	4.262	0.017
FY32-33	1.945	0.012	3.715	0.023	1.770	0.030
Average	5.167	0.015	7.161	0.018	1.995	0.025

The NGER Act defines facility and corporate group emission thresholds. The facility thresholds are:

- 25,000 tonnes or more CO₂-e (scope 1 and scope 2 emissions);
- production of 100 terajoules (TJ) or more of energy; or
- consumption of 100 TJ or more of energy.

The projected annual emissions of the Wilpinjong Coal Mine (including with the Modification) are likely to exceed the facility emission threshold (i.e. >25,000 tonnes of carbon dioxide equivalent), so WCPL will continue to have an obligation to report emissions from this facility under the NGER Act.

3.4 Benchmarking

Table 6 shows the calculated GHG emissions from the Modification Scenario, Modification Only 1 Scenario and Modification Only 2 Scenario in the State, National and Global context. The comparisons show that the annual average Scope 1 and 2 emissions from the Modification Only 1 Scenario would be in the order of 0.04% of NSW emissions. The Scope 1 and 2 incremental emissions of the Amendment would be small in the context of global GHG emissions, but it is acknowledged that all sources of GHG emissions will contribute in some way towards the potential global, national, state and regional effects of climate change.

Table 6 Comparison of emissions in the State, National and Global context

Statistic	Modification Scenario	Modification Only Scenario 1
Emissions in the State context		
Total reported NSW GHG emissions in 2022 (NSW DCCEEW, 2025)	110.997 Mt CO ₂ -e	
Total average annual Scope 1 and 2	0.125 Mt CO ₂ -e	0.045 Mt CO ₂ -e
Proportion of NSW's annual emissions	0.113 %	0.041 %
Emissions in the Australian context		
Total reported Australia GHG emissions in 2022 (Commonwealth DCCEEW, 2025)	432.621 Mt CO ₂ -e	
Total average annual Scope 1, 2 and 3	6.710 Mt CO ₂ -e	1.603 Mt CO ₂ -e
Proportion of Australia's annual emissions	1.551 %	0.370 %
Emissions in the Global context		
Total average annual Scope 1, 2, and 3 in 2021 (ClimateWatch, 2025)	49,600 Mt CO ₂ -e	
Total average annual Scope 1, 2, and 3	12.874 Mt CO ₂ -e	2.789 Mt CO ₂ -e
Proportion of annual global emissions	0.026 %	0.006 %

Table 7 presents the estimated Scope 1 GHG emissions from the Modification Scenario and Modification Only 1 Scenario, compared with projected NSW and Australian emissions under various policy scenarios. Under the Modification Scenario, annual Scope 1 emissions are projected to represent approximately 0.136% of total NSW Scope 1 emissions in 2030 and 0.032% of National Scope 1 emissions under the 'with additional measures' scenario. The Modification Only 1 Scenario would contribute slightly less, accounting for approximately 0.066% of total NSW emissions and 0.016% of national emissions in 2030. Emissions in 2035 are negligible across all scenarios, as coal mining activities associated with the Modification would cease prior to this date.

Wilpinjong Coal Mine is a Safeguard facility and is subject to the declining emissions trajectory required by the Safeguard Mechanism, in support of Australia's NDCs, which are designed to deliver a 43% reduction in emissions (on a 2005 base year) by 2030, and net zero by 2050. As such WCPL will continue to be required to manage its emissions under the Safeguard Mechanism.

Table 7 Comparison of NSW and National Projections

Year	Statistic (Mt CO ₂ -e)	Modification Scenario		Modification Only Scenario 1	
		Estimated Emissions (Mt CO ₂ -e)	Proportion of Emissions	Estimated Emissions (Mt CO ₂ -e)	Proportion of Emissions
Total Projected NSW Scope 1 Emissions for ‘Current Policy’ Scenario (Mt CO ₂ -e) (NSW DCCEEW, 2025)					
2030	82.970	0.113	0.136 %	0.055	0.066 %
2035	57.438	0.009	0.016 %	-	-
Projected Scope 1 NSW Fugitive Emissions for Coal Mining - Surface Mines for ‘Current Policy’ Scenario (Mt CO ₂ -e) (NSW DCCEEW, 2025)					
2030	1.798	0.010	0.556 %	0.003	0.167 %
2035	1.650	-	-	-	-
Total Projected NSW Scope 1 Stationary Energy Emissions for ‘Current Policy’ Scenario (Mt CO ₂ -e) (NSW DCCEEW, 2025)					
2030	13.088	0.086	0.657 %	0.045	0.344 %
2035	10.438	0.009	0.086 %	-	-
Total Projected Australia Scope 1 Emissions for ‘with additional measures’ Scenario (Mt CO ₂ -e) (Commonwealth DCCEEW, 2025)					
2030	351.410	0.113	0.032 %	0.055	0.016 %
2035	301.260	0.009	0.003 %	-	-

4 References

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Appendix A. Greenhouse gas calculations

Baseline Scenario 1

Record	Year	ROM coal (t)	Scope 1 (t CO2-e)	Scope 2 (t CO2-e)	Scope 3 (t CO2-e)	Total (t CO2-e)	Year (Mining)	Year (Calendar)	ROM coal (Mt)	Scope 1 (Mt CO2-e/year)	Scope 2 (Mt CO2-e/year)	Scope 3 (Mt CO2-e/year)	Total (Mt CO2-e/year)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)	Diesel (Mt CO2-e)	Fugitive (Mt CO2-e)	Blasting (Mt CO2-e)	Land clearing (Mt CO2-e)	Oils and greases (Mt CO2-e)	Electricity (Mt CO2-e)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)
1	FY24-25	11,763,195	114,832	9,862	24,232,455	24,357,149	FY24-25	2025	11.763	0.115	0.010	24.232	24.357	0.01	0.11	-	0.00	-	-	0.01	0.01
2	FY25-26	9,012,358	110,089	7,686	17,467,807	17,585,582	FY25-26	2026	9.012	0.110	0.008	17.468	17.586	0.01	0.11	-	0.00	-	-	0.01	0.01
3	FY26-27	9,595,134	149,599	7,121	18,590,657	18,747,377	FY26-27	2027	9.595	0.150	0.007	18.591	18.747	0.016	0.11	0.02	0.00	0.02	0.00	0.01	0.02
4	FY27-28	8,674,170	120,953	5,388	17,197,367	17,323,707	FY27-28	2028	8.674	0.121	0.005	17.197	17.324	0.015	0.08	0.02	0.00	0.02	0.00	0.01	0.01
5	FY28-29	7,228,849	101,066	2,892	14,611,386	14,715,343	FY28-29	2029	7.229	0.101	0.003	14.611	14.715	0.014	0.07	0.01	0.00	0.02	0.00	0.00	0.01
6	FY29-30	3,535,992	57,438	1,153	6,984,872	7,043,463	FY29-30	2030	3.536	0.057	0.001	6.985	7.043	0.017	0.04	0.01	0.00	0.01	0.00	0.00	0.02
7	FY30-31	2,791,057	43,479	897	5,419,233	5,463,609	FY30-31	2031	2.791	0.043	0.001	5.419	5.464	0.016	0.03	0.00	0.00	0.00	0.00	0.00	0.02
8	FY31-32	2,397,612	35,569	658	4,622,222	4,658,450	FY31-32	2032	2.398	0.036	0.001	4.622	4.658	0.015	0.03	0.00	0.00	0.00	0.00	0.00	0.02
9	FY32-33	1,945,427	22,680	426	3,720,242	3,743,349	FY32-33	2033	1.945	0.023	0.000	3.720	3.743	0.012	0.02	-	0.00	0.01	0.00	0.00	0.01
10	FY33-34	-	9,261	138	2,316	11,716	FY33-34	2034	-	0.009	0.000	0.002	0.012	#DIV/0!	0.01	-	-	-	0.00	0.00	#DIV/0!
11	FY34-35	-	9,261	-	2,316	11,577	FY34-35	2035	-	0.009	-	0.002	0.012	#DIV/0!	0.01	-	-	-	0.00	-	#DIV/0!
12	FY35-36	-	4,631	-	1,158	5,789	FY35-36	2036	-	0.005	-	0.001	0.006	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
13	FY36-37	-	4,631	-	1,158	5,789	FY36-37	2037	-	0.005	-	0.001	0.006	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
14		-	-	-	-	-		2038	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
15		-	-	-	-	-		2039	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
16		-	-	-	-	-		2040	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
17		-	-	-	-	-		2041	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
18		-	-	-	-	-		2042	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
19		-	-	-	-	-		2043	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
20		-	-	-	-	-		2044	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
21		-	-	-	-	-		2045	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
22								2046							-	-	-	-	-	-	
23								2047													
24								2048													
25								2049													
26								2050													
Average		5,166,891	75,826	2,648	10,163,711	10,242,185			5.167	0.076	0.003	10.164	10.242	0.015	0.053	0.011	0.002	0.011	0.000	0.003	0.015
Total		36,168,240	558,568	18,673	71,152,927	71,730,168			36.168	0.559	0.019	71.153	71.730	#DIV/0!	0.402	0.065	0.012	0.079	0.001	0.019	#DIV/0!

Baseline Scenario 1

Diesel usage

Year	ROM coal (t)	Usage (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	40,980	2709.72	0	667.78	111,044	-	27,366	138,410
FY25-26	9,012,358	39,219	2709.72	0	667.78	106,273	-	26,190	132,462
FY26-27	9,595,134	38,969	2709.72	0	667.78	105,594	-	26,022	131,616
FY27-28	8,674,170	30,788	2709.72	0	667.78	83,426	-	20,559	103,985
FY28-29	7,228,849	25,671	2709.72	0	667.78	69,561	-	17,143	86,703
FY29-30	3,535,992	15,273	2709.72	0	667.78	41,386	-	10,199	51,585
FY30-31	2,791,057	11,981	2709.72	0	667.78	32,466	-	8,001	40,467
FY31-32	2,397,612	9,410	2709.72	0	667.78	25,498	-	6,284	31,781
FY32-33	1,945,427	5,866	2709.72	0	667.78	15,896	-	3,917	19,813
FY33-34	-	3,407	2709.72	0	667.78	9,232	-	2,275	11,507
FY34-35	-	3,407	2709.72	0	667.78	9,232	-	2,275	11,507
FY35-36	-	1,704	2709.72	0	667.78	4,616	-	1,138	5,754
FY36-37	-	1,704	2709.72	0	667.78	4,616	-	1,138	5,754
FY35-37	-	-	2709.72	0	667.78	-	-	-	-
FY36-38	-	-	2709.72	0	667.78	-	-	-	-
FY35-38	-	-	2709.72	0	667.78	-	-	-	-
FY36-39	-	-	2709.72	0	667.78	-	-	-	-
FY35-39	-	-	2709.72	0	667.78	-	-	-	-
FY36-40	-	-	2709.72	0	667.78	-	-	-	-
FY35-40	-	-	2709.72	0	667.78	-	-	-	-
FY36-41	-	-	2709.72	0	667.78	-	-	-	-
FY35-41	-	-	2709.72	0	667.78	-	-	-	-
FY36-42	-	-	2709.72	0	667.78	-	-	-	-
FY35-42	-	-	2709.72	0	667.78	-	-	-	-
FY36-43	-	-	2709.72	0	667.78	-	-	-	-
FY35-43	-	-	2709.72	0	667.78	-	-	-	-
								Average	59,334
								Total	771,345

Baseline Scenario 1

Fugitive emissions

Year	ROM coal (t)	Emission factor (t CO2-e/t ROM)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	-	-	-	-	-	-	-
FY25-26	9,012,358	-	-	-	-	-	-	-
FY26-27	9,595,134	0.0020	-	-	18,867	-	-	18,867
FY27-28	8,674,170	0.0020	-	-	16,955	-	-	16,955
FY28-29	7,228,849	0.0019	-	-	13,704	-	-	13,704
FY29-30	3,535,992	0.0018	-	-	6,434	-	-	6,434
FY30-31	2,791,057	0.0018	-	-	4,947	-	-	4,947
FY31-32	2,397,612	0.0018	-	-	4,272	-	-	4,272
FY32-33	1,945,427	-	-	-	-	-	-	-
FY33-34	-	-	-	-	-	-	-	-
FY34-35	-	-	-	-	-	-	-	-
FY35-36	-	-	-	-	-	-	-	-
FY36-37	-	-	-	-	-	-	-	-
FY35-37	-	-	-	-	-	-	-	-
FY36-38	-	-	-	-	-	-	-	-
FY35-38	-	-	-	-	-	-	-	-
FY36-39	-	-	-	-	-	-	-	-
FY35-39	-	-	-	-	-	-	-	-
FY36-40	-	-	-	-	-	-	-	-
FY35-40	-	-	-	-	-	-	-	-
FY36-41	-	-	-	-	-	-	-	-
FY35-41	-	-	-	-	-	-	-	-
FY36-42	-	-	-	-	-	-	-	-
FY35-42	-	-	-	-	-	-	-	-
FY36-43	-	-	-	-	-	-	-	-
FY35-43	-	-	-	-	-	-	-	-
							Average	10,863
							Total	65,179

Baseline Scenario 1

Blasting emissions

Year	ROM coal (t)	Explosives (t)	Emission factor (t CO2-e/t Explosives)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	20,235	0.17	0	0	3,440	-	-	3,440
FY25-26	9,012,358	20,488	0.17	0	0	3,483	-	-	3,483
FY26-27	9,595,134	20,037	0.17	0	0	3,406	-	-	3,406
FY27-28	8,674,170	15,284	0.17	0	0	2,598	-	-	2,598
FY28-29	7,228,849	12,745	0.17	0	0	2,167	-	-	2,167
FY29-30	3,535,992	7,965	0.17	0	0	1,354	-	-	1,354
FY30-31	2,791,057	6,240	0.17	0	0	1,061	-	-	1,061
FY31-32	2,397,612	4,798	0.17	0	0	816	-	-	816
FY32-33	1,945,427	2,766	0.17	0	0	470	-	-	470
FY33-34	-	-	0.17	0	0	-	-	-	-
FY34-35	-	-	0.17	0	0	-	-	-	-
FY35-36	-	-	0.17	0	0	-	-	-	-
FY36-37	-	-	0.17	0	0	-	-	-	-
FY35-37	-	-	0.17	0	0	-	-	-	-
FY36-38	-	-	0.17	0	0	-	-	-	-
FY35-38	-	-	0.17	0	0	-	-	-	-
FY36-39	-	-	0.17	0	0	-	-	-	-
FY35-39	-	-	0.17	0	0	-	-	-	-
FY36-40	-	-	0.17	0	0	-	-	-	-
FY35-40	-	-	0.17	0	0	-	-	-	-
FY36-41	-	-	0.17	0	0	-	-	-	-
FY35-41	-	-	0.17	0	0	-	-	-	-
FY36-42	-	-	0.17	0	0	-	-	-	-
FY35-42	-	-	0.17	0	0	-	-	-	-
FY36-43	-	-	0.17	0	0	-	-	-	-
FY35-43	-	-	0.17	0	0	-	-	-	-
Average									2,088
Total									18,795

Baseline Scenario 1

Greases

Density: 0.94 t/m3
1.06 kL/t

Year	ROM coal (t)	Grease (kL)	Scope 1	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3	Scope 1	Scope 2	Scope 3		
FY24-25	11,763,195	70		135.8	0	698.4	9	-	49	58
FY25-26	9,012,358	67		135.8	0	698.4	9	-	47	56
FY26-27	9,595,134	66		135.8	0	698.4	9	-	46	55
FY27-28	8,674,170	52		135.8	0	698.4	7	-	37	44
FY28-29	7,228,849	44		135.8	0	698.4	6	-	31	36
FY29-30	3,535,992	26		135.8	0	698.4	4	-	18	22
FY30-31	2,791,057	20		135.8	0	698.4	3	-	14	17
FY31-32	2,397,612	16		135.8	0	698.4	2	-	11	13
FY32-33	1,945,427	10		135.8	0	698.4	1	-	7	8
FY33-34	-	6		135.8	0	698.4	1	-	4	5
FY34-35	-	6		135.8	0	698.4	1	-	4	5
FY35-36	-	3		135.8	0	698.4	0	-	2	2
FY36-37	-	3		135.8	0	698.4	0	-	2	2
FY35-37	-	-		135.8	0	698.4	-	-	-	-
FY36-38	-	-		135.8	0	698.4	-	-	-	-
FY35-38	-	-		135.8	0	698.4	-	-	-	-
FY36-39	-	-		135.8	0	698.4	-	-	-	-
FY35-39	-	-		135.8	0	698.4	-	-	-	-
FY36-40	-	-		135.8	0	698.4	-	-	-	-
FY35-40	-	-		135.8	0	698.4	-	-	-	-
FY36-41	-	-		135.8	0	698.4	-	-	-	-
FY35-41	-	-		135.8	0	698.4	-	-	-	-
FY36-42	-	-		135.8	0	698.4	-	-	-	-
FY35-42	-	-		135.8	0	698.4	-	-	-	-
FY36-43	-	-		135.8	0	698.4	-	-	-	-
FY35-43	-	-		135.8	0	698.4	-	-	-	-
Average										25
Total										325

Baseline Scenario 1

Oils

Year	ROM coal (t)	Oils (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total	
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3		
FY24-25	11,763,195		628	539.32	0	698.4	339	-	438	777
FY25-26	9,012,358		601	539.32	0	698.4	324	-	420	744
FY26-27	9,595,134		597	539.32	0	698.4	322	-	417	739
FY27-28	8,674,170		472	539.32	0	698.4	254	-	329	584
FY28-29	7,228,849		393	539.32	0	698.4	212	-	275	487
FY29-30	3,535,992		234	539.32	0	698.4	126	-	163	290
FY30-31	2,791,057		184	539.32	0	698.4	99	-	128	227
FY31-32	2,397,612		144	539.32	0	698.4	78	-	101	178
FY32-33	1,945,427		90	539.32	0	698.4	48	-	63	111
FY33-34	-		52	539.32	0	698.4	28	-	37	65
FY34-35	-		52	539.32	0	698.4	28	-	37	65
FY35-36	-		26	539.32	0	698.4	14	-	18	32
FY36-37	-		26	539.32	0	698.4	14	-	18	32
FY35-37	-	-		539.32	0	698.4	-	-	-	-
FY36-38	-	-		539.32	0	698.4	-	-	-	-
FY35-38	-	-		539.32	0	698.4	-	-	-	-
FY36-39	-	-		539.32	0	698.4	-	-	-	-
FY35-39	-	-		539.32	0	698.4	-	-	-	-
FY36-40	-	-		539.32	0	698.4	-	-	-	-
FY35-40	-	-		539.32	0	698.4	-	-	-	-
FY36-41	-	-		539.32	0	698.4	-	-	-	-
FY35-41	-	-		539.32	0	698.4	-	-	-	-
FY36-42	-	-		539.32	0	698.4	-	-	-	-
FY35-42	-	-		539.32	0	698.4	-	-	-	-
FY36-43	-	-		539.32	0	698.4	-	-	-	-
FY35-43	-	-		539.32	0	698.4	-	-	-	-
Average									333	
Total									4,331	

Baseline Scenario 1

Land clearing

	GWP	Distribution corrected for GWP
CO2	1	100.0%
CH4	28	0.00%
N2O	265	0.000%

Year	ROM coal (t)	Clearing (ha)	Emission factor (t CO2-e/ha)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	-	0	0	0	-	-	-	-
FY25-26	9,012,358	-	0	0	0	-	-	-	-
FY26-27	9,595,134	65	329	0	0	21,402	-	-	21,402
FY27-28	8,674,170	55	322	0	0	17,712	-	-	17,712
FY28-29	7,228,849	48	321	0	0	15,416	-	-	15,416
FY29-30	3,535,992	25	325	0	0	8,134	-	-	8,134
FY30-31	2,791,057	15	327	0	0	4,904	-	-	4,904
FY31-32	2,397,612	15	327	0	0	4,904	-	-	4,904
FY32-33	1,945,427	19	330	0	0	6,265	-	-	6,265
FY33-34	-	-	0	0	0	-	-	-	-
FY34-35	-	-	0	0	0	-	-	-	-
FY35-36	-	-	0	0	0	-	-	-	-
FY36-37	-	-	0	0	0	-	-	-	-
FY35-37	-	-	0	0	0	-	-	-	-
FY36-38	-	-	0	0	0	-	-	-	-
FY35-38	-	-	0	0	0	-	-	-	-
FY36-39	-	-	0	0	0	-	-	-	-
FY35-39	-	-	0	0	0	-	-	-	-
FY36-40	-	-	0	0	0	-	-	-	-
FY35-40	-	-	0	0	0	-	-	-	-
FY36-41	-	-	0	0	0	-	-	-	-
FY35-41	-	-	0	0	0	-	-	-	-
FY36-42	-	-	0	0	0	-	-	-	-
FY35-42	-	-	0	0	0	-	-	-	-
FY36-43	-	-	0	0	0	-	-	-	-
FY35-43	-	-	0	0	0	-	-	-	-
Average									11,248
Total									78,736

Baseline Scenario 1

Electricity usage

Year	ROM coal (t)	Usage (kWh)	Emission factor (kg CO2-e/kWh)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	19,337,299	0	0.51	0.04	-	9,862	773	10,636
FY25-26	9,012,358	16,352,488	0	0.47	0.03	-	7,686	491	8,176
FY26-27	9,595,134	17,801,971	0	0.4	0.03	-	7,121	534	7,655
FY27-28	8,674,170	15,845,983	0	0.34	0.02	-	5,388	317	5,705
FY28-29	7,228,849	13,772,000	0	0.21	0.02	-	2,892	275	3,168
FY29-30	3,535,992	7,687,805	0	0.15	0.01	-	1,153	77	1,230
FY30-31	2,791,057	5,976,907	0	0.15	0.01	-	897	60	956
FY31-32	2,397,612	5,064,477	0	0.13	0.01	-	658	51	709
FY32-33	1,945,427	4,736,036	0	0.09	0.00	-	426	-	426
FY33-34	-	1,536,336	0	0.09	0.00	-	138	-	138
FY34-35	-	-	0	0.07	0.02	-	-	-	-
FY35-36	-	-	0	0.06	0.01	-	-	-	-
FY36-37	-	-	0	0.06	0.00	-	-	-	-
FY35-37	-	-	0	0.06	0.00	-	-	-	-
FY36-38	-	-	0	0.06	0.00	-	-	-	-
FY35-38	-	-	0	0.03	0.00	-	-	-	-
FY36-39	-	-	0	0.03	0.00	-	-	-	-
FY35-39	-	-	0	0.03	0.00	-	-	-	-
FY36-40	-	-	0	0.03	0.00	-	-	-	-
FY35-40	-	-	0	0.03	0.00	-	-	-	-
FY36-41	-	-	0	0.03	0.00	-	-	-	-
FY35-41	-	-	0	0.03	0.00	-	-	-	-
FY36-42	-	-	0	0.03	0.00	-	-	-	-
FY35-42	-	-	0	0.03	0.00	-	-	-	-
FY36-43	-	-	0	0.03	0.00	-	-	-	-
FY35-43	-	-	0	0.03	0.00	-	-	-	-
Average									3,880
Total									38,799

Baseline Scenario 1

Transport (Rail)

Factor kg CO2-e/t.km 0.01630 NGER (Safeguard) Rule 2015
Distance km 480 Assumed distance to port

Year	Product coal (t)	Emission factor (kg CO2-e/t)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	9,730,480 -	0	0	7.82	-	-	76,131	76,131
FY25-26	7,011,535 -	0	0	7.82	-	-	54,858	54,858
FY26-27	7,462,997 -	0	0	7.82	-	-	58,390	58,390
FY27-28	6,905,186 -	0	0	7.82	-	-	54,026	54,026
FY28-29	5,866,978 -	0	0	7.82	-	-	45,903	45,903
FY29-30	2,803,870 -	0	0	7.82	-	-	21,937	21,937
FY30-31	2,175,355 -	0	0	7.82	-	-	17,020	17,020
FY31-32	1,855,645 -	0	0	7.82	-	-	14,519	14,519
FY32-33	1,494,018 -	0	0	7.82	-	-	11,689	11,689
FY33-34	- -	0	0	7.82	-	-	-	-
FY34-35	- -	0	0	7.82	-	-	-	-
FY35-36	- -	0	0	7.82	-	-	-	-
FY36-37	- -	0	0	7.82	-	-	-	-
FY35-37	- -	0	0	7.82	-	-	-	-
FY36-38	- -	0	0	7.82	-	-	-	-
FY35-38	- -	0	0	7.82	-	-	-	-
FY36-39	- -	0	0	7.82	-	-	-	-
FY35-39	- -	0	0	7.82	-	-	-	-
FY36-40	- -	0	0	7.82	-	-	-	-
FY35-40	- -	0	0	7.82	-	-	-	-
FY36-41	- -	0	0	7.82	-	-	-	-
FY35-41	- -	0	0	7.82	-	-	-	-
FY36-42	- -	0	0	7.82	-	-	-	-
FY35-42	- -	0	0	7.82	-	-	-	-
FY36-43	- -	0	0	7.82	-	-	-	-
FY35-43	- -	0	0	7.82	-	-	-	-
							Average	39,386
							Total	354,475

Baseline Scenario 1

Transport (Shipping)

Factor kg CO2-e/t.km 0.00539 NGER (Safeguard) Rule 2015
Distance km 8000 Assumed distance to market

Year	Product coal (t)	Emission factor (kg CO2-e/t)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	9,730,480 -	0	0	43.12	-	-	419,578	419,578
FY25-26	7,011,535 -	0	0	43.12	-	-	302,337	302,337
FY26-27	7,462,997 -	0	0	43.12	-	-	321,804	321,804
FY27-28	6,905,186 -	0	0	43.12	-	-	297,752	297,752
FY28-29	5,866,978 -	0	0	43.12	-	-	252,984	252,984
FY29-30	2,803,870 -	0	0	43.12	-	-	120,903	120,903
FY30-31	2,175,355 -	0	0	43.12	-	-	93,801	93,801
FY31-32	1,855,645 -	0	0	43.12	-	-	80,015	80,015
FY32-33	1,494,018 -	0	0	43.12	-	-	64,422	64,422
FY33-34	- -	0	0	43.12	-	-	-	-
FY34-35	- -	0	0	43.12	-	-	-	-
FY35-36	- -	0	0	43.12	-	-	-	-
FY36-37	- -	0	0	43.12	-	-	-	-
FY35-37	- -	0	0	43.12	-	-	-	-
FY36-38	- -	0	0	43.12	-	-	-	-
FY35-38	- -	0	0	43.12	-	-	-	-
FY36-39	- -	0	0	43.12	-	-	-	-
FY35-39	- -	0	0	43.12	-	-	-	-
FY36-40	- -	0	0	43.12	-	-	-	-
FY35-40	- -	0	0	43.12	-	-	-	-
FY36-41	- -	0	0	43.12	-	-	-	-
FY35-41	- -	0	0	43.12	-	-	-	-
FY36-42	- -	0	0	43.12	-	-	-	-
FY35-42	- -	0	0	43.12	-	-	-	-
FY36-43	- -	0	0	43.12	-	-	-	-
FY35-43	- -	0	0	43.12	-	-	-	-
							Average	217,066
							Total	1,953,597

Baseline Scenario 1

Energy Production

Year	ROM coal (t)	Thermal coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	9,730,480		0	0	2436.48	-	-	23,708,119		23,708,119
FY25-26	9,012,358	7,011,535		0	0	2436.48	-	-	17,083,465		17,083,465
FY26-27	9,595,134	7,462,997		0	0	2436.48	-	-	18,183,442		18,183,442
FY27-28	8,674,170	6,905,186		0	0	2436.48	-	-	16,824,347		16,824,347
FY28-29	7,228,849	5,866,978		0	0	2436.48	-	-	14,294,775		14,294,775
FY29-30	3,535,992	2,803,870		0	0	2436.48	-	-	6,831,574		6,831,574
FY30-31	2,791,057	2,175,355		0	0	2436.48	-	-	5,300,209		5,300,209
FY31-32	2,397,612	1,855,645		0	0	2436.48	-	-	4,521,242		4,521,242
FY32-33	1,945,427	1,494,018		0	0	2436.48	-	-	3,640,144		3,640,144
FY33-34	-	-		0	0	2436.48	-	-	-		-
FY34-35	-	-		0	0	2436.48	-	-	-		-
FY35-36	-	-		0	0	2436.48	-	-	-		-
FY36-37	-	-		0	0	2436.48	-	-	-		-
FY35-37	-	-		0	0	2436.48	-	-	-		-
FY36-38	-	-		0	0	2436.48	-	-	-		-
FY35-38	-	-		0	0	2436.48	-	-	-		-
FY36-39	-	-		0	0	2436.48	-	-	-		-
FY35-39	-	-		0	0	2436.48	-	-	-		-
FY36-40	-	-		0	0	2436.48	-	-	-		-
FY35-40	-	-		0	0	2436.48	-	-	-		-
FY36-41	-	-		0	0	2436.48	-	-	-		-
FY35-41	-	-		0	0	2436.48	-	-	-		-
FY36-42	-	-		0	0	2436.48	-	-	-		-
FY35-42	-	-		0	0	2436.48	-	-	-		-
FY36-43	-	-		0	0	2436.48	-	-	-		-
FY35-43	-	-		0	0	2436.48	-	-	-		-
									Average		12,265,257
									Total		110,387,317

Baseline Scenario 1

Coking coal use

Year	ROM coal (t)	Coking coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	-		0	0	2760.9	-	-	-	-	-
FY25-26	9,012,358	-		0	0	2760.9	-	-	-	-	-
FY26-27	9,595,134	-		0	0	2760.9	-	-	-	-	-
FY27-28	8,674,170	-		0	0	2760.9	-	-	-	-	-
FY28-29	7,228,849	-		0	0	2760.9	-	-	-	-	-
FY29-30	3,535,992	-		0	0	2760.9	-	-	-	-	-
FY30-31	2,791,057	-		0	0	2760.9	-	-	-	-	-
FY31-32	2,397,612	-		0	0	2760.9	-	-	-	-	-
FY32-33	1,945,427	-		0	0	2760.9	-	-	-	-	-
FY33-34	-	-		0	0	2760.9	-	-	-	-	-
FY34-35	-	-		0	0	2760.9	-	-	-	-	-
FY35-36	-	-		0	0	2760.9	-	-	-	-	-
FY36-37	-	-		0	0	2760.9	-	-	-	-	-
FY35-37	-	-		0	0	2760.9	-	-	-	-	-
FY36-38	-	-		0	0	2760.9	-	-	-	-	-
FY35-38	-	-		0	0	2760.9	-	-	-	-	-
FY36-39	-	-		0	0	2760.9	-	-	-	-	-
FY35-39	-	-		0	0	2760.9	-	-	-	-	-
FY36-40	-	-		0	0	2760.9	-	-	-	-	-
FY35-40	-	-		0	0	2760.9	-	-	-	-	-
FY36-41	-	-		0	0	2760.9	-	-	-	-	-
FY35-41	-	-		0	0	2760.9	-	-	-	-	-
FY36-42	-	-		0	0	2760.9	-	-	-	-	-
FY35-42	-	-		0	0	2760.9	-	-	-	-	-
FY36-43	-	-		0	0	2760.9	-	-	-	-	-
FY35-43	-	-		0	0	2760.9	-	-	-	-	-
										Average Total	#DIV/0! -

Baseline Scenario 2

Record	Year	ROM coal (t)	Scope 1 (t CO2-e)	Scope 2 (t CO2-e)	Scope 3 (t CO2-e)	Total (t CO2-e)	Year (Mining)	Year (Calendar)	ROM coal (Mt)	Scope 1 (Mt CO2-e/year)	Scope 2 (Mt CO2-e/year)	Scope 3 (Mt CO2-e/year)	Total (Mt CO2-e/year)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)	Diesel (Mt CO2-e)	Fugitive (Mt CO2-e)	Blasting (Mt CO2-e)	Land clearing (Mt CO2-e)	Oils and greases (Mt CO2-e)	Electricity (Mt CO2-e)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)
1	FY24-25	11,763,195	114,832	9,862	24,232,455	24,357,149	FY24-25	2025	11.763	0.115	0.010	24.232	24.357	0.01	0.11	-	0.00	-	-	0.01	0.01
2	FY25-26	9,012,358	110,089	7,686	17,467,807	17,585,582	FY25-26	2026	9.012	0.110	0.008	17.468	17.586	0.01	0.11	-	0.00	-	-	0.01	0.01
3	FY26-27	9,595,134	149,599	7,121	18,590,657	18,747,377	FY26-27	2027	9.595	0.150	0.007	18.591	18.747	0.02	0.11	0.02	0.00	0.02	0.00	0.01	0.02
4	FY27-28	8,674,170	120,953	5,388	17,197,367	17,323,707	FY27-28	2028	8.674	0.121	0.005	17.197	17.324	0.01	0.08	0.02	0.00	0.02	0.00	0.01	0.01
5	FY28-29	7,228,849	114,762	2,892	14,611,386	14,729,040	FY28-29	2029	7.229	0.115	0.003	14.611	14.729	0.02	0.07	0.02	0.00	0.02	0.00	0.00	0.02
6	FY29-30	7,812,392	118,172	2,548	15,432,320	15,553,040	FY29-30	2030	7.812	0.118	0.003	15.432	15.553	0.02	0.09	0.01	0.00	0.01	0.00	0.00	0.02
7	FY30-31	4,791,057	72,236	1,539	9,302,517	9,376,292	FY30-31	2031	4.791	0.072	0.002	9.303	9.376	0.02	0.06	0.01	0.00	0.01	0.00	0.00	0.02
8	FY31-32	4,009,026	53,308	1,101	7,728,778	7,783,186	FY31-32	2032	4.009	0.053	0.001	7.729	7.783	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.01
9	FY32-33	1,945,427	26,053	426	3,720,242	3,746,721	FY32-33	2033	1.945	0.026	0.000	3.720	3.747	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.01
10	FY33-34	-	7,597	124	1,900	9,621	FY33-34	2034	-	0.008	0.000	0.002	0.010	#DIV/0!	0.01	-	-	-	0.00	0.00	#DIV/0!
11	FY34-35	-	7,597	-	1,900	9,497	FY34-35	2035	-	0.008	-	0.002	0.009	#DIV/0!	0.01	-	-	-	0.00	-	#DIV/0!
12	FY35-36	-	3,799	-	950	4,748	FY35-36	2036	-	0.004	-	0.001	0.005	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
13	FY36-37	-	3,799	-	950	4,748	FY36-37	2037	-	0.004	-	0.001	0.005	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
14		-	-	-	-	-		2038	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
15		-	-	-	-	-		2039	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
16		-	-	-	-	-		2040	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
17		-	-	-	-	-		2041	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
18		-	-	-	-	-		2042	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
19		-	-	-	-	-		2043	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
20		-	-	-	-	-		2044	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
21		-	-	-	-	-		2045	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
22								2046							-	-	-	-	-	-	
23								2047													
24								2048													
25								2049													
26								2050													
Average		6,293,722	93,583	3,002	12,369,038	12,465,623			6.294	0.094	0.003	12.369	12.466	0.015	0.066	0.011	0.002	0.013	0.000	0.003	0.015
Total		44,056,054	677,874	21,138	86,588,965	87,287,978			44.056	0.678	0.021	86.589	87.288	#DIV/0!	0.487	0.080	0.015	0.094	0.002	0.021	#DIV/0!

Baseline Scenario 2

Diesel usage

Year	ROM coal (t)	Usage (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	40,980	2709.72	0	667.78	111,044	-	27,366	138,410
FY25-26	9,012,358	39,219	2709.72	0	667.78	106,273	-	26,190	132,462
FY26-27	9,595,134	38,969	2709.72	0	667.78	105,594	-	26,022	131,616
FY27-28	8,674,170	30,788	2709.72	0	667.78	83,426	-	20,559	103,985
FY28-29	7,228,849	25,671	2709.72	0	667.78	69,561	-	17,143	86,703
FY29-30	7,812,392	33,744	2709.72	0	667.78	91,438	-	22,534	113,972
FY30-31	4,791,057	20,567	2709.72	0	667.78	55,730	-	13,734	69,464
FY31-32	4,009,026	15,734	2709.72	0	667.78	42,634	-	10,507	53,141
FY32-33	1,945,427	5,866	2709.72	0	667.78	15,896	-	3,917	19,813
FY33-34	-	2,795	2709.72	0	667.78	7,573	-	1,866	9,440
FY34-35	-	2,795	2709.72	0	667.78	7,573	-	1,866	9,440
FY35-36	-	1,397	2709.72	0	667.78	3,787	-	933	4,720
FY36-37	-	1,397	2709.72	0	667.78	3,787	-	933	4,720
FY35-37	-	-	2709.72	0	667.78	-	-	-	-
FY36-38	-	-	2709.72	0	667.78	-	-	-	-
FY35-38	-	-	2709.72	0	667.78	-	-	-	-
FY36-39	-	-	2709.72	0	667.78	-	-	-	-
FY35-39	-	-	2709.72	0	667.78	-	-	-	-
FY36-40	-	-	2709.72	0	667.78	-	-	-	-
FY35-40	-	-	2709.72	0	667.78	-	-	-	-
FY36-41	-	-	2709.72	0	667.78	-	-	-	-
FY35-41	-	-	2709.72	0	667.78	-	-	-	-
FY36-42	-	-	2709.72	0	667.78	-	-	-	-
FY35-42	-	-	2709.72	0	667.78	-	-	-	-
FY36-43	-	-	2709.72	0	667.78	-	-	-	-
FY35-43	-	-	2709.72	0	667.78	-	-	-	-
								Average	67,530
								Total	877,885

Baseline Scenario 2

Fugitive emissions

Year	ROM coal (t)	Emission factor (t CO2-e/t ROM)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	-	-	-	-	-	-	-
FY25-26	9,012,358	-	-	-	-	-	-	-
FY26-27	9,595,134	0.0020	-	-	18,867	-	-	18,867
FY27-28	8,674,170	0.0020	-	-	16,955	-	-	16,955
FY28-29	7,228,849	0.0026	-	-	18,744	-	-	18,744
FY29-30	7,812,392	0.0015	-	-	11,475	-	-	11,475
FY30-31	4,791,057	0.0014	-	-	6,530	-	-	6,530
FY31-32	4,009,026	0.0011	-	-	4,272	-	-	4,272
FY32-33	1,945,427	0.0017	-	-	3,372	-	-	3,372
FY33-34	-	-	-	-	-	-	-	-
FY34-35	-	-	-	-	-	-	-	-
FY35-36	-	-	-	-	-	-	-	-
FY36-37	-	-	-	-	-	-	-	-
FY35-37	-	-	-	-	-	-	-	-
FY36-38	-	-	-	-	-	-	-	-
FY35-38	-	-	-	-	-	-	-	-
FY36-39	-	-	-	-	-	-	-	-
FY35-39	-	-	-	-	-	-	-	-
FY36-40	-	-	-	-	-	-	-	-
FY35-40	-	-	-	-	-	-	-	-
FY36-41	-	-	-	-	-	-	-	-
FY35-41	-	-	-	-	-	-	-	-
FY36-42	-	-	-	-	-	-	-	-
FY35-42	-	-	-	-	-	-	-	-
FY36-43	-	-	-	-	-	-	-	-
FY35-43	-	-	-	-	-	-	-	-
							Average	11,459
							Total	80,215

Baseline Scenario 2

Blasting emissions

Year	ROM coal (t)	Explosives (t)	Emission factor (t CO2-e/t Explosives)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	20,235	0.17	0	0	3,440	-	-	3,440
FY25-26	9,012,358	20,488	0.17	0	0	3,483	-	-	3,483
FY26-27	9,595,134	20,037	0.17	0	0	3,406	-	-	3,406
FY27-28	8,674,170	15,284	0.17	0	0	2,598	-	-	2,598
FY28-29	7,228,849	12,745	0.17	0	0	2,167	-	-	2,167
FY29-30	7,812,392	17,599	0.17	0	0	2,992	-	-	2,992
FY30-31	4,791,057	10,711	0.17	0	0	1,821	-	-	1,821
FY31-32	4,009,026	8,023	0.17	0	0	1,364	-	-	1,364
FY32-33	1,945,427	2,766	0.17	0	0	470	-	-	470
FY33-34	-	-	0.17	0	0	-	-	-	-
FY34-35	-	-	0.17	0	0	-	-	-	-
FY35-36	-	-	0.17	0	0	-	-	-	-
FY36-37	-	-	0.17	0	0	-	-	-	-
FY35-37	-	-	0.17	0	0	-	-	-	-
FY36-38	-	-	0.17	0	0	-	-	-	-
FY35-38	-	-	0.17	0	0	-	-	-	-
FY36-39	-	-	0.17	0	0	-	-	-	-
FY35-39	-	-	0.17	0	0	-	-	-	-
FY36-40	-	-	0.17	0	0	-	-	-	-
FY35-40	-	-	0.17	0	0	-	-	-	-
FY36-41	-	-	0.17	0	0	-	-	-	-
FY35-41	-	-	0.17	0	0	-	-	-	-
FY36-42	-	-	0.17	0	0	-	-	-	-
FY35-42	-	-	0.17	0	0	-	-	-	-
FY36-43	-	-	0.17	0	0	-	-	-	-
FY35-43	-	-	0.17	0	0	-	-	-	-
Average									2,416
Total									21,741

Baseline Scenario 2

Greases

Density: 0.94 t/m3
1.06 kL/t

Year	ROM coal (t)	Grease (kL)	Scope 1	Emission factor (kg CO2-e/kL)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	70	135.8	0	698.4		9	-		49	58
FY25-26	9,012,358	67	135.8	0	698.4		9	-		47	56
FY26-27	9,595,134	66	135.8	0	698.4		9	-		46	55
FY27-28	8,674,170	52	135.8	0	698.4		7	-		37	44
FY28-29	7,228,849	44	135.8	0	698.4		6	-		31	36
FY29-30	7,812,392	57	135.8	0	698.4		8	-		40	48
FY30-31	4,791,057	35	135.8	0	698.4		5	-		24	29
FY31-32	4,009,026	27	135.8	0	698.4		4	-		19	22
FY32-33	1,945,427	10	135.8	0	698.4		1	-		7	8
FY33-34	-	5	135.8	0	698.4		1	-		3	4
FY34-35	-	5	135.8	0	698.4		1	-		3	4
FY35-36	-	2	135.8	0	698.4		0	-		2	2
FY36-37	-	2	135.8	0	698.4		0	-		2	2
FY35-37	-	-	135.8	0	698.4		-	-		-	-
FY36-38	-	-	135.8	0	698.4		-	-		-	-
FY35-38	-	-	135.8	0	698.4		-	-		-	-
FY36-39	-	-	135.8	0	698.4		-	-		-	-
FY35-39	-	-	135.8	0	698.4		-	-		-	-
FY36-40	-	-	135.8	0	698.4		-	-		-	-
FY35-40	-	-	135.8	0	698.4		-	-		-	-
FY36-41	-	-	135.8	0	698.4		-	-		-	-
FY35-41	-	-	135.8	0	698.4		-	-		-	-
FY36-42	-	-	135.8	0	698.4		-	-		-	-
FY35-42	-	-	135.8	0	698.4		-	-		-	-
FY36-43	-	-	135.8	0	698.4		-	-		-	-
FY35-43	-	-	135.8	0	698.4		-	-		-	-
Average										28	
Total										369	

Baseline Scenario 2

Oils

Year	ROM coal (t)	Oils (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	628	539.32	0	698.4	339	-	438	777
FY25-26	9,012,358	601	539.32	0	698.4	324	-	420	744
FY26-27	9,595,134	597	539.32	0	698.4	322	-	417	739
FY27-28	8,674,170	472	539.32	0	698.4	254	-	329	584
FY28-29	7,228,849	393	539.32	0	698.4	212	-	275	487
FY29-30	7,812,392	517	539.32	0	698.4	279	-	361	640
FY30-31	4,791,057	315	539.32	0	698.4	170	-	220	390
FY31-32	4,009,026	241	539.32	0	698.4	130	-	168	298
FY32-33	1,945,427	90	539.32	0	698.4	48	-	63	111
FY33-34	-	43	539.32	0	698.4	23	-	30	53
FY34-35	-	43	539.32	0	698.4	23	-	30	53
FY35-36	-	21	539.32	0	698.4	12	-	15	26
FY36-37	-	21	539.32	0	698.4	12	-	15	26
FY35-37	-	-	539.32	0	698.4	-	-	-	-
FY36-38	-	-	539.32	0	698.4	-	-	-	-
FY35-38	-	-	539.32	0	698.4	-	-	-	-
FY36-39	-	-	539.32	0	698.4	-	-	-	-
FY35-39	-	-	539.32	0	698.4	-	-	-	-
FY36-40	-	-	539.32	0	698.4	-	-	-	-
FY35-40	-	-	539.32	0	698.4	-	-	-	-
FY36-41	-	-	539.32	0	698.4	-	-	-	-
FY35-41	-	-	539.32	0	698.4	-	-	-	-
FY36-42	-	-	539.32	0	698.4	-	-	-	-
FY35-42	-	-	539.32	0	698.4	-	-	-	-
FY36-43	-	-	539.32	0	698.4	-	-	-	-
FY35-43	-	-	539.32	0	698.4	-	-	-	-
								Average	379
								Total	4,929

Baseline Scenario 2

Land clearing

GWP **Distribution corrected for GWP**

CO2	1	100.0%
CH4	28	0.00%
N2O	265	0.000%

Year	ROM coal (t)	Clearing (ha)	Emission factor (t CO2-e/ha)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	-	0	0	0	-	-	-	-
FY25-26	9,012,358	-	0	0	0	-	-	-	-
FY26-27	9,595,134	65	329	0	0	21,402	-	-	21,402
FY27-28	8,674,170	55	322	0	0	17,712	-	-	17,712
FY28-29	7,228,849	76	318	0	0	24,072	-	-	24,072
FY29-30	7,812,392	37	321	0	0	11,982	-	-	11,982
FY30-31	4,791,057	25	321	0	0	7,981	-	-	7,981
FY31-32	4,009,026	15	327	0	0	4,904	-	-	4,904
FY32-33	1,945,427	19	330	0	0	6,265	-	-	6,265
FY33-34	-	-	0	0	0	-	-	-	-
FY34-35	-	-	0	0	0	-	-	-	-
FY35-36	-	-	0	0	0	-	-	-	-
FY36-37	-	-	0	0	0	-	-	-	-
FY35-37	-	-	0	0	0	-	-	-	-
FY36-38	-	-	0	0	0	-	-	-	-
FY35-38	-	-	0	0	0	-	-	-	-
FY36-39	-	-	0	0	0	-	-	-	-
FY35-39	-	-	0	0	0	-	-	-	-
FY36-40	-	-	0	0	0	-	-	-	-
FY35-40	-	-	0	0	0	-	-	-	-
FY36-41	-	-	0	0	0	-	-	-	-
FY35-41	-	-	0	0	0	-	-	-	-
FY36-42	-	-	0	0	0	-	-	-	-
FY35-42	-	-	0	0	0	-	-	-	-
FY36-43	-	-	0	0	0	-	-	-	-
FY35-43	-	-	0	0	0	-	-	-	-
Average									13,474
Total									94,317

Baseline Scenario 2

Electricity usage

Year	ROM coal (t)	Usage (kWh)	Emission factor (kg CO2-e/kWh)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	19,337,299	0	0.51	0.04	-	9,862	773	10,636
FY25-26	9,012,358	16,352,488	0	0.47	0.03	-	7,686	491	8,176
FY26-27	9,595,134	17,801,971	0	0.4	0.03	-	7,121	534	7,655
FY27-28	8,674,170	15,845,983	0	0.34	0.02	-	5,388	317	5,705
FY28-29	7,228,849	13,772,000	0	0.21	0.02	-	2,892	275	3,168
FY29-30	7,812,392	16,985,374	0	0.15	0.01	-	2,548	170	2,718
FY30-31	4,791,057	10,259,806	0	0.15	0.01	-	1,539	103	1,642
FY31-32	4,009,026	8,468,267	0	0.13	0.01	-	1,101	85	1,186
FY32-33	1,945,427	4,736,036	0	0.09	0.00	-	426	-	426
FY33-34	-	1,378,282	0	0.09	0.00	-	124	-	124
FY34-35	-	-	0	0.07	0.02	-	-	-	-
FY35-36	-	-	0	0.06	0.01	-	-	-	-
FY36-37	-	-	0	0.06	0.00	-	-	-	-
FY35-37	-	-	0	0.06	0.00	-	-	-	-
FY36-38	-	-	0	0.06	0.00	-	-	-	-
FY35-38	-	-	0	0.03	0.00	-	-	-	-
FY36-39	-	-	0	0.03	0.00	-	-	-	-
FY35-39	-	-	0	0.03	0.00	-	-	-	-
FY36-40	-	-	0	0.03	0.00	-	-	-	-
FY35-40	-	-	0	0.03	0.00	-	-	-	-
FY36-41	-	-	0	0.03	0.00	-	-	-	-
FY35-41	-	-	0	0.03	0.00	-	-	-	-
FY36-42	-	-	0	0.03	0.00	-	-	-	-
FY35-42	-	-	0	0.03	0.00	-	-	-	-
FY36-43	-	-	0	0.03	0.00	-	-	-	-
FY35-43	-	-	0	0.03	0.00	-	-	-	-
Average									4,143
Total									41,434

Baseline Scenario 2

Transport (Rail)

Factor kg CO2-e/t.km 0.01630 NGER (Safeguard) Rule 2015
Distance km 480 Assumed distance to port

Year	Product coal (t)	Emission factor (kg CO2-e/t)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	9,730,480 -	0	0	7.82	-	-	76,131	76,131
FY25-26	7,011,535 -	0	0	7.82	-	-	54,858	54,858
FY26-27	7,462,997 -	0	0	7.82	-	-	58,390	58,390
FY27-28	6,905,186 -	0	0	7.82	-	-	54,026	54,026
FY28-29	5,866,978 -	0	0	7.82	-	-	45,903	45,903
FY29-30	6,194,849 -	0	0	7.82	-	-	48,468	48,468
FY30-31	3,734,159 -	0	0	7.82	-	-	29,216	29,216
FY31-32	3,102,808 -	0	0	7.82	-	-	24,276	24,276
FY32-33	1,494,018 -	0	0	7.82	-	-	11,689	11,689
FY33-34	- -	0	0	7.82	-	-	-	-
FY34-35	- -	0	0	7.82	-	-	-	-
FY35-36	- -	0	0	7.82	-	-	-	-
FY36-37	- -	0	0	7.82	-	-	-	-
FY35-37	- -	0	0	7.82	-	-	-	-
FY36-38	- -	0	0	7.82	-	-	-	-
FY35-38	- -	0	0	7.82	-	-	-	-
FY36-39	- -	0	0	7.82	-	-	-	-
FY35-39	- -	0	0	7.82	-	-	-	-
FY36-40	- -	0	0	7.82	-	-	-	-
FY35-40	- -	0	0	7.82	-	-	-	-
FY36-41	- -	0	0	7.82	-	-	-	-
FY35-41	- -	0	0	7.82	-	-	-	-
FY36-42	- -	0	0	7.82	-	-	-	-
FY35-42	- -	0	0	7.82	-	-	-	-
FY36-43	- -	0	0	7.82	-	-	-	-
FY35-43	- -	0	0	7.82	-	-	-	-
							Average	44,773
							Total	402,960

Baseline Scenario 2

Transport (Shipping)

Factor kg CO2-e/t.km 0.00539 NGER (Safeguard) Rule 2015
Distance km 8000 Assumed distance to market

Year	Product coal (t)	Emission factor (kg CO2-e/t)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	9,730,480 -	0	0	43.12	-	-	419,578	419,578
FY25-26	7,011,535 -	0	0	43.12	-	-	302,337	302,337
FY26-27	7,462,997 -	0	0	43.12	-	-	321,804	321,804
FY27-28	6,905,186 -	0	0	43.12	-	-	297,752	297,752
FY28-29	5,866,978 -	0	0	43.12	-	-	252,984	252,984
FY29-30	6,194,849 -	0	0	43.12	-	-	267,122	267,122
FY30-31	3,734,159 -	0	0	43.12	-	-	161,017	161,017
FY31-32	3,102,808 -	0	0	43.12	-	-	133,793	133,793
FY32-33	1,494,018 -	0	0	43.12	-	-	64,422	64,422
FY33-34	- -	0	0	43.12	-	-	-	-
FY34-35	- -	0	0	43.12	-	-	-	-
FY35-36	- -	0	0	43.12	-	-	-	-
FY36-37	- -	0	0	43.12	-	-	-	-
FY35-37	- -	0	0	43.12	-	-	-	-
FY36-38	- -	0	0	43.12	-	-	-	-
FY35-38	- -	0	0	43.12	-	-	-	-
FY36-39	- -	0	0	43.12	-	-	-	-
FY35-39	- -	0	0	43.12	-	-	-	-
FY36-40	- -	0	0	43.12	-	-	-	-
FY35-40	- -	0	0	43.12	-	-	-	-
FY36-41	- -	0	0	43.12	-	-	-	-
FY35-41	- -	0	0	43.12	-	-	-	-
FY36-42	- -	0	0	43.12	-	-	-	-
FY35-42	- -	0	0	43.12	-	-	-	-
FY36-43	- -	0	0	43.12	-	-	-	-
FY35-43	- -	0	0	43.12	-	-	-	-
							Average	246,757
							Total	2,220,810

Baseline Scenario 2

Energy Production

Year	ROM coal (t)	Thermal coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	9,730,480		0	0	2436.48	-	-	23,708,119		23,708,119
FY25-26	9,012,358	7,011,535		0	0	2436.48	-	-	17,083,465		17,083,465
FY26-27	9,595,134	7,462,997		0	0	2436.48	-	-	18,183,442		18,183,442
FY27-28	8,674,170	6,905,186		0	0	2436.48	-	-	16,824,347		16,824,347
FY28-29	7,228,849	5,866,978		0	0	2436.48	-	-	14,294,775		14,294,775
FY29-30	7,812,392	6,194,849		0	0	2436.48	-	-	15,093,625		15,093,625
FY30-31	4,791,057	3,734,159		0	0	2436.48	-	-	9,098,203		9,098,203
FY31-32	4,009,026	3,102,808		0	0	2436.48	-	-	7,559,930		7,559,930
FY32-33	1,945,427	1,494,018		0	0	2436.48	-	-	3,640,144		3,640,144
FY33-34	-	-		0	0	2436.48	-	-	-		-
FY34-35	-	-		0	0	2436.48	-	-	-		-
FY35-36	-	-		0	0	2436.48	-	-	-		-
FY36-37	-	-		0	0	2436.48	-	-	-		-
FY35-37	-	-		0	0	2436.48	-	-	-		-
FY36-38	-	-		0	0	2436.48	-	-	-		-
FY35-38	-	-		0	0	2436.48	-	-	-		-
FY36-39	-	-		0	0	2436.48	-	-	-		-
FY35-39	-	-		0	0	2436.48	-	-	-		-
FY36-40	-	-		0	0	2436.48	-	-	-		-
FY35-40	-	-		0	0	2436.48	-	-	-		-
FY36-41	-	-		0	0	2436.48	-	-	-		-
FY35-41	-	-		0	0	2436.48	-	-	-		-
FY36-42	-	-		0	0	2436.48	-	-	-		-
FY35-42	-	-		0	0	2436.48	-	-	-		-
FY36-43	-	-		0	0	2436.48	-	-	-		-
FY35-43	-	-		0	0	2436.48	-	-	-		-
									Average		13,942,894
									Total		125,486,050

Baseline Scenario 2

Coking coal use

Year	ROM coal (t)	Coking coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	-		0	0	2760.9	-	-	-	-	-
FY25-26	9,012,358	-		0	0	2760.9	-	-	-	-	-
FY26-27	9,595,134	-		0	0	2760.9	-	-	-	-	-
FY27-28	8,674,170	-		0	0	2760.9	-	-	-	-	-
FY28-29	7,228,849	-		0	0	2760.9	-	-	-	-	-
FY29-30	7,812,392	-		0	0	2760.9	-	-	-	-	-
FY30-31	4,791,057	-		0	0	2760.9	-	-	-	-	-
FY31-32	4,009,026	-		0	0	2760.9	-	-	-	-	-
FY32-33	1,945,427	-		0	0	2760.9	-	-	-	-	-
FY33-34	-	-		0	0	2760.9	-	-	-	-	-
FY34-35	-	-		0	0	2760.9	-	-	-	-	-
FY35-36	-	-		0	0	2760.9	-	-	-	-	-
FY36-37	-	-		0	0	2760.9	-	-	-	-	-
FY35-37	-	-		0	0	2760.9	-	-	-	-	-
FY36-38	-	-		0	0	2760.9	-	-	-	-	-
FY35-38	-	-		0	0	2760.9	-	-	-	-	-
FY36-39	-	-		0	0	2760.9	-	-	-	-	-
FY35-39	-	-		0	0	2760.9	-	-	-	-	-
FY36-40	-	-		0	0	2760.9	-	-	-	-	-
FY35-40	-	-		0	0	2760.9	-	-	-	-	-
FY36-41	-	-		0	0	2760.9	-	-	-	-	-
FY35-41	-	-		0	0	2760.9	-	-	-	-	-
FY36-42	-	-		0	0	2760.9	-	-	-	-	-
FY35-42	-	-		0	0	2760.9	-	-	-	-	-
FY36-43	-	-		0	0	2760.9	-	-	-	-	-
FY35-43	-	-		0	0	2760.9	-	-	-	-	-
										Average Total	#DIV/0!
										-	-

Modification Scenario

Record	Year	ROM coal (t)	Scope 1 (t CO2-e)	Scope 2 (t CO2-e)	Scope 3 (t CO2-e)	Total (t CO2-e)	Year (Mining)	Year (Calendar)	ROM coal (Mt)	Scope 1 (Mt CO2-e/year)	Scope 2 (Mt CO2-e/year)	Scope 3 (Mt CO2-e/year)	Total (Mt CO2-e/year)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)	Diesel (Mt CO2-e)	Fugitive (Mt CO2-e)	Blasting (Mt CO2-e)	Land clearing (Mt CO2-e)	Oils and greases (Mt CO2-e)	Electricity (Mt CO2-e)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)
1	FY24-25	11,763,195	114,832	9,862	24,232,455	24,357,149	FY24-25	2025	11.76	0.115	0.010	24.232	24.357	0.01	0.11	-	0.00	-	-	0.01	0.01
2	FY25-26	9,012,358	110,089	7,686	17,467,807	17,585,582	FY25-26	2026	9.01	0.110	0.008	17.468	17.586	0.01	0.11	-	0.00	-	-	0.01	0.01
3	FY26-27	9,731,136	153,902	7,230	18,805,673	18,966,805	FY26-27	2027	9.73	0.154	0.007	18.806	18.967	0.017	0.11	0.02	0.00	0.02	0.00	0.01	0.02
4	FY27-28	9,570,180	142,055	6,056	18,763,534	18,911,645	FY27-28	2028	9.57	0.142	0.006	18.764	18.912	0.015	0.10	0.02	0.00	0.02	0.00	0.01	0.02
5	FY28-29	9,218,176	134,382	3,785	18,029,914	18,168,081	FY28-29	2029	9.22	0.134	0.004	18.030	18.168	0.015	0.09	0.02	0.00	0.02	0.00	0.00	0.01
6	FY29-30	5,198,711	112,930	1,616	9,553,138	9,667,684	FY29-30	2030	5.20	0.113	0.002	9.553	9.668	0.022	0.09	0.01	0.00	0.01	0.00	0.00	0.02
7	FY30-31	6,037,597	118,855	1,956	11,396,678	11,517,489	FY30-31	2031	6.04	0.119	0.002	11.397	11.517	0.020	0.09	0.01	0.00	0.02	0.00	0.00	0.02
8	FY31-32	6,659,220	105,585	1,987	12,673,863	12,781,435	FY31-32	2032	6.66	0.106	0.002	12.674	12.781	0.016	0.07	0.01	0.00	0.02	0.00	0.00	0.02
9	FY32-33	3,715,466	83,413	862	20,301	104,576	FY32-33	2033	3.72	0.083	0.001	0.020	0.105	0.023	0.07	0.01	0.00	0.01	0.00	0.00	0.02
10	FY33-34	-	64,143	149	16,039	80,330	FY33-34	2034	-	0.064	0.000	0.016	0.080	#DIV/0!	0.06	-	-	-	0.00	0.00	#DIV/0!
11	FY34-35	-	9,261	-	2,316	11,577	FY34-35	2035	-	0.009	-	0.002	0.012	#DIV/0!	0.01	-	-	-	0.00	-	#DIV/0!
12	FY35-36	-	4,631	-	1,158	5,789	FY35-36	2036	-	0.005	-	0.001	0.006	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
13	FY36-37	-	4,631	-	1,158	5,789	FY36-37	2037	-	0.005	-	0.001	0.006	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
14		-	-	-	-	-		2038	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
15		-	-	-	-	-		2039	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
16		-	-	-	-	-		2040	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
17		-	-	-	-	-		2041	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
18		-	-	-	-	-		2042	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
19		-	-	-	-	-		2043	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
20		-	-	-	-	-		2044	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
21		-	-	-	-	-		2045	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
22								2046							-	-	-	-	-	-	
23								2047													
24								2048													
25								2049													
26								2050													
Average		7,161,498	121,589	3,356	12,749,014	12,873,959			7.161	0.122	0.003	12.749	12.874	0.018	0.088	0.014	0.003	0.017	0.000	0.003	0.018
Total		50,130,487	933,789	23,640	89,263,771	90,221,200			50.130	0.934	0.024	89.264	90.221	#DIV/0!	0.696	0.097	0.019	0.120	0.002	0.024	#DIV/0!

Modification Scenario

Diesel usage

Year	ROM coal (t)	Usage (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	40,980	2709.72	0	667.78	111,044	-	27,366	138,410
FY25-26	9,012,358	39,219	2709.72	0	667.78	106,273	-	26,190	132,462
FY26-27	9,731,136	40,162	2709.72	0	667.78	108,827	-	26,819	135,646
FY27-28	9,570,180	36,710	2709.72	0	667.78	99,473	-	24,514	123,987
FY28-29	9,218,176	33,615	2709.72	0	667.78	91,087	-	22,447	113,535
FY29-30	5,198,711	31,739	2709.72	0	667.78	86,003	-	21,194	107,197
FY30-31	6,037,597	32,251	2709.72	0	667.78	87,391	-	21,537	108,928
FY31-32	6,659,220	26,319	2709.72	0	667.78	71,317	-	17,575	88,892
FY32-33	3,715,466	25,645	2709.72	0	667.78	69,489	-	17,125	86,614
FY33-34	-	23,597	2709.72	0	667.78	63,942	-	15,758	79,700
FY34-35	-	3,407	2709.72	0	667.78	9,232	-	2,275	11,507
FY35-36	-	1,704	2709.72	0	667.78	4,616	-	1,138	5,754
FY36-37	-	1,704	2709.72	0	667.78	4,616	-	1,138	5,754
FY35-37	-	-	2709.72	0	667.78	-	-	-	-
FY36-38	-	-	2709.72	0	667.78	-	-	-	-
FY35-38	-	-	2709.72	0	667.78	-	-	-	-
FY36-39	-	-	2709.72	0	667.78	-	-	-	-
FY35-39	-	-	2709.72	0	667.78	-	-	-	-
FY36-40	-	-	2709.72	0	667.78	-	-	-	-
FY35-40	-	-	2709.72	0	667.78	-	-	-	-
FY36-41	-	-	2709.72	0	667.78	-	-	-	-
FY35-41	-	-	2709.72	0	667.78	-	-	-	-
FY36-42	-	-	2709.72	0	667.78	-	-	-	-
FY35-42	-	-	2709.72	0	667.78	-	-	-	-
FY36-43	-	-	2709.72	0	667.78	-	-	-	-
FY35-43	-	-	2709.72	0	667.78	-	-	-	-
								Average	87,568
								Total	1,138,385

Modification Scenario

Fugitive emissions

Year	ROM coal (t)	Emission factor (t CO2-e/t ROM)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	-	-	-	-	-	-	-
FY25-26	9,012,358	-	-	-	-	-	-	-
FY26-27	9,731,136	0.0020	-	-	19,064	-	-	19,064
FY27-28	9,570,180	0.0019	-	-	18,369	-	-	18,369
FY28-29	9,218,176	0.0019	-	-	17,616	-	-	17,616
FY29-30	5,198,711	0.0019	-	-	9,835	-	-	9,835
FY30-31	6,037,597	0.0020	-	-	12,309	-	-	12,309
FY31-32	6,659,220	0.0020	-	-	13,139	-	-	13,139
FY32-33	3,715,466	0.0018	-	-	6,737	-	-	6,737
FY33-34	-	-	-	-	-	-	-	-
FY34-35	-	-	-	-	-	-	-	-
FY35-36	-	-	-	-	-	-	-	-
FY36-37	-	-	-	-	-	-	-	-
FY35-37	-	-	-	-	-	-	-	-
FY36-38	-	-	-	-	-	-	-	-
FY35-38	-	-	-	-	-	-	-	-
FY36-39	-	-	-	-	-	-	-	-
FY35-39	-	-	-	-	-	-	-	-
FY36-40	-	-	-	-	-	-	-	-
FY35-40	-	-	-	-	-	-	-	-
FY36-41	-	-	-	-	-	-	-	-
FY35-41	-	-	-	-	-	-	-	-
FY36-42	-	-	-	-	-	-	-	-
FY35-42	-	-	-	-	-	-	-	-
FY36-43	-	-	-	-	-	-	-	-
FY35-43	-	-	-	-	-	-	-	-
							Average	13,867
							Total	97,068

Modification Scenario

Blasting emissions

Year	ROM coal (t)	Explosives (t)	Emission factor (t CO2-e/t Explosives)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	20,235	0.17	0	0	3,440	-	-	3,440
FY25-26	9,012,358	20,488	0.17	0	0	3,483	-	-	3,483
FY26-27	9,731,136	22,415	0.17	0	0	3,811	-	-	3,811
FY27-28	9,570,180	18,653	0.17	0	0	3,171	-	-	3,171
FY28-29	9,218,176	19,267	0.17	0	0	3,275	-	-	3,275
FY29-30	5,198,711	18,161	0.17	0	0	3,087	-	-	3,087
FY30-31	6,037,597	17,884	0.17	0	0	3,040	-	-	3,040
FY31-32	6,659,220	9,680	0.17	0	0	1,646	-	-	1,646
FY32-33	3,715,466	4,069	0.17	0	0	692	-	-	692
FY33-34	-	-	0.17	0	0	-	-	-	-
FY34-35	-	-	0.17	0	0	-	-	-	-
FY35-36	-	-	0.17	0	0	-	-	-	-
FY36-37	-	-	0.17	0	0	-	-	-	-
FY35-37	-	-	0.17	0	0	-	-	-	-
FY36-38	-	-	0.17	0	0	-	-	-	-
FY35-38	-	-	0.17	0	0	-	-	-	-
FY36-39	-	-	0.17	0	0	-	-	-	-
FY35-39	-	-	0.17	0	0	-	-	-	-
FY36-40	-	-	0.17	0	0	-	-	-	-
FY35-40	-	-	0.17	0	0	-	-	-	-
FY36-41	-	-	0.17	0	0	-	-	-	-
FY35-41	-	-	0.17	0	0	-	-	-	-
FY36-42	-	-	0.17	0	0	-	-	-	-
FY35-42	-	-	0.17	0	0	-	-	-	-
FY36-43	-	-	0.17	0	0	-	-	-	-
FY35-43	-	-	0.17	0	0	-	-	-	-
Average									2,849
Total									25,645

Modification Scenario

Greases

Density: 0.94 t/m3
1.06 kL/t

Year	ROM coal (t)	Grease (kL)	Scope 1	Emission factor (kg CO2-e/kL)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	70	135.8	0	698.4		9	-		49	58
FY25-26	9,012,358	67	135.8	0	698.4		9	-		47	56
FY26-27	9,731,136	68	135.8	0	698.4		9	-		48	57
FY27-28	9,570,180	63	135.8	0	698.4		8	-		44	52
FY28-29	9,218,176	57	135.8	0	698.4		8	-		40	48
FY29-30	5,198,711	54	135.8	0	698.4		7	-		38	45
FY30-31	6,037,597	55	135.8	0	698.4		7	-		38	46
FY31-32	6,659,220	45	135.8	0	698.4		6	-		31	37
FY32-33	3,715,466	46	135.8	0	698.4		6	-		32	39
FY33-34	-	40	135.8	0	698.4		5	-		28	34
FY34-35	-	6	135.8	0	698.4		1	-		4	5
FY35-36	-	3	135.8	0	698.4		0	-		2	2
FY36-37	-	3	135.8	0	698.4		0	-		2	2
FY35-37	-	-	135.8	0	698.4		-	-		-	-
FY36-38	-	-	135.8	0	698.4		-	-		-	-
FY35-38	-	-	135.8	0	698.4		-	-		-	-
FY36-39	-	-	135.8	0	698.4		-	-		-	-
FY35-39	-	-	135.8	0	698.4		-	-		-	-
FY36-40	-	-	135.8	0	698.4		-	-		-	-
FY35-40	-	-	135.8	0	698.4		-	-		-	-
FY36-41	-	-	135.8	0	698.4		-	-		-	-
FY35-41	-	-	135.8	0	698.4		-	-		-	-
FY36-42	-	-	135.8	0	698.4		-	-		-	-
FY35-42	-	-	135.8	0	698.4		-	-		-	-
FY36-43	-	-	135.8	0	698.4		-	-		-	-
FY35-43	-	-	135.8	0	698.4		-	-		-	-
Average										37	
Total										481	

Modification Scenario

Oils

Year	ROM coal (t)	Oils (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	628	539.32	0	698.4	339	-	438	777
FY25-26	9,012,358	601	539.32	0	698.4	324	-	420	744
FY26-27	9,731,136	615	539.32	0	698.4	332	-	430	762
FY27-28	9,570,180	562	539.32	0	698.4	303	-	393	696
FY28-29	9,218,176	515	539.32	0	698.4	278	-	360	637
FY29-30	5,198,711	486	539.32	0	698.4	262	-	340	602
FY30-31	6,037,597	494	539.32	0	698.4	266	-	345	612
FY31-32	6,659,220	403	539.32	0	698.4	217	-	282	499
FY32-33	3,715,466	417	539.32	0	698.4	225	-	291	516
FY33-34	-	362	539.32	0	698.4	195	-	253	448
FY34-35	-	52	539.32	0	698.4	28	-	37	65
FY35-36	-	26	539.32	0	698.4	14	-	18	32
FY36-37	-	26	539.32	0	698.4	14	-	18	32
FY35-37	-	-	539.32	0	698.4	-	-	-	-
FY36-38	-	-	539.32	0	698.4	-	-	-	-
FY35-38	-	-	539.32	0	698.4	-	-	-	-
FY36-39	-	-	539.32	0	698.4	-	-	-	-
FY35-39	-	-	539.32	0	698.4	-	-	-	-
FY36-40	-	-	539.32	0	698.4	-	-	-	-
FY35-40	-	-	539.32	0	698.4	-	-	-	-
FY36-41	-	-	539.32	0	698.4	-	-	-	-
FY35-41	-	-	539.32	0	698.4	-	-	-	-
FY36-42	-	-	539.32	0	698.4	-	-	-	-
FY35-42	-	-	539.32	0	698.4	-	-	-	-
FY36-43	-	-	539.32	0	698.4	-	-	-	-
FY35-43	-	-	539.32	0	698.4	-	-	-	-
Average									494
Total									6,421

Modification Scenario

Land clearing

GWP **Distribution corrected for GWP**

CO2	1	100.0%
CH4	28	0.00%
N2O	265	0.000%

Year	ROM coal (t)	Clearing (ha)	Emission factor (t CO2-e/ha)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	-	0	0	0	-	-	-	-
FY25-26	9,012,358	-	0	0	0	-	-	-	-
FY26-27	9,731,136	66	329	0	0	21,860	-	-	21,860
FY27-28	9,570,180	64	323	0	0	20,731	-	-	20,731
FY28-29	9,218,176	68	324	0	0	22,118	-	-	22,118
FY29-30	5,198,711	42	327	0	0	13,736	-	-	13,736
FY30-31	6,037,597	48	329	0	0	15,841	-	-	15,841
FY31-32	6,659,220	59	329	0	0	19,261	-	-	19,261
FY32-33	3,715,466	19	330	0	0	6,265	-	-	6,265
FY33-34	-	-	0	0	0	-	-	-	-
FY34-35	-	-	0	0	0	-	-	-	-
FY35-36	-	-	0	0	0	-	-	-	-
FY36-37	-	-	0	0	0	-	-	-	-
FY35-37	-	-	0	0	0	-	-	-	-
FY36-38	-	-	0	0	0	-	-	-	-
FY35-38	-	-	0	0	0	-	-	-	-
FY36-39	-	-	0	0	0	-	-	-	-
FY35-39	-	-	0	0	0	-	-	-	-
FY36-40	-	-	0	0	0	-	-	-	-
FY35-40	-	-	0	0	0	-	-	-	-
FY36-41	-	-	0	0	0	-	-	-	-
FY35-41	-	-	0	0	0	-	-	-	-
FY36-42	-	-	0	0	0	-	-	-	-
FY35-42	-	-	0	0	0	-	-	-	-
FY36-43	-	-	0	0	0	-	-	-	-
FY35-43	-	-	0	0	0	-	-	-	-
Average									17,116
Total									119,810

Modification Scenario

Electricity usage

Year	ROM coal (t)	Usage (kWh)	Emission factor (kg CO2-e/kWh)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	11,763,195	19,337,299	0	0.51	0.04	-	9,862	773	10,636
FY25-26	9,012,358	16,352,488	0	0.47	0.03	-	7,686	491	8,176
FY26-27	9,731,136	18,074,947	0	0.4	0.03	-	7,230	542	7,772
FY27-28	9,570,180	17,811,731	0	0.34	0.02	-	6,056	356	6,412
FY28-29	9,218,176	18,022,114	0	0.21	0.02	-	3,785	360	4,145
FY29-30	5,198,711	10,771,496	0	0.15	0.01	-	1,616	108	1,723
FY30-31	6,037,597	13,036,835	0	0.15	0.01	-	1,956	130	2,086
FY31-32	6,659,220	15,286,190	0	0.13	0.01	-	1,987	153	2,140
FY32-33	3,715,466	9,577,155	0	0.09	0.00	-	862	-	862
FY33-34	-	1,657,884	0	0.09	0.00	-	149	-	149
FY34-35	-	-	0	0.07	0.02	-	-	-	-
FY35-36	-	-	0	0.06	0.01	-	-	-	-
FY36-37	-	-	0	0.06	0.00	-	-	-	-
FY35-37	-	-	0	0.06	0.00	-	-	-	-
FY36-38	-	-	0	0.06	0.00	-	-	-	-
FY35-38	-	-	0	0.03	0.00	-	-	-	-
FY36-39	-	-	0	0.03	0.00	-	-	-	-
FY35-39	-	-	0	0.03	0.00	-	-	-	-
FY36-40	-	-	0	0.03	0.00	-	-	-	-
FY35-40	-	-	0	0.03	0.00	-	-	-	-
FY36-41	-	-	0	0.03	0.00	-	-	-	-
FY35-41	-	-	0	0.03	0.00	-	-	-	-
FY36-42	-	-	0	0.03	0.00	-	-	-	-
FY35-42	-	-	0	0.03	0.00	-	-	-	-
FY36-43	-	-	0	0.03	0.00	-	-	-	-
FY35-43	-	-	0	0.03	0.00	-	-	-	-
Average									4,410
Total									44,102

Modification Scenario

Transport (Rail)

Factor kg CO2-e/t.km 0.01630 NGER (Safeguard) Rule 2015
Distance km 480 Assumed distance to port

Year	Product coal (t)	Emission factor (kg CO2-e/t)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	9,730,480 -	0	0	7.82	-	-	76,131	76,131
FY25-26	7,011,535 -	0	0	7.82	-	-	54,858	54,858
FY26-27	7,549,109 -	0	0	7.82	-	-	59,064	59,064
FY27-28	7,533,186 -	0	0	7.82	-	-	58,940	58,940
FY28-29	7,239,098 -	0	0	7.82	-	-	56,639	56,639
FY29-30	3,831,859 -	0	0	7.82	-	-	29,980	29,980
FY30-31	4,572,854 -	0	0	7.82	-	-	35,778	35,778
FY31-32	5,087,923 -	0	0	7.82	-	-	39,808	39,808
FY32-33	1,147 -	0	0	7.82	-	-	9	9
FY33-34	- -	0	0	7.82	-	-	-	-
FY34-35	- -	0	0	7.82	-	-	-	-
FY35-36	- -	0	0	7.82	-	-	-	-
FY36-37	- -	0	0	7.82	-	-	-	-
FY35-37	- -	0	0	7.82	-	-	-	-
FY36-38	- -	0	0	7.82	-	-	-	-
FY35-38	- -	0	0	7.82	-	-	-	-
FY36-39	- -	0	0	7.82	-	-	-	-
FY35-39	- -	0	0	7.82	-	-	-	-
FY36-40	- -	0	0	7.82	-	-	-	-
FY35-40	- -	0	0	7.82	-	-	-	-
FY36-41	- -	0	0	7.82	-	-	-	-
FY35-41	- -	0	0	7.82	-	-	-	-
FY36-42	- -	0	0	7.82	-	-	-	-
FY35-42	- -	0	0	7.82	-	-	-	-
FY36-43	- -	0	0	7.82	-	-	-	-
FY35-43	- -	0	0	7.82	-	-	-	-
							Average	45,690
							Total	411,207

Modification Scenario

Transport (Shipping)

Factor kg CO2-e/t.km 0.00539 NGER (Safeguard) Rule 2015
Distance km 8000 Assumed distance to market

Year	Product coal (t)	Emission factor (kg CO2-e/t)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	9,730,480 -	0	0	43.12	-	-	419,578	419,578
FY25-26	7,011,535 -	0	0	43.12	-	-	302,337	302,337
FY26-27	7,549,109 -	0	0	43.12	-	-	325,518	325,518
FY27-28	7,533,186 -	0	0	43.12	-	-	324,831	324,831
FY28-29	7,239,098 -	0	0	43.12	-	-	312,150	312,150
FY29-30	3,831,859 -	0	0	43.12	-	-	165,230	165,230
FY30-31	4,572,854 -	0	0	43.12	-	-	197,181	197,181
FY31-32	5,087,923 -	0	0	43.12	-	-	219,391	219,391
FY32-33	1,147 -	0	0	43.12	-	-	49	49
FY33-34	- -	0	0	43.12	-	-	-	-
FY34-35	- -	0	0	43.12	-	-	-	-
FY35-36	- -	0	0	43.12	-	-	-	-
FY36-37	- -	0	0	43.12	-	-	-	-
FY35-37	- -	0	0	43.12	-	-	-	-
FY36-38	- -	0	0	43.12	-	-	-	-
FY35-38	- -	0	0	43.12	-	-	-	-
FY36-39	- -	0	0	43.12	-	-	-	-
FY35-39	- -	0	0	43.12	-	-	-	-
FY36-40	- -	0	0	43.12	-	-	-	-
FY35-40	- -	0	0	43.12	-	-	-	-
FY36-41	- -	0	0	43.12	-	-	-	-
FY35-41	- -	0	0	43.12	-	-	-	-
FY36-42	- -	0	0	43.12	-	-	-	-
FY35-42	- -	0	0	43.12	-	-	-	-
FY36-43	- -	0	0	43.12	-	-	-	-
FY35-43	- -	0	0	43.12	-	-	-	-
							Average	251,807
							Total	2,266,266

Modification Scenario

Energy Production

Year	ROM coal (t)	Thermal coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	9,730,480		0	0	2436.48	-	-	-	23,708,119	23,708,119
FY25-26	9,012,358	7,011,535		0	0	2436.48	-	-	-	17,083,465	17,083,465
FY26-27	9,731,136	7,549,109		0	0	2436.48	-	-	-	18,393,253	18,393,253
FY27-28	9,570,180	7,533,186		0	0	2436.48	-	-	-	18,354,457	18,354,457
FY28-29	9,218,176	7,239,098		0	0	2436.48	-	-	-	17,637,918	17,637,918
FY29-30	5,198,711	3,831,859		0	0	2436.48	-	-	-	9,336,248	9,336,248
FY30-31	6,037,597	4,572,854		0	0	2436.48	-	-	-	11,141,668	11,141,668
FY31-32	6,659,220	5,087,923		0	0	2436.48	-	-	-	12,396,622	12,396,622
FY32-33	3,715,466	1,147		0	0	2436.48	-	-	-	2,794	2,794
FY33-34	-	-		0	0	2436.48	-	-	-	-	-
FY34-35	-	-		0	0	2436.48	-	-	-	-	-
FY35-36	-	-		0	0	2436.48	-	-	-	-	-
FY36-37	-	-		0	0	2436.48	-	-	-	-	-
FY35-37	-	-		0	0	2436.48	-	-	-	-	-
FY36-38	-	-		0	0	2436.48	-	-	-	-	-
FY35-38	-	-		0	0	2436.48	-	-	-	-	-
FY36-39	-	-		0	0	2436.48	-	-	-	-	-
FY35-39	-	-		0	0	2436.48	-	-	-	-	-
FY36-40	-	-		0	0	2436.48	-	-	-	-	-
FY35-40	-	-		0	0	2436.48	-	-	-	-	-
FY36-41	-	-		0	0	2436.48	-	-	-	-	-
FY35-41	-	-		0	0	2436.48	-	-	-	-	-
FY36-42	-	-		0	0	2436.48	-	-	-	-	-
FY35-42	-	-		0	0	2436.48	-	-	-	-	-
FY36-43	-	-		0	0	2436.48	-	-	-	-	-
FY35-43	-	-		0	0	2436.48	-	-	-	-	-
										Average	14,228,283
										Total	128,054,544

Modification Scenario

Coking coal use

Year	ROM coal (t)	Coking coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	11,763,195	-		0	0	2760.9	-	-	-	-	-
FY25-26	9,012,358	-		0	0	2760.9	-	-	-	-	-
FY26-27	9,731,136	-		0	0	2760.9	-	-	-	-	-
FY27-28	9,570,180	-		0	0	2760.9	-	-	-	-	-
FY28-29	9,218,176	-		0	0	2760.9	-	-	-	-	-
FY29-30	5,198,711	-		0	0	2760.9	-	-	-	-	-
FY30-31	6,037,597	-		0	0	2760.9	-	-	-	-	-
FY31-32	6,659,220	-		0	0	2760.9	-	-	-	-	-
FY32-33	3,715,466	-		0	0	2760.9	-	-	-	-	-
FY33-34	-	-		0	0	2760.9	-	-	-	-	-
FY34-35	-	-		0	0	2760.9	-	-	-	-	-
FY35-36	-	-		0	0	2760.9	-	-	-	-	-
FY36-37	-	-		0	0	2760.9	-	-	-	-	-
FY35-37	-	-		0	0	2760.9	-	-	-	-	-
FY36-38	-	-		0	0	2760.9	-	-	-	-	-
FY35-38	-	-		0	0	2760.9	-	-	-	-	-
FY36-39	-	-		0	0	2760.9	-	-	-	-	-
FY35-39	-	-		0	0	2760.9	-	-	-	-	-
FY36-40	-	-		0	0	2760.9	-	-	-	-	-
FY35-40	-	-		0	0	2760.9	-	-	-	-	-
FY36-41	-	-		0	0	2760.9	-	-	-	-	-
FY35-41	-	-		0	0	2760.9	-	-	-	-	-
FY36-42	-	-		0	0	2760.9	-	-	-	-	-
FY35-42	-	-		0	0	2760.9	-	-	-	-	-
FY36-43	-	-		0	0	2760.9	-	-	-	-	-
FY35-43	-	-		0	0	2760.9	-	-	-	-	-
										Average Total	#DIV/0!
										-	-

Modification Only Scenario 1

Record	Year	ROM coal (t)	Scope 1 (t CO2-e)	Scope 2 (t CO2-e)	Scope 3 (t CO2-e)	Total (t CO2-e)	Year (Mining)	Year (Calendar)	ROM coal (Mt)	Scope 1 (Mt CO2-e/year)	Scope 2 (Mt CO2-e/year)	Scope 3 (Mt CO2-e/year)	Total (Mt CO2-e/year)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)	Diesel (Mt CO2-e)	Fugitive (Mt CO2-e)	Blasting (Mt CO2-e)	Land clearing (Mt CO2-e)	Oils and greases (Mt CO2-e)	Electricity (Mt CO2-e)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)
1 FY24-25	-	-	-	-	-	-	FY24-25	2025	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
2 FY25-26	-	-	-	-	-	-	FY25-26	2026	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
3 FY26-27	136,002	4,937	109	213,120	218,166	FY26-27	2027	2027	0.136	0.005	0.000	0.213	0.218	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.04
4 FY27-28	896,011	21,978	668	1,552,339	1,574,986	FY27-28	2028	2028	0.896	0.022	0.001	1.552	1.575	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.03
5 FY28-29	1,989,326	34,340	893	3,388,316	3,423,549	FY28-29	2029	2029	1.989	0.034	0.001	3.388	3.424	0.02	0.02	0.00	0.00	0.01	0.00	0.00	0.02
6 FY29-30	1,662,719	58,319	463	2,545,630	2,604,412	FY29-30	2030	2030	1.663	0.058	0.000	2.546	2.604	0.04	0.04	0.01	0.00	0.01	0.00	0.00	0.04
7 FY30-31	3,246,540	75,421	1,059	5,924,654	6,001,134	FY30-31	2031	2031	3.247	0.075	0.001	5.925	6.001	0.02	0.05	0.01	0.00	0.01	0.00	0.00	0.02
8 FY31-32	4,261,609	68,421	1,329	7,980,468	8,050,219	FY31-32	2032	2032	4.262	0.068	0.001	7.980	8.050	0.02	0.05	0.01	0.00	0.01	0.00	0.00	0.02
9 FY32-33	1,770,040	50,052	436	15,316	65,804	FY32-33	2033	2033	1.770	0.050	0.000	0.015	0.066	0.03	0.05	-	0.00	-	0.00	0.00	0.03
10 FY33-34	-	54,881	11	13,723	68,615	FY33-34	2034	2034	-	0.055	0.000	0.014	0.069	#DIV/0!	0.05	-	-	-	0.00	0.00	#DIV/0!
11 FY34-35	-	-	-	-	-	FY34-35	2035	2035	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
12 FY35-36	-	-	-	-	-	FY35-36	2036	2036	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
13 FY36-37	-	-	-	-	-	FY36-37	2037	2037	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
14	-	-	-	-	-	-	2038	2038	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
15	-	-	-	-	-	-	2039	2039	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
16	-	-	-	-	-	-	2040	2040	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
17	-	-	-	-	-	-	2041	2041	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
18	-	-	-	-	-	-	2042	2042	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
19	-	-	-	-	-	-	2043	2043	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
20	-	-	-	-	-	-	2044	2044	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
21	-	-	-	-	-	-	2045	2045	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
22	-	-	-	-	-	-	2046	2046	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
23	-	-	-	-	-	-	2047	2047	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
24	-	-	-	-	-	-	2048	2048	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
25	-	-	-	-	-	-	2049	2049	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
26	-	-	-	-	-	-	2050	2050	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
Average	1,994,607	44,781	708	3,088,549	3,134,038				1.995	0.045	0.001	3.089	3.134	0.026	0.034	0.005	0.001	0.007	0.000	0.001	0.026
Total	13,962,247	368,350	4,967	21,633,567	22,006,884				13.962	0.368	0.005	21.634	22.007	#DIV/0!	0.291	0.029	0.007	0.041	0.001	0.005	#DIV/0!

Modification Only Scenario 1

Diesel usage

	GWP	Distribution corrected for GWP
CO2	1	99.6%
CH4	28	0.01%
N2O	265	0.001%

Year	ROM coal (t)	Usage (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	2709.72	0	667.78	-	-	-	-
FY25-26	-	-	2709.72	0	667.78	-	-	-	-
FY26-27	136,002	1,193	2709.72	0	667.78	3,233	-	797	4,030
FY27-28	896,011	5,922	2709.72	0	667.78	16,047	-	3,955	20,002
FY28-29	1,989,326	7,944	2709.72	0	667.78	21,526	-	5,305	26,831
FY29-30	1,662,719	16,465	2709.72	0	667.78	44,617	-	10,995	55,612
FY30-31	3,246,540	20,270	2709.72	0	667.78	54,925	-	13,536	68,461
FY31-32	4,261,609	16,909	2709.72	0	667.78	45,819	-	11,292	57,111
FY32-33	1,770,040	18,323	2709.72	0	667.78	49,649	-	12,235	61,885
FY33-34	-	20,190	2709.72	0	667.78	54,710	-	13,483	68,192
FY34-35	-	-	2709.72	0	667.78	-	-	-	-
FY35-36	-	-	2709.72	0	667.78	-	-	-	-
FY36-37	-	-	2709.72	0	667.78	-	-	-	-
FY35-37	-	-	2709.72	0	667.78	-	-	-	-
FY36-38	-	-	2709.72	0	667.78	-	-	-	-
FY35-38	-	-	2709.72	0	667.78	-	-	-	-
FY36-39	-	-	2709.72	0	667.78	-	-	-	-
FY35-39	-	-	2709.72	0	667.78	-	-	-	-
FY36-40	-	-	2709.72	0	667.78	-	-	-	-
FY35-40	-	-	2709.72	0	667.78	-	-	-	-
FY36-41	-	-	2709.72	0	667.78	-	-	-	-
FY35-41	-	-	2709.72	0	667.78	-	-	-	-
FY36-42	-	-	2709.72	0	667.78	-	-	-	-
FY35-42	-	-	2709.72	0	667.78	-	-	-	-
FY36-43	-	-	2709.72	0	667.78	-	-	-	-
FY35-43	-	-	2709.72	0	667.78	-	-	-	-
Average									45,265
Total									362,124

Modification Only Scenario 1

Fugitive emissions

	GWP	Distribution corrected for GWP
CO2	1	80.0% 80% CO2
CH4	28	0.7% 20% CH4
N2O	265	

Year	Carbonaceous material	Emission factor (t CO2-e/t ROM)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	- -	-	-	-	-	-	-	-
FY25-26	- -	-	-	-	-	-	-	-
FY26-27	664,552 -	0.0013	-	-	831	-	-	831
FY27-28	1,653,435 -	0.0014	-	-	2,289	-	-	2,289
FY28-29	3,368,636 -	0.0015	-	-	4,936	-	-	4,936
FY29-30	3,496,646 -	0.0018	-	-	6,227	-	-	6,227
FY30-31	4,211,851 -	0.0018	-	-	7,407	-	-	7,407
FY31-32	4,846,157 -	0.0015	-	-	7,272	-	-	7,272
FY32-33	1,770,040 -	-	-	-	-	-	-	-
FY33-34	- -	-	-	-	-	-	-	-
FY34-35	- -	-	-	-	-	-	-	-
FY35-36	- -	-	-	-	-	-	-	-
FY36-37	- -	-	-	-	-	-	-	-
FY35-37	- -	-	-	-	-	-	-	-
FY36-38	- -	-	-	-	-	-	-	-
FY35-38	- -	-	-	-	-	-	-	-
FY36-39	- -	-	-	-	-	-	-	-
FY35-39	- -	-	-	-	-	-	-	-
FY36-40	- -	-	-	-	-	-	-	-
FY35-40	- -	-	-	-	-	-	-	-
FY36-41	- -	-	-	-	-	-	-	-
FY35-41	- -	-	-	-	-	-	-	-
FY36-42	- -	-	-	-	-	-	-	-
FY35-42	- -	-	-	-	-	-	-	-
FY36-43	- -	-	-	-	-	-	-	-
FY35-43	- -	-	-	-	-	-	-	-
							Average	4,827
							Total	28,962

Modification Only Scenario 1

Blasting emissions

Assume same as diesel combustion

GWP

Distribution corrected for GWP

CO2	1	99.6%
CH4	28	0.01%
N2O	265	0.001%

Year	ROM coal (t)	Explosives (t)	Emission factor (t CO2-e/t Explosives)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	0.17	0	0	-	-	-	-
FY25-26	-	-	0.17	0	0	-	-	-	-
FY26-27	136,002	2,378	0.17	0	0	404	-	-	404
FY27-28	896,011	3,369	0.17	0	0	573	-	-	573
FY28-29	1,989,326	6,522	0.17	0	0	1,109	-	-	1,109
FY29-30	1,662,719	10,195	0.17	0	0	1,733	-	-	1,733
FY30-31	3,246,540	11,644	0.17	0	0	1,980	-	-	1,980
FY31-32	4,261,609	4,882	0.17	0	0	830	-	-	830
FY32-33	1,770,040	1,303	0.17	0	0	222	-	-	222
FY33-34	-	-	0.17	0	0	-	-	-	-
FY34-35	-	-	0.17	0	0	-	-	-	-
FY35-36	-	-	0.17	0	0	-	-	-	-
FY36-37	-	-	0.17	0	0	-	-	-	-
FY35-37	-	-	0.17	0	0	-	-	-	-
FY36-38	-	-	0.17	0	0	-	-	-	-
FY35-38	-	-	0.17	0	0	-	-	-	-
FY36-39	-	-	0.17	0	0	-	-	-	-
FY35-39	-	-	0.17	0	0	-	-	-	-
FY36-40	-	-	0.17	0	0	-	-	-	-
FY35-40	-	-	0.17	0	0	-	-	-	-
FY36-41	-	-	0.17	0	0	-	-	-	-
FY35-41	-	-	0.17	0	0	-	-	-	-
FY36-42	-	-	0.17	0	0	-	-	-	-
FY35-42	-	-	0.17	0	0	-	-	-	-
FY36-43	-	-	0.17	0	0	-	-	-	-
FY35-43	-	-	0.17	0	0	-	-	-	-
Average									979
Total									6,850

Modification Only Scenario 1

Greases

Density: 0.94 t/m3
1.06 kL/t

Year	ROM coal (t)	Grease (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	135.8	0	698.4	-	-	-	-
FY25-26	-	-	135.8	0	698.4	-	-	-	-
FY26-27	136,002	2	135.8	0	698.4	0	-	1	2
FY27-28	896,011	10	135.8	0	698.4	1	-	7	8
FY28-29	1,989,326	14	135.8	0	698.4	2	-	9	11
FY29-30	1,662,719	28	135.8	0	698.4	4	-	20	23
FY30-31	3,246,540	35	135.8	0	698.4	5	-	24	29
FY31-32	4,261,609	29	135.8	0	698.4	4	-	20	24
FY32-33	1,770,040	36	135.8	0	698.4	5	-	25	30
FY33-34	-	34	135.8	0	698.4	5	-	24	29
FY34-35	-	-	135.8	0	698.4	-	-	-	-
FY35-36	-	-	135.8	0	698.4	-	-	-	-
FY36-37	-	-	135.8	0	698.4	-	-	-	-
FY35-37	-	-	135.8	0	698.4	-	-	-	-
FY36-38	-	-	135.8	0	698.4	-	-	-	-
FY35-38	-	-	135.8	0	698.4	-	-	-	-
FY36-39	-	-	135.8	0	698.4	-	-	-	-
FY35-39	-	-	135.8	0	698.4	-	-	-	-
FY36-40	-	-	135.8	0	698.4	-	-	-	-
FY35-40	-	-	135.8	0	698.4	-	-	-	-
FY36-41	-	-	135.8	0	698.4	-	-	-	-
FY35-41	-	-	135.8	0	698.4	-	-	-	-
FY36-42	-	-	135.8	0	698.4	-	-	-	-
FY35-42	-	-	135.8	0	698.4	-	-	-	-
FY36-43	-	-	135.8	0	698.4	-	-	-	-
FY35-43	-	-	135.8	0	698.4	-	-	-	-
Average									20
Total									157

Modification Only Scenario 1

Oils

Year	ROM coal (t)	Oils (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	539.32	0	698.4	-	-	-	-
FY25-26	-	-	539.32	0	698.4	-	-	-	-
FY26-27	136,002	18	539.32	0	698.4	10	-	13	23
FY27-28	896,011	91	539.32	0	698.4	49	-	63	112
FY28-29	1,989,326	122	539.32	0	698.4	66	-	85	151
FY29-30	1,662,719	252	539.32	0	698.4	136	-	176	312
FY30-31	3,246,540	311	539.32	0	698.4	167	-	217	384
FY31-32	4,261,609	259	539.32	0	698.4	140	-	181	321
FY32-33	1,770,040	327	539.32	0	698.4	176	-	228	404
FY33-34	-	309	539.32	0	698.4	167	-	216	383
FY34-35	-	-	539.32	0	698.4	-	-	-	-
FY35-36	-	-	539.32	0	698.4	-	-	-	-
FY36-37	-	-	539.32	0	698.4	-	-	-	-
FY35-37	-	-	539.32	0	698.4	-	-	-	-
FY36-38	-	-	539.32	0	698.4	-	-	-	-
FY35-38	-	-	539.32	0	698.4	-	-	-	-
FY36-39	-	-	539.32	0	698.4	-	-	-	-
FY35-39	-	-	539.32	0	698.4	-	-	-	-
FY36-40	-	-	539.32	0	698.4	-	-	-	-
FY35-40	-	-	539.32	0	698.4	-	-	-	-
FY36-41	-	-	539.32	0	698.4	-	-	-	-
FY35-41	-	-	539.32	0	698.4	-	-	-	-
FY36-42	-	-	539.32	0	698.4	-	-	-	-
FY35-42	-	-	539.32	0	698.4	-	-	-	-
FY36-43	-	-	539.32	0	698.4	-	-	-	-
FY35-43	-	-	539.32	0	698.4	-	-	-	-
								Average	261
								Total	2,090

Modification Only Scenario 1

Land clearing

	GWP	Distribution corrected for GWP
CO2	1	100.0%
CH4	28	0.00%
N2O	265	0.000%

Year	ROM coal (t)	Clearing (ha)	Emission factor (t CO2-e/ha)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	0	0	0	-	-	-	-
FY25-26	-	-	0	0	0	-	-	-	-
FY26-27	136,002	2	285	0	0	458	-	-	458
FY27-28	896,011	11	285	0	0	3,019	-	-	3,019
FY28-29	1,989,326	24	285	0	0	6,702	-	-	6,702
FY29-30	1,662,719	20	285	0	0	5,602	-	-	5,602
FY30-31	3,246,540	38	285	0	0	10,937	-	-	10,937
FY31-32	4,261,609	50	285	0	0	14,357	-	-	14,357
FY32-33	1,770,040	-	0	0	0	-	-	-	-
FY33-34	-	-	0	0	0	-	-	-	-
FY34-35	-	-	0	0	0	-	-	-	-
FY35-36	-	-	0	0	0	-	-	-	-
FY36-37	-	-	0	0	0	-	-	-	-
FY35-37	-	-	0	0	0	-	-	-	-
FY36-38	-	-	0	0	0	-	-	-	-
FY35-38	-	-	0	0	0	-	-	-	-
FY36-39	-	-	0	0	0	-	-	-	-
FY35-39	-	-	0	0	0	-	-	-	-
FY36-40	-	-	0	0	0	-	-	-	-
FY35-40	-	-	0	0	0	-	-	-	-
FY36-41	-	-	0	0	0	-	-	-	-
FY35-41	-	-	0	0	0	-	-	-	-
FY36-42	-	-	0	0	0	-	-	-	-
FY35-42	-	-	0	0	0	-	-	-	-
FY36-43	-	-	0	0	0	-	-	-	-
FY35-43	-	-	0	0	0	-	-	-	-
Average									6,846
Total									41,074

Electricity usage

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Modification Only Scenario 1

Transport (Rail)

GWP **Distribution corrected for GWP**

Factor	kg CO2-e/t.km	0.01630 NGER (Safeguard) Rule 2015	CO2	1	99.6%
Distance	km	480 Assumed distance to port	CH4	28	0.01%
			N2O	265	0.001%

Year	Product coal (t)	-	Emission factor (kg CO2-e/t)			Emissions (t CO2-e/year)				Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3		
FY24-25	-	-		0	0	7.82	-	-	-	-
FY25-26	-	-		0	0	7.82	-	-	-	-
FY26-27	86,112	-		0	0	7.82	-	-	674	674
FY27-28	628,000	-		0	0	7.82	-	-	4,913	4,913
FY28-29	1,372,120	-		0	0	7.82	-	-	10,735	10,735
FY29-30	1,027,989	-		0	0	7.82	-	-	8,043	8,043
FY30-31	2,397,499	-		0	0	7.82	-	-	18,758	18,758
FY31-32	3,232,278	-		0	0	7.82	-	-	25,289	25,289
FY32-33	1,147	-		0	0	7.82	-	-	9	9
FY33-34	-	-		0	0	7.82	-	-	-	-
FY34-35	-	-		0	0	7.82	-	-	-	-
FY35-36	-	-		0	0	7.82	-	-	-	-
FY36-37	-	-		0	0	7.82	-	-	-	-
FY35-37	-	-		0	0	7.82	-	-	-	-
FY36-38	-	-		0	0	7.82	-	-	-	-
FY35-38	-	-		0	0	7.82	-	-	-	-
FY36-39	-	-		0	0	7.82	-	-	-	-
FY35-39	-	-		0	0	7.82	-	-	-	-
FY36-40	-	-		0	0	7.82	-	-	-	-
FY35-40	-	-		0	0	7.82	-	-	-	-
FY36-41	-	-		0	0	7.82	-	-	-	-
FY35-41	-	-		0	0	7.82	-	-	-	-
FY36-42	-	-		0	0	7.82	-	-	-	-
FY35-42	-	-		0	0	7.82	-	-	-	-
FY36-43	-	-		0	0	7.82	-	-	-	-
FY35-43	-	-		0	0	7.82	-	-	-	-
									Average	9,775
									Total	68,422

Modification Only Scenario 1

Transport (Shipping)

Factor	kg CO2-e/t.km	0.00539	NGER (Safeguard) Rule 2015			CO2	1	99.1%
Distance	km	7830	Assumed distance to market			CH4	28	0.01%
						N2O	265	0.003%

Modification Only Scenario 1

Energy Production

GWP	Distribution corrected for GWP	
CO2	1	99.7%
CH4	28	0.002%
N2O	265	0.001%

Year	ROM coal (t)	Thermal coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	-	-		0	0	2436.48	-	-	-	-	-
FY25-26	-	-		0	0	2436.48	-	-	-	-	-
FY26-27	136,002	86,112		0	0	2436.48	-	-	209,810		209,810
FY27-28	896,011	628,000		0	0	2436.48	-	-	1,530,110		1,530,110
FY28-29	1,989,326	1,372,120		0	0	2436.48	-	-	3,343,143		3,343,143
FY29-30	1,662,719	1,027,989		0	0	2436.48	-	-	2,504,674		2,504,674
FY30-31	3,246,540	2,397,499		0	0	2436.48	-	-	5,841,459		5,841,459
FY31-32	4,261,609	3,232,278		0	0	2436.48	-	-	7,875,380		7,875,380
FY32-33	1,770,040	1,147		0	0	2436.48	-	-	2,794		2,794
FY33-34	-	-		0	0	2436.48	-	-	-		-
FY34-35	-	-		0	0	2436.48	-	-	-		-
FY35-36	-	-		0	0	2436.48	-	-	-		-
FY36-37	-	-		0	0	2436.48	-	-	-		-
FY35-37	-	-		0	0	2436.48	-	-	-		-
FY36-38	-	-		0	0	2436.48	-	-	-		-
FY35-38	-	-		0	0	2436.48	-	-	-		-
FY36-39	-	-		0	0	2436.48	-	-	-		-
FY35-39	-	-		0	0	2436.48	-	-	-		-
FY36-40	-	-		0	0	2436.48	-	-	-		-
FY35-40	-	-		0	0	2436.48	-	-	-		-
FY36-41	-	-		0	0	2436.48	-	-	-		-
FY35-41	-	-		0	0	2436.48	-	-	-		-
FY36-42	-	-		0	0	2436.48	-	-	-		-
FY35-42	-	-		0	0	2436.48	-	-	-		-
FY36-43	-	-		0	0	2436.48	-	-	-		-
FY35-43	-	-		0	0	2436.48	-	-	-		-
										Average	3,043,910
										Total	21,307,371

Modification Only Scenario 1

Coking coal use

GWP	Distribution corrected for GWP	
CO2	1	99.8%
CH4	28	0.001%
N2O	265	0.001%

Year	ROM coal (t)	Coking coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	-	-		0	0	2760.9	-	-	-	-	-
FY25-26	-	-		0	0	2760.9	-	-	-	-	-
FY26-27	136,002	-		0	0	2760.9	-	-	-	-	-
FY27-28	896,011	-		0	0	2760.9	-	-	-	-	-
FY28-29	1,989,326	-		0	0	2760.9	-	-	-	-	-
FY29-30	1,662,719	-		0	0	2760.9	-	-	-	-	-
FY30-31	3,246,540	-		0	0	2760.9	-	-	-	-	-
FY31-32	4,261,609	-		0	0	2760.9	-	-	-	-	-
FY32-33	1,770,040	-		0	0	2760.9	-	-	-	-	-
FY33-34	-	-		0	0	2760.9	-	-	-	-	-
FY34-35	-	-		0	0	2760.9	-	-	-	-	-
FY35-36	-	-		0	0	2760.9	-	-	-	-	-
FY36-37	-	-		0	0	2760.9	-	-	-	-	-
FY35-37	-	-		0	0	2760.9	-	-	-	-	-
FY36-38	-	-		0	0	2760.9	-	-	-	-	-
FY35-38	-	-		0	0	2760.9	-	-	-	-	-
FY36-39	-	-		0	0	2760.9	-	-	-	-	-
FY35-39	-	-		0	0	2760.9	-	-	-	-	-
FY36-40	-	-		0	0	2760.9	-	-	-	-	-
FY35-40	-	-		0	0	2760.9	-	-	-	-	-
FY36-41	-	-		0	0	2760.9	-	-	-	-	-
FY35-41	-	-		0	0	2760.9	-	-	-	-	-
FY36-42	-	-		0	0	2760.9	-	-	-	-	-
FY35-42	-	-		0	0	2760.9	-	-	-	-	-
FY36-43	-	-		0	0	2760.9	-	-	-	-	-
FY35-43	-	-		0	0	2760.9	-	-	-	-	-
										Average Total	#DIV/0!
										-	-

Modification Only Scenario 2

Record	Year	ROM coal (t)	Scope 1 (t CO2-e)	Scope 2 (t CO2-e)	Scope 3 (t CO2-e)	Total (t CO2-e)	Year (Mining)	Year (Calendar)	ROM coal (Mt)	Scope 1 (Mt CO2-e/year)	Scope 2 (Mt CO2-e/year)	Scope 3 (Mt CO2-e/year)	Total (Mt CO2-e/year)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)	Diesel (Mt CO2-e)	Fugitive (Mt CO2-e)	Blasting (Mt CO2-e)	Land clearing (Mt CO2-e)	Oils and greases (Mt CO2-e)	Electricity (Mt CO2-e)	Intensity (direct emissions) (Mt CO2-e/Mt ROM)
1 FY24-25	-	-	-	-	-	-	FY24-25	2025	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
2 FY25-26	-	-	-	-	-	-	FY25-26	2026	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
3 FY26-27	136,002	4,303	109	213,120	217,532	FY26-27	2027	2027	0.136	0.004	0.000	0.213	0.218	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.03
4 FY27-28	896,011	21,102	668	1,552,339	1,574,110	FY27-28	2028	2028	0.896	0.021	0.001	1.552	1.574	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.02
5 FY28-29	1,989,326	19,620	893	3,388,316	3,408,828	FY28-29	2029	2029	1.989	0.020	0.001	3.388	3.409	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.01
6 FY29-30	2,613,681	5,242	932	5,827,152	5,833,326	FY29-30	2030	2030	2.614	0.005	0.001	5.827	5.833	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
7 FY30-31	1,246,540	46,619	417	2,075,693	2,122,729	FY30-31	2031	2031	1.247	0.047	0.000	2.076	2.123	0.04	0.03	0.01	0.00	0.01	0.00	0.00	0.04
8 FY31-32	2,650,195	52,278	886	4,901,374	4,954,539	FY31-32	2032	2032	2.650	0.052	0.001	4.901	4.955	0.02	0.03	0.01	0.00	0.01	0.00	0.00	0.02
9 FY32-33	1,770,040	57,361	436	3,358,441	3,416,238	FY32-33	2033	2033	1.770	0.057	0.000	3.358	3.416	0.03	0.05	0.00	0.00	-	0.00	0.00	0.03
10 FY33-34	-	56,546	26	14,139	70,710	FY33-34	2034	2034	-	0.057	0.000	0.014	0.071	#DIV/0!	0.06	-	-	-	0.00	0.00	#DIV/0!
11 FY34-35	-	1,664	-	416	2,081	FY34-35	2035	2035	-	0.002	-	0.000	0.002	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
12 FY35-36	-	832	-	208	1,040	FY35-36	2036	2036	-	0.001	-	0.000	0.001	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
13 FY36-37	-	832	-	208	1,040	FY36-37	2037	2037	-	0.001	-	0.000	0.001	#DIV/0!	0.00	-	-	-	0.00	-	#DIV/0!
14	-	-	-	-	-		2038	2038	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
15	-	-	-	-	-		2039	2039	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
16	-	-	-	-	-		2040	2040	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
17	-	-	-	-	-		2041	2041	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
18	-	-	-	-	-		2042	2042	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
19	-	-	-	-	-		2043	2043	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
20	-	-	-	-	-		2044	2044	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
21	-	-	-	-	-		2045	2045	-	-	-	-	-	#DIV/0!	-	-	-	-	-	-	#DIV/0!
22							2046	2046							-	-	-	-	-	-	
23							2047	2047													
24							2048	2048													
25							2049	2049													
26							2050	2050													
Average	867,776	28,006	354	1,380,305	1,408,664				0.868	0.028	0.000	1.380	1.409	0.023	0.021	0.002	0.001	0.004	0.000	0.000	0.023
Total	6,074,433	255,915	2,502	9,677,105	9,935,522				6.074	0.256	0.003	9.677	9.936	#DIV/0!	0.209	0.017	0.004	0.025	0.001	0.003	#DIV/0!

Modification Only Scenario 2

Diesel usage

	GWP	Distribution corrected for GWP
CO2	1	99.6%
CH4	28	0.01%
N2O	265	0.001%

Year	ROM coal (t)	Usage (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	2709.72	0	667.78	-	-	-	-
FY25-26	-	-	2709.72	0	667.78	-	-	-	-
FY26-27	136,002	1,193	2709.72	0	667.78	3,233	-	797	4,030
FY27-28	896,011	5,922	2709.72	0	667.78	16,047	-	3,955	20,002
FY28-29	1,989,326	7,944	2709.72	0	667.78	21,526	-	5,305	26,831
FY29-30	- 2,613,681 -	2,006	2709.72	0	667.78	- 5,435 -	- -	1,339 -	6,774
FY30-31	1,246,540	11,684	2709.72	0	667.78	31,661	-	7,803	39,464
FY31-32	2,650,195	10,585	2709.72	0	667.78	28,682	-	7,068	35,751
FY32-33	1,770,040	19,778	2709.72	0	667.78	53,594	-	13,208	66,801
FY33-34	-	20,802	2709.72	0	667.78	56,369	-	13,891	70,260
FY34-35	-	612	2709.72	0	667.78	1,659	-	409	2,068
FY35-36	-	306	2709.72	0	667.78	829	-	204	1,034
FY36-37	-	306	2709.72	0	667.78	829	-	204	1,034
FY35-37	-	-	2709.72	0	667.78	-	-	-	-
FY36-38	-	-	2709.72	0	667.78	-	-	-	-
FY35-38	-	-	2709.72	0	667.78	-	-	-	-
FY36-39	-	-	2709.72	0	667.78	-	-	-	-
FY35-39	-	-	2709.72	0	667.78	-	-	-	-
FY36-40	-	-	2709.72	0	667.78	-	-	-	-
FY35-40	-	-	2709.72	0	667.78	-	-	-	-
FY36-41	-	-	2709.72	0	667.78	-	-	-	-
FY35-41	-	-	2709.72	0	667.78	-	-	-	-
FY36-42	-	-	2709.72	0	667.78	-	-	-	-
FY35-42	-	-	2709.72	0	667.78	-	-	-	-
FY36-43	-	-	2709.72	0	667.78	-	-	-	-
FY35-43	-	-	2709.72	0	667.78	-	-	-	-
Average									26,727
Total									260,500

Modification Only Scenario 2

Fugitive emissions

	CO2	CH4	N2O	GWP		Distribution corrected for GWP	
				1	80.0%	80% CO2	
				28	0.7%	20% CH4	
				265			

Year	Carbonaceous material	Emission factor (t CO2-e/t ROM)			Emissions (t CO2-e/year)			Total
		Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	-	-	-	-	-	-
FY25-26	-	-	-	-	-	-	-	-
FY26-27	664,552	-	-	-	197	-	-	197
FY27-28	1,653,435	-	-	-	1,413	-	-	1,413
FY28-29	3,368,636	-	-	-	1,128	-	-	1,128
FY29-30	3,496,646	-	-	-	1,640	-	-	1,640
FY30-31	4,211,851	-	-	-	5,780	-	-	5,780
FY31-32	4,846,157	-	-	-	8,867	-	-	8,867
FY32-33	1,770,040	-	-	-	3,364	-	-	3,364
FY33-34	-	-	-	-	-	-	-	-
FY34-35	-	-	-	-	-	-	-	-
FY35-36	-	-	-	-	-	-	-	-
FY36-37	-	-	-	-	-	-	-	-
FY35-37	-	-	-	-	-	-	-	-
FY36-38	-	-	-	-	-	-	-	-
FY35-38	-	-	-	-	-	-	-	-
FY36-39	-	-	-	-	-	-	-	-
FY35-39	-	-	-	-	-	-	-	-
FY36-40	-	-	-	-	-	-	-	-
FY35-40	-	-	-	-	-	-	-	-
FY36-41	-	-	-	-	-	-	-	-
FY35-41	-	-	-	-	-	-	-	-
FY36-42	-	-	-	-	-	-	-	-
FY35-42	-	-	-	-	-	-	-	-
FY36-43	-	-	-	-	-	-	-	-
FY35-43	-	-	-	-	-	-	-	-
Average								3,924
Total								16,853

Modification Only Scenario 2

Blasting emissions

Assume same as diesel combustion

GWP

Distribution corrected for GWP

CO2	1	99.6%
CH4	28	0.01%
N2O	265	0.001%

Year	ROM coal (t)	Explosives (t)	Emission factor (t CO2-e/t Explosives)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	0.17	0	0	-	-	-	-
FY25-26	-	-	0.17	0	0	-	-	-	-
FY26-27	136,002	2,378	0.17	0	0	404	-	-	404
FY27-28	896,011	3,369	0.17	0	0	573	-	-	573
FY28-29	1,989,326	6,522	0.17	0	0	1,109	-	-	1,109
FY29-30	- 2,613,681	562	0.17	0	0	96	-	-	96
FY30-31	1,246,540	7,173	0.17	0	0	1,219	-	-	1,219
FY31-32	2,650,195	1,658	0.17	0	0	282	-	-	282
FY32-33	1,770,040	1,303	0.17	0	0	222	-	-	222
FY33-34	-	-	0.17	0	0	-	-	-	-
FY34-35	-	-	0.17	0	0	-	-	-	-
FY35-36	-	-	0.17	0	0	-	-	-	-
FY36-37	-	-	0.17	0	0	-	-	-	-
FY35-37	-	-	0.17	0	0	-	-	-	-
FY36-38	-	-	0.17	0	0	-	-	-	-
FY35-38	-	-	0.17	0	0	-	-	-	-
FY36-39	-	-	0.17	0	0	-	-	-	-
FY35-39	-	-	0.17	0	0	-	-	-	-
FY36-40	-	-	0.17	0	0	-	-	-	-
FY35-40	-	-	0.17	0	0	-	-	-	-
FY36-41	-	-	0.17	0	0	-	-	-	-
FY35-41	-	-	0.17	0	0	-	-	-	-
FY36-42	-	-	0.17	0	0	-	-	-	-
FY35-42	-	-	0.17	0	0	-	-	-	-
FY36-43	-	-	0.17	0	0	-	-	-	-
FY35-43	-	-	0.17	0	0	-	-	-	-
Average									558
Total									3,904

Modification Only Scenario 2

Greases

Density: 0.94 t/m3
1.06 kL/t

Year	ROM coal (t)	Grease (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	135.8	0	698.4	-	-	-	-
FY25-26	-	-	135.8	0	698.4	-	-	-	-
FY26-27	136,002	2	135.8	0	698.4	0	-	1	2
FY27-28	896,011	10	135.8	0	698.4	1	-	7	8
FY28-29	1,989,326	14	135.8	0	698.4	2	-	9	11
FY29-30	- 2,613,681 -	3	135.8	0	698.4	- 0 -	- -	2 -	3
FY30-31	1,246,540	20	135.8	0	698.4	3	-	14	17
FY31-32	2,650,195	18	135.8	0	698.4	2	-	13	15
FY32-33	1,770,040	36	135.8	0	698.4	5	-	25	30
FY33-34	-	35	135.8	0	698.4	5	-	25	30
FY34-35	-	1	135.8	0	698.4	0	-	1	1
FY35-36	-	1	135.8	0	698.4	0	-	0	0
FY36-37	-	1	135.8	0	698.4	0	-	0	0
FY35-37	-	-	135.8	0	698.4	-	-	-	-
FY36-38	-	-	135.8	0	698.4	-	-	-	-
FY35-38	-	-	135.8	0	698.4	-	-	-	-
FY36-39	-	-	135.8	0	698.4	-	-	-	-
FY35-39	-	-	135.8	0	698.4	-	-	-	-
FY36-40	-	-	135.8	0	698.4	-	-	-	-
FY35-40	-	-	135.8	0	698.4	-	-	-	-
FY36-41	-	-	135.8	0	698.4	-	-	-	-
FY35-41	-	-	135.8	0	698.4	-	-	-	-
FY36-42	-	-	135.8	0	698.4	-	-	-	-
FY35-42	-	-	135.8	0	698.4	-	-	-	-
FY36-43	-	-	135.8	0	698.4	-	-	-	-
FY35-43	-	-	135.8	0	698.4	-	-	-	-
Average									11
Total									112

Modification Only Scenario 2

Oils

Year	ROM coal (t)	Oils (kL)	Emission factor (kg CO2-e/kL)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	539.32	0	698.4	-	-	-	-
FY25-26	-	-	539.32	0	698.4	-	-	-	-
FY26-27	136,002	18	539.32	0	698.4	10	-	13	23
FY27-28	896,011	91	539.32	0	698.4	49	-	63	112
FY28-29	1,989,326	122	539.32	0	698.4	66	-	85	151
FY29-30	- 2,613,681 -	31	539.32	0	698.4	- 17 -	- -	21 -	38
FY30-31	1,246,540	179	539.32	0	698.4	97	-	125	222
FY31-32	2,650,195	162	539.32	0	698.4	87	-	113	201
FY32-33	1,770,040	327	539.32	0	698.4	176	-	228	404
FY33-34	-	319	539.32	0	698.4	172	-	223	395
FY34-35	-	10	539.32	0	698.4	5	-	7	12
FY35-36	-	5	539.32	0	698.4	3	-	3	6
FY36-37	-	5	539.32	0	698.4	3	-	3	6
FY35-37	-	-	539.32	0	698.4	-	-	-	-
FY36-38	-	-	539.32	0	698.4	-	-	-	-
FY35-38	-	-	539.32	0	698.4	-	-	-	-
FY36-39	-	-	539.32	0	698.4	-	-	-	-
FY35-39	-	-	539.32	0	698.4	-	-	-	-
FY36-40	-	-	539.32	0	698.4	-	-	-	-
FY35-40	-	-	539.32	0	698.4	-	-	-	-
FY36-41	-	-	539.32	0	698.4	-	-	-	-
FY35-41	-	-	539.32	0	698.4	-	-	-	-
FY36-42	-	-	539.32	0	698.4	-	-	-	-
FY35-42	-	-	539.32	0	698.4	-	-	-	-
FY36-43	-	-	539.32	0	698.4	-	-	-	-
FY35-43	-	-	539.32	0	698.4	-	-	-	-
								Average	153
								Total	1,493

Modification Only Scenario 2

Land clearing

	GWP	Distribution corrected for GWP
CO2	1	100.0%
CH4	28	0.00%
N2O	265	0.000%

Year	ROM coal (t)	Clearing (ha)	Emission factor (t CO2-e/ha)			Emissions (t CO2-e/year)			Total
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	
FY24-25	-	-	0	0	0	-	-	-	-
FY25-26	-	-	0	0	0	-	-	-	-
FY26-27	136,002	2	285	0	0	458	-	-	458
FY27-28	896,011	11	285	0	0	3,019	-	-	3,019
FY28-29	1,989,326	4	460	0	0	1,954	-	-	1,954
FY29-30	2,613,681	7	240	0	0	1,754	-	-	1,754
FY30-31	1,246,540	29	276	0	0	7,860	-	-	7,860
FY31-32	2,650,195	50	285	0	0	14,357	-	-	14,357
FY32-33	1,770,040	-	0	0	0	-	-	-	-
FY33-34	-	-	0	0	0	-	-	-	-
FY34-35	-	-	0	0	0	-	-	-	-
FY35-36	-	-	0	0	0	-	-	-	-
FY36-37	-	-	0	0	0	-	-	-	-
FY35-37	-	-	0	0	0	-	-	-	-
FY36-38	-	-	0	0	0	-	-	-	-
FY35-38	-	-	0	0	0	-	-	-	-
FY36-39	-	-	0	0	0	-	-	-	-
FY35-39	-	-	0	0	0	-	-	-	-
FY36-40	-	-	0	0	0	-	-	-	-
FY35-40	-	-	0	0	0	-	-	-	-
FY36-41	-	-	0	0	0	-	-	-	-
FY35-41	-	-	0	0	0	-	-	-	-
FY36-42	-	-	0	0	0	-	-	-	-
FY35-42	-	-	0	0	0	-	-	-	-
FY36-43	-	-	0	0	0	-	-	-	-
FY35-43	-	-	0	0	0	-	-	-	-
Average									5,490
Total									25,493

Modification Only Scenario 2

Electricity usage

	GWP	Distribution corrected for GWP
CO2	1	99.7%
CH4	28	0.002%
N2O	265	0.001%

Year	ROM coal (t)	Usage (kWh)	Emission factor (kg CO2-e/kWh)			Emissions (t CO2-e/year)				
			Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	Total	
FY24-25	-	-	0	0.51	0.04	-	-	-	-	-
FY25-26	-	-	0	0.47	0.03	-	-	-	-	-
FY26-27	136,002	272,975	0	0.4	0.03	-	109	8	117	
FY27-28	896,011	1,965,748	0	0.34	0.02	-	668	39	708	
FY28-29	1,989,326	4,250,115	0	0.21	0.02	-	893	85	978	
FY29-30	- 2,613,681 -	6,213,878	0	0.15	0.01	- -	932 -	62 -	994	
FY30-31	1,246,540	2,777,029	0	0.15	0.01	-	417	28	444	
FY31-32	2,650,195	6,817,922	0	0.13	0.01	-	886	68	955	
FY32-33	1,770,040	4,841,119	0	0.09	0.00	-	436	-	436	
FY33-34	-	285,004	0	0.09	0.00	-	26	-	26	
FY34-35	-	-	0	0.07	0.01	-	-	-	-	
FY35-36	-	-	0	0.06	0.01	-	-	-	-	
FY36-37	-	-	0	0.06	0.00	-	-	-	-	
FY35-37	-	-	0	0.06	0.00	-	-	-	-	
FY36-38	-	-	0	0.06	0.00	-	-	-	-	
FY35-38	-	-	0	0.03	0.00	-	-	-	-	
FY36-39	-	-	0	0.03	0.00	-	-	-	-	
FY35-39	-	-	0	0.03	0.00	-	-	-	-	
FY36-40	-	-	0	0.03	0.00	-	-	-	-	
FY35-40	-	-	0	0.03	0.00	-	-	-	-	
FY36-41	-	-	0	0.03	0.00	-	-	-	-	
FY35-41	-	-	0	0.03	0.00	-	-	-	-	
FY36-42	-	-	0	0.03	0.00	-	-	-	-	
FY35-42	-	-	0	0.03	0.00	-	-	-	-	
FY36-43	-	-	0	0.03	0.00	-	-	-	-	
FY35-43	-	-	0	0.03	0.00	-	-	-	-	
Average									523	
Total									2,669	

Modification Only Scenario 2

Transport (Rail)

Factor	kg CO2-e/t.km	0.01630	NGER (Safeguard) Rule 2015			CO2	1	99.6%	
Distance	km	480	Assumed distance to port			CH4	28	0.01%	
						N2O	265	0.001%	
Year	Product coal (t)	-	Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	Total
FY24-25	-	-		0	0	7.82	-	-	-
FY25-26	-	-		0	0	7.82	-	-	-
FY26-27	86,112	-		0	0	7.82	-	674	674
FY27-28	628,000	-		0	0	7.82	-	4,913	4,913
FY28-29	1,372,120	-		0	0	7.82	-	10,735	10,735
FY29-30	-	2,362,990	-	0	0	7.82	-	18,488	18,488
FY30-31	838,696	-		0	0	7.82	-	6,562	6,562
FY31-32	1,985,115	-		0	0	7.82	-	15,532	15,532
FY32-33	1,356,767	-		0	0	7.82	-	10,615	10,615
FY33-34	-	-		0	0	7.82	-	-	-
FY34-35	-	-		0	0	7.82	-	-	-
FY35-36	-	-		0	0	7.82	-	-	-
FY36-37	-	-		0	0	7.82	-	-	-
FY35-37	-	-		0	0	7.82	-	-	-
FY36-38	-	-		0	0	7.82	-	-	-
FY35-38	-	-		0	0	7.82	-	-	-
FY36-39	-	-		0	0	7.82	-	-	-
FY35-39	-	-		0	0	7.82	-	-	-
FY36-40	-	-		0	0	7.82	-	-	-
FY35-40	-	-		0	0	7.82	-	-	-
FY36-41	-	-		0	0	7.82	-	-	-
FY35-41	-	-		0	0	7.82	-	-	-
FY36-42	-	-		0	0	7.82	-	-	-
FY35-42	-	-		0	0	7.82	-	-	-
FY36-43	-	-		0	0	7.82	-	-	-
FY35-43	-	-		0	0	7.82	-	-	-
								Average	8,172
								Total	30,543

Modification Only Scenario 2

Transport (Shipping)

Factor	kg CO2-e/t.km	0.00539	NGER (Safeguard) Rule 2015	CO2	1	99.1%			
Distance	km	7830	Assumed distance to market	CH4	28	0.01%			
				N2O	265	0.003%			
Year	Product coal (t)	-	Scope 1	Scope 2	Scope 3	Scope 1	Scope 2	Scope 3	Total
FY24-25	-	-		0	0	42.20	-	-	-
FY25-26	-	-		0	0	42.20	-	-	-
FY26-27	86,112	-		0	0	42.20	-	-	1,817
FY27-28	628,000	-		0	0	42.20	-	-	13,251
FY28-29	1,372,120	-		0	0	42.20	-	-	28,953
FY29-30	-	2,362,990		0	0	42.20	-	-	49,861
FY30-31	838,696	-		0	0	42.20	-	-	17,697
FY31-32	1,985,115	-		0	0	42.20	-	-	41,888
FY32-33	1,356,767	-		0	0	42.20	-	-	28,629
FY33-34	-	-		0	0	42.20	-	-	-
FY34-35	-	-		0	0	42.20	-	-	-
FY35-36	-	-		0	0	42.20	-	-	-
FY36-37	-	-		0	0	42.20	-	-	-
FY35-37	-	-		0	0	42.20	-	-	-
FY36-38	-	-		0	0	42.20	-	-	-
FY35-38	-	-		0	0	42.20	-	-	-
FY36-39	-	-		0	0	42.20	-	-	-
FY35-39	-	-		0	0	42.20	-	-	-
FY36-40	-	-		0	0	42.20	-	-	-
FY35-40	-	-		0	0	42.20	-	-	-
FY36-41	-	-		0	0	42.20	-	-	-
FY35-41	-	-		0	0	42.20	-	-	-
FY36-42	-	-		0	0	42.20	-	-	-
FY35-42	-	-		0	0	42.20	-	-	-
FY36-43	-	-		0	0	42.20	-	-	-
FY35-43	-	-		0	0	42.20	-	-	-
Average									22,039
Total									82,374

Modification Only Scenario 2

Energy Production

GWP	Distribution corrected for GWP
CO2	1 99.7%
CH4	28 0.002%
N2O	265 0.001%

Year	ROM coal (t)	Thermal coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	-	-		0	0	2436.48	-	-	-	-	-
FY25-26	-	-		0	0	2436.48	-	-	-	-	-
FY26-27	136,002	86,112		0	0	2436.48	-	-	209,810		209,810
FY27-28	896,011	628,000		0	0	2436.48	-	-	1,530,110		1,530,110
FY28-29	1,989,326	1,372,120		0	0	2436.48	-	-	3,343,143		3,343,143
FY29-30	- 2,613,681	- 2,362,990		0	0	2436.48	-	-	- 5,757,377	-	5,757,377
FY30-31	1,246,540	838,696		0	0	2436.48	-	-	2,043,465		2,043,465
FY31-32	2,650,195	1,985,115		0	0	2436.48	-	-	4,836,693		4,836,693
FY32-33	1,770,040	1,356,767		0	0	2436.48	-	-	3,305,736		3,305,736
FY33-34	-	-		0	0	2436.48	-	-	-		-
FY34-35	-	-		0	0	2436.48	-	-	-		-
FY35-36	-	-		0	0	2436.48	-	-	-		-
FY36-37	-	-		0	0	2436.48	-	-	-		-
FY35-37	-	-		0	0	2436.48	-	-	-		-
FY36-38	-	-		0	0	2436.48	-	-	-		-
FY35-38	-	-		0	0	2436.48	-	-	-		-
FY36-39	-	-		0	0	2436.48	-	-	-		-
FY35-39	-	-		0	0	2436.48	-	-	-		-
FY36-40	-	-		0	0	2436.48	-	-	-		-
FY35-40	-	-		0	0	2436.48	-	-	-		-
FY36-41	-	-		0	0	2436.48	-	-	-		-
FY35-41	-	-		0	0	2436.48	-	-	-		-
FY36-42	-	-		0	0	2436.48	-	-	-		-
FY35-42	-	-		0	0	2436.48	-	-	-		-
FY36-43	-	-		0	0	2436.48	-	-	-		-
FY35-43	-	-		0	0	2436.48	-	-	-		-
										Average	2,544,826
										Total	9,511,580

Modification Only Scenario 2

Coking coal use

GWP	Distribution corrected for GWP	
CO2	1	99.8%
CH4	28	0.001%
N2O	265	0.001%

Year	ROM coal (t)	Coking coal (t)	Scope 1	Emission factor (kg CO2-e/t)			Scope 1	Emissions (t CO2-e/year)			Total
				Scope 2	Scope 3			Scope 2	Scope 3		
FY24-25	-	-		0	0	2760.9	-	-	-	-	-
FY25-26	-	-		0	0	2760.9	-	-	-	-	-
FY26-27	136,002	-		0	0	2760.9	-	-	-	-	-
FY27-28	896,011	-		0	0	2760.9	-	-	-	-	-
FY28-29	1,989,326	-		0	0	2760.9	-	-	-	-	-
FY29-30	- 2,613,681	-		0	0	2760.9	-	-	-	-	-
FY30-31	1,246,540	-		0	0	2760.9	-	-	-	-	-
FY31-32	2,650,195	-		0	0	2760.9	-	-	-	-	-
FY32-33	1,770,040	-		0	0	2760.9	-	-	-	-	-
FY33-34	-	-		0	0	2760.9	-	-	-	-	-
FY34-35	-	-		0	0	2760.9	-	-	-	-	-
FY35-36	-	-		0	0	2760.9	-	-	-	-	-
FY36-37	-	-		0	0	2760.9	-	-	-	-	-
FY35-37	-	-		0	0	2760.9	-	-	-	-	-
FY36-38	-	-		0	0	2760.9	-	-	-	-	-
FY35-38	-	-		0	0	2760.9	-	-	-	-	-
FY36-39	-	-		0	0	2760.9	-	-	-	-	-
FY35-39	-	-		0	0	2760.9	-	-	-	-	-
FY36-40	-	-		0	0	2760.9	-	-	-	-	-
FY35-40	-	-		0	0	2760.9	-	-	-	-	-
FY36-41	-	-		0	0	2760.9	-	-	-	-	-
FY35-41	-	-		0	0	2760.9	-	-	-	-	-
FY36-42	-	-		0	0	2760.9	-	-	-	-	-
FY35-42	-	-		0	0	2760.9	-	-	-	-	-
FY36-43	-	-		0	0	2760.9	-	-	-	-	-
FY35-43	-	-		0	0	2760.9	-	-	-	-	-
										Average Total	#DIV/0!
										-	-