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Cumbria Metallurgical Coal Project

GHG Assessment

West Cumbria Mining

6 May 2020

Cumbria Metallurgical Coal Project

Quality information

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Abbreviations and Acronyms

Abbreviation or Acronym	Definition
BREEAM	Building Research Environmental Assessment Method
BSI	British Standards Institution
CIBSE	Chartered Institution of Building Services Engineers
CO ₂	Carbon Dioxide
Defra	The Department for Environment, Food and Rural Affairs
e	Equivalent
EIA	Environmental Impact Assessment
ESD	Effort Sharing Decision
ETS	Emissions Trading System
EU	European Union
GHG	Greenhouse Gas
Ha	Hectare
ICE	Inventory of Carbon and Energy
IEMA	Institute of Environmental Management and Assessment
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
M	Mega
NPPF	National Planning Policy Framework
RLF	Rail Loading Facility
t	Tonnes
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute

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1. Introduction

Project Description

- 1.1 The Proposed Development is a new underground metallurgical coal mine and associated development that includes the following infrastructure elements:
- the refurbishment of two existing drifts;
 - coal storage and processing buildings;
 - an office and change building;
 - an access road;
 - ventilation, power and water infrastructure;
 - security fencing, lighting and landscaping;
 - an outfall to sea;
 - a surface water management system and landscaping at the former Marchon site (High Road) Whitehaven;
 - a new coal loading facility and railway sidings linked to the Cumbrian Coast Railway Line with adjoining office/welfare facilities;
 - extension of railway underpass;
 - construction of a temporary development compound;
 - associated permanent access on land off Mirehouse Road, Pow Beck Valley, south of Whitehaven;
 - a new underground coal conveyor to connect the coal processing buildings with the coal loading facility; and
 - occupation of an offsite materials depot.

Overview and Approach

- 1.2 This Report presents an assessment of the impacts of the Proposed Development on the climate as a result of greenhouse gas emissions (GHGs) arising during construction, operation and decommissioning. It defines the study area; the approach to identifying the effects, the methodology used for developing the baseline and impact assessment; provides a description of the baseline environment in relation to climate; and presents the findings of the impact assessment.
- 1.3 The Environmental Statement has been prepared under the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (as amended) ("the 2011 Regulations"), which continue to apply to the determination of this application in accordance with the transitional provisions in the Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ("the 2017 Regulations"). However, insofar as GHG emissions are concerned, notwithstanding the application of the 2011 Regulations, this assessment has sought to incorporate the stricter requirements of 2017 Regulations and to take into account the guidance from the Institute of Environmental Management and Assessment (IEMA) for climate change mitigation (IEMA, 2017).
- 1.4 The Proposed Development is also considered in the context of the UK carbon budgets and the impact it may have on the UK government's ability to meet its carbon reduction targets.

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2. Legislation, Policy and Guidance

- 2.1 This Section identifies and briefly describes the legislation, policy, and guidance of relevance to the assessment of potential climate impacts associated with the construction, operation and eventual decommissioning of the Proposed Development.
- 2.2 Legislation, policy and other relevant guidance has been considered on an international, national and local level. The following is relevant to the GHG assessment as it has either influenced the sensitivity of receptors and requirements for mitigation or the scope and/or methodology of the assessment.

International Legislation

Kyoto Protocol

- 2.3 The Kyoto Protocol is an international treaty which extends the 1992 United Nations Framework Convention on Climate Change (UNFCCC) that commits state parties to reduce greenhouse gas emissions, based on the scientific consensus that global warming is occurring and that it is extremely likely that human-made CO₂ emissions have predominantly caused it. Under Article 4 of the Kyoto Protocol, the EU created an Effort Sharing Regulation that requires the setting of individual binding GHG emission reduction targets for each of its Member States. The current Effort Sharing Decision (ESD) commits the UK to a 37% reduction in GHG emissions for the period 2021 to 2030 (Official Journal of the European Union, 2018).

Paris Agreement

- 2.4 The Paris Agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gas emissions mitigation, adaptation and finance starting in the year 2020. It requires all signatories to strengthen their climate change mitigation efforts to keep global warming to below 2°C this century (UNFCCC, 2016).

European Legislation

EU EIA Directive

- 2.5 The EIA Directive 2011/92/EU sets out the requirement to undertake an Environmental Impact Assessment (EIA). Directive 2011/92/EU was amended by Directive 2014/92/EU. The amendments included the introduction of an express requirement to describe the likely significant effects resulting from the impact of the project on climate change.
- 2.6 The amendments introduced by Directive 2014/92 do not apply to applications where the initial scoping request was submitted before 16 May 2017, per the transitional provisions of Article 3 of that Directive. Therefore, the requirements of Directive 2011/92/EU as un-amended continue to apply to the determination of this application.

EU Emissions Trading System

- 2.7 Directive 2003/87/EC (as amended). The EU Emissions Trading System (EU ETS) is a GHG trading scheme that covers industrial installations with a net excess of 20 megawatts. Participating installations work under a 'cap and trade' principle that sets maximum allowances for GHG emissions. Unused allowances can be traded, whilst installations that go over their limit must purchase allowances from others. From 2020, the emissions cap will reduce by an annual rate of 1.74%.

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National Legislation

The Climate Change Act

- 2.8 The Climate Change Act 2008 (UK Government, 2008) (hereafter referred to as the 'Act') provides a framework to meet its GHG emission reduction goals through legally binding national carbon emission caps within five-year periods. The Act was amended in 2019 to revise the existing 80% reduction target and legislate for a net zero emissions by 2050 (2050 Target Amendment, Order 2019) (UK Government, 2019). The UK has declared its 5th carbon budget up until 2032 (Committee on Climate Change, 2017). As a result of the amended 2050 carbon reduction target to net zero carbon, the Committee on Climate Change announced it will review the current carbon budgets. The results of this review will be published in autumn 2020 along with the 6th carbon budget.
- 2.9 This Act defines 'net zero' carbon as "the amount of net UK emissions of targeted greenhouse gases for a period adjusted by the amount of carbon united, credited or debited for the year 2050". This means that by 2050 emissions will have to be avoided completely or offset by removal from the atmosphere and/or traded in carbon units.

EIA Regulations

- 2.10 The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 and Town and Country Planning (Environmental Impact Assessment) Regulations 2017.
- 2.11 These regulations transpose the EIA Directive into domestic legislation. This application is governed by 2011 Regulations in accordance with the transitional provisions set out in regulation 76 of the 2017 Regulations.

National Policy

The National Planning Policy Framework

- 2.12 The revised National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2019) sets out the Government's planning policies for England. Policies of relevance to climate change and sustainability assessment as presented herein include those achieving sustainable development and meeting the challenge of climate change.

Local Policy

Climate Emergency Declaration

- 2.13 Cumbria County Council declared a climate emergency in September 2019 and committed to working with the six district councils (including Copeland) to become carbon neutral (Cumbria County Council, 2019).

Cumbrian Climate Change Strategy

- 2.14 This Strategy (Cumbria Strategic Partnership, 2008) details their target of annual reductions of 210,000 tonnes of carbon emissions, their associated strategy and action plan across various sectors of the county. Recommendations made for industry include improvements to energy efficiency to reduce carbon emissions from all its operations from procurement, staff commuting and products.

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Guidance and Information Sources- International and National Guidance

Intergovernmental Panel on Climate Change

- 2.15 Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance for Land Use, Land-Use Change and Forestry (2003) and the current IPCC Emission Factor Database (2019) also provide relevant guidance for the assessment.

European Commission

- 2.16 Guidance for the Calculation of Land Carbon Stocks (European Commission, 2010) provides a calculation methodology for calculating carbon stocks from land use.
- 2.17 Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Commission, 2013).
- 2.18 Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).

Department for Environment, Food and Rural Affairs

- 2.19 The Department for Environment, Food and Rural Affairs (Defra) provide GHG emission factors for UK-based organisations (2019).

British Standards

- 2.20 The British Standards Institution (BSI) BS EN ISO 14064-1:2019 and 14064-2:2019 (BSI, 2019 and b, respectively) provides specifications for organisational-level and project-level guidance for the quantification and reporting of GHG emissions and removals.

The Planning Inspectorate

- 2.21 Using the Rochdale Envelope: Advice Note Nine: Rochdale Envelope (July 2018).

Guidance and Information Sources - Professional Bodies

Institute for Environmental Management and Assessment

- 2.22 In the absence of any widely accepted guidance on assessing the significance of the impact effect of GHG emissions, EIA Guidance published by IEMA in 2017 has been taken into account. This provides a framework for the consideration of greenhouse gas emissions in the EIA process, in line with the 2014 EU Directive. Amongst other things, the guidance sets out how to:
- identify the greenhouse gas emissions baseline in terms of GHG current and future emissions;
 - identify key contributing GHG sources and establish the scope and methodology of the assessment;
 - assess the impact of potential GHG emissions and evaluate their significance; and
 - consider mitigation in accordance with the hierarchy for managing project related GHG emissions (avoid, reduce, substitute, and compensate).

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The World Resources Institute and World Business Council for Sustainable Development

- 2.23 The World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) GHG Protocol (WRI & WBCSD, 2015) provides overarching guidance on developing GHG inventories and reporting standards (WRI & WBCSD, 2015).

British Standards Institute

- 2.24 Publicly Available Specification (PAS) 2080 (BSI, 2016): Carbon Management in Infrastructure provides specific guidance on measuring and managing GHGs from infrastructure.

University of Bath

- 2.25 The Inventory of Carbon & Energy (ICE) Database (University of Bath, 2019) has been used to source appropriate carbon factors to estimate the embodied carbon of materials used for construction of the Proposed Development. ICE uses some material property data from the Chartered Institution of Building Services Engineers (CIBSE).

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3. GHG Assessment Methodology

3.1 This Section sets out:

- The methodology that has been applied to assess the impact of the project on the climate. It provides criteria for determining the sensitivity of the receptor and the magnitude of change from the existing 'baseline' condition;
- An explanation as to how the identification of effects and assessment of potential impacts on the climate has been reached; and
- The significance criteria and terminology for the assessment of residual effects.

Overview

3.2 The GHG assessment has identified the likely effects, identified whether there are likely to be any additional effects as a result of the Proposed Development, and assessed their significance over its lifetime.

Determination of Assessment Scenarios

3.3 The GHG assessment of the Proposed Development has identified the likely effects of the Proposed Development and has then also gone onto address two scenarios: a baseline scenario; and a project scenario. The baseline scenario is a 'Do Nothing' scenario where the Proposed Development does not go ahead. The baseline comprises existing carbon stock and sources of GHGs within the boundary of the existing Site. The alternative is a 'Do Something' scenario associated with the delivery of the Proposed Development, which includes the construction, operation and decommissioning paired with activities that will reduce or no longer occur because of the Proposed Development. The 'Do Something' assessment examines whether, and to what degree, it would result in additional effects by way of GHG emissions over and above the baseline scenario of do nothing. In addition to the assessment carried out of environmental effects for the purpose of EIA Directive, this Report also goes on to consider the impact of the practice of importing metallurgical coal to the UK and Europe from sources located within the United States of America (USA), which currently occurs in the absence of the operation of the Proposed Development.

Study Area

- 3.4 The GHG study area considers all direct GHG emissions that arise as a result of the Proposed Development including construction, operation and decommissioning from within the red line boundary area. It also considers indirect emissions arising as a result of the Proposed Development from off-site activities such as transport of materials, waste disposal and embedded carbon in construction materials and products.
- 3.5 The scope and boundary for the assessment has been determined taking in account the principles of the GHG Protocol (WRI & WBCSD, 2015), British Standard EN ISO 14064-1:2019 Greenhouse Gas Reporting, and PAS 2080: Carbon Management in Infrastructure (BSI 2016).

Sensitive Receptors

3.6 The identified receptor for GHG emissions is the global climate. As the effects of GHGs are not geographically constrained, all GHG emissions have the potential to result in a cumulative effect in the atmosphere. In order to assess the impact of GHG emissions from Proposed Development, UK Carbon Budgets have been used as a reasonable proxy for the climate.

GHG Calculation Methodology

3.7 In line with British Standard ISO14064, principles of the GHG Protocol (2011) and Defra reporting guidance (2019), the GHG emissions have been calculated by multiplying activity data by its relevant emission factor:

$$\text{Activity data} \times \text{GHG emissions factor} = \text{GHG volume}$$

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- 3.8 Activity data is a quantifiable measure of activity, such as operating hours or volumes of fuels used. Emission factors convert the activity data into GHG volumes. Activity data has been sourced from client data. Where specific data is not available, a mix of assumptions and industry benchmarks have been used to fill data gaps. Where this is not possible, then a qualitative approach to assessing the GHG impacts has been followed, in line with the IEMA guidance (2017).
- 3.9 Emission factors have been sourced from publicly available sources, such as Defra (2019), IPCC, the Bath University ICE (2019) and Ecolnvent database version 3.6.
- 3.10 In line with the British Standard ISO14064 and the principles of the GHG Protocol (WRI & WBCSD, 2015), when calculating GHG emissions, the seven Kyoto Protocol GHGs have been considered, specifically:
- carbon dioxide (CO₂);
 - methane (CH₄);
 - nitrous oxide (N₂O);
 - sulphur hexafluoride (SF₆);
 - hydrofluorocarbons (HFCs);
 - perfluorocarbons (PFCs); and
 - nitrogen trifluoride (NF₃).
- 3.11 These gases are broadly referred to in this report under an encompassing definition of 'GHGs', with the unit of tCO₂e (tonnes CO₂ equivalent) or MtCO₂e (mega tonnes of CO₂ equivalent).
- 3.12 A lifecycle approach has been used to calculate the GHGs associated with the Proposed Development. This approach considers specific timescales and direct and indirect emissions from different lifecycle stages of the development, such as product and material manufacture, site enabling and construction, operations and decommissioning. Only indirect emissions arising as a result of the Proposed Development are considered. Emissions arising from the combustion of the coal from the Proposed Development in steelworks are not considered to be indirect emissions as a result of the Proposed Development for the purpose of this assessment. Activities to be included in the GHG assessment have been scoped on the basis of their presence and materiality, and in line the requirements of the PAS 2080.

GHG Significance Criteria

- 3.13 IEMA (2017) guidance states that there are currently no agreed methods to evaluate levels of GHG significance and that professional judgement is required to contextualise the projects emission impacts.
- 3.14 In GHG accounting, it is considered good practice to contextualise emissions against pre-determined carbon budgets (IEMA, 2017). In the absence of sector-based or local emissions budgets, the UK Carbon Budgets can be used to contextualise the level of significance, and this approach has been adopted in the present case as a cogent and reasonable basis.
- 3.15 Both the Department of Energy and Climate Change (2013) and the PAS 2050 Specification (British Standards Institution, 2011) allow emissions sources of <1% contribution to be excluded from emission inventories, and these inventories to still be considered complete for verification purposes. This exclusion of emission sources that are <1% of a given emissions inventory is on the basis of a '*de minimis*' (relatively minimal) contribution.
- 3.16 On this basis, where GHG emissions from the Proposed Development are equal to or more than 1% of the relevant annual UK Carbon Budgets, the impact of the Proposed Development on the climate is considered to be of high significance. This is summarised in Table 3.1.

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Table 3.1: Magnitude criteria for GHG emissions

Magnitude	Magnitude Criteria Description
High	Estimated GHG emissions from the Proposed Development equate to equal to or more than 1% of total emissions across the relevant 5-year UK Carbon Budget period in which they arise
Low	Estimated GHG emissions from the Proposed Development equate to less than 1% of total emissions across the relevant 5-year UK Carbon Budget period in which they arise
3.17	<p>There is currently no published standard definition for receptor sensitivity of GHG emissions. All GHG emissions are classed as being capable of being significant on the basis that all emissions contribute to climate change (IEMA (2017) guidance). The global climate has been identified as the receptor for the purposes of the GHG assessment. The sensitivity of the climate to GHG emissions is considered to be 'high'. The rationale supporting this includes:</p> <ul style="list-style-type: none"> GHG emission impacts could compromise the UK's ability to reduce its GHG emissions and therefore the ability to meet its future carbon budgets; The need to reduce GHG emissions to reduce the risks and impacts of climate change, as broadly identified by the climate science community and by the Paris Agreement which aims to keep global temperature rise this century below two degrees above pre-industrial levels, (Framework Convention on Climate Change (FCCC/CP/2015/10Add.1), UNFCCC, 2016). Additionally, a recent report by the IPCC highlighted the importance of limiting global warming below 1.5°C (IPCC, 2018); and A disruption to global climate is already having diverse and wide-ranging impacts to the environment, society, economic and natural resources. Known effects of climate change include increased frequency and duration of extreme weather events, temperature changes, rainfall and flooding, and sea level rise and ocean acidification. These effects are largely accepted to be negative, profound, global, likely, long-term to permanent, and are transboundary and cumulative from many global actions.
3.18	This method to determine the significance of GHG emissions are summarised in Table 3.2.

Table 3.2: Significance of GHG Emissions

		Sensitivity of Receptor
		High
Magnitude of GHG emissions (Table 3.1)	High	Major adverse significance
	Low	Minor adverse significance

UK Carbon Budgets

- 3.19 The UK carbon budgets are in place to restrict the amount of greenhouse emissions the UK can legally emit in a five-year period (Committee on Climate Change, 2017). The Carbon Budgets do not currently include emissions from international shipping (House of Commons Library, 2019). The UK is currently in the 3rd carbon budget period, which runs from 2018 to 2022, as detailed in Table 3.3. The current Carbon Budgets reflect the previous 80% reduction target by 2050, rather than the current target of net zero emissions by 2050. As the Proposed Development will be operating past 2050, we have therefore also compared the emissions against net zero in 2050.
- 3.20 The Committee on Climate Change, the body responsible for setting the UK carbon budgets, is currently reviewing the budgets with consideration of the net zero carbon target and will publish their outcome later in 2020 along with the sixth carbon budget. The carbon budgets are reducing to meet the legislated 2050 net zero commitment. This means that any source of emissions contributing to the UK's carbon inventory will have a greater impact on the UK carbon budgets in the future.

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Table 3.3: UK Carbon Budgets

UK Carbon Budget	Total Budget (MtCO ₂ e)
3 rd (2018-2022)	2,544
4 th (2023-2027)	1,950
5 th (2028-2032)	1,725

- 3.21 Construction of the Proposed Development is likely to intersect the 3rd and 4th Carbon Budget. The operations will then continue through the 4th and 5th Carbon Budgets and intersect the net zero target in 2050.

General Limitations and Assumptions

- 3.22 The GHG assessment presented in this document has been based on all currently available data that can be reasonably obtained. As a result, some data is not available to provide a fully quantified assessment of the GHGs from the construction, operation and decommissioning of the Proposed Development. Specific inclusions and exclusions of data, and scenario assumptions are discussed in Sections 4, 6, 7 and 8.
- 3.23 Where appropriate estimates and approximations have been used based on professional judgement and publicly available information. Maximum parameters (sometimes referred to as 'the Rochdale envelope' (The Planning Inspectorate, 2018), after the judgment of Sullivan J – as he then was - in *R. v Rochdale MBC, ex parte Tew* [1999] and *R. v Rochdale MBC, ex parte Milne* (No. 2) [2000]) have been adopted where relevant, as a worst case.

4. Baseline Environment

- 4.1 As discussed in Section 3, the baseline environment assesses the 'Do Nothing' scenario where the Proposed Development does not go ahead. Although not part of the assessment under the EIA Directive, it is nonetheless material to note that, metallurgical coal which would otherwise be replaced by coal produced by the Proposed Development will continue to be shipped from sources outside of Europe and transported to UK and EU-based steel works, as illustrated in Figure 4.1, with consequential effects (H&W Worldwide Consulting Ltd, 2020).
- 4.2 The Site is currently an unoccupied brownfield industry site of a former coal mine, anhydrite mine and chemical works for the manufacture of detergents. The 23-hectare (ha) Site consists of approximately 14 ha 'rank grassland and limited scrub regeneration', and 9 ha of disused concrete footings and hardstanding. There are no current activities at the proposed Site.
- 4.3 Using the Guidance for the Calculation of Land Carbon Stocks (European Commission, 2010), classification of the climate region is "cool temperate, moist", the grassland is "species poor semi-improved grassland" and soils are "high activity clay soils".

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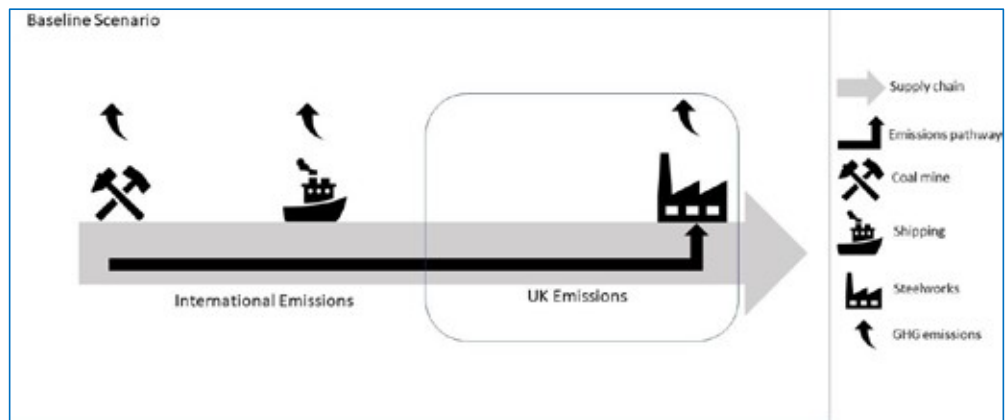


Figure 4.1: Illustrated Baseline Scenario Emissions Pathways

- 4.4 As detailed in the Revised Environmental Statement and Planning Statement (West Cumbria Mining, 2018a and b, respectively), there are no sources of metallurgical coal in the UK. This type of coal is used and required in steel manufacture and is primarily shipped to the UK from Baltimore or Norfolk, USA. There are no legal restrictions on steelworks using metallurgical coal or any known plans to introduce such legislation. Metallurgical coal from the USA is the main source for steel works in both the UK and Europe and this will continue if the Proposed Development is not permitted to operate.
- 4.5 If this Proposed Development is not permitted, these shipments will continue to meet the demand from the UK as well as elsewhere in the EU steel industry (H&W Worldwide Consulting Ltd, 2020). Any GHG emissions at the steel works from the combustion of coal mined from the Proposed Development would therefore not be additional as these will occur whether or not the Proposed Development is permitted to operate.
- 4.6 Using the equivalent coal tonnage from the Proposed Development, the GHG emissions associated with the current shipments from the USA to the UK and EU was calculated as an estimated 107,430 tonnes CO₂ per annum, or 5,371,515 tonnes CO₂ over the 50-year lifespan of the Proposed Development.

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5. Scope of Impact Assessment

- 5.1 Table 5.1 summarises which activities will be included in the GHG assessment.
- 5.2 The assessment includes direct, indirect and secondary GHG emissions resulting from the Proposed Development that fall within the scope of the assessment.
- 5.3 Direct GHG emissions are those emissions generated at the development Site during the lifetime of the development (i.e. its construction, operation and decommissioning).
- 5.4 Indirect GHG emissions are those generated (or avoided) away from the Development Site as a result of the Development, such as the generation of electricity and the manufacture of materials (embedded emissions) used by the Development, transportation associated with the Development, and the disposal of waste.

Table 5.1: Scope of GHG assessment

Lifecycle stage	Activity	Emissions source	Direct/Indirect
Construction (including enabling works)	Construction activities	GHG emissions from fuel used in plant, vehicles and temporary accommodation	Direct
	Construction materials	Embedded GHG emissions in materials used for the construction of the Proposed Development	Indirect
	Transportation of construction materials	GHG emissions from the transportation	Indirect
	Transportation of construction workers	GHG emissions from the fuel used for the transportation of workers to/from site	Indirect
	Construction waste	GHG emissions from the transportation and treatment of waste	Indirect
Operation	Mine operation	GHG emissions from the use of grid electricity during mine operations	Direct
	Fugitive emission	Fugitive methane emissions	Direct
	Vehicles	GHG emissions from vehicles used on site	Direct
	Waste	GHG emissions from the transportation and disposal of operational waste	Indirect
	Worker transportation	GHG emissions from the fuel used for the transportation of workers to/from site	Indirect
	Materials	GHG emissions from the transportation of materials for operation to site	Indirect
	Transportation	GHG from the rail transportation of coal from the Rail Loading Facility at the Proposed Development to the primary point of onward distribution.	Indirect
Decommissioning	Decommissioning activities	GHG emissions from fuels used by plant, vehicles and temporary accommodation	Direct
	Waste and materials	GHG emissions from the transportation and disposal of waste and other materials.	Indirect

- 5.5 GHG emissions caused by using coal produced by the Proposed Development (e.g. at steelworks in the UK or Europe) are not direct or indirect/secondary effects of the Proposed Development. The use of coal produced by the Development is not an effect (whether direct, or indirect/secondary) caused by any phase of the development and therefore there is no requirement to take it into account under the EIA Directive. Nonetheless, for the sake of prudence this assessment has asked whether, if such emissions were an indirect effect, the 'Do Something' scenario would result in any additional or material increase in GHG emissions. The answer is no. The use of coal already forms part of the baseline (as is explained Section 4)

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and would be likely to continue at the same level irrespective of whether the Proposed Development proceeds (H&W Worldwide Consulting Ltd, 2020).

- 5.6 A proportionate approach has been taken in order to ensure that the assessment captures the direct and indirect (and secondary) effects of the GHG emissions caused by the onward transportation of coal produced by the Proposed Development. This has been achieved by taking into account GHG emissions generated from transportation from the Development Site to the point of first distribution. This includes the GHG emissions of all rail transportation of coal from the Rail Loading Facility (RLF) to UK steelworks (at Port Talbot and Scunthorpe) or the Port at Redcar. As a matter for professional judgement, rail journeys from the RLF are considered to be an indirect effect of the operation of the Development, whereas further onward distribution beyond those rail journeys are not. This acknowledges the need to transport coal away from the Development site, whilst recognising that onward distribution beyond the point of first distribution (e.g. international shipping) should properly be regarded as the indirect GHG emissions of another development (e.g. the port) and/or the upstream indirect effects of the development (e.g. steel works) where the actual consumption of the product for energy as part of the production of steel takes place.
- 5.7 Furthermore, and in any event, the adoption of this approach to GHG emissions generated by the onward transportation of coal, which excludes the emissions of international shipping, is likely to represent a worst-case scenario for assessment for the purposes of the EIA Directive since it does not take into account the significant reduction in GHG emissions from shipping that is considered likely to arise as a result of the Proposed Development (The Planning Inspectorate, 2018). Therefore, it incorporates a precautionary and robust approach to GHG emissions caused by onward transportation for the purposes of EIA assessment.
- 5.8 These activity types are in line with that described in the GHG Protocol (WRI & WBCSD, 2015) and PAS 2080. Any carbon offsets and land use change will also be considered in the GHG assessment.

Transboundary Effects

- 5.9 It is not considered that any transboundary effects are likely to arise for the purposes of the EIA Directive as a result of the construction, operation and decommissioning of the Proposed Development (see above, paragraph 5.5). Additionally, even if contrary to the foregoing such emissions were considered to be indirect effects of this development based upon the best evidence which can be reasonably obtained having regard to the carbon budgets for the various European Economic Area states it is not considered that such emissions would amount to "significant environmental effects on the environment of that country" [underlining added] so as to trigger the transboundary notification requirements.
- 5.10 It is also to be noted that the planning application and the environmental statement for the Proposed Development have been supplied to the Secretary of State. The Secretary of State issued an Article 31 direction (Town and Country Planning (Development Management Procedure) (England) Order 2015) and gave obvious careful consideration to the Proposed Development. Following consideration of the Proposed Development, the Secretary of State lifted the Article 14 direction. That decision was not challenged. It can therefore be presumed that the Secretary of State did not consider that the transboundary requirement of the EIA Directive had been triggered. It is not considered that the proposed variation of the application has materially altered the position. Furthermore, Paragraph: 049 Reference ID: 4-049-20170728 of the National Planning Practice Guidance advises that (UK Government, 2019c):

"As a proportion of all planning applications, the number of developments in England that are likely to have significant effects on the environment of another country will be small. However, should they occur, the Secretary of State must send information about the development to the government of the affected country, and invite them to participate in the consultation procedures, determining with them a reasonable timescale to allow them to do so. In such a case, the Secretary of State may direct (Article 31(1) of the Town and Country Planning (Development Management Procedure) (England) Order 2015) that planning permission may not be granted until the end of such time as may be necessary for consultations with that government...."

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6. Enabling Works and Construction GHG Impacts

Overview of Stage Activities

- 6.1 As described in the Revised Environmental Statement and Planning Statement (West Cumbria Mining, 2018a and b, respectively), the construction stage is anticipated to take two years and includes initial site remediation from historical activities, manufacture of construction materials, driving underground tunnels (also known as drifts) to access the underground coal measures), above ground landscaping, and construction of onsite buildings.

GHG Emissions

- 6.2 In order to assess the magnitude of the impact of the Proposed Development on the climate, GHG emissions associated with the enabling works and construction of the Proposed Development have been calculated based on the methodologies discussed in Section 3.

- 6.3 As is usual with projects of this nature, a detailed design of the enabling works and construction activities has not been undertaken for this stage of design, the GHG calculations are based on the following conditions using a mixture of existing Proponent (West Cumbria Mining) data and information, industry benchmarks and professional judgement. The following assumptions, inclusions and exclusions, made on a precautionary basis, have been used in this calculation:

- Construction activities will take two years with approximately 626 working days. This figure is based on construction activities being undertaken from Monday to Saturday;
- At peak construction 310 staff will work at the main mine site. Daily construction staff averages for each month of construction are in line with that described in the Project Description of the Environmental Statement (West Cumbria Mining, 2018a);
- Construction staff commute in single occupancy vehicles, from destinations in accordance with the Road Transport Assessment of the Environmental Statement (West Cumbria Mining, 2018a). However, in reality, shuttle buses will be provided during construction that will reduce per person emissions. All commutes include a return trip;
- Incoming materials and consumables required during construction have been assumed to be available on average of 84 km from the Site. This distance is the average from Carlisle and Lancaster where HGVs are expected to be travelling to and from;
- Uses of grid electricity are likely to include workshops and welfare facilities. Usage has been conservatively estimated on continuous use during construction hours using CIBSE Energy Benchmarks (2008) and includes that for the main site and at the materials depot. However, in reality electricity use is likely to be intermittent;
- Fuel usage onsite has been based on the plant and machinery list detailed in the Noise and Vibration Assessment of the Environmental Statement (West Cumbria Mining, 2018a). Power ratings for these items these equipment items are based upon published construction equipment suppliers. All plant and machinery are assumed to use diesel;
- Waste volumes are based upon current project estimates and include the disposal or treatment of potentially contaminated soil, wastewater, municipal waste and estimates of construction waste;
- Suitable waste receiving facilities have been assumed to be available on average of 84 km from the Site. This distance is the average from Carlisle and Lancaster where HGVs are expected to be travelling to and from;
- An average 57 daily HGV trips to and from Site are expected, of which 50 are assumed to be incoming materials and the remainder for outgoing wastes;

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- UK per person averages have been used for mains water usage (Discover Water, 2019) and municipal waste creation (EU Commission, 2019). Mains water will only be used to meet human welfare requirements.
 - A bill of quantities for the construction materials is not available. Estimates of materials have been made of the buildings, rail line, the concrete culvert and concrete hardstanding, the water tank and the car park. These estimates have been based on dimensions detailed within the Project Description of the Environmental Statement (West Cumbria Mining, 2018a). As other building and infrastructure elements have not yet been designed, this is only a partial calculation; and
 - 12 company-owned vehicles are expected to be active over the course of the construction period.
- 6.4 As detailed in Table 6.1, the total GHGs estimated to be emitted from the enabling works and construction associated with the Proposed Development have been calculated to be 85,105 tCO₂e over the course of the two-year period. The majority of emissions (90%) are associated with electricity purchase and the embodied carbon of purchased materials used to construct the buildings and infrastructure. Average annual emissions are therefore expected to be approximately 42,553 tCO₂e.
- 6.5 All these emissions are considered 'additional' and are included in the impact assessment of the Proposed Development. They are defined as additional as they are considered new and would not occur if the Proposed Development did not go ahead.

Table 6.1: Estimated Enabling Works and Construction GHG Emissions

Project Activity/ Emission Source	Emissions (tCO ₂ e)	Percentage of Stage Emissions
Fuel Usage Onsite	2,857	3%
Company Vehicle Usage	49	0%
Electricity Purchase	31,330	37%
Purchase Goods and Services	45,318	53%
Upstream Transportation and Distribution	3,314	4%
Waste Generated in Operations	917	1%
Employee Commuting	1,316	2%
Total construction stage emissions	85,105	
Total emissions per annum		42,553

Significance of GHG Emissions

- 6.6 As stated in Section 3, all emissions are considered to be significant. To contextualise the level of significance, these emissions have been compared to corresponding UK carbon budgets (Table 6.2). Using the estimated annual emissions from the construction period (42,553 tCO₂e), this is compared to the percentage contribution of the annual budget within each Carbon Budget.
- 6.7 The timing of construction is dependent upon amongst other things the date by which planning permission is obtained, however, if a year of construction began in 2021 during the 3rd UK Carbon Budget, it will contribute to 0.0017% of this budget. If the following year of construction then occurs during the 4th UK Carbon Budget, it will contribute to 0.0022% of this budget. Emissions from the construction of the Proposed Development do not contribute to more than 1% of any Carbon Budget.
- 6.8 The magnitude of impact during construction is therefore considered 'low'. As per Table 3.2, the significance of effects is considered as 'minor adverse'. As such, the construction of the Proposed Development is not expected to affect the UK in meeting its Carbon Budgets.

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Table 6.2: Contribution to the Construction Emissions to the UK Carbon Budgets

UK Carbon Budget	Total Budget (MtCO ₂ e)	Potential Project Emissions (MtCO ₂ e)	Percentage Contribution of Construction Emissions
3 rd (2018-2022)	2,544	0.043	0.0017%
4 th (2023-2027)	1,950	0.043	0.0022%

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7. Operational GHG Impacts

Overview of Stage Activities

- 7.1 As described in Revised Environmental Statement and Planning Statement (West Cumbria Mining, 2018a and b, respectively), the operations involve mining and transport of metallurgical coal to steel manufacturers in Port Talbot and Scunthorpe. Steel manufacturers in Port Talbot and Scunthorpe will each receive approximately 180,000 tonnes of metallurgical coal per annum at full production. The remainder of the coal (2.42 million tonnes per annum at full production) will be transported to the Port of Redcar for onward shipping to Europe (most likely the Port of Rotterdam) for onward distribution to European steel manufacturers.

GHG Emissions

- 7.2 In order to assess the magnitude of the impact of the Proposed Development on the climate, GHG emissions associated with the operations of the Proposed Development have been calculated based on the methodologies discussed in Section 3. Emissions that are considered 'additional' are included in the impact assessment of the Proposed Development. Any emissions arising as a result of the Proposed Development, and that would not have occurred anyway, are considered to be additional. For example, even if it was capable of comprising an indirect effect of the Proposed Development (contrary to the judgement set out above), GHG emissions from the use of coal in the steel making process will occur in the future either with or without the Proposed Development being permitted. This is the same for steel manufacturers in Europe who are likely to use the coal from the Proposed Development rather than sources from the USA.
- 7.3 Emissions from the use of the coal extracted from the Proposed Development are therefore not considered additional and have been excluded from the impact assessment on this basis as well. The emissions that are defined as additional are illustrated in Figure 7.1.
- 7.4 GHG Emissions generated from the onward transportation of coal beyond the first point of distribution (e.g. international shipping) have not been taken into account because, as a matter of judgement, these are not considered to be an indirect effect of the Proposed Development. Furthermore, and in any event, it is not considered that this would result in any additional GHG emissions due to the likely reduction in shipping distances.

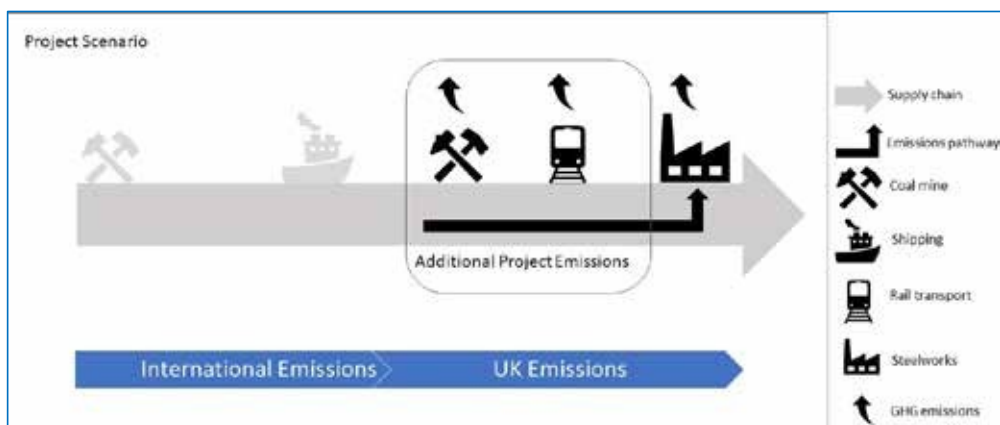


Figure 7.1: Illustrated Project Scenario Emissions Pathways

- 7.5 This Proposed Development will not lead to a change in the activity levels of the steel manufacturers, having regard inter alia to the expert evidence of Dr Bristow in relation to the operation of metallurgical coal and steel markets. If the Proposed Development does not go ahead, steelmakers will continue to ship the metallurgical coal from sources in the USA. Further, participating steelmakers in Europe are regulated by

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the EU ETS where emissions are capped and there are financial disadvantages if their emission limits are breached. The EU ETS emissions cap will reduce by an annual rate of 1.74%.

7.6 GHG calculations are based on the following conditions using a mixture of existing Proponent (West Cumbria Mining) data and information, industry benchmarks and professional judgement. The following assumptions, inclusions and exclusions, made on a precautionary basis, have been used in this calculation:

- Operational activities will be undertaken 24 hours a day, 7 days per week for 50 years;
- Staffing numbers at the main site are in accordance with that detailed in the Road Transport Assessment of the Environmental Statement (West Cumbria Mining, 2018a);
- Operational staff commute in single occupancy vehicles, from destinations in accordance with the Road Transport Assessment of the Environmental Statement (West Cumbria Mining, 2018a). In reality, many staff will commute by other means such as public transport, cycling or walking. All commutes include a return trip;
- Incoming materials and consumables required during construction have been assumed to be available on average of 84 km from the Site. This distance is the average from Carlisle and Lancaster where materials are expected to be sourced;
- Uses of grid electricity are likely to include workshops and welfare facilities at the main site and the offsite depot. Usage has been conservatively based on continuous use during operational hours using Proponent estimates and CIBSE Energy Benchmarks (2008). Emissions calculations have not included grid decarbonisation over the 50-year period or any potential carbon displacements (discussed in Section 9) and therefore represents a worst-case emissions estimate from electricity usage;
- Fuel usage onsite has been based on Proponent estimates for annual diesel usage for backup generators and plant and machinery;
- UK per person averages have been used for mains water usage (Discover Water, 2019) and municipal waste creation (EU Commission, 2019). Mains water will only be used to meet human welfare requirements, and water needed for processing will be sourced from ingress into the mine;
- Suitable waste receiving facilities have been assumed to be available on average of 84 km from the Site. This distance is the average from Carlisle and Lancaster where HGVs are expected to be travelling to and from;
- An average six daily HGV trips to and from Site to the materials depot are expected;
- A bill of quantities of operational materials is not available. The most significant material requirement during operations is steel roof bolts. Estimates of the embodied carbon for these have been estimated. As other building and infrastructure elements have not yet been designed, this is only a partial calculation;
- 12 company-owned vehicles are expected to be active over the course of the operational period;
- Transportation and distribution of coal will be undertaken by rail primarily to Redcar, with smaller volumes to Port Talbot and Scunthorpe;
- The target metallurgical coal is known to contain methane that will be released once the coal is exposed and processed. Fugitive methane emissions for the full operational period have been included as a precaution, however, it is expected that from the fifth year of operations, a methane capture and utilisation plant will be installed at the Site as soon as methane volumes become viable for the plant. The emission volumes are based on an upper range of 6 m³ of methane per tonne of coal mined but could be as low as 2 m³ per tonne of coal mined. This plant will reduce or eliminate the need for grid electricity at the main Site; however, electricity consumption has been calculated on the basis of grid use for 50 years. The design and specifications of the methane capture plant are not known, and the associated embodied carbon of those materials are therefore not included;
- Revegetation including 1.5 ha of 'broadleaved plantation forest less than 20 years old' and 9.5 ha of 'improved grassland'; and
- Operational carbon offsetting could not be calculated at this stage of the design (carbon displacements are described in Section 9).

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- 7.7 As detailed in Table 7.1 the total GHGs estimated to be emitted from the operations associated with the Proposed Development have been calculated to be 18,328,183 tCO₂e over the course of the fifty-year period. The majority of emissions (73%) are associated with fugitive methane emissions, however, as stated previously, methane emissions are likely to be captured and utilised from the fifth year of operation. Average annual emissions are therefore expected to be approximately 366,564 tCO₂e. These calculations include a change in land use by revegetation prior to the start of operations.

Table 7.1: Estimated Operational GHG Emissions over the course of the mine's life

Project Activity/ Emission Source	Emissions (tCO ₂ e)	Percentage of Stage Emissions
Fuel Usage Onsite	4,897	0%
Company Vehicle Usage	1,215	0%
Fugitive Emissions	13,588,440	74%
Electricity Purchase	2,410,309	13%
Purchase Goods and Services	2,583	0%
Upstream Transportation and Distribution	3,509	0%
Waste Generated in Operations	4,213	0%
Employee Commuting	100,358	1%
Onward rail transportation and Distribution of Sold Products	2,214,049	12%
Land use change	-1,399	
Total operational stage emissions	18,328,183	
Operational emissions per annum	366,564	

Shipping Emissions

- 7.8 As detailed in Section 4, the current baseline scenario is that there are no sources of metallurgical coal in the UK and that the UK and EU steel industry ships the coal from sources on the east coast of the USA (H&W Worldwide Consulting Ltd, 2020). If this Proposed Development goes ahead, then it is assumed that there will be reduced shipping of metallurgical sources of coal from the USA as the coal can now be sourced from within Europe.
- 7.9 The emissions associated with shipping the same volumes of coal have been calculated as an estimated 107,430 tonnes CO₂ per annum, or 5,371,515 tonnes CO₂ over the 50-year lifespan of the Proposed Development. These emission volumes do not include any further associated emissions through mining and transportation to port.
- 7.10 To put this into context, approximately 2.4 million tonnes of coal from the Proposed Development may be shipped from Redcar to Rotterdam per annum. GHG emissions from this activity is estimated to be approximately 9,089 tonnes CO₂ per annum, or 454,475 tonnes CO₂ over the 50-year life. This equates to approximately 8% of the emissions currently arising from the shipping of coal from the US to the UK. Net shipping emissions displaced over 50 years as a result of the Proposed Development are therefore likely to be around 4,917,040 tonnes CO₂. This figure alone is of a similar magnitude to the project-related emissions.
- 7.11 However, for the reasons set out above, and adopting a precautionary approach, the displaced GHG emissions from reduced shipping are not included in this calculation and significance test.

Significance of GHG Emissions

- 7.12 As stated in Section 3, all GHG emissions are considered to be significant. In order to provide a reasonable basis to contextualise the level of significance, these emissions are compared to corresponding UK carbon budgets (Table 7.2) as well as in the context of net zero by 2050. Using the estimated annual emissions from the operational period (366,564 tCO₂e), this is compared to the percentage contribution of the annual budget within each Carbon Budget.

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- 7.13 The mining operation is expected to commence in 2024 during the 4th UK Carbon Budget period and will contribute to 0.075% of this budget. Five years of further operations will then occur during the 5th UK Carbon Budget, contributing to 0.104% of this budget. The operations period goes beyond the current published Carbon Budgets. Emissions from the operations of the Proposed Development do not contribute to more than 1% of any published Carbon Budget, however, operations will intersect steeply reducing future Carbon Budgets and the net zero emissions target of 2050 (2050 Target Amendment, Order 2019) (UK Government, 2019). Emissions from this Proposed Development are therefore likely to become significant without an emissions reduction strategy. To meet the UK's net zero target, GHG reduction measures will be considered and are discussed in Section 9.
- 7.14 The magnitude of impact during operations is therefore considered 'low'. As per Table 3.2, the significance of effects is considered as 'minor adverse'. As such, the operations of the Proposed Development are not expected to affect the UK in meeting its Carbon Budgets.

Table 7.2: Contribution to the Operational Emissions to the UK Carbon Budgets

UK Carbon Budget	Total Budget (MtCO ₂ e)	Potential Project Emissions (MtCO ₂ e)	Percentage Contribution of Operational Emissions
4 th (2023-2027)	1,950	1.466 (four years)	0.075%
5 th (2028-2032)	1,725	1.833 (five years)	0.104%

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8. Decommissioning GHG Impacts

Overview of Stage Activities

- 8.1 The Environmental Statement (West Cumbria Mining, 2018a) provides an indicative timeframe and description of the decommissioning process. At the end of the 50-year operational life span, it is proposed that all above ground buildings are removed, and the landscape reinstated for ecological and recreational use.

GHG Emissions

- 8.2 In order to assess the magnitude of the impact of the Proposed Development on the climate, GHG emissions associated with the decommissioning of the Proposed Development have been calculated based on the methodologies discussed in Section 3. All emissions are considered additional and are therefore included in the assessment.
- 8.3 GHG calculations are based on the following conditions using a mixture of existing Proponent (West Cumbria Mining) data and information, industry benchmarks and professional judgement. The following assumptions, inclusions and exclusions, made on a precautionary basis, have been used in this calculation:
- Decommissioning will take one year with activities undertaken Monday to Saturday;
 - Total workdays during the decommissioning stage are assumed to be half of that during the construction stage;
 - Decommissioning staff commute in single occupancy vehicles, from destinations in accordance with the Road Transport Assessment of the Environmental Statement (West Cumbria Mining, 2018a). All commutes include a return trip;
 - Uses of grid electricity are likely to include workshops and welfare facilities. Usage has been conservatively estimated on continuous use during construction hours using CIBSE Energy Benchmarks (2008) and includes that for the main site and at the materials depot. The estimate has not included grid decarbonisation over the 50-year period or any potential carbon displacements (discussed in Section 9) and therefore represents a worst case emissions estimate from electricity usage;
 - Fuel usage onsite has been based on the plant and machinery list detailed in the Noise and Vibration Assessment of the Environmental Statement (West Cumbria Mining, 2018a) and reduced to reflect the shorter duration. Power ratings for these equipment items are based upon published construction equipment suppliers. All plant and machinery are assumed to use diesel;
 - Waste volumes are based upon current project estimates that have been marked up and additional volumes added;
 - Suitable waste receiving facilities have been assumed to be available at an average of 84 km from the Site. This distance is the average from Carlisle and Lancaster where HGVs are expected to be travelling to and from;
 - An average 57 daily HGV trips to and from Site are expected;
 - UK per person averages have been used for mains water usage (Discover Water, 2019) and municipal waste creation (EU Commission, 2019). Mains water will only be used to meet human welfare requirements.
 - 12 company-owned vehicles are expected to be active over the course of the decommissioning period; and
 - Vegetation including 1.5 ha of 'broadleaved plantation forest more than 20 years old' and 21.5 ha of 'improved grassland'.
- 8.4 As detailed in Table 8.1 the total GHGs estimated to be emitted from the decommissioning associated with the Proposed Development have been calculated to be 17,907 tCO₂e over the course of a one year period. The majority of emissions (87%) are associated with electricity purchase and treatment and disposal of

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wastes. These calculations include a change in land use by revegetation of any areas previously under hardstanding.

Table 8.1: Estimated Decommissioning GHG Emissions

Project Activity/ Emission Source	Emissions (tCO ₂ e)	Percentage of Stage Emissions
Fuel Usage Onsite	2,032	10%
Company Vehicle Usage	24	0%
Electricity Purchase	15,665	75%
Purchase Goods and Services	2	0%
Waste Generated in Operations	2,529	12%
Employee Commuting	658	3%
Landscaping	-3,004	
Total decommissioning stage emissions		17,907

Significance of GHG Emissions

- 8.5 As stated in Section 3, all emissions are considered to be significant. GHG emissions during decommissioning will intersect the UK's net zero emissions target of 2050 (2050 Target Amendment, Order 2019) (UK Government, 2019). To meet this target, GHG reduction measures will be considered and are discussed in Section 9. It is not considered emissions from decommissioning will be material in the overall context of the UK achieving net zero.

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9. Carbon Displacements and Offsets

- 9.1 As the design life of the plant goes beyond 2050, the Proposed Development is expected to be operating in a net zero GHG emissions environment after 2050. This Section discusses a number of activities that are under consideration by the Proponent (West Cumbria Mining) in order to operate in this context.
- 9.2 These activities are in addition to standard resource efficiency measures within the Environmental Statement (West Cumbria Mining, 2018a), such as provision and encouragement of group transport, building insulation, energy efficient lighting, selection of electrically powered mine machinery over diesel-powered, rainwater harvesting, and building design in accordance with the Building Research Environmental Assessment Method (BREEAM) principles.

Electricity Grid Decarbonisation

- 9.3 The UK Government plans to continue its progressive grid decarbonisation in the UK. Planned national reductions in fossil-fuel based power stations paired with increases in low carbon and renewable energy will progressively reduce the emissions intensity of electricity generation. Any indirect emissions produced from grid electricity will progressively decrease through grid decarbonisation.

Methane Capture and Utilisation Plant

- 9.4 Proponent sampling and analysis of the coal seam deposits have shown a methane release range of between 2 and 6 m³ per tonne of coal mined. During the ramp up stage towards full production, detailed design of a methane capture and utilisation plant will begin once viable volumes are confirmed. This will potentially eliminate the majority of fugitive emissions and provide a source of electrical power for the Site that will further reduce the need for grid electricity. This will be assumed to be operating from the 5th year of operations for another 45 years.

Carbon Credits

- 9.5 In support of the UKs net zero emissions target of 2050 and any future legislative forces, the Proponent will consider carbon offsetting credits using an accredited carbon offsetting scheme and/or carbon permit trading for any remaining GHG emissions once other measures have been undertaken.

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10. Summary GHG Emissions and Impacts

- 10.1 Using the currently available data and information, the GHG emissions associated with the construction, operations and decommissioning of the Proposed Development have been calculated. A summary of these emissions are detailed in Table 10.1.
- 10.2 The total emissions associated with additional activities (activities that will occur if the Proposed Development goes ahead) have been calculated as 18,431,196 tCO₂e.

Table 10.1: Total Proposed Development GHG emissions

Lifecycle stage	Total stage GHG emissions (tCO ₂ e)	Emissions per annum (tCO ₂ e)
Construction	85,105	42,553
Operation	18,328,183	366,564
Decommissioning	17,907	17,907
Total emissions 18,431,196		

- 10.3 Emissions associated with each stage of the Proposed Development were examined for their significance against the UK Carbon Budgets. Combined emissions for these stages are detailed in Table 10.1..
- 10.4 This assumes one year of construction during the 3rd Carbon Budget, one year of construction and four years of operation in the 4th Carbon Budget, and five years of operations during the 5th Carbon Budget. The percentage contribution of emissions from the Proposed Development to the respective Carbon Budgets are 0.002%, 0.077% and 0.104%, respectively.
- 10.5 The magnitude of impact of the Proposed Development is therefore considered 'low' against the current UK Carbon Budgets. As per Table 3.2, the significance of effects is considered as 'minor adverse'. As such, the operations of the Proposed Development are not expected to affect the UK in meeting its current Carbon Budgets. However, the operations and decommissioning activities will intersect steeply reducing future Carbon Budgets and the net zero emissions target of 2050. Emissions from this Proposed Development are therefore likely to become significant without an emissions reduction strategy after the year 2050.
- 10.6 Across the 53-year full design life of the Proposed Development (total of construction, operations and decommissioning), the average annual GHG emissions are calculated as 347,758 tCO₂e.

Table 10.1: Total Emissions to the UK Carbon Budgets

UK Carbon Budget	Total Budget (MtCO ₂ e)	Potential Project Emissions (MtCO ₂ e)	Percentage Contribution of Emissions (Construction and Operations)
3 rd (2018-2022)	2,544	0.043 (one year of construction)	0.002%
4 th (2023-2027)	1,950	1.509 (one year of construction plus four years of operations)	0.077%
5 th (2028-2032)	1,725	1.833 (five years operations)	0.104%

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