CHAPTER 14 – GREENHOUSE GAS

STANMORE ID EXTENSION PTY LTD
ISAAC DOWNS EXTENSION PROJECT

TABLE OF CONTENTS

Tables

14. GREENHOUSE GAS

14.1 Introduction

This chapter provides a greenhouse gas (GHG) assessment for the Isaac Downs Extension (IDE) Project (the Project), including an estimate of Scope 1, 2 and 3 emissions from the Project, the regulatory framework for calculating and managing GHG emissions, a description of proposed GHG abatement measures including carbon offsets, and the Project's contribution to estimated global, national and state GHG emissions budgets.

This chapter was developed from a detailed GHG assessment and abatement plan completed for the Project by Katestone Environmental Australia Pty Ltd (Katestone), provided in **Appendix T**. This appendix also addresses the requirements of the Department of Environment, Tourism, Science and Innovation's (DETSI's) Guideline—Greenhouse gas emissions (the GHG Guideline) (DETSI 2026), including the provision of a GHG Abatement Plan.

The proponent for the Project (Stanmore ID Extension Pty Ltd (ID Extension) is a wholly owned subsidiary of Stanmore Resources Ltd (Stanmore). Project emissions estimates and abatement measures are informed by Stanmore's policies, plans and resources.

14.2 Relevant Legislation, Policy and Guidelines

14.2.1 International Agreements

14.2.1.1 Paris Agreement

The Australian Government signed the legally binding Paris Agreement (UNFCCC, 2015) to take actions to keep global warming to 'well below' 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C above pre-industrial levels.

The current Australian target (Nationally Determined Contribution) is to reduce emissions to 43% below 2005 levels by 2030, and 62 – 70% by 2035, including land use, land use change and forestry (LULUCF). The legislated target is to have net zero GHG emissions by 2050.

14.2.2 Legislation and Regulation

14.2.2.1 Climate Change Act 2022

The *Climate Change Act 2022* (Cth) (CC Act) provides the legislative framework to implement Australia's net-zero commitments and codifies Australia's 2030 and 2050 net GHG emissions reductions targets under the Paris Agreement.

14.2.2.2 Climate Change (Consequential Amendments) Act 2022

The *Climate Change (Consequential Amendments) Act 2022* (Cth) (CCCA Act) embeds the GHG emissions reduction targets into fourteen Commonwealth acts, including the *Clean Energy Regulator Act 2011*, *Infrastructure Australia Act 2008*, *National Greenhouse and Energy Reporting Act 2007*, and the *Renewable Energy (Electricity) Act 2000*.

14.2.2.3 National Greenhouse and Energy Reporting Act 2007

The *National Greenhouse and Energy Reporting Act 2007* (Cth) (NGER Act) established a national framework for corporations to report GHG emissions and energy consumption.

Under the National Greenhouse and Energy Reporting (NGER) scheme, corporations or facilities must register and report if they meet one or more of the following thresholds in a financial year:

- 25,000 tonnes or more of carbon dioxide equivalent (CO_2-e) emissions (scope 1 and scope 2),
- production of 100 terajoules (TJ) or more of energy, or
- consumption of 100 TJ or more of energy.

These entities are required to report on their Scope 1 and Scope 2 emissions. Scope 3 emissions are not included in NGER reporting due to the potential for double counting.

Isaac Plains Complex (IPC) is a facility that reports under NGERs. The Project will form part of the IPC facility, comprising Isaac Plains Mine (IPM), Isaac Downs Mine (IDM) and the Project.

14.2.2.4 National Greenhouse and Energy Reporting (Measurement) Determination 2008

The *National Greenhouse and Energy Reporting (Measurement) Determination 2008* (Cth) (NGER Determination) provides methods, criteria, and measurement standards for calculating GHG emissions and energy data under the NGER Act. It covers Scope 1 and Scope 2 emissions and energy production and consumption.

14.2.2.5 Safeguard Mechanism (Crediting) Amendment Act 2023

The *Safeguard Mechanism (Crediting) Amendment Act 2023* (Cth) (Safeguard Mechanism) provides a framework for Australia's largest emitters to measure, report and manage their emissions and is administered through the NGER scheme. It does this by requiring large facilities, whose net emissions exceed the Safeguard threshold of 100,000 tCO2-e per year, to keep their emissions at or below an emissions baseline determined by the Safeguard Mechanism under the Clean Energy Regulator (CER). The CER is the government body responsible for accelerating carbon abatement for Australia through the administration of the NGER scheme, Renewable Energy Target, and the Emissions Reduction Fund.

14.2.2.6 Clean Economy Jobs Act 2024

The *Clean Economy Jobs Act 2024* (Qld) (CEJ Act) establishes the following emissions reduction targets:

- by 30 June 2030, net GHG emissions in Queensland are reduced to an amount that is at least 30% below the net GHG emissions in Queensland for 2005
- by 30 June 2035, net GHG emissions in Queensland are reduced to an amount that is at least 75% below the net GHG emissions in Queensland for 2005
- by 30 June 2050, net GHG emissions in Queensland are reduced to zero (the 2050 net zero emissions target).

14.2.2.7 Energy (Infrastructure Facilitation) Act 2024

The *Energy Roadmap Amendment Act 2025* repealed the *Energy (Renewable Transformation and Jobs) Act 2024*, replacing it with the *Energy (Infrastructure Facilitation) Act 2024* (Qld) (Energy Act). The Energy Act aims to ensure a safe, secure, and affordable electricity supply by facilitating the coordinated development of energy infrastructure, including transmission, storage, and generation. It removed fixed renewable energy targets and establishes Regional Energy Hubs.

14.2.2.8 Human Rights Act 2019

The *Human Rights Act 2019* (Qld) (HR Act) protects 23 fundamental civil, political, and specific economic/cultural rights, requiring public entities to act compatibly with them. Regulators must consider the HR Act in making decisions about approvals for the Project. An act or decision is compatible with human rights if it does not limit a human right or, where it does, the limit is only to the extent reasonable and justifiable in a free and democratic society based on human dignity, equality and freedom. The test of compatibility of a limit to a human right is known as the proportionality test.

14.2.3 Policy and Guidelines

14.2.3.1 GHG Guideline

The Guideline Greenhouse gas emissions ESR/2024/6819 (GHG Guideline) describes requirements under the *Environmental Protection Act 1994* (EP Act) and provides information about how to meet these requirements in relation to GHG emissions for new and amended environmental authority (EA) applications and environmental impact statements (EISs).

The GHG Guideline sets out the expectations for GHG emissions information to be provided with applications and supports rigorous, defensible, and transparent decision making in relation to these emissions. Table 14-1 summarises the requirements of the GHG Guideline and the section in this chapter or **Appendix T** addressing the requirements.

Table 14-1 GHG Guideline Requirement Cross Reference

GHG Guideline Requirement	Section Reference
An inventory of expected GHG emissions resulting from the Project including the stage at which the emissions will occur and a breakdown by source	14.3, 14.4
An estimate of projected Scope 1 and Scope 2 CO2-e emissions over the life of the project, including an unabated and abated emissions scenario	14.4, 14.5
An estimate of annual Scope 3 emissions and total Scope 3 emissions over the life of the Project	14.4, 14.4.5
A description of the method used for estimating GHG emissions	14.3
A GHG abatement (decarbonisation) plan in alignment with recommendations made in Appendix A of the GHG Guideline:	14.5, **Appendix T**
a) Project details	Chapter 4, **Appendix T** (Section 1)
b) Emissions projections and commencing abatement measures	**Appendix T** (Emissions estimates - Section 5, Table 7, Table 9, Table 10, Table 11). **Appendix T** (Emissions management – Section 6, Table 12, Table 13, Table 14)
c) GHG emissions reference point	**Appendix T** (reference point and Safeguard Mechanism - Sections 5.2.1, 6.4, 6.5) **Appendix T** (Emissions estimates - Section 5, Table 7, Table 9, Table 10, Table 11).

GHG Guideline Requirement	Section Reference
d) Emission reduction targets	**Appendix T** (Emissions management – Section 6, Table 12, Table 13, Table 14) **Appendix T** (Queensland emissions reduction targets – Section 7, Table 15 and 16 QLD GHG contributions)
e) GHG emission reduction program	**Appendix T** (Emissions management – Section 6, Table 12, Table 13, Table 14)
f) Advancing technologies and opportunities	**Appendix T** (Section 6.5, Table 13 Section 6.7, Section 6.10)
g) Monitoring and auditing	**Appendix T** (Sections 4.1, 6.9)
h) Reporting	**Appendix T** (Section 6.9)
A description of risks and the likely magnitude of impacts on environmental values resulting from the Project, including qualitatively describing the impacts of climate change on environmental values and the likely magnitude of such impacts based on the relative scale of the Project's net GHG emissions.	14.6

The GHG Guideline identifies expected scope 1 and 2 GHG emission rates for activities as:

- Low emitters if expected annual GHG emissions are less than 25,000 t CO2-e.
- Medium to high emitters if expected annual GHG emissions are 25,000 t CO2-e or more at any time during the life of the project (this applies to the Project's scope 1 and 2 GHG emissions).

14.2.3.2 Corporate Value Chain (Scope 3) Accounting and Reporting Standard

The Greenhouse Gas Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Scope 3 Standard) (GHG Protocol, 2011) is the only internationally accepted method for Scope 3 emissions accounting and is applied here.

Scope 3 emissions refer to all indirect emissions occurring in the value chain of a reporting company, including upstream and downstream emissions, that are not included in the reporting company's Scope 1 and 2 inventory. Examples of Scope 3 emissions include emissions resulting from the production and transport of purchased goods, processing and use of sold products, and purchased services such as fuel-intensive activities or transportation.

Scope 3 emissions may be 'double-counted', when two companies account for the same emissions – this is recognised as a beneficial scenario because each company may have different and mutually exclusive opportunities to influence the sources of emissions. While a reporting company has no direct control over its Scope 3 emissions, it may exert influence over its Scope 3 inventory through strategic partnerships, policy-setting, and procurement decisions.

14.2.4 Environmental Objectives and Performance Outcomes

The environmental objectives and performance outcomes, based on the *Environmental Protection Regulation 2019* (EP Regulation) and terms of reference (ToR) for the Project's EIS, that are relevant to the GHG assessment, are provided in Table 14-2. The EP Regulation does not contain specific

environmental objectives and performance outcomes for GHG emissions. A corresponding EIS section reference is provided in Table 14-2 demonstrating how the Project meets these environmental objectives and performance outcomes.

Table 14-2 Environmental Objectives and Performance Outcomes

Environmental Objective and Outcomes	EIS Reference
Keep global warming below 2°C, preferably 1.5°C, above pre-industrial levels through the reduction of GHG emissions by supporting Queensland's emission reduction targets.	14.5, 14.6
Prepare for climate change through climate resilient project development and operation.	14.6.1 Section 6.5 and 6.6 of **Chapter 6**

14.3 Methodologies to Estimate GHG Emissions

14.3.1 Scope 1, 2 and 3

GHG emissions are classified into three scopes (Scope 1, 2 and 3) for monitoring, reporting, and management purposes. In Australia, these are defined in the NGER Act, as described in Section 4.1 of **Appendix T**, summarised as:

- Scope 1 – GHG emissions released to the atmosphere as a direct result of an activity or series of activities that are controlled by a company or facility.
- Scope 2 – GHG emissions released to the atmosphere because of the generation of electricity that has been purchased by a company for use at a facility.
- Scope 3 – GHG emissions released to the atmosphere upstream or downstream in an organisation's supply or value chain.

14.3.2 Project Activities Resulting in GHG Emissions

Project activities that will lead to GHG emissions are presented in Table 14-3. These are differentiated by their scope and the Project phase in which they occur.

Table 14-3 Project Activities Resulting in GHG Emissions

Phase	Scope 1 and Scope 2	Scope 3
Construction / Operation	• Diesel combustion by construction equipment • Diesel combustion by mine plant • Diesel combusted in explosives • Diesel combustion for generation of electricity • Fugitive emissions from mining of coal • Electricity usage for the dragline and amenities • Vegetation clearing • Combustion of petroleum-based oils and greases	• Purchased goods and services and capital goods • Upstream production and transportation of diesel, oils and greases • Upstream production of electricity • Upstream transportation of diesel, explosives and materials to site required during operations • Downstream transportation and processing of waste generated • Business travel and employee commuting • Downstream by rail (within Australia) and shipping (outside Australia) • Processing / use of product coal

Phase	Scope 1 and Scope 2	Scope 3
Decommissioning	• Diesel combustion for rehabilitation activities • Electricity usage	• Upstream fuel extraction and processing

14.3.3 Methodologies for Calculating GHG Emissions

14.3.3.1 Overview

Section 4.3 and Section 4.4 of **Appendix T** provides detailed methodologies for the calculation of GHG emissions (including assumptions and limitations), with summarises provided below.

Projected annual Scope 1, Scope 2, and Scope 3 GHG emissions for the Project during all phases are calculated from proposed activity levels by applying the methods, fuel consumption and emissions factors described in the following resources:

- NGER Determination
- the National Greenhouse Accounts Factors (DCCEEW, 2025)
- the Greenhouse Gas Protocol (WRI/WBCSD, 2004).

Energy contents and emissions factors used in Scope 1 and Scope 2 calculations are provided in Table 3 of **Appendix T**.

14.3.3.2 Scope 1 and 2

Scope 1 and Scope 2 emissions (t CO_2-e) are calculated in accordance with Method 1, as outlined in the NGER Determination, other than fugitive emissions from the extraction of coal which have been estimated in accordance with Method 2 in the NGER Determination.

14.3.3.3 Scope 1 - Fugitive Emissions

Method 2 requires each gas in a gas bearing stratum to be analysed in accordance with the requirements of the NGER determination.

A coal seam gas (CSG) report for the Project was completed in November 2025 (refer to Appendix B of **Appendix T**). The result is a calculated gas content and gas composition for zoned depth intervals that then can be used to determine a CO_2-e value for seams that are mined from the corresponding zone. The respective CO_2-e values multiplied by the in-situ tonnes of run of the mine (ROM) coal of a particular zone determines emissions. Emissions originating from within 20m of the final pit floor horizon are assigned a release factor of 50% for gas bearing strata (where these contain gas).

ROM coal projections are as per those provided in Section 4.7 of **Chapter 4**. The quantity of coal projected to be extracted from each depth was multiplied by the depth-dependent CO_2-e emission factor produced in the fugitive emissions report (Table 2 of Appendix B of **Appendix T**). The maximum pit depth is 100 m or less. The results of this approach have informed the fugitive emissions estimate for the Project. At the completion of mining, there will be no strata classified as gas bearing affecting fugitive emission assessment located within 20m of the final pit floor (see sections 3.1 and 3.2 of Appendix B of **Appendix T**).

14.3.3.4 Scope 1 - Vegetation Clearance

The Full Carbon Accounting Model (FullCAM) (Richards, 2001) is used to assess the carbon stock (tonnes carbon per hectare (t C / ha)) of vegetation within the proposed areas for land clearing resulting from the Project. Assumptions and inputs into the FullCAM Model are provided in Section 4.3.1 of **Appendix T**.

The vegetation to be cleared was identified by regional ecosystem (RE) type, based on the field verified REs that will be cleared, as described in Section 11.5 of **Chapter 11**.

14.3.3.5 Scope 3

Scope 3 emissions were determined in accordance with the Greenhouse Gas Protocol where applicable. Where this was not possible, values were derived from established and recognised sources consistent with industry practice. Scope 3 energy contents and emission factors used in this assessment are summarised in Table 4 of **Appendix T**.

14.3.3.5.1 Scope 3 - End Use of Coal

Emissions resulting from the end use (combustion) of coal were estimated using the emissions factors provided in the NGER Determination, with all product coal (as per the tonnages provided in Section 4.7 of **Chapter 4**) assumed to be combusted. All emissions from the combustion of coal are assumed to be emitted to the atmosphere without mitigation measures applied.

The quantity of coal projected to be sold by country along with the percentage of total life of mine (LOM) coal is shown in Appendix A of **Appendix T**. Potential end user companies are not disclosed due to commercial sensitivity. Japan is the destination country expected to receive the highest quantity of coal (45%), followed by Europe (25%), India (15%), Vietnam (10%) and Brazil (5%). The Nationally Determined Contributions (NDCs) for Paris Agreement commitments of end user countries are shown in Appendix A of **Appendix T**.

14.3.3.5.2 Scope 3 – Coal Distribution

The distribution of the Project's coal involves the transport of coal product to Dalrymple Bay Coal Terminal (DBCT) or North Queensland Export Terminal (NQXT) via Aurizon owned trains and then shipping to international markets. Based on Stanmore's expected sales of product coal from the Project (see **Chapter 4**), Table 6 of **Appendix T** describes coal distribution for rail and shipping by destination, distance, and attributable percentage of product coal.

Emissions from rail freight utilised published emissions factors from Aurizon (Aurizon, 2024). Emissions from shipping utilised the United Kingdom's Department for Energy Security and Net Zero's (DESNZ's) (2025) average bulk carrier emission factor.

14.3.3.5.3 Scope 3 - Upstream Processing of Fuel and Energy

Diesel consumption data, based on the Project's estimated life of Project diesel usage, was used to assess Scope 3 GHG emissions resulting from the production of liquid fuels for the Project.

The Queensland Scope 3 electricity emissions factor was applied to the estimated life of Project electricity consumption to estimate total upstream emissions associated with generation and delivery of purchased electricity.

14.3.3.5.4 Scope 3 - Downstream Non-Mining Waste

The Project's non-mining waste sources (e.g. general municipal waste, regulated waste) were estimated based on non-mining waste produced from IPC historically. The total tonnage of each waste category was multiplied the respective emissions factor.

14.3.3.5.5 Scope 3 - Purchased Goods and Services

Purchased goods and services were based on the life of Project economic modelling. Emissions were estimated using an average emission factor derived from 2024 IPC expenditure data within the Planet Price platform, a database that links financial expenditure to GHG emissions. The resulting average emission factor was applied to forecasted expenditure for future years for purchased goods and services.

14.3.3.5.6 Scope 3 - Capital Goods

Initial and sustaining capital expenditure (CAPEX) for the Project was based on the life of Project economic modelling. Emissions were estimated using the methodology described in Section 14.3.3.5.5. Where specific expenditure data was available for key capital construction materials or infrastructure items, these were estimated separately.

14.3.3.5.7 Scope 3 - Travel and Employee Commuting

Worker commuting for the Project involves both road and air travel. Road travel encompasses local driving and bus transport. The proportion of workers using each mode of commute was based on the workforce estimates, workforce residence (e.g. local, drive in drive out (DIDO) or fly in fly out (FIFO)) and the source of workforce accommodation developed for the Project.

Emissions from road commuting of workers were estimated based on fuel consumption of a typical light utility vehicle, and from typical fuel consumption for typical buses servicing the region. Fuel consumptions were then multiplied by projected annual trips, based on workforce estimates and shift rosters.

Emissions from FIFO workers for air travel were based on an emission factor determined by Stanmore for CO_2-e emissions per seat per flight between Brisbane and Moranbah or Mackay. The emission factor was then multiplied by the projected number of seats occupied per year.

14.3.3.5.8 Scope 3 - Upstream Transportation

Upstream transport emissions were estimated by multiplying tonnage and distance travelled for delivery of materials (e.g. fuel and explosives) to calculate tonne kilometres, then applying the relevant articulated heavy goods vehicle emission factors (DESNZ, 2025).

14.4 GHG Emissions Estimates

14.4.1 Summary

The GHG emissions associated with the Project for Scope 1, Scope 2, and Scope 3 emissions over all phases of the Project (the 'LOM') are presented in Table 14-4. The Project is considered a medium to high emitter under the GHG Guideline and is required to consider all Scope 3 emissions and develop a GHG Abatement Plan.

The total LOM GHG emissions are estimated to be 82.45 million tonnes (Mt) CO_2-e. Of this:

- LOM Scope 1 emissions are estimated at 1.27 Mt CO_2-e, with an annual average of 0.049 Mt CO_2-e.
- LOM Scope 2 emissions are estimated at 0.18 Mt CO_2-e, with an annual average of 0.007 Mt CO_2-e.
- LOM Scope 3 emissions are estimated at 0.89 Mt CO_2-e within Australia and 80.10 Mt CO_2-e outside Australia.

Table 14-4 Summary of Project GHG Emissions

Category	Measure	Emissions (Mt CO_2-e)			
		Construction (1 year)	Operation (15 years)	Rehab (10 years)	Total LOM (26 years)
Scope 1	Average annual emissions	0.008	0.084	0.00022	0.049
	Total emissions	0.008	1.26	0.0022	1.27
Scope 2	Average annual emissions	-	0.012		0.007
	Total emissions	-	0.18		0.18
Scope 3	Average annual emissions (within Australia)	0.039	0.057	0.00041	0.034
	Average annual emissions (outside Australia)	-	5.34		3.08
	Total emissions (within Australia only)	0.039	0.85	0.0041	0.89
	Total emissions (outside Australia only)	-	80.10		80.10
Total (scope 1, 2 and 3)	Total GHG Emissions	0.047	82.40	0.0063	82.45
	Average annual emissions (within Australia)	0.047	0.15	0.00063	0.09
	Average annual emissions (within and outside Australia)	0.047	5.49	0.00063	3.17

14.4.2 NGER Category Energy and Emissions

The total energy consumed for the LOM (scope 1 and 2) is estimated at 13,068,288 GJ (refer to Table 8 of **Appendix T**). Diesel used in stationary plant and machinery is the dominant energy source, accounting for ~82% of LOM energy consumption, followed by electricity consumption (~8%), and diesel used in explosives (~4%). The Project will not generate electricity, as electricity will be purchased from the national electricity market (NEM).

The Project's NGER reportable (combined Scope 1 and 2) LOM emissions are estimated at 1,353,095 t CO_2-e (Table 14-5):

- Diesel combustion for stationary plant is expected to be the largest contributor to the NGER reportable inventory with 752,200 t CO_2-e (~56%).

- Fugitive methane emissions are expected to be the second largest contributor of Scope 1 emissions, totalling 377,066 t CO_2-e (~28%).
- Diesel combustion for transport vehicles is expected to contribute 39,708t CO_2-e (~3%) to Scope 1 emissions.
- Scope 2 emissions from electricity purchased from the Queensland grid are estimated to result in 180,900 t CO_2-e (~13%).

The maximum annual NGER Reportable Scope 1 and Scope 2 GHG emissions are estimated at 109,984 t CO_2-e in Project operational Year 6.

The NGER reportable emission inventory contributes ~93% to the Project's total LOM Scope 1 and 2 emissions of 1,454,925 t CO2-e (Table 14-5). The Scope 1 sources not reported to the NGER Scheme are:

- land clearing, estimated to result in 62,449 t CO_2-e LOM
- diesel used in explosives, estimated to result in 39,381 t CO_2-e LOM.

The Safeguard Mechanism is based on all NGER Reportable Scope 1 emissions in years when there is ROM coal production from a Safeguard facility. For the Project's contribution to the IPC facility this totals 1,170,014 t CO_2-e LOM, as per Table 14-5. IPC facility scope 1 emissions are described in Section 14.4.4.

Table 14-5 Scope 1 and Scope 2 Emissions from the Project (t CO2-e) by Year and Emissions Source

Year	Scope 1							Scope 2	Total	Total Reportable to NGER Scheme	Safeguard Mechanism (NGER Scope 1)
	Diesel – stationary	Diesel – transport	Oils	Greases	Fugitives	Land clearing [1]	Explosives [1]	Electricity			
2028	7,723	408	32	1	0	0	0	0	**8,163**	**8,163**	8,163
2029	40,636	2,145	168	6	9,272	62,449	1,904	12,060	**128,641**	**64,288**	52,227
2030	61,892	3,267	256	9	15,699	-	2,234	12,060	**95,418**	**93,184**	81,123
2031	59,921	3,163	248	9	18,361	-	2,368	12,060	**96,130**	**93,762**	81,702
2032	62,861	3,318	260	9	19,830	-	3,017	12,060	**101,356**	**98,339**	86,278
2033	63,510	3,353	263	9	21,358	-	3,580	12,060	**104,133**	**100,552**	88,493
2034	69,578	3,673	288	10	24,375	-	3,739	12,060	**113,723**	**109,984**	97,924
2035	55,056	2,906	228	8	22,118	-	3,472	12,060	**95,848**	**92,376**	80,316
2036	52,623	2,778	218	7	22,906	-	2,656	12,060	**93,248**	**90,593**	78,532
2037	46,873	2,474	194	7	23,894	-	3,087	12,060	**88,590**	**85,503**	73,442
2038	51,064	2,696	211	7	28,906	-	2,671	12,060	**97,616**	**94,944**	82,884
2039	42,713	2,255	177	6	33,411	-	2,344	12,060	**92,966**	**90,622**	78,562
2040	48,255	2,547	200	7	41,119	-	2,840	12,060	**107,028**	**104,188**	92,128
2041	40,617	2,144	168	6	44,160	-	2,280	12,060	**101,435**	**99,155**	87,095
2042	40,762	2,152	169	6	44,486	-	2,263	12,060	**101,899**	**99,635**	87,575
2043	6,056	320	25	1	7,168	-	925	12,060	**26,555**	**25,630**	13,570
2044	515	27	2	-	-	-	-	-	**544**	**544**	-
2045	515	27	2	-	-	-	-	-	**544**	**544**	-
2046	129	7	1	-	-	-	-	-	**136**	**136**	-
2047	129	7	1	-	-	-	-	-	**136**	**136**	-
2048	129	7	1	-	-	-	-	-	**136**	**136**	-
2049	129	7	1	-	-	-	-	-	**136**	**136**	-
2050	129	7	1	-	-	-	-	-	**136**	**136**	-
2051	129	7	1	-	-	-	-	-	**136**	**136**	-
2052	129	7	1	-	-	-	-	-	**136**	**136**	-
2053	129	7	1	-	-	-	-	-	**136**	**136**	-
Total	**752,200**	**39,708**	**3,114**	**107**	**377,066**	**62,449**	**39,381**	**180,900**	**1,454,925**	**1,353,095**	**1,170,014**

[1] *Not reported under NGER*

14.4.3 Emissions Intensity of Production

The Scope 1 emission intensity of production is calculated by the total t CO_2-e from NGER emission sources divided by the tonnes of ROM coal produced. This is a benchmark that can be used to assess operational efficiency, compare performance across different scales, and guide decarbonisation efforts.

The projected average Scope 1 emission intensity (EI) (excluding land clearing) is estimated at 0.0272 t CO2-e / t ROM coal. This benchmark is used to determine the effectiveness of decarbonisation measures.

14.4.4 IPC Facility Emissions

The Project would be part of the IPC facility, for the purposes of the Safeguard Mechanism. The Safeguard Mechanism is based on financial year (FY) reporting whereas the data in Table 14-5 is based on calendar year (irrespective, total emissions remain the same). The baseline emissions for the IPC facility for the period FY 2028 to FY 2044 are provided in Table 14-6, separated between the Project and the rest of IPC facility (i.e. IPM and IDM).

ROM coal is proposed to be mined at IDM in 2028, hence there are diesel, oil, grease and fugitive emissions in FY 2028 in the rest of IPC. In all years at IPM and IDM, emissions are associated with diesel, oil and grease use for equipment used for rehabilitation activities and for handling of ROM coal, product coal and rejects at IPC coal handling and preparation plant (CHPP).

The baseline emissions presented in Table 14-6 account for the committed scope 1 decarbonisation measures described in Section 14.5.5, totalling approximately 185,000 t CO2-e LOM. Baseline emissions have been calculated in accordance the *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*.

The Project, as part of the IPC facility, would be required to purchase and surrender Australian Carbon Credit Units (ACCUs) or use Safeguard Mechanism Credits (SMCs) if it becomes subject to the Safeguard Mechanism emissions reduction requirements.

To estimate whether the IPC facility will be required to purchase ACCUs or SMCs, or will generate SMCs in future FYs, a forecast is required of the key variables affecting the Safeguard Mechanism, primarily the 'designated large facility' (safeguard) threshold[1]. This is currently set at 100,000 t CO2-e per year, however post FY 2030 there is scope for the threshold to be lowered in line with the decreasing amount of GHG that can be permitted to be released under Australia's Nationally Determined Contribution. Stanmore has therefore developed three scenarios for estimating ACCUs and SMCs for the IPC facility in FYs with ROM coal production (i.e. FY 2028 to FY 2044):

1) The safeguard threshold of 100,000 t CO2-e per year continues to apply for all years, with a constant 4.9% emission reduction contribution (ERC) in the baseline emissions factor. However, it is expected that the safeguard threshold will decline in FYs beyond 2030 to align with Australia's commitment to net zero by 2050 by including an increasing the number of facilities captured within the Safeguard Mechanism. Therefore this scenario potentially overstates the level of the safeguard threshold.
2) The safeguard threshold is set at 25,000 t CO2-e per year from FY 2031, with a constant 4.9% ERC in the baseline emissions factor.
3) The safeguard threshold set at 75,000 t CO2-e per year from FY 2031, 50,000 t CO2-e per year from FY 2036, and 25,000 t CO2-e per year from FY 2041, with a constant 4.9% ERC in the baseline emissions factor.

[1] The designated large facility threshold is the number of tonnes of carbon dioxide equivalent covered emissions of greenhouse gases from the facility that determines if a facility is large enough to be regulated by Safeguard Mechanism rules. The value is set in the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth).

The predicted decline in the safeguard threshold for scenario 2 has come from the Productivity Commission, 2025 which provides as a recommendation that the scheduled review of the Safeguard Mechanism in 2026 / 2027 could reasonably reduce the threshold from 100,000 to 25,000 t CO2-e per year.

Scenario 3 provides a staggered reduction in the safeguard threshold that is a mid-case between scenario 1 and 2.

The baseline emissions factor has been calculated using the IPC baseline emissions factor and the industry emissions factor, based on a proportion of these in FY 2028 to FY 2029 and then using 100% of the industry emissions factor from FY 2030 (this aligns with the Safeguard Mechanism rules). The ERC in the baseline emission factor is set at 4.9% until FY 2030. The ERC in the baseline emissions factor from FY 2031 may vary in response to achieving Australia's commitment's under the Paris Agreement. Whilst the default ERC from FY 2031 is currently set at 3.285%, it is expected that a more aggressive ERC will be implemented in order to achieve the Australian Government's 2035 target under the Paris Agreement. Hence the scenarios above use an ERC of 4.9%, in line with the current rate. A minor change in the rate of decline in the emissions factor of 4.9% per year (e.g. by less than 2 percentage points) will not materially alter the estimated net ACCUs / SMCs presented in Table 14-6 for each scenario.

Table 14-6 demonstrates that for scenario 1, there is only one year where the safeguard threshold is exceeded, requiring the purchase of ACCUs or SMCs.

Under scenarios 2 and 3, SMCs are generated in the initial years when the safeguard threshold drops below 100,000 t CO2-e per year, followed by years when ACCUs / SMCs are predicted to be purchased and surrendered. Overall net ACCUs / SMCs are between 306,000 and 390,000 t CO2-e over the life of ROM coal production.

Table 14-6 IPC Facility Emissions and Safeguard Mechanism Estimates

Financial Year	IDE Project	Rest of IPC (IPM and IDM)	Total	Scenario 1 (t CO2-e)		Scenario 2 (t CO2-e)		Scenario 3 (t CO2-e)	
	t CO2-e			Baseline Value	ACCUs / (SMCs)	Baseline Value	ACCUs / (SMCs)	Baseline Value	ACCUs / (SMCs)
2028	4,199	49,038	53,237	100,000	0	100,000	0	100,000	0
2029	30,192	2,295	32,487	100,000	0	100,000	0	100,000	0
2030	66,667	5,893	72,560	100,000	0	100,000	0	100,000	0
2031	81,403	7,271	88,674	122,203	0	122,203	-33,529	122,203	-33,529
2032	83,981	7,355	91,336	112,355	0	112,355	-21,019	112,355	-21,019
2033	87,376	7,960	95,335	102,506	0	102,506	-7,171	102,506	-7,171
2034	93,198	8,575	101,773	100,000	1,773	92,658	9,116	92,658	9,116
2035	89,110	7,949	97,059	100,000	0	73,319	23,741	75,000	22,059
2036	79,416	6,950	86,366	100,000	0	51,353	35,013	51,353	35,013
2037	75,980	5,754	81,734	100,000	0	38,236	43,498	50,000	31,734
2038	78,155	4,678	82,833	100,000	0	30,330	52,504	50,000	32,833
2039	80,715	4,199	84,914	100,000	0	25,000	59,914	50,000	34,914
2040	85,338	4,064	89,402	100,000	0	25,000	64,402	50,000	39,402
2041	89,604	4,239	93,844	100,000	0	25,000	68,844	25,000	68,844
2042	87,329	4,229	91,557	100,000	0	25,000	66,557	25,000	66,557
2043	50,569	2,498	53,067	100,000	0	25,000	28,067	25,000	28,067
2044	6,785	421	7,206	0	0	0	0	0	0
Total	**1,170,016**	**133,369**	**1,303,384**		**1,773**		**389,935**		**306,819**

14.4.5 Scope 3 Emissions

The total LOM Scope 3 emissions are estimated to be 80,995,551 t CO2-e (Table 14-7). End use of sold products is the highest Scope 3 emission category for the LOM estimated to be 78,794,422 t CO2-e (~97% of total), followed by downstream transport with 1,387,359 t CO2-e, ~2% of total) and purchased goods and services (436,036 t CO2-e, ~1% of total). Annual estimates of Scope 3 emissions per category are provided in Table 11 of **Appendix T**.

Table 14-7 LOM Scope 3 Emissions by Category

Category	Emissions (t CO_2-e)
Category 1 Purchased Goods and Services	436,036
Category 2 Capital Goods	68,700
Category 3 Fuel & Energy related activities	224,009
Category 4 Upstream Transport	21,462
Category 5 Waste Generated in operations	31,351
Category 6 Business Travel	15,453
Category 7 Employee Commuting	16,759
Category 9 Downstream Transport - including rail within Australia and shipping overseas	1,387,359
Category 10/11 Processing / Use of Sold Products	78,794,422
TOTAL	**80,995,551**

14.5 Decarbonisation Plan

14.5.1 Introduction

The Project is considered a medium to high emitter per the GHG Guideline and is therefore required to identify emissions mitigation and management practices and provide a GHG Abatement Plan. **Appendix T** includes the GHG Abatement Plan for the Project, prepared in accordance with the requirements of the GHG Guideline, with this chapter summarising information provided in **Appendix T**.

14.5.2 Stanmore's Sustainability Policy and Decarbonisation Strategy

Stanmore acknowledge Australia's commitment to net zero emissions by 2050 and will continue aligning its decarbonisation efforts with the Australian Government's commitments to contribute to the goal of the Paris Agreement. Per Stanmore's Sustainability Policy (Stanmore, 2024):

> "Stanmore recognises the broad ranging implications of its operations in terms of actual and potential environmental, social, and economic impacts. As a result, to improve and enhance environmental, social, and economic outcomes for all of its stakeholders, Stanmore is committed to embedding sustainability across the entire organisation and operations."

This is given effect in decision making by the following principles in the Sustainability Policy:

- "Reducing the greenhouse gas emissions intensity of our operations to contribute to the global transition to a lower carbon economy and mitigate overall impacts of climate change
- Reporting in a transparent and honest manner with respect to our environmental and social governance and sustainability commitments, activities, and performance; and
- Establishing systems and processes for the continual improvement of sustainability practices and performance"

Whilst Stanmore has developed a GHG Abatement Plan for the Project, Stanmore continues to develop a decarbonisation strategy for the company as a whole across multiple Safeguard facilities. For example, Stanmore is investing in decarbonisation projects that include capturing coal seam methane and converting it to electricity at its South Walker Creek Mine. Solar projects are also being evaluated at IPC and other Stanmore facilities and connection applications have commenced. These decarbonisation initiatives will reduce Scope 1 and Scope 2 emissions and may result in Safeguard Mechanism Credits (SMC) that can be used to offset emissions from other Stanmore facilities.

14.5.3 Goals and Objectives

Stanmore intends to meet the Safeguard Mechanism emission reduction requirements for IPC, inclusive of the Project, through activities that reduce, substitute, and/or offset emissions from the Project.

The Project will be one of several of Stanmore's Safeguards facilities, and decarbonisation will be applied at the facility or facilities where it makes the most economic sense.

The Project will make a negligible contribution to Australia's emissions in 2050, as it will be in the rehabilitation and closure period (see Table 14-5).

14.5.4 Reference Point

Two Project reference points are provided: the projected Scope 1 emissions intensity of production during operation (Section 14.4.3), and the maximum annual Scope 1 emissions projected during operations.

The projected average Scope 1 emission intensity (EI) is estimated at 0.0272 t CO2-e / t ROM coal.

The projected maximum annual Scope 1 emissions during operations is 116,581 t CO2-e which includes land clearing (see Year 2029 in Table 14-5), and for operations only the maximum annual Scope 1 emissions is 101,663 t CO2-e during Year 6 (see Year 2034 in Table 14-5).

14.5.5 Economic Assessment of Potential Decarbonisation Measures

Stanmore commissioned an economic cost-benefit review of potential decarbonisation technology and processes for application in its operations and commits to application of these technologies in the Project and/or trials of these technologies and/or further feasibility assessment of these technologies. These are summarised below in Table 14-8 for scope 1 and 2 emissions. The 'net present cost' of various technologies was evaluated where net present cost considers, for each particular technology, the capital investment cost, operational costs and savings and the savings in carbon credit (i.e. carbon offset) costs. Where net present cost is positive, this demonstrates that the technology has not reached suitable technical or economic feasibility for implementation at the Project.

Table 14-8 Economic Feasibility Assessment of Potential Scope 1 and 2 Decarbonisation Measures

Assessed Technology or Process	Comments and Findings	Benefit
Committed		
Electric dragline	The Project will utilise an electric dragline rather than diesel excavators for the removal of overburden.	Avoidance of 155 kilotonnes (kt) CO_2-e for LOM
Power purchase agreement (PPA)	Tender process for PPA to be undertaken in 2026 / 2027 for supply of carbon neutral or renewably generated electricity	Reduction in Scope 2 emissions up to 100% (i.e. up to 181 kt CO_2-e for LOM)
Premium diesel used	Use of premium diesel increases fuel use efficiency. IDE mine plan and GHG assessment based on use of premium diesel.	Avoidance of 29 kt CO_2-e for LOM
Replace light vehicles with battery electric vehicle (BEV) or Hybrid	Stanmore is trialling a mine-ready BEV Ute – availability on the market is currently limited	To be confirmed (TBC)
Solar Powered Crib Hut	Replacement of diesel genset with solar photovoltaic and battery in crib hut and site/Project office design	Avoidance of 870 t CO_2-e for LOM
Not currently technically and / or commercially feasible – further feasibility assessment required		
Electric Excavator	Increased CAPEX for electrical infrastructure and restriction in operating envelope means only one of two major excavators could be 'electrified'. Plan to be revisited before financial investment decisions are made regarding equipment sourcing. Medium positive net present cost.	Potential avoidance of 34 kt CO_2-e for LOM.

Assessed Technology or Process	Comments and Findings	Benefit
Dual fuel with dynamic gas blending	Dual fuel engine retrofitted to utilise CSG-diesel blend. Diesel cost savings offset CAPEX for upgrade. Engine reliability and maintenance cost impact requires assessment. Option not economic if purchase price of gas is $12/GJ, i.e. market rate. Stanmore considering trial at another mine site with 'CAT' trucks using CSG from that mine site (option not available for the Project due to low coal seam gas content at the Project). High positive net present cost of depending on source of gas.	Potential avoidance of 36 kt CO_2-e for LOM
Pre-drainage and flaring CSG before mining	CSG domains quantified for NGER system reporting (see Section 14.3.3.3 and Appendix B of **Appendix T**). Gas content is too low for all areas <100 m (i.e. all areas to be mined for the Project) for pre-drainage and flaring or capture for use (see Appendix C of **Appendix T**).	Nil
BEV Haul Trucks	Stanmore has joined the 'CAT Pathways Project' to assess the two 'Early Learner' CAT793XE trucks delivered to the Pilbara for BHP/Rio Tinto mining pilot trial. Developing technology not commercially available in Australia	Potential avoidance of 311 kt CO_2 -e for LOM
D11 XE Dozer	Electric Hybrid Drive D11 dozers being released by Caterpillar in 2027. Developing technology requiring further assessment. Potential for half dozer fleet being electric if technically and commercially feasible.	Potential avoidance of 33 kt CO_2-e for LOM
Behind the meter (BTM) solar farm	Stanmore is assessing the connection requirements with ERGON to build a 4.9MW BTM solar farm for IPC to provide renewable electricity to the operations.	Reduction in Scope 2 emissions up to 100% during day
Compressed natural gas (CNG) and liquefied natural gas (LNG) powered road haul trucks	Stanmore is investigating the production of LNG from CSG at another Stanmore mine site. This could be used as a diesel substitute for road haul trucks used to transport ROM coal to the IPC CHPP.	TBC
Retirement of old plant	Retirement of inefficient ROM Coal feed system at IPC CHPP.	TBC

Assessed Technology or Process	Comments and Findings	Benefit
Soil carbon amelioration	Stanmore will investigate the RemoraCarbon exhaust capture system and apply CO_2 as feedstock for algae production and soil carbon sequestration.	TBC
Coal conveyor to link IDE with IPC CHPP	Significant CAPEX with low carbon reduction. Very high net present cost.	Potential avoidance of 29 kt CO_2-e for LOM
Technology considered but rejected		
Haul Truck Automation	High cost of capital with some operational expenditure (OPEX) savings, but little carbon reduction.	Minimal
Diesel Electric trucks with 'trolley assist'	High CAPEX. Very high net present cost. Project site unsuitable for required infrastructure.	Potential avoidance of 18 kt CO_2-e for LOM
In-pit crushing and conveying (IPCC) system for coal moved out of the pit	High CAPEX and significant pit redesign required, not feasible for the Project.	n/a
IPCC system for waste moved out of the pit	Very high CAPEX and OPEX demonstrated at RioTinto/Glencore Clermont Mine, not feasible for the Project.	n/a
Hydrogen addition to diesel engines	Trial by Theiss demonstrates thermodynamic inefficiency.	TBC
Carbon mineralisation	Still in research and development stages	n/a

14.5.6 Management Controls to Reduce GHG Emissions

The following management controls will be applied for the Project by Stanmore, where practicable and cost-effective, to achieve the objectives and key result areas (KRAs) (Table 14-9).

14.5.6.1 Avoid

Stanmore is unable to avoid GHG emissions in carrying out the activities associated with the Project, other than by avoiding the unnecessary clearance of vegetation to avoid Scope 1 emissions from land clearing. The option of not proceeding with the Project is not considered economically viable.

14.5.6.2 Reduce

Stanmore's priority is to reduce Scope 1 emissions through diesel use efficiency on site, noting that it is not technically and economically viable to abate the Project's fugitive methane emissions.

Stanmore is continually investigating and testing feasible options for emissions reduction through increased diesel use efficiency and electrical efficiency across all of its facilities. The main areas of focus include investigating the business case of:

- premium diesel (3.9% fuel burn benefit, reducing diesel consumption by 3.9%)
- electric shovels or excavators
- electric haul trucks
- electric road trains
- use of electric conveyors
- use of electric trolley assist haul trucks.

Implementation of these options will occur if and when the business case demonstrates that they are technically and commercially feasible.

14.5.6.3 Substitute

Stanmore will utilise an electric dragline for the Project as the preferred operating case for overburden removal, supporting Project feasibility. This will displace Scope 1 diesel emissions, which would otherwise be required for diesel powered excavators, with Scope 2 electricity emissions. Relative to a diesel mobile equipment case, this is expected to reduce emissions by 155,000 t CO2-e over the LOM.

Stanmore will evaluate the cost-effectiveness of entering into a PPA with a supplier of renewably generated electricity, for use by the Project. A PPA for renewably generated electricity would both support investment in renewably generated electricity in Queensland, helping to meet Queensland's targets for renewable energy, and provide for significantly reduced Scope 2 emissions for the Project. Purchasing (or producing) renewably generated electricity will incur zero (0) GHG emissions for that proportion of electricity purchased or produced.

Stanmore is currently trialling a mine-ready BEV Ute and will investigate replacement of light vehicles with electric vehicles once they are more commercially available and financially feasible. This would displace Scope 1 diesel emissions with Scope 2 electricity emissions to reduce CO2-e emissions over the LOM.

Stanmore proposes to replace a diesel genset with a solar photovoltaic and battery system at the Project's crib hut. This would displace an estimated 870 t CO2-e of diesel emissions for the LOM.

Stanmore is continually investigating and testing feasible options for emissions reduction through the substitution of diesel equipment with electric equipment. This includes the potential electrification of conveyors, excavators, haul trucks, road trains and other machinery that uses diesel as fuel. Implementation of these options will occur if and when the business case demonstrates that they are technically and commercially feasible.

14.5.6.4 Offset

The Project would be part of the IPC facility for the purposes of the Safeguard Mechanism. The Project, as part of the IPC facility, would be required to purchase and surrender ACCUs or use SMCs if it becomes subject to the Safeguard Mechanism emissions reduction requirements (see Section 14.4.4 for scenarios estimating ACCU and / or SMC requirements for IPC facility). Stanmore commits to implementing all technically and commercially feasible decarbonisation options before seeking to offset residual emissions with ACCUs or SMCs. Stanmore will purchase ACCUs that are produced in Queensland (DETSI, 2026) where they are available and cost-effective. Where offsets are proposed for carbon abatement Stanmore will monitor the offset market using internally sourced information and reputable third party market analysts to identify any market constraints.

Table 14-9 Key Result Areas and Management Controls for the Project by GHG Abatement Hierarchy

Priority	Key Result Area	Management Controls and Timing
Avoid	KRA 1: Avoid unnecessary clearance of woody vegetation	Map and identify woody vegetation to be excluded from damage or clearance prior to construction.
Reduce	KRA 2: Mobile and stationary plant emissions are reduced from the base case to support emissions reductions as required under the Safeguard Mechanism and Queensland's emission reduction targets	Mine layout and run of mine will be optimised for diesel use efficiency through explicit planning and scheduling from Project Year 1. Emissions reduction in plant will be realised through ongoing process monitoring and optimisation. Use of premium diesel in all transport and stationary plant will be reviewed before commencement and implemented where economically feasible. Research and evaluation of dual fuel technologies in heavy diesel vehicles and implementation if economically feasible and if sources of gas supply prove favourable. Right sized machinery and load optimisation on commissioning to reduce fleet hours.
Substitute	KRA 3: Substitute diesel mobile equipment used for overburden removal with an electric dragline	Commission electric dragline at commencement of operations.
	KRA 4: Emissions due to electricity usage are reduced where cost effective and technically feasible by using renewable electricity	Purchase renewably generated electricity where it is cost effective for Project operation. Install onsite renewable electricity generation where a positive business case exists (e.g. replacing diesel genset with renewable electricity to power the crib hut).

Priority	Key Result Area	Management Controls and Timing
Offset	KRA 5: Apply cost-effective options to offset balance of annual emissions against production adjusted baseline after decarbonisation and abatement	Purchase ACCUs produced in Queensland where available and cost effective and surrender as required, otherwise ACCU/SMCs purchased in rest of Australia. Identify best management practices to increase post mining land use (PMLU) carbon stock in soil and vegetation, for application in progressive rehabilitation.

14.5.7 Mitigating Scope 3 Emissions

The majority of Scope 3 emissions will be due to the combustion of the product coal in client countries (see Section 14.3.3.5.1). These countries are signatories to the Paris Agreement and are responsible for reducing their own GHG emissions and becoming net zero by their specified timeframes.

The measures that Stanmore are undertaking to reduce diesel use through efficiency measures will be reflected in a reduction in both scope 1 and scope 3 emissions.

Stanmore will investigate the business case and implement where appropriate, targeted policy interventions to mitigate emissions associated with their supply chain. This may include:

- voluntary provision of consumer's GHG and decarbonisation disclosures
- collaboration with low carbon consumer end users including steel manufacturers, research groups and industry organisations.

Within Australia, Stanmore will regularly review options to reduce GHG emissions across its supply and value chain such as distribution of coal product via low emission transportation providers, and utilisation of low emissions bus fleets to transport workers. Stanmore currently contracts a rail freight provider which is seeking to have 25% of their electricity requirements from renewable sources. Stanmore has partnered with a bus fleet supply company to introduce zero-emission, battery-electric buses for workforce transportation in the Bowen Basin near Moranbah, Queensland.

14.5.8 Assessment of Proposed GHG Mitigation Measures

An assessment of proposed GHG abatement measures for the Project is provided in Table 14-10, which considers the timeframe for implementation, key risks, a comparison with relevant best practice environmental management standards, an estimate of emissions reductions resulting from the abatement measure, and consideration of whether the inclusion of an ongoing monitoring program for the abatement measure is necessary.

The timeframes for implementation are presented as immediate, near, medium, and long-term. These timeframes are defined as:

- short-term = 0 – 2 years
- medium-term 3 - 5 years
- long-term 5+ years

'Approaching best practice' indicates the abatement measure is dependent on the degree of implementation. An 'embedded' monitoring program requirement indicates the abatement measure should become standard operating procedure once implemented.

Table 14-10 Project GHG Abatement Hierarchy Including Key Result Areas and Management Controls

Priority	Mitigation measure	Timeframe	Risks	Opportunities	Industry Standard	Emissions reduction estimate for LOM ($t CO_2$-e)
Avoid (KRA 1)	Avoid unnecessary vegetation clearance	Short term with regular evaluation	• Unauthorised clearance	• Reduced rehabilitation requirements leads to shorter land management obligations and cost savings • Ability to improve carbon sequestration of existing land to support broader sustainability commitments	Best	To be determined (TBD)
Reduce (KRA 2 & 3)	Reduce mobile and stationary plant emissions in the base case	Short term with regular evaluation over medium and long term	• Optimising mine layout, scheduling and fleet size may constrain operational flexibility • High capital and operational costs associated with premium diesel, dual fuel technologies and process operations may lead to cost overruns and underestimated emission reductions • Dependence on gas availability and quality (KRA 3) as well as emerging dual fuel technologies may limit long term viability of abatement	• Reduced diesel usage reduces operating costs and exposure to volatile fuel markets • Optimised layout, fleets and loading increase productivity and reduce maintenance requirements • Reductions support Safeguard Mechanism compliance and Queensland's emission reduction goals	Best	TBD

Priority	Mitigation measure	Timeframe	Risks	Opportunities	Industry Standard	Emissions reduction estimate for LOM ($t CO_2$-e)
Substitute (KRA 3 & 4)	Substitute diesel mobile equipment used for overburden removal with an electric dragline	Short term	• Reliance on a single dragline increases downtime risk and requires fallback to diesel machinery.	• Electrified equipment leads to further decarbonisation as grid decarbonises and offers the potential to couple dragline with onsite renewable electricity generation • Reduced diesel usage reduces operating costs and exposure to volatile fuel markets	Best	155,000
	Reduce emissions from electricity usage through substitution where cost effective and technically possible	Short term with regular evaluation over medium term	• Costly PPAs and / or no availability • Cost overruns, installation delays and intermittent generation for onsite renewable electricity generation	• Renewable PPAs allow for an immediate reduction of emissions, without significant capital or planning • Long term electricity security with potential of grid connections allowing for new business models	Best	Up to 180,900
Offset (KRA – 5)	Purchasing of offsets (>30%) after decarbonisation KRAs to meet emissions against production adjusted baseline	Annually	• Reliance on offsets exposes Stanmore to carbon markets, resulting in economic losses • Offsets may discourage investments from stakeholders	• Potentially cost-effective way to manage difficult residual emissions and support meeting interim targets as technology advances	Established	TBD

14.5.9 Monitoring, Evaluation, and Reporting

Stanmore will monitor and record all energy use and production within the IPC facility boundary (inclusive of the Project) consistent with NGER requirements and methods. This data and the methods for monitoring will be available and subject to periodic internal validation and independent audit.

IPC is subject to the Safeguard Mechanism, therefore Stanmore will be required to demonstrate year-on-year proportional reduction in emissions relative to its baseline when its emissions are above the threshold.

Stanmore will report its progress in emissions reduction and minimisation of Safeguard Mechanism liabilities to the Board and report its progress in annual emissions reduction in the Sustainability and Environmental, Social, and Governance (ESG) Report published on its website. Stanmore provides public reporting on GHG emissions and reductions in its annual Sustainability and ESG Report and through annual reporting under the NGERS Act and Safeguard Mechansim, including for IPC.

Progress against the decarbonisation objective and key result areas (Table 14-9) will be periodically audited and reviewed.

14.5.10 Advancing Technologies and Opportunities

Stanmore will annually review the technological and commercial readiness of options that may result in improved efficiency or reduced GHG emissions in the operation of the Project.

Stanmore is committed to a process of continuous improvement to meet its decarbonisation goal and objective. It will scope new technologies and processes that may be implemented cost-effectively to improve efficiency and reduce GHG emissions. Stanmore will also continue to support the Australian Coal Industry Research Program (ACARP) in research to develop best practice environmental management measures.

Feasibility assessments may be conducted regarding options according to their technology readiness level (TRL) and their commercial readiness level (CRL). These terms were first developed by NASA (Kimmel, 2020) and are used by firms such as KPMG. Typical satisfactory adopted levels for proceeding include a TRL of 6 or above and a CRL of 5 or above. These values or similar methods may be used by Stanmore to help guide their investment decisions for GHG abatement.

14.5.11 Assessment of Proposed GHG Mitigation Measures

Decarbonisation of the mining sector is a rapidly changing space, driven in large part by the Safeguard Mechanism requirements. Expected best practice is planning, designing, constructing, and operating mine sites for the efficient use of diesel. Electrification of plant and equipment is emerging as best practice however there are still limitations in market availability, technical feasibility, operational constraints and cost-competitiveness against traditional diesel options.

Stanmore is continually investigating a range of improved diesel-use efficiency and electrification options, and these will be implemented where feasible for the Project.

Practicable and economically feasible emission reduction, abatement, or offsetting options will be implemented when the business case is met. Each option will have its effectiveness monitored and reported.

14.6 Risks And Likely Magnitude of Impacts on Environmental Values

14.6.1 Impacts of GHG Emissions on Environmental Values

The increasing concentration of GHG in the atmosphere, primarily due to the combustion of fossil fuels and deforestation, is leading to the warming of oceans, land, and atmosphere. This warming increases the heat energy available in the climate system leading to changed weather patterns including more frequent and intense extreme weather events. Australia is required to provide the UNFCCC with National Inventory Reports annually, biennial reports every 2 years, and National Communications every 4 years. These reports include details on total and sectoral GHG emissions, progress against reduction targets, and mitigation actions.

The Project is located in the Isaac region, Queensland. Key climate risks for this region include (DETSI, 2025):

- increased frequency of hot days (>35 ^{o}C) and very hot days (>40 ^{o}C)
- increased likelihood of bushfire weather
- increased likelihood of short duration high intensity rainfall
- increased pan evaporation rates
- increased frequency and severity of drought
- less frequent but more intense tropical cyclones
- warmer and more acidic ocean
- rising sea levels and more frequent coastal and open ocean extreme events.

Consequently, there is a need to reduce emissions at a state, national, and global level.

Chapter 6 evaluates the resilience of the Project to climate extremes and climate change.

Queensland and Australia have legally committed to achieving a net zero GHG emissions economy by 2050 as their contribution to the Paris agreement goal to preferably limit warming to 1.5°C or at least well below 2°C. The relative carbon budgets (gigatonnes (Gt) CO2-e) remaining between 2025 and 2050 (Friedlingstein, 2025) to achieve these goals and the relative proportion of these budgets occupied by the Project's expected emissions are presented in Table 14-11.

For state and national contributions, only regulated emissions (Scope 1 and 2) that occur within Australia are included (0.0015 Gt Co2-e). Whilst the global contribution includes all expected GHG emissions across the LOM occurring both within and outside Australia (0.082 Gt CO2-e).

As demonstrated in Table 14-11, the Project will contribute an insignificant fraction to the drawdown on Queensland's remaining carbon budget (0.052% - 0.087%) to achieve a net zero emissions economy by 2050 and the Project will have commenced rehabilitation and revegetation before this time. The Project's contribution to remaining national budgets (0.012% - 0.02%) and global budgets (0.009% - 0.0016%) is also insignificant.

Table 14-11 Project Emissions and Remaining Queensland, Australian and Global Carbon Budgets

Limit Degree of Warming	Project Emissions	Contributions to Emission Budgets					
		Queensland		Australia		Global	
		Budget (Gt CO2-e)	Project %	Budget (Gt CO2-e)	Project %	Budget (Gt CO2-e)	Project %
°C	(Gt CO2-e)						
1.5	0.0015 [1]	1.68	0.087 %	7.25	0.020 %		
	0.082 [2]					531	0.016 %
2	0.0015 [1]	2.78	0.052 %	11.91	0.012 %		
	0.082 [2]					869	0.009 %

Table Notes:
[1] Total LOM Scope 1 and 2 GHG emissions
[2] All LOM Emissions (Scope 1, 2 and 3)

14.6.2 Contribution to Queensland's Emissions Reduction and Renewable Energy Targets

Queensland has committed to three emissions reduction targets in legislation. The targets are:

- 30% reduction in GHG emissions on 2005 levels by 2030
- 75% reduction in GHG emissions on 2005 levels by 2035
- A net zero emissions economy will be achieved by 2050.

The Queensland Government has flagged that these targets will be amended and are likely to be reduced.

The Project's contribution to Queensland's emission reduction targets as included in the CEJ Act are shown in Table 14-12.

Table 14-12 Project Contribution to Queensland's Emissions and Renewable Energy Targets

Queensland Targets	Project Contribution
75% on 2005 levels by 2035	Progressive emissions reduction as per Safeguard Mechanism requirements and GHG Abatement Plan. This will also contribute to meeting the 2030 target of 30% on 2005 levels.
Zero net emissions economy by 2050	Progressive reduction in production-adjusted baseline emissions under Safeguard Mechanism. Implementation of GHG Abatement Plan. Potential purchases of renewable electricity through a PPA, or onsite electricity generation. Project operational phase is projected to end in 2043, after which emissions are negligible.

14.6.3 Human Rights Act 2019

The *Human Rights Act 2019* (HR Act) requires public entities to act and make decisions in a way that is compatible with human rights, and to properly consider human rights when making decisions. The HR Act applies to public service employees, including a decision maker for an EIS assessment report under the EP Act. DETSI is a public entity for the purposes of the HR Act. As a result, DETSI is required to properly

consider human rights in making an assessment of the Project and must not make a decision that would be incompatible with human rights.

In relation to the Project's GHG emissions and climate change impacts, the following human rights may be engaged:

- right to life and protection of children
- rights of First Nations peoples
- right to property and right to privacy and home
- recognition and equality before the law.

Two recent judgements from the Land Court ('Waratah Coal'[2] and 'Ensham'[3]) provide further guidance. In both these cases, key factors in the Land Court's decision included:

- the determination of 'proportionality'
- Scope 1, 2 and 3 GHG emissions from the projects
- whether the projects were producing thermal coal or metallurgical coal
- emissions management.

The GHG emissions estimate for the Project, as well as proposed GHG abatement measures, are provided in preceding sections. By comparison with 'Waratah Coal', the Project is a majority metallurgical coal mine with approximately 5% of the total Scope 1, 2 and 3 GHG emissions compared to that estimated for 'Waratah Coal'. The Project has similar GHG emission estimates to 'Ensham'. DETSI will make its own assessment of the Project's compatibility with human rights, however Stanmore offers the following considerations:

- Right to life and protection of children. The socio-economic benefits of the Project are described in **Chapter 21** and **Chapter 22**. On balance any potential limitations of the Project on these rights are considered appropriate and proportional given the socio-economic benefits of the Project, proposed emissions management, significantly lower emissions than 'Waratah Coal' and production of majority metallurgical coal, for which there will be a need for years to come.
- Rights of First Nations peoples. The proponent will enter into a Native Title agreement and cultural heritage management plan with the Barada Barna Aboriginal Corporation, thereby managing impacts on the rights of First Nations peoples. Furthermore the Project's social impact management plan (**Appendix AK**) proposes a number of measures for mitigating and managing social impacts and benefits for Indigenous peoples.
- Right to property and right to privacy and home. The Project will enter in compensation agreements with the landholders for the mining lease application areas, including for amenity impacts to a residence where these may be impacted. Furthermore, air quality and noise management measures are proposed (see **Chapter 15** and **Chapter 16**) to reduce impacts on nearby residences, with only one residence within 5 km of Project mining activities. In addition, the Project's EA will include conditions that mitigate the risks of impacts to human health and the environment, including in relation to dust and noise.
- Recognition and equality before the law. Given the social impact assessment (see **Chapter 21**), EIS process and engagement on First Nations matters (see **Chapter 3**), the Project will not create unequal treatment, discrimination or disproportionate disadvantage for any affected persons or groups.

The Project will provide economic and social benefits, including employment, regional infrastructure improvements and long-term development for the broader community, including First Nations

[2] *Waratah Coal Pty Ltd v Youth Verdict Limited* [2020] Queensland Land Court (QLC) 33
[3] *Sungela Pty Ltd and Anor* [2025] QLC 5

populations and landholders. As such the proponent considers that Project will be compatible with human rights, and to the extent there is any limitation on human rights, it is appropriate and proportional.

14.7 Conclusion

A GHG assessment and abatement plan has been prepared for the Project in accordance with the requirements of the ToR and other regulatory and policy requirements. The assessment shows the total LOM Scope 1, 2 and 3 GHG emissions are estimated to be 82.45 Mt CO2-e, split as follows:

- Scope 1 emissions contribute 1.27 Mt CO2-e with average annual emissions of 0.049 Mt CO2-e, with: stationery diesel combustion and fugitive methane emissions being the largest contributors to total LOM Scope 1 emissions at 0.75 Mt CO2-e and 0.38 Mt CO2-e respectively.
- Scope 2 emissions contribute 0.18 Mt CO2-e, with average annual emissions of 0.007 Mt CO2-e.
- Scope 3 emissions contribute 80.99 Mt CO2-e with average annual emissions of 3.12 Mt CO2-e, (emissions within Australia of 0.89 Mt CO2-e and outside Australia of 80.10 Mt CO2-e).

The Project's combined total Scope 1 and 2 emissions are estimated to represent 0.087% and 0.020% of the remaining Queensland and Australian carbon budgets, respectively, under a pathway consistent with limiting warming to 1.5°C. Under a 2°C pathway, the corresponding contributions are 0.052% and 0.012%. The Project's total LOM emissions (Scopes 1, 2 and 3) are estimated to represent 0.016% of the remaining global carbon budget for 1.5°C warming, and 0.009% for 2°C warming. The Project will therefore make an insignificant contribution to state, national and global GHG emissions budgets.

Stanmore acknowledges Australia's commitment to net zero emissions by 2050 and will continue aligning its decarbonisation efforts with the Australian Government's commitments to contribute to the goal of the Paris Agreement. Consequently, Stanmore has developed a GHG Abatement Plan for the Project, and more broadly is developing a decarbonisation strategy and is investing in decarbonisation projects for the company.

The Project will be a medium to high emitter under the state's GHG Guideline and has therefore prepared a GHG Abatement Plan (**Appendix T**). The option to avoid emissions production through not progressing with the Project is considered economically undesirable. Stanmore intends to meet the Safeguard Mechanism reduction requirements for the IPC facility, inclusive of the Project, through the following activities to avoid, reduce, substitute, and/or offset emissions where commercially and technically feasible:

- Avoid:
  - Minimising unnecessary clearance of vegetation to minimise emissions during land clearing activities.
- Reduce:
  - Mobile and stationary plant emissions are reduced from the base case through:
    - optimisation of mine layout and operations
    - optimisation of vehicles and processes for energy efficiency
    - replacement of diesel with premium diesel.
  - Staff are engaged in energy efficiency and emissions reduction.
- Substitute:
  - Use of an electrically powered dragline as preferred option for overburden removal, thereby reducing diesel consumption for equipment that would otherwise be used for overburden removal.
  - Emissions due to electricity usage will be minimised through:
    - purchase of renewably generated electricity through a power purchase agreement where this is cost effective
    - onsite renewable electricity generation.
- Offset:

- SMCs will be surrendered against Project emissions above baseline where this is the most economic use of them.
- Purchase and surrender of ACCUs generated in Queensland where feasible and cost-effective, and in the rest of Australia.

The gas content of the Project's coal seams has been demonstrated to be very low, and therefore pre-drainage of CSG and flaring or combustion to produce electricity is unlikely to be technically and commercially feasible.

The measures that Stanmore are undertaking to reduce diesel use through efficiency measures will be reflected in a reduction in both Scope 1 and Scope 3 emissions. Scope 3 GHG emissions associated with the transport of product coal, are expected to reduce as contracted companies meet their published emission reduction goals.

Stanmore commits to a process of continuous improvement informed by engaged staff, monitoring, evaluation, and research. Stanmore will continue to build on its current commitments including electric dragline, use of premium diesel, replace light vehicles with battery electric vehicles (BEV) or hybrid, solar powered crib hut and power purchase agreement for supply of carbon neutral or renewably generated electricity. Potentially feasible decarbonisation initiatives requiring further assessment over the Project's life include electric excavators, dual fuel technologies in haulage fleets and BEV haul trucks. New and emerging technologies will be considered as they evolve.

Stanmore will report on its emissions and emissions reduction targets through the annual NGER and Safeguard Mechanism process and through Stanmore's annual Sustainability Report.

The Project will result in socio-economic benefits to the region and state. With the proposed GHG abatement measures proposed for the Project, as well as other socio-economic measures to management benefits and impacts from the Project, the Project will be compatible with Queensland's HR Act.

The Project's GHG assessment and abatement plan achieves the environmental objectives and performance outcomes of the EP Regulation and other regulatory and policy requirements.

14.8 References

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