CURRAGHINALT 33KV CONNECTION PROJECT

STATEMENT OF CASE TECHNICAL REPORT
CLIMATE AND GREENHOUSE GASES

NI1851
Statement of Case
V.01
October 2024

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
V.01	SoC	SM	AMCK	SF	14.10.2024

Approval for issue

Stephen McAfee	[redacted]	14 October 2024

Contents

1 INTRODUCTION

This Technical Report sets out the following summary of the assessment and outcomes:

- The methodology used in the assessment.
- Impacts without mitigation.
- Proposed mitigation measures.
- Residual impacts.
- Cumulative impacts/interactions/in combination/transboundary impacts.
- Consideration of consultation replies from statutory agencies and relevant third-party representations.
- Consideration of any changes to the baseline data, relevant policy, guidance and legislation (including case law) since the completion of the Environmental Impact Assessment (EIA).
- Conclusions.

This Technical Report has been prepared by Stephen McAfee.

This Technical Report should be read alongside Chapter 13 (Climate and Greenhouse Gases) and associated Appendices of the ES previously submitted to the Department for Infrastructure ("DfI") in June 2021.

Stephen is a Technical Director with RPS and was responsible for preparing, drafting and delivering the climate and greenhouse gas ("GHG") assessment contained in Chapter 13 (Climate and Greenhouse Gases) of the Environmental Statement ("ES") for the NIE Networks' Curraghinalt 33kV Connection Project.

Stephen holds a BSc (Hons) in Geography and an MSc in Environmental Engineering. Stephen is an Associate Environmentalist with the Institute of Environmental Management & Assessment ("MIEMA") and a chartered member of the Institute of Environmental Sciences ("CSci").

Stephen is a chartered scientist with over 20 years' experience primarily in the field of EIA, specialising in climate and air quality impact assessment and various roles in senior project management. Stephen has also acted as an expert witness and environmental expert at various public inquires and has provided specialist input into planning appeals, oral hearings and judicial review proceedings for both private and public sector clients.

Where the review of baseline data or any relevant change in legislation, policy or guidance results in a need to update environmental information this is clearly identified in this technical report. This Technical Report includes Additional Environmental Information (AEI) and is clearly presented as outlined in this document.

2 METHODOLOGY

All climate assessment methodologies employed to inform the planning application for the NIE Networks' Curraghinalt 33kV Connection Project ("Proposed Development") are set out in Section 13.3 of Chapter 13 of the ES.

By way of update, the following sections provide commentary on those pieces of legislation, guidance or Directives (including case law) that have since been updated from the time of ES publication (June 2021).

2.1 Design Manual for Roads and Bridges (DMRB) LA 114 – Climate

The Design Manual for Roads and Bridges ("DMRB") guidance on climate change was published on 31 October 2019 under the heading LA 114 – Climate. This guidance aligns the DMRB assessment process with The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 ("2017 EIA Regulations").

LA 114 – Climate sets out the requirements for assessing and reporting the effects of climate on highways (climate change resilience and adaptation), and the effect on climate of GHG from construction, operation and maintenance projects. Although specific to road schemes, the criterion for assessment is a useful gauge in determining whether an assessment is required for construction and operational phases of proposed developments.

An update to the LA 114 – Climate was published in 2021, however, this release is for the publication of updated requirements in the Scotland National Application Annex only. This involved incremental change to notes and editorial updates only and have no bearing on the conclusions presented in Chapter 13 of the ES.

2.2 The Institute of Environmental Management and Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance

The Institute of Environmental Management and Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance has been updated in 2022. It provides essential guidance to assist professionals with GHG emissions assessment, mitigation, and reporting in statutory and non-statutory EIA.

Through iterative design, and the application of the mitigation hierarchy, the guidance will help lead to reduced GHG emissions from developments. The assessment presented in Chapter 13 of the ES complies with the IEMA guidance and the updated sections of the IEMA guidance do not affect the assessment presented in Chapter 13 of the ES.

For planners, developers, regulators and impact assessment professionals working with, or commissioning, GHG impact assessment, this publication provides updated and improved guidance, developed by leading practitioners from the past 5 years of practice on complex projects. The guidance builds on the previous IEMA guidance and reinforces the need to use competent experts for specialist topics such as GHG assessment.

2.3 GHG Northern Ireland - Greenhouse Gas Statistical Bulletin

Specific to baseline data and as set out in Section 13.4.1 of Chapter 13 of the ES, the Northern Ireland Greenhouse Gas Inventory 1990-2018 Statistical Bulletin (DAERA, 2020) has been updated to reflect further data collection and is now dated 18th June 2024. This is detailed further in Section 5 of this Technical Report.

2.4 Climate Change Act

Another update since the publication of the ES in June 2021 was the Climate Change Act (Northern Ireland) 2022 (Climate Change Act). The Climate Change Act came into operation on 6th June 2022. The Climate Change Act sets a 2050 net zero GHG emissions account for Northern Ireland compared to the baseline, along with interim targets of an at least 48% reduction in the net emissions account by 2030 and a 2040 target for emissions to be in line with the 2050 target.

2.5 Landmark UK Supreme Court climate judgment: Finch v Surrey County Council [2024] UKSC 20

On 20th June 2024 the UK Supreme Court held in the landmark decision of *Finch v Surrey County Council* [2024] UKSC 20 that Surrey County Council's ("Council") decision to grant planning permission to a developer was unlawful due to the fact the EIA for the project failed to include an assessment of the downstream GHG emissions. The ES for NIE Networks' Curraghinalt 33kV Connection Project was published in 2021. To acknowledge the requirements brought about by the *Finch* ruling, this Technical Report presents commentary and calculations in Section 5 relating to estimates of GHG emissions.

3 SUMMARY OF ASSESSMENT[1]

3.1 Introduction

Directive 2011/92/EU included climate as a criteria for assessment in EIA both in terms of the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change (e.g. such as through flood risk or the risk of major accidents and/or disasters caused by climate change).

'Climate' is generally understood to mean the weather conditions prevailing over a long period of time and climate change refers to changes in recorded long term climate trends. As a topic for the assessment within EIA, climate change is relatively new. Guidance is evolving and there is no prescribed way in which climate change should be incorporated into an ES, however, some guidance has been prepared by IEMA, discussed further below, which sets out the two main approaches that can be taken to determine a project's climate change impact. These involve identifying:

- The vulnerability of the Development to climate change; and
- The direct and indirect influence of the Development on climate change.

3.1.1 Climate Change Resilience and Adaptation

The vulnerability of the development to climate change considers effects on the development as a receptor (this is referred to in IEMA Guidance as "Climate Change Resilience and Adaptation"). A high-level climate change risk and resilience assessment has been undertaken to identify the potential risks of climate change on the Proposed Development and to high design measures to increase its resilience and adaptation to climate hazards, such as extreme hot and cold weather, intense rainfall, high winds and storm events.

3.1.2 Greenhouse Gas (GHG) Emissions

IEMA Guidance[2] states that, *"As one of the most challenging environmental issues, the effects of GHG emissions are integral to the understanding of a project's impact and need to be factored into the decision making process accordingly. At the same time a focus on proportionate assessment is also important in avoiding undue burden to developers and regulators… A 'good practice' approach is therefore advocated where GHG emissions are always considered and reported but at varying degrees of detail depending on the EIA project."*

Due to the inconsistencies between the different methods and their assumptions for assessment; there is not one single agreed method by which to assess a project's carbon budget or GHG emissions. The applicability of the method will be dependent on the type and scale of the project. For this assessment emission estimates are presented for the construction phase and a qualitative assessment was made for the operational and maintenance phases given the nature of the project.

3.2 Impact Assessment

3.2.1 Construction – Climate Change Resilience and Adaptation

In terms of the Proposed Development, the following key potential effects are summarised below:

- Increased frequency of extreme weather - damage, delay, health and safety impacts, and increased costs. The sensitivity of construction phase receptors is considered to be high. The magnitude of change is

[1] This section summarises the assessment undertaken in respect of the baseline as existing in May 2021 when the EIA was completed. Section 5 contains a review of any changes in the baseline data, cumulative/in-combination & transboundary considerations, legislation, policy and guidelines and/or any other consideration that would trigger the need for Additional Environmental Information (AEI).

[2] The Institute of Environmental Management and Assessment (IEMA) Guide: Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2022.

considered to be negligible. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be minor.

- Increased temperatures and prolonged periods of hot weather - warm and dry conditions exacerbate dust generation and dispersions, and health risks to construction workers. Appropriate dust control measures will be put in place during the construction phase of the Proposed Development to aid protection from fugitive dust dispersion and the potential health impacts on construction workers (Section 12.5 of Chapter 12 of the ES details mitigation measures in relation to dust during the construction phase).
- Increased precipitation and intense periods of rainfall - 1) flooding of works and soil erosion; 2) increased risk of contamination of waterbodies; 3) disruption to the supply of materials and goods; and 4) landslides. Robust Assessment has been undertaken in relation to future flooding. Please refer to Chapter 10 of the ES for full assessment details of future flood risk.

The sensitivity of construction phase receptors is considered to be high. The magnitude of change is considered to be negligible. Therefore, there is likely to be a direct, temporary, short-term, adverse effect which is considered to be negligible. With regard to climate change risks to the Proposed Development during the construction period, Volume III, Appendix 13.1 summarises potential changes in climatic parameters from 2020 onwards.

3.2.2 Construction – GHG Emissions

3.2.2.1 Design Manual for Roads and Bridges (DMRB)

Construction GHG emissions are emissions associated with the construction phase of a project. GHG emissions associated with the removal and reinstatement of peat habitat, production of construction materials, and construction phase processes operation will arise as a result of the construction activities. The primary emission sources are summarised in Table 1 below.

Table 1: Construction phase - Primary Emission Sources

Lifecycle stage	Activity	Primary emission sources
Product Stage	Raw material extraction and manufacturing of products/ materials.	Embodied GHG emissions.
	Transport of products/ materials to site.	Emissions from fuel used for the transportation of products/materials to site.
Construction Process Stage	On-site construction activity.	GHG emissions from fuel consumption by vehicles, plant and equipment for construction of the Proposed Development.
	Transport of construction workers.	Emissions from fuel used for worker commuting.
	Disposal of construction waste.	GHG emissions from fuel used for the transport and disposal of waste.

DMRB guidance on climate change was published on 31 October 2019 under the heading LA 114 – Climate. This guidance aligns the DMRB assessment process more closely with the 2017 EIA Regulations. Although specifically related to highway schemes it can be referenced in this assessment with regard to emissions and also is aligned with guidance as presented in the Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guide to Assessing Greenhouse Gas (GHG) Emissions and Evaluating their Significance.

The LA 114 document was created to set out the requirements for assessing and reporting the effects of climate on highways (climate change resilience and adaptation), and the effect on climate of greenhouse gas from construction, operation and maintenance of road/highway[3] projects.

[3] Although specific to road schemes, the criteria for assessment is a useful gauge in determining whether an assessment is required for construction and operational phases of Proposed Developments.

LA 114 advises to report on the likely additional and avoided GHG emissions at each life cycle stage of the project, in comparison with current and future baseline GHG emissions. The nature and scale of GHG emissions (positive, neutral or negative) and the likelihood of significant effects should be reported in accordance with the LA 114 guidance document.

One main questions is posed in relation to the construction phase:

- are construction GHG emissions (or GHG-emitting activity), compared to the baseline scenario (i.e. when compared to GHG emissions and energy use associated with existing maintenance activities), increasing by >1%.

The GHG emissions associated with the scheme are not likely to increase by more than 1% during construction. However, a qualitative assessment of GHG emissions was completed in the accordance with the DMRB recommendations and presented in Chapter 13 of the ES and in addition estimates have been made in this Technical Report in regard to GHG emissions from materials used.

3.2.2.2 Embedded Carbon & Emissions

Another key aspect is embodied carbon, these are, Carbon (GHG) emissions associated with energy consumption and chemical processes during the extraction, transport and/or manufacture of construction materials or products Typical embodied carbon datasets are 'cradle-to-gate' (i.e. all emissions to the point of delivery from the factory gate) and expressed in kilograms of CO2e per kilogram of product or material.

Section 5 of this Technical Report presented estimates of GHG associated with the materials used in the Proposed Development. This assessment has been undertaken in line with the Institute of Environmental Management and Assessment (IEMA) guide 'Assessing Greenhouse Gas Emissions and Evaluating their Significance', 2022. One of the core principles of the IEMA guidance relates to the quantification of impacts using standardised quantification techniques including Publicly Available Specification (PAS) 2080: 2016 Carbon Management in Infrastructure. The following aspects of the Project are presented:

- Potential direct greenhouse gas (GHG) emissions associated with the construction of the Project – this includes site clearance, embodied carbon, material transport, construction activities and waste management.

3.2.2.3 Peat and Carbon Dioxide Release

In addition to the combustion of fossil fuels, GHGs are also released through natural processes such as the decomposition of organic material (which is composed of carbon). Bogs and peatlands are known to store large amounts of carbon. Chapter 7 (Terrestrial Ecology & Ornithology) of the ES details pole locations, habitat types and also the mitigation measures for the impact on habitats. It should be noted that in locations of pole erection, the peat is not "lost" - it is "disturbed", set to the side and then replaced around the base of the pole.

Excavation works will temporarily remove and set aside topsoil, excavate the foundation for the pole and then backfill and compact the foundation of the pole. All excavated material will be used as backfill, with no imported backfill being required or spoil to be removed from the site.

There is a commitment to provide 670m^2 for peat compensation. This is over and above what is being impacted upon by the Proposed Development and this will be provided on land within the control of Dalradian Gold Ltd and this can be secured by way of negative planning condition or Planning Agreement.

3.2.3 Operational

3.2.3.1 GHG Emissions from Vehicles

The changes in regional emissions from traffic as a result of the Proposed Development were considered in the context of total UK emissions provided by the National Atmospheric Emissions Inventory (NAEI). The consideration of significance of the Proposed Development's impact on regional emissions was undertaken using professional judgement considering the change predicted and the sensitivity of the national (UK) total to change, with the outcome assessed as either Significant or Not Significant. Operation and maintenance traffic will only include light commercial vehicles and is estimated to consist of an average of 6 trips per year to various points along the 37.9km route. The operational phase DMRB road assessment can be screened out

as impacts are not deemed to be significant given that the criteria set out in Section 13.2.1 of Chapter 13 of the ES are not met. These are repeated here for convenience:

- during operation, will roads meet or exceed any of the following criteria:

a) a change of more than 10% in AADT;
b) a change of more than 10% to the number of heavy duty vehicles; and,
c) a change in daily average speed of more than 20 km/hr.

None of these criteria are met in relation to the operational phase of the development and none are materially altered at all considering the predicted volume of traffic during operations and maintenance scenarios.

3.2.3.2 GHG Emissions from Operational Electricity

Operational electricity usage by the mine was assessed on a very conservative 400g/kWh. Electricity usage at the mine was assessed at 100% of their Maximum Import Capacity (MIC) of 12MW. Generally, in the UK, the government is pursuing net zero carbon emissions by 2050. The electricity grid in NI can currently operate the grid with up to 65% of renewable power.[4] Section 5 of this Technical Report details operational estimates.

3.2.3.3 Climate Change Resilience

The Proposed Development also has the potential to be impacted upon by a changing climate and, in particular, more frequent severe weather events in the medium to longer-term. Potential impacts on the Proposed Development during the operational phase include:

- Material and asset deterioration due to high temperatures.
- Health and safety risks to road users.
- Damage to roads from periods of heavy rainfall.
- Flood risk (surface, groundwater, fluvial and snow/ice melt) on the road network and damage to drainage systems with the potential for increased runoff from adjacent land contributing to surface water flooding.

With regard to climate change risks to the Proposed Development during the operational period, Volume III, Appendix 13.1 of the ES summarises potential changes in climatic parameters from 2020 onwards. Effects are considered to be negligible and not significant following mitigation.

3.2.4 Decommissioning

Decommissioning of the OHL and UGC is not envisaged. However, should the OHL be required to be decommissioned, all associated structures and materials would be recycled or recovered. Steel from the cross arms would be recycled. The porcelain and polymeric insulators would be recovered.

For the wooden poles NIE estimates that they have sequestered circa 137T of carbon during their growth period. This will ultimately be released at decommissioning stage – either via incineration, or chipping (flower beds etc) and eventual decay. Section 5 of this Technical Report details operational estimates.

3.3 Proposed Mitigation Measures

3.3.1 Construction Phase

As with any construction site, there are associated vehicle movement, emissions and reuse of materials. With respect to vehicle emissions and materials, the following mitigation measures will reduce the GHG emissions to the atmosphere such that impacts will be negligible and not significant:

- All vehicles switch off engines when stationary - no idling vehicles.

[4] https://www.soni.ltd.uk/about/strategy-2025/

- All plant utilised will be regularly inspected.
- Visual monitoring of plant by operatives to ensure no black smoke is emitted other than during ignition.
- Ensuring exhaust emissions are maintained to comply with the appropriate manufacturer's limits.
- The reuse of soil materials won from excavations.

3.3.2 Operational Phase

For the operational phase, no significant adverse effect on the Proposed Development due to climate change during operation is predicted. The operational phase does not meet criteria regarding emissions from vehicles and may be screened out. In terms of mitigation owing to emissions form electricity generation, NIE recognise their commitments under the Climate Act and movement towards renewable integration by 2030.

3.3.3 Decommissioning Phase

Decommissioning of the OHL not envisaged. However, should the OHL be required to be decommissioned, all associated structures and materials would be recycled or recovered. Steel from the cross arms would be recycled. The porcelain and polymeric insulators would be recovered. If decommissioning is required, it has been estimated from the detailed pole construction schedule provided in Volume III, Appendix 2.1 of the ES that 418 individual poles (321 structures – 97 H /double poles) would need decommissioned which is 3,918 m (3,185.2m if butts are cut) of wooden poles. There will be no significant effect from the decommissioning of the OHL.

Similarly to the OHL, decommissioning of the UGC is not envisaged, however, should the UGC be required to be decommissioned, it would be de-energised and disconnected from the circuit breakers or poles to which it is connected, safely insulated using pot end terminations and the cabling will be recovered for recycling. As a result, the impact of decommissioning the UGC would be significantly less than the impact of installation.

3.4 Residual Impacts

Residual effects have been assessed by reviewing the effectiveness of the proposed mitigation measures against the potential effects outlined in the ES Chapter. It is considered that all of the potential impacts will be managed appropriately through mitigation measures, good practice construction methods and sustainable design, and will reduce the impacts to a level of insignificance.

4 CONSULTATION RESPONSES AND SUBMISSIONS

4.1 Relevant Statutory Body Consultation Responses

Climate and emissions of GHGs have not been raised by statutory body consultation responses.

4.2 Relevant Third Party Representations

Climate change has been referenced in some third party representations. These are set out and discussed below.

OBJ1 OBJ2 OBJ3 - *Overhead lines result in power outages during increasingly frequent inclement weather and high winds arising from climate change.*

Response – Chapter 13 of the ES considered a climate change risk and resilience assessment and has been undertaken to identify the potential risks of climate change on the Proposed Development and to high design measures to increase its resilience and adaptation to climate hazards, such as extreme hot and cold weather, intense rainfall, high winds and storm events. Further details of the climate projections and the risk assessment approach are contained within ES Volume III Appendix 13.1. It should be noted that the 33kV line is supplying one customer and does not impact on the wider supply network.

In conclusion, with the incorporated mitigation measures, no significant climate change risks to the Proposed Development are considered likely.

OBJ3 - *In light of the declaration by the NI Assembly regarding the need for action on Climate and an Independent Environment Agency, Dfl cannot ignore the negative impact of the proposed goldmine including removing some 30 hectares of bogland, using some three million litres of diesel per year.*

Note: A response is given in this Technical Report for completeness even though this portion of the third party representation relates to the proposed Curraghinalt mine.

Response – In relation to *"bogland"*, Section 13.5.3 of Chapter 13 of the ES comments on Peat and Carbon Dioxide release. GHGs are also released through natural processes such as the decomposition of organic material (which is composed of carbon). Bogs and peatlands are known to store large amounts of carbon. Chapter 7 (Terrestrial Ecology & Ornithology) of the ES details pole locations, habitat types and also mitigation measures for the impact on habitats. It should be noted that in locations of pole erection, the peat is not "lost" - it is "disturbed", set to the side and then replaced around the base of the pole.

Excavation works will temporarily remove and set aside topsoil, excavate the foundation for the pole and then backfill and compact the foundation of the pole. All excavated material will be used as backfill, with no imported backfill being required or spoil to be removed from the site.

With regard to "*three million litres of diesel per year*", this is a reference to the Dalradian Gold Limited ("DGL") Curraghinalt Gold Project[5].

[5] From Table 2.1, Page 6 of FEI2_Vol 2_ Second Addendum to the ES October 2020, SLR Consulting

5 REVIEW OF NEED FOR AEI IN RESPECT TO CHANGES IN BASELINE DATA, CUMULATIVE IMPACTS, TRANSBOUNDARY IMPACTS, LEGISLATION/GUIDELINES/POLICY, OTHER

5.1 Baseline Data

Baseline data has changed since the publication of the ES in June 2021. Similarly, some legislation, guidance and policies have been updated since June 2021.

Specific to baseline data and as set out in Section 13.4.1 of Chapter 13 of the ES, the Northern Ireland greenhouse gas inventory 1990-2018 statistical bulletin (DAERA, 2020) has been updated to reflect further data collection and is now dated 18th June 2024.

Energy supply is detailed in the GHG Statistical Bulletin and emissions are predominantly from power stations but also include emissions from fuel production and fuel supply activities such as mining, refining, manufacturing, and distributing fuels. Emissions are significantly affected by abatement technology at power stations and the type of fuel being produced or combusted. A summary of the findings of the bulletin are presented below:

"In 2022, Northern Ireland's net greenhouse gas emissions were estimated to be 21.3 million tonnes of carbon dioxide equivalent (MtCO2e). This net figure is a result of an estimated 23.2 MtCO2e total emissions, offset by 1.9 MtCO2e of emissions removed through sequestration.

The net figure of 21.3 MtCO2e, in 2022, represents a decrease of 3.0% compared with 2021. The longer-term trend showed a decrease of 26.4% compared with emissions in 1990.

In 2022, Agriculture was the largest emitting sector, responsible for 29.1% of emissions. Domestic transport contributed 18.1% to overall emissions, whilst the Buildings and product uses and Electricity supply sectors contributed 15.3% and 14.0% respectively.

Between 2021 and 2022 all sectors, with the exception of Domestic transport, showed a decrease in emissions. The largest decreases in terms of tonnes of carbon dioxide equivalent were in the Buildings and product uses (0.4 MtCO2e), Agriculture (0.1 MtCO2e) and Electricity Supply (0.1 MtCO2e) sectors.

In 2022, Northern Ireland contributed 5.3% of all UK greenhouse gas emissions, which stood at 406.2 MtCO2e. In the UK there has been a 50.2% reduction in emissions between 1990 and 2022. During the same period, the reduction in emissions in Northern Ireland was 26.4%, compared to 52.6% in England, 51.2% in Scotland and 36.4% in Wales."

5.1.1 Emissions by Sector

The largest sectors in terms of emissions in 2022 were Agriculture (29.1%), Domestic Transport (18.1%), Buildings and product uses (15.3%) and Electricity Supply (14.0%). The remaining emissions were produced by Land Use Change (10.1%), Industry (9.7%) and Waste (3.6%), with less than 0.0% of emissions from Fuel supply. Between 2021 and 2022, all sectors, with the exception of Domestic Transport, showed a decrease in emissions. The majority of sectors also showed a decreasing trend since the base year (1990).

Specific to electricity supply emission, these have decreased by 0.1 MtCO2e compared to 2021 for production of electricity, continuing a trend where they have fallen 2.3 MtCO2e (43.9%) since the base year (1990). This is due to fuel switching away from oil and coal-fired power-stations and an increase in generation from renewable sources.

The GHG Northern Ireland - Greenhouse Gas Statistical Bulletins are available online:

https://www.daera-ni.gov.uk/articles/northern-ireland-greenhouse-gas-inventory

The changes in baseline data as presented in the June 2024 GHG Bulletin does not alter the conclusion of the ES Chapter due to the trend in decreasing emissions from sectors

5.2 Cumulative Impacts

5.2.1 Introduction

The cumulative impact of carbon emissions arising from global human activity is “High”. This is true to the nature of climate change as a global, cumulative problem. As committed developments have been assessed throughout the ES and particularly through the cumulative vehicular transport scenarios, the potential inter-scheme cumulative effects during the operational phase of the Proposed Development have already been considered.

As stated within the relevant guidance on assessing GHG emissions (IEMA, 2022), the consideration of cumulative effects for GHGs differs from that for many EIA topics where only projects within a geographically bounded study area would be included. This is because the atmospheric concentration of GHGs and their resulting effect on climate change is affected by all sources and sinks globally, not simply those in close proximity to the project. All developments that emit GHGs have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a cumulative impact on climate change. Therefore, the effects of GHG emissions from specific cumulative projects should not be individually assessed, as there is no basis for selecting any particular cumulative project that has GHG emissions for assessment over any other.

Consequently, cumulative effects due to other specific local development projects are not individually predicted but are taken into account when considering the impact of the project by defining the atmospheric mass of GHGs as a high sensitivity receptor, in line with relevant guidance. GHG emissions have a global effect rather than directly affecting any specific local receptor to which a level of sensitivity can be assigned. The global atmospheric mass of the relevant GHGs and consequent warming potential, expressed in CO2e, has therefore been treated as a single receptor of high sensitivity (given the consequences of global climate change and the cumulative contributions of all GHG emissions sources).

5.2.2 The Proposed Curraghinalt Mine

The Applicant (DGL) for the proposed Curraghinalt mine, currently under consideration by DfI under planning application LA10/2017/1249/F, has committed to deliver the mine as a carbon neutral project. Due to this, there is no potential for or need to assess cumulative emissions from the mine and this Proposed Development cumulatively. Carbon neutrality will ensure that climate change impacts from the project are fully mitigated. Carbon neutrality will be achieved and maintained across all project stages (construction, operation and closure) for both direct and indirect emissions through a combination of onsite efficiency measures, the procurement of 100% renewable electricity and the use of high quality carbon offsets to address unavoidable emissions.

5.2.3 A5 Western Transport Corridor (WTC)

The total anticipated traffic GHG emissions are presented an Environmental Statement Addendum 2022[6] for the year 2028 (the first year of operation for the Proposed Scheme) and the year 2043 (the future modelled year). In addition, the average annual and total GHG emissions based on a 60-year operational period of 2028-2087 are presented. The baseline figures (without the Proposed Scheme) are included for comparison. The operational phase of the Proposed Scheme is anticipated to generate GHG emissions due changes in end-user traffic emissions and replacement of materials (resurfacing). The impacts of GHGs relate to their contribution to global warming and climate change. These impacts are global and cumulative in nature, with every tonne of GHGs contributing to impacts on natural and human systems. GHG emissions result in the same global effects wherever and whenever they occur. Therefore, the assessment has considered climate as the receptor. A range of mitigation measures have been included in the Addendum covering construction and operational phases.

[6] Chapter 15 Climate, A5 WTC Environmental Statement Addendum 2022, WSP.

5.3 Transboundary Impacts

Climate change is a globally occurring phenomenon with impacts on the global climate related largely to atmospheric carbon dioxide levels and other GHG levels and emissions. An insignificant impact on transboundary climate will arise during the construction of the Proposed Development with the level of impact being reduced by the implementation of the mitigation measures outlined in the ES. The significance of the transboundary impact of the Proposed Development located in Northern Ireland to GHGs in the Republic of Ireland is considered to be negligible and insignificant.

5.4 The Finch Ruling

5.4.1 Background

Finch concerned a judicial review of Surrey County Council's ("Council") 2019 decision to grant planning permission to expand oil production and add new wells to an existing onshore oil well site in Surrey (the "Project"). It was estimated that in the final phase of the Project, over 3.3m tonnes of oil would be extracted. The Supreme Court, in a majority decision, ruled the decision to grant planning permission was unlawful as downstream GHG emissions are an indirect effect of the extraction oil and must be assessed as part of such a project's EIA.

It is important to note that the judgment is not confined to downstream emissions from fossil fuels but general consideration of what amount to "indirect effects". Indirect impacts, also referred to as secondary impacts, are impacts caused by a project that occur later in time or are farther removed in distance, but are still reasonably foreseeable. Another key aspect is determining what amounts to an indirect effect sufficient to require them to be subject to EIA. The judgement should be based on *"information on which a reasoned conclusion could properly be based. Conjecture and speculation have no place in the EIA process".*

5.4.2 Key Points from the Ruling

The key points from the judgment include:

Causation and effect: downstream GHG emissions resulting from the combustion of the extracted oil are an inevitable and direct consequence of the Project. It was not disputed that the oil extracted from the Horse Hill site would eventually be refined and burned, releasing GHGs into the atmosphere. The EIA Directive requires assessment of "*direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project*". Therefore, the EIA should have considered the downstream GHG emissions.

Methodology and scope: it is possible to estimate the amount of downstream GHG emissions resulting from the combustion of the extracted oil using established methodologies. This estimate should have been included in the EIA to provide a complete picture of the environmental impact of the Project.

Geographical scope: the Court rejected the notion that the EIA should be limited to emissions occurring at the Project's site. The EIA Directive does not impose geographical limits on the assessment of environmental effects. The impact of GHG emissions on the global climate does not depend on the location of their release.

Refining process and causal connection: the Court addressed the argument that refining the crude oil at separate facilities breaks the causal chain between the extraction and combustion of the oil. It concluded that the refining process does not alter the essential nature or intended use of the crude oil. The final combustion of the refined product remains a foreseeable consequence of the extraction project and falls within the scope of the EIA. This may not be the case for other commodities such as steel which can be put to many possible uses, and it may be considered that no meaningful assessment can be made of the emissions ultimately resulting from its use.

Policy considerations: the Court noted that while national policy encourages domestic oil and gas production, this policy does not exempt projects from complying with environmental assessment requirements. The EIA is intended to ensure that decisions are made with a full understanding of their environmental impact, which includes downstream GHG emissions.

5.4.3 Finch and its association with NIE Networks' Curraghinalt 33kV Connection Project.

5.4.3.1 Introduction

In order to fully understand potential downstream emissions associated with the 33kV project, there has to be an understanding of what the provision of the electricity supply relates to. It is clear that the downstream effects are related to the DGL Curraghinalt Gold Project – this is detailed in Section 5.4.3.2 of this Technical Report. A series of estimates have been made specific to materials used in the NIE Networks' Curraghinalt 33kV Connection Project, these are as follows:

- Aluminium
- Copper
- Steel
- Steel - wire
- Ceramics
- HDPE
- PVC
- Aggregate
- Concrete - General
- XLPE
- MDPE
- Diesel
- Treated wood pole 45' average /13.7m
- Quantities for 33/11 TX
- Lean Mix
- Bitumen

The estimates also consider the fuel mix components of the electricity supply associated with the 33kV connection.

Material	Embodied Energy MJ/kg	Embodied kg CO2/kg	Comments	The proposed 33kV connection is c37.9 km in length, comprising of c26.9 km of overhead line supported by single and double wooden pole sets and c11 km of underground cabling.	Metres	Poplar AAAC 0.659 kg/m	STAYWIRE-M.S. GALVD 7/4.00MM 700 GRADE 0.69kg/m	Embodied kg CO2/kg	PVC Ducts 9.786 kg / 6 m length. 1.631kg/m	Aggregate - Type 3 when compacted 2200kg/m3
Aluminium	155	8.24		40,000m X 3 phases X 10% for stringing / jumpers	132000	86988		716781.12		
Copper	55	3.88		240mm CU, x 48,400m at 2.1952kg/m = 106,247.68kgs				412241		
Steel	24.4	1.77		50 kgs average x 321 poles	16050			28408.5		
Steel - wire	36	2.82		63 Angle H poles (3 stays) 12 Terms (2 stays)75 total, 15 metres each =900m	900		621	1751.22		75
Ceramics	20	1.05		321 poles x 15kgs porcelain	4815			5055.75		
HDPE	76.7	1.6								
PVC	77.2	2.41		11kms x 3 phases & 1 subduct & 10% extra. 36.3kms	48400			190246.36	78940.4	9.786
Aggregate	0.15	0.01		11kms x 1.3m depth x 0.5m deep = 7150m3				157300		157300
Concrete - General	0.95	0.13								
XLPE	89.3	2.13		48,400m at 0.7607kg/m = 36,817.88kg				78422.09		
MDPE	84.4	2.02		48,400m @ 0.3028kg/m = 14,654.75kg				29602.61		
Diesel	38 MJ/litre	2.63 kgCO2/litre		NG 3300 litres per km OHL , 14300 litres per km u/g - Transmission values - used 20% for Distribution = 246,070 litres *0.2 = 49,214	49214			129432.82		
Treated wood pole 45' average /13.7m		(328kgs) per pole negative	- 723 lbs = 328kgs	321 pole positions, 97 H-poles so 418 total poles				-137104		
Update quantities for 33/11 TX										
Lean Mix	0.74	0.1		45.74m3 at 2400kg/m3 = 109,776kg				10977.6		
Bitumen	51	0.43		3,564m3 for full width reinstatment at 2400kg/m3 with 10% Bitumen content = 855,360kg				367804.8		
NI Fuel Mix										
Gas	61.52%									
Import	2.38%									
Renewables	36.10%									
	100.00%									
gC02/kWh	100-400g/kWh	12000kWh / 12MWh MIC		https://www.soni.ltd.uk/how-the-grid-works/system-information/						
	0.4kgs / kWh	4800								
		4.8T / HOUR								
	tonnes per day (24hrs)	115.2	115.2	806.4				1990919.9	kilos	
	tonnes per year	42048	42048	Tonnes per week.				1990.9199	tonnes	
	tonnes for 25 years	1051200	1051200							
	tonnes for 40years	1681920	1681920							

5.4.3.2 NIE Networks' Curraghinalt 33kV Connection Project accounting for *Finch* and the Relationship with Curraghinalt Gold Mine

DGL has committed to delivering the proposed Curraghinalt Gold Mine as a carbon neutral project. This approach accords with the UK Government's new target for net zero GHG carbon emissions by 2050, and the use of Renewable Energy Guarantee of Origin ("REGO") certificates and high quality and independently certified carbon offsets will ensure that considerations regarding the "additionality" of these measures are addressed.

DGL will enter into a contract with a suitable third party organisation to ensure the delivery of carbon neutral status is legally enforceable and independently verified throughout the project lifecycle, and which can be secured by a Planning Agreement under Section 76 of the Planning (Northern Ireland) Act 2011.

A detailed and comprehensive GHG assessment will be prepared and published for each year of the project's lifecycle (construction, operation and closure). Actual activity data (for example metered electricity consumption, on-site diesel fuel consumption and biofuel mix, transport in and out) will be used wherever possible to ensure the assessment work is complete and accurate. Each GHG assessment will utilise GHG conversion factors in place at that time and quantify the total direct and indirect unavoidable GHG emissions so these can be mitigated via REGO certificated and high quality carbon offsets.

If the objective of being carbon neutral is considered in respect to the downstream effects in relation to the Curraghinalt Gold Mine then the associated impact is not significant.

6 CONCLUSIONS

It is not anticipated that the scale of projected climate change identified will significantly alter the baseline conditions in the ES and presented in this Technical Report. With the implementation of the mitigations specified in Chapter 13 of the ES, it is concluded that construction of the proposed underground cable and OHL will have a negligible impact on climate and GHG emissions. A discussion on the implication of *Finch*, as presented in Section 5.4 of this Technical Report, relates to downstream emissions from the proposal and also presents calculations with regard to materials used.

A robust assessment has been made with regard to GHG emissions for the NIE Networks' Curraghinalt 33kV Connection Project. It has considered construction, operational, maintenance and decommissioning phases of the project with regard to GHG emissions as presented in Chapter 13 of the ES and in this Technical Report. Information available at the time of writing and associated assessments presented in Chapter 13 of the ES and in this Technical Report are soundly based on professional judgement and material on which a reasoned conclusion could properly be based.

The table below is a copy of the summary table provided in Chapter 13 of the ES.

Table 13.8 Summary of Likely Environmental Effects on Climate

Receptor	Sensitivity of receptor	Description of Effect	Duration	Magnitude	Significance	Significant / Not significant
Construction phase						
Construction Workers	High	Increased temperatures, prolonged periods of hot weather - Warm and dry conditions exacerbate dust generation and dispersions, health risks to construction workers.	Short term	Low	Negligible	Not Significant
Atmosphere	High	Emissions of Greenhouse Gases (GHGs)	Short term	Low	Negligible	Not Significant
Operational phase						
Atmosphere	High	Emissions of Greenhouse Gases (GHGs)	Long term	Low	Negligible	Not Significant