East Midlands Gateway
Phase 2 (EMG2)

Document DCO 6.19/MCO 6.19

ENVIRONMENTAL STATEMENT

Main Statement

Chapter 19

Climate Change

October 2025

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The East Midlands Gateway Phase 2 and Highway Order 202X and The East Midlands Gateway Rail Freight and Highway (Amendment) Order 202X

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19. Climate Change

Contents

19.1. Introduction

19.1.1. This Chapter of the ES assesses the EMG2 Project in relation to the effects it would have upon and from climate change. The assessment is based on the project description set out in **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**), including the development parameters set out in **Table 3.5**.

19.1.2. Climate change in the context of EIA can be considered broadly in the following parts:

- The effect of greenhouse gas emissions (GHGs) caused directly or indirectly by the EMG2 Project, and its component parts, which contribute to climate change;
- The effect of changes in climate on the EMG2 Project, and its component parts, which could affect it directly resulting in climate risk; and
- The effect of changes in climate on the EMG2 Project, and its component parts, which could modify its other environmental impacts (i.e., in-combination climate change impacts).

19.1.3. This Chapter is supported by the following appendices:

- **Appendix 19A: Climate Change Policy Review (Document DCO 6.19A/MCO 6.19A)**
- **Appendix 19B: Greenhouse Gas Assessment (Document DCO 6.19B/MCO 6.19B)**
- **Appendix 19C: Climate Change Risk Assessment (Document DCO 6.19C/MCO 6.19C)**
- **Appendix 19D: Energy Report (Document DCO 6.19D/MCO 6.19D)**
- **Appendix 19E: Carbon Management Plan** (**Document DCO 6.19E/MCO 6.19E**)

19.1.4. The assessment in this Chapter is based on the project description detailed within **Chapter 3: Project Description (Document DCO 6.3/MCO 6.3)**, which includes details of the key components and construction processes, and is based on the details set out on the Parameters Plans (**Document DCO 2.5** and **MCO 2.5**), and is cognisant of the illustrative landscape masterplans (**Document DCO 2.6** and **MCO 2.6**).

19.1.5. In brief, the EMG2 Project comprises three main components as follows:

Table 19.1: The EMG2 Project Components

Main Component	Summary of Component	Works Nos.
DCO Application made by the DCO Applicant for the DCO Scheme		
EMG2 Works	Logistics and advanced manufacturing development located on the EMG2 Main Site south of East Midlands Airport and the A453, and west of the M1 motorway. The development includes HGV parking and a bus interchange. Together with an upgrade to the EMG1 substation and provision of a Community Park.	DCO Works Nos. 1 to 5 including relevant Further Works as described in the draft DCO (**Document DCO 3.1**). DCO Works Nos. 20 and 21 including relevant Further Works as described in the draft DCO (**Document DCO 3.1**).
Highway Works	Works to the highway network: the A453 EMG2 access junction works (referred to as the EMG2 Access Works); significant improvements at Junction 24 of the M1 (referred to as the J24 Improvements), works to the wider highway network including the Active Travel Link, Hyam's Lane Works, L57 Footpath Upgrade, A6 Kegworth Bypass/A453 Junction Improvements and Finger Farm Roundabout Improvements.	DCO Works Nos. 6 to 19 including relevant Further Works as described in the draft DCO (**Document DCO 3.1**).
MCO Application made by the MCO Applicant for the MCO Scheme		
EMG1 Works	Additional warehousing development on Plot 16 together with works to increase the permitted height of the cranes at the EMG1 rail-freight terminal, improvements to the public transport interchange, site management building and the EMG1 Pedestrian Crossing.	MCO Works Nos. 3A, 3B, 5A, 5B, 5C, 6A and 8A in the draft MCO (**Document MCO 3.1**).

19.1.6. In recognition that this Chapter forms part of a single ES covering both the DCO Scheme and the MCO Scheme, it makes a clear distinction between the component parts and, consistent with the dual application approach**,** separately assesses the impacts arising from:

(i) the DCO Application (Section 19.5);

(ii) the MCO Application (Section 19.6);

(iii) the DCO Application and the MCO Application together as the EMG2 Project (Section 19.7); and

(iv) An assessment of the cumulative impacts of the EMG2 Project with other existing and, or approved developments, has been completed (Section 19.8).

19.1.7. The assessment of the cumulative impacts of the EMG2 Project with other existing and, or approved developments, in Section 19.8 has been prepared using the list of projects identified in **Appendix 21B** to **Chapter 21: Cumulative Impacts (Document DCO 6.21B/MCO 6.21B)**. A summary of the effect and their significance is provided in the summary and conclusions section at the end of this chapter.

19.1.8. With regards to the assessment of cumulative impacts, all developments that emit, avoid or sequester GHGs have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a cumulative impact on climate change and upon the development. Consequently, cumulative impacts due to other specific local development projects (inter-project effects) are not considered individually but are taken into account when considering the impact of the EMG2 Project by defining the atmospheric mass of GHGs as a high sensitivity receptor. There is therefore no specific cumulative assessment study area for climate change.

19.2. Scope and Methodology of the Assessment

19.2.1. This section of the Chapter is common to both the DCO Scheme and the MCO Scheme. Where 'the EMG2 Project' is referred to, this means that the methodology has been applied to both the DCO Scheme and the MCO Scheme.

Consultation

19.2.2. In August 2024, a Scoping Report (**Document DCO 6.1C/MCO 6.1C**) was submitted to the Planning Inspectorate (PINS) which defined the likely significant effects of the development on the environment, the studies necessary to assess them, and the level of detail required to enable a decision to be made.

19.2.3. Following consultation with the appropriate statutory bodies, PINS (on behalf of the Secretary of State) adopted a Scoping Opinion on 24 September 2024 (**Document DCO 6.1D/MCO 6.1D**). Key issues raised during the scoping process specific to climate change are listed in **Table 19.2** together with details of how these issues have been addressed within this chapter of the ES.

Table 19.2: Summary of scoping responses

Summary of Scoping Comments	Response to Comments
Climate change resilience: The Scoping Report states that a risk assessment of the impact of climate change on the EMG2 Project will be undertaken but does not specify which other aspect assessments this will incorporate. The Inspectorate considered that the ES should include an assessment of the resilience of the EMG2 Project to climate change, including how the design would be adapted to take account of the projected impacts of climate change (for both construction and operation). This should draw on the Flood Risk and Drainage ES chapter and the Flood Risk Assessment.	The ES includes an assessment of the resilience of the EMG2 Project to climate change in **Appendix 19C: Climate Change Risk Assessment (Document DCO 6.19C/MCO 6.19C**). The outcomes of the Climate Change Risk Assessment (CCRA) are set out in Sections 19.5, 19.6, and 19.7. The risk of future climate change with regard to flood risk is set out in **Chapter 13: Flood Risk and Drainage (Document DCO 6.13/MCO 6.13**), where appropriate climate change allowances have been applied in the assessment. As set out in paragraph 19.5.24 below, owing to the limited period of the construction programme (see **Chapter 3: Project Description (Document DCO 6.3/MCO 6,3)**, variations in climatic parameters would be minimal compared to the current day baseline and therefore no significant effects are anticipated, as such no additional mitigation other than best practice construction industry measures are proposed.
Residual impacts: The Scoping Report states that the chapter will 'seek to quantify their impacts where feasible and assess their impacts commensurate to the 'outline' nature of the proposals'. The Applicant should be aware that the term 'outline' is	Sections 19.5, 19.6 and 19.7 set out any residual effects, taking into account the Parameters Plan and EMG2 Project description as set out in **Chapter 3: Project Description (Document DCO 6.3/MCO 6,3)**. All climate change impacts

Summary of Scoping Comments	Response to Comments
not directly applicable to applications made under the Planning Act 2008. The ES should assess all impacts of the EMG2 Project where significant effects are likely to occur. Where uncertainty exists, the Applicant may choose to apply for flexibility in any DCO application. Please also refer to Section 2 of this Scoping Opinion for the Inspectorate's comments in relation to flexibility and the 'Rochdale Envelope' with reference to a worst-case assessment.	of the EMG2 Project where significant effects are likely to occur have been assessed in this chapter.
Design and climate change resilience: The ES should demonstrate how resilience to future climate change has been addressed within the design, including in the provision and location of water attenuation features.	Sections 19.5, 19.6 and 19.7 set out climate resilience mitigation measures adopted as part of the EMG2 Project. Measures relating to flood risk and drainage, such as provision and location of water attenuation features, are set out in **Chapter 13: Flood Risk and Drainage (Document DCO 6.13/MCO 6.13)**, where appropriate.

19.2.4. A six-week period of statutory consultation was undertaken between Monday 3rd February 2025 and Monday 17th March 2025. This included the presentation of draft application material for the EMG2 Project and included draft ES Chapters. Additional consultation was undertaken between Tuesday 1st July and Tuesday 29th July on more advanced draft application material, including ES Chapters, which had taken on board comments received to the statutory consultation. Key issues raised during the statutory consultation are listed in **Table 19.3** together with details of how these issues have been addressed within this chapter of the ES. No comments were received from consultees during the course of the additional consultation in July 2025 in relation to climate change.

Table 19.3: Summary of statutory consultation responses

Summary of Consultation Comments	Response to Comments
National Highways	
National Highways would emphasise the importance of carbon in respect of the SRN impacts and mitigation. Any assessment of works to the SRN must consider National Highways' Decarbonisation Strategy and Environmental Sustainability Strategy. In addition, the impacts of climate change on the highways drainage system in respect of mitigation work will need to be considered. Circular 01/2022 contains directions on the provision of suitable drainage on the SRN in respect of third-party developments. The project may also place constraints on the construction of new attenuation features in the future. DMRB (document CG501) outlines National Highways' approach to climate change and LA113 refers the reader to the Environment Agency's latest allowances. However, the standards do not provide for the potential future surface outfall requirements in the context of climate change resilience. Therefore, the Applicant should consider designing new infrastructure or developments adjacent to the SRN to avoid constraining the construction of new above- or below-ground surface water attenuation features (for example, balancing ponds, underground tanks etc) or to provide maintenance access to these features in the future.	The Climate Change Chapter of the ES considers the magnitude and significance of emissions arising from the Highway Works proposed, over its construction, and operation and maintenance phases. A Carbon Management Plan (**Appendix 19E** (**Document DCO 6.19E/MCO 6.19E**)) has been submitted within the application, which provides further detail on carbon reduction measures. The objectives of National Highways' Decarbonisation Strategy have been accounted for in the design and mitigation proposed with regards to the Highway Works (see Section 19.5). The National Highways' Environmental Sustainability Strategy has been accounted for throughout the ES, through the assessment of environmental impacts associated with the Highway Works within each chapter as relevant. Sections 19.5 and 19.6 below set out climate resilience mitigation measures adopted as part of the EMG2 Project. Measures relating to flood risk and drainage, such as provision and location of water attenuation features, are set out in **Chapter 13: Flood Risk and Drainage (Document DCO 6.13/MCO 6.13)**, where appropriate. Direct response to this comment is provided within Table 13.2 of **Chapter 13: Flood Risk and Drainage (Document DCO 6.13/MCO 6.13)**.

Study Area

19.2.5. GHG emissions have a global effect rather than directly affecting any specific local receptor. The impact of GHG emissions occurring due to the EMG2 Project on the global atmospheric concentration of the relevant GHGs, expressed in CO_2-equivalents (CO_2e), is therefore considered within these assessments. The climate change study area is defined as the Order Limits alongside the global atmosphere, based on established Institute for Environmental Management and Assessment (IEMA) guidance (IEMA, 2022).

19.2.6. The climate change risk study area is defined as the order limits and the 25 km grid cell within which the order limits are located, based on the UK Climate Projections 2018 (UKCP18) probabilistic projections (Met Office Hadley Centre (MOHC), 2024).

19.2.7. With regards to the assessment of cumulative impacts, all developments that emit, avoid or sequester GHGs have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a cumulative impact on climate change and upon the development. Consequently, cumulative impacts due to other specific local development projects (inter-project effects) are not considered individually but are taken into account when considering the impact of the EMG2 Project by defining the atmospheric mass of GHGs as a high sensitivity receptor. There is therefore no specific cumulative assessment study area for climate change.

19.2.8. Assessment of in-combination (intra-project effects) climate change impacts has been included within individual environmental topic chapters where relevant, i.e. where climatic changes could modify the EMG2 Project's other environmental impacts. As such, the study area for in-combination climate change impacts is defined in individual environmental topic chapters.

Baseline Methodology

19.2.9. The baseline methodology is divided between the assessment of GHG emissions and climate resilience and adaptation.

19.2.10. GHG emissions affect global atmospheric GHG concentrations (and fluxes with land and ocean) and are not localised to a site-level baseline. The current and future baseline conditions relevant to the EMG2 Project, and its component parts, with regards to the impact of GHGs therefore comprise the following:

- the business-as-usual GHG emissions from comparable buildings, building uses (i.e. offices, logistics facilities (use class B8) and general industrial uses (use class B2)) and infrastructure;
- the business-as-usual GHG emissions from road users using the highways network, for the Highway Works elements of the EMG2 Project; and
- any existing GHG sources or sinks from current land use of the EMG2 Project's site itself that would be impacted by the EMG2 Project.

19.2.11. The business-as-usual baseline has been established through the use of benchmarks, traffic modelling data and the review of relevant existing policy and legislation. Existing GHG sources or sinks have been established through desk review of existing land use and informed by site-specific land use and ground condition surveys (see **Chapter 15: Agriculture and Soils (Document DCO 6.15/MCO 6.15**) and **Chapter 14: Ground Conditions** (**Document DCO 6.14/MCO 6.14**) for more information).

19.2.12. To determine the baseline climate environment to inform both the CCRA and assessment of in-combination climate impacts (presented in individual topic chapters), onshore climate conditions have been sourced from the Met Office observed data for Sutton Bonington climate station (Met Office, 2020). The observational data from Sutton Bonington climate station has been collected and averaged over 30 years from 1981 to 2010 and reviewed against regional observational data averaged over the same reporting period (Met Office, 2020). The future climate baseline has been informed by the Met Office UKCP18 dataset (MOHC, 2024).

Assessment Criteria and Assignment of Significance

19.2.13. The climate change impact assessment has followed the following guidance documents in its approach to assessment and assignment of significance:

- IEMA Guidance on Climate Change Adaptation and Resilience (IEMA, 2020);
- IEMA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022); and
- Design Manual for Roads and Bridges (DMRB) LA 114: Climate (Highways England (now National Highways), 2021).

19.2.14. The criteria for determining the significance of effects have been divided into two categories:

- Assessment of the significance of the effect of the EMG2 Project on climate change (GHG assessment); and
- Assessment of the significance of the effect from climate changes on the EMG2 Project (CCRA).

19.2.15. The assessment methodology for each of these categories is set out below, with the impact assessment criteria for the GHG assessments defined at paragraphs 19.2.17 to 19.2.36, and the impact assessment criteria for the CCRA defined at paragraphs 19.2.37 to 19.2.45.

19.2.16. As set out in paragraph 19.2.8 above, in-combination climate change impacts have been assessed in individual topic chapters, where relevant. As such, there is no specific assessment methodology presented in this chapter.

GHG Emissions Assessment Methodology

19.2.17. GHG emissions have been estimated by applying published emissions factors to activities in the baseline and to those required for the EMG2 Project. The emissions factors relate to a given level of activity, or amount of fuel, energy or materials used, to the mass of GHGs released as a consequence. The GHGs considered in these assessments are those in the 'Kyoto basket' of global warming gases expressed as their CO_2-equivalent global warming potential (GWP). This is denoted by CO_2e units in emissions factors and calculation results. GWPs used are typically the 100-year factors in the IPCC Fifth Assessment Report (IPCC, 2013) or as otherwise defined for national reporting under the United Nations Framework Convention on Climate Change (UNFCCC).

19.2.18. Additional guidance used for the quantification of GHG emissions includes:

- UK Government GHG Conversion Factors for Company Reporting (Department for Energy Security and Net Zero (DESNZ) and Department for Environment, Food and Rural Affairs (Defra), 2024);
- Royal Institute for Chartered Surveyors (RICS) Professional Standard: Whole Life Carbon Assessment for the Built Environment (2nd Edition) (RICS, 2024); and
- PAS 2080 – Carbon Management in Buildings and Infrastructure (The British Standards Institution (BSI), 2023); and

- the Greenhouse Gas Protocol suite of documents (WRI and WBCSD, 2004).

19.2.19. GHG emissions caused by an activity are often categorised into 'scope 1', 'scope 2' or 'scope 3' emissions, following the guidance of the WRI and the WBCSD Greenhouse Gas Protocol suite of guidance documents (WRI and WBCSD, 2004):

- scope 1 emissions: direct GHG emissions from sources owned or controlled by the company (e.g., from combustion of fuel at an installation);
- scope 2 emissions: caused indirectly by consumption of purchased energy (e.g., from generating electricity supplied through the UK Grid to an installation); and
- scope 3 emissions: all other indirect emissions occurring as a consequence of the activities of the company (e.g., in the upstream extraction, processing and transport of materials consumed or the use of sold products or services).

19.2.20. This assessment has sought to include emissions from all three scopes, where this is material and reasonably possible from the information and emissions factors available, to capture the impacts attributable most completely to the EMG2 Project. These emissions are not separated out by defined scopes (scopes 1, 2 or 3) in the assessment, but appropriately capture all material upstream and downstream emissions from the EMG2 Project, as required by IEMA (2022) guidance, emphasised within recent case law (Finch vs Surrey County Council, 2024).

19.2.21. The assessment has considered the GHG emissions arising from the EMG2 Project, as required by IEMA (2022) and Highways England (2021) guidance. Emissions resulting from the manufacturing and construction, and operations and maintenance of the EMG2 Project (comprising the DCO Scheme and MCO Scheme) have been calculated via a range of methodologies. These include published benchmark carbon intensities, life cycle analysis (LCA) literature, analysis of SEGRO development whole-life carbon (WLC) assessments, and the application of material or fuel emission intensities to material or fuel quantities.

19.2.22. Decommissioning of the EMG2 Project has not been assessed as the EMG2 Project, and its component parts, is intended to be a permanent development, and consideration for decommissioning at this stage would be hypothetical in nature, as stated within **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**). Further, there would likely be negligible end-of-life emissions associated with plant use on site, disassembly activities and material transport, given anticipated decarbonisation of the construction industry in line with UK net zero goals. Materials used to construct the EMG2 Project will be recycled at the end of their lifetime wherever possible, through the specification of recyclable and recycled materials for the buildings and infrastructure. As such, when disposing of materials, recycling is the preferred solution. This not only prevents materials from being sent to landfill, but also reduces the need for extraction of primary materials. Material which cannot be recycled might be incinerated or used to produce energy from waste. Emissions associated with the disposal of materials at the end of the lifetime is considered to be negligible and may even result in future avoided emissions. The impact of decommissioning is therefore not assessed further.

19.2.23. Some construction-stage GHG emissions associated with the manufacturing of materials may occur outside the territorial boundary of the UK and hence outside the scope of the

UK's national carbon budget. However, in recognition of the climate change effect of GHG emissions (wherever occurring) and the need, as identified in national policy, to avoid 'carbon leakage' overseas when reducing UK emissions, the full life-cycle GHG emissions of the EMG2 Project have been evaluated where possible when determining the significance of effects.

19.2.24. A proportional approach to identification and calculation of GHG emissions sources has been applied, in accordance with National Highways (2021).

19.2.25. Further details regarding the GHG emissions calculation methodology can be found in **Appendix 19B: Greenhouse Gas Assessment** (**Document DCO 6.19B/MCO 6.19B**).

Receptor Sensitivity / Value

19.2.26. 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 CO_2e, has therefore been treated as a single receptor of high sensitivity (given the importance of the global climate as a receptor), as defined within IEMA (2022).

19.2.27. National Highways (2021) does not prescribe a methodology to determine the sensitivity of the receptor, and as such IEMA (2022) guidance has been used.

Significance of Effect

19.2.28. The significance of the effect on climate change has been determined by taking into account the sensitivity of the receptor and the magnitude of the impact.

19.2.29. In all cases, the evaluation of receptor sensitivity, impact magnitude and significance of effect has been informed by professional judgement and is underpinned by narrative to explain the conclusions reached.

19.2.30. Assessment guidance for GHG emissions (IEMA, 2022) describes five levels of significance for emissions resulting from a development, each based on whether the GHG emission impact of the development will support or undermine a science-based 1.5°C compatible trajectory towards net zero. To aid in considering whether effects are significant, the guidance recommends that GHG emissions should be contextualised against pre-determined carbon budgets, or applicable existing and emerging policy and performance standards where a budget is not available. It is a matter of professional judgement to integrate these sources of evidence and evaluate them in the context of significance.

19.2.31. Taking the guidance into account, the following factors have been considered in contextualising the EMG2 Project's GHG emissions:

- the magnitude of gross and net GHG emissions as a percentage of national carbon budgets given the national significance of the EMG2 Project;
- the consideration of any increase/reduction in absolute GHG emissions of the EMG2 Project compared with current baseline scenarios, including projections for future changes in those baselines; and

- whether the EMG2 Project contributes to, and is in line with, the UK's policy for GHG emissions reductions, where these are consistent with science-based commitments to limit global climate change to an internationally-agreed level (as determined by the UK's NDC to the Paris Agreement (former Department for Business, Energy and Industrial Strategy (BEIS), 2022)).

19.2.32. Effects from GHG emissions are described within this chapter as adverse, negligible or beneficial based on the following definitions, as stated within the IEMA guidance (IEMA, 2022):

- Major Adverse: the EMG2 Project's GHG impacts would not be compatible with the UK's net zero trajectory. Its GHG impacts cannot be mitigated, or would be compliant only with do-minimum standards set through regulation. The EMG2 Project may not provide further emissions reductions required by existing local and national policy for projects of this type.
- Moderate Adverse: the EMG2 Project's GHG impacts would not be compatible with the UK's net zero trajectory. Its GHG impacts could be partially mitigated and may partially meet the applicable existing and emerging policy documents, however it would not fully contribute to decarbonisation in line with local and national policy goal for projects of this type.
- Minor Adverse: the EMG2 Project's GHG impacts would be compatible with the UK's 1.5°C trajectory and would comply with up-to-date policy and 'good practice' emissions reduction measures. The EMG2 Project would fully comply with, or exceed, measures necessary to achieve the UK's net zero trajectory.
- Negligible: the EMG2 Project would achieve emissions mitigation that goes substantially beyond existing and emerging policy compatible with the 1.5°C trajectory and would have minimal emissions. The EMG2 Project would be fully consistent with good practice design standards for projects of this type.
- Beneficial: the EMG2 Project would result in emissions reductions from the atmosphere, whether directly or indirectly, compared to the without-project baseline. As such, its net GHG impacts would be below zero. The EMG2 Project would substantially exceed net zero requirements.

19.2.33. Major and moderate adverse effects and beneficial effects are significant in EIA terms. Minor adverse and negligible effects are not considered to be significant in EIA terms.

19.2.34. GHG emissions associated with a project are often reported as a whole life figure (net emissions) that takes account of all life stages. The net whole life figure is the key element for determining the EMG2 Project's whole life impact on climate change. However, it is noted in the IEMA guidance (2022) that due to the nature of GHG emissions, it is good practice to include a section that reports on the whole life GHG emissions associated with a project, alongside the sections that assess construction, operation, and decommissioning effects in isolation.

19.2.35. National Highways (2021) guidance sets out that the significance of effect of GHG emissions should be undertaken in comparison with the relevant UK carbon budgets. It also notes that benchmarking of project performance should be undertaken, by comparing normalised GHG

emissions to other highways projects. Significant effects should be reported where increases in GHG emissions will have a material impact on the ability of the UK Government to meet its carbon reduction targets.

19.2.36. The National Highways (2021) guidance has been considered in the contextualisation of emissions in the assessment of significance. However, the IEMA (2022) definitions of significance, set out in paragraph 19.2.32 above, have been used to establish the significance of GHG effects, given their more rigorous definitions and conservative assessment approach.

CCRA Methodology

19.2.37. Potential climatic conditions during the 2040-2069 and 2070-2099 time periods for the EMG2 Project have been considered based on the MOHC UKCP18 probabilistic projections (MOHC, 2024). Projections for the global emissions RCP 8.5 have been used as a worst case approach, as this is a high emissions scenario assuming 'business as usual' growth globally with little additional mitigation to combat climate change.

19.2.38. Further detail of the approach and data input is given in **Appendix 19C: Climate Change Risk Assessment (Document DCO 6.19C/MCO 6.19C)**.

19.2.39. An initial screening exercise has been undertaken, which has identified the relevant climate change risks on the EMG2 Project. A high level assessment of such risks has been undertaken, considering the hazard, the likelihood of the effect on the EMG2 Project and its users, and the consequence of that effect.

Impact Assessment Criteria

19.2.40. IEMA guidance (IEMA, 2020) defines climate change resilience as the 'ability to respond to changes in climate. If a receptor or project has good climate change resilience, it is able to respond to the changes in climate in a way that ensures it retains much of its original function and form. A receptor or project that has poor climate change resilience will lose much of its original function or form as the climate changes'.

19.2.41. The CCRA differs from many other EIA topics in that it considers how the resilience of a development is affected by an external factor (climate change) and not specifically how potential environmental receptors are affected by a development's impacts. Consequentially, the climate change risk assessment cannot easily be assigned significance with respect to the severity of impacts in the same way as for the other topics. Instead, a risk-analysis based approach has been used for the assessment.

19.2.42. In accordance with IEMA (2020) and National Highways (2021) guidance, a risk assessment has been undertaken, considering the hazard, the likelihood of the effect on the EMG2 Project and its users, and the consequence of that effect.

19.2.43. Each element of the risk assessment (likelihood and consequence) has been evaluated following the definitions in **Table 19.4** and **Table 19.5** below (adapted from National Highways (2021)). An assessment of significance has been subsequently undertaken according to **Table 19.6** (adapted from National Highways (2021)).

19.2.44. Where relevant, the likelihood and consequence definitions provided within the National Highways (2021) guidance have been adapted to make them suitable for the receptors identified. For example, levels of consequence for the EMG2 Works have been classified according to disruption to site operations, rather than disruption to a strategic route.

19.2.45. As set out in paragraph 19.2.37, climate projections in the mid- to late-century have been used to capture the range of climatic changes over the project lifetime, which aligns with the 60 year assessment period as recommended by National Highways (2021) guidance.

Table 19.4: Likelihood Category Definitions

Likelihood Category	Description (Probability and Frequency of Occurrence)
Very high	The event occurs multiple times during the lifetime of the project (60 years) e.g. approximately annually, typically 60 events.
High	The event occurs several times during the lifetime of the project (60 years) e.g. approximately once every five years, typically 12 events.
Medium	The event occurs limited times during the lifetime of the project (60 years) e.g. approximately once every 15 years, typically 4 events.
Low	The event occurs during the lifetime of the project (60 years) e.g. once in 60 years.
Very low	The event can occur once during the lifetime of the project (60 years).

Table 19.5: Consequence Category Definitions

Consequence of Impact	Description
Very large adverse	Operation – national level (or greater) disruption to strategic route(s) lasting more than 1 week.
Large adverse	Operation – national level disruption to strategic route(s) lasting more than 1 day but less than 1 week or regional level disruption to strategic route(s) lasting more than 1 week.
Moderate adverse	Operation – regional level disruption to strategic route(s) lasting more than 1 day but less than 1 week.
Minor adverse	Operation – regional level disruption to strategic route(s) lasting less than 1 day.
Negligible	Operation – disruption to an isolated section of a strategic route lasting less than 1 day.

Table 19.6: Significance Matrix

		Measure of Likelihood				
		Very low	Low	Medium	High	Very high
Measure of Consequence	Very large	NS	S	S	S	S
	Large	NS	NS	S	S	S
	Moderate	NS	NS	S	S	S
	Minor	NS	NS	NS	NS	NS
	Negligible	NS	NS	NS	NS	NS

NS: Not significant in EIA terms, S: Significant in EIA terms.

Limitations of the Assessment

19.2.46. When assessing climate risks, uncertainty arises from both modelling uncertainty and natural variability in the potential magnitude of future changes in climate. Therefore, a high magnitude of change scenario and the high end of probabilistic projections have been used, to provide a precautionary worst case approach. This is further discussed in **Appendix 19C: Climate Change Risk Assessment** (**Document DCO 6.19C/MCO 6.19C**).

19.2.47. Some of the construction stage GHG emissions associated with the manufacturing of components may occur outside the territorial boundary of the UK and hence outside the scope of the UK's national carbon budget, policy and governance. However, in recognition of the climate change effect of GHG emissions (wherever they occur) and the need to avoid 'carbon leakage' overseas when reducing UK emissions, emissions associated with the construction stage have been presented within the assessment and quantification of GHG emissions as part of the EMG2 Project.

19.2.48. When considering the assessment of emissions resultant from the EMG2 Project, due to the early stage in the development design, the detailed design of the DCO Scheme and MCO Scheme has not yet been fully specified. Thus, there is a degree of uncertainty regarding the construction stage GHG emissions resulting from the manufacturing and construction of the EMG2 Project.

19.2.49. The assessment has therefore sought to limit the impact this may have by assessing a maximum design scenario (which will result in a conservative or worst case assessment). The maximum design scenario is based on the parameters set out in **Chapter 3**: **Project Description** (**Document DCO 6.3/MCO 6.3**). The following items comprise the main assumptions made for the maximum design scenario for the EMG2 Project:

- An estimated bill of materials for the buildings elements (i.e. warehousing and office space) of the EMG2 Works and the MCO Scheme was developed based on recently constructed similar developments by SEGRO. Though exact material specifications will be subject to change informed by a range of factors (such as availability of the material in proximity to the EMG2 Project), SEGRO are committed to a comparable

level of low carbon design, as a minimum, for the EMG2 Project, and are committed to Net Zero across all business operations by 2050 at the latest, including emissions from development embodied carbon. The information provided is therefore deemed to suitably capture the material types and quantities to be used at the EMG2 Project.

- An estimated bill of materials for the internal road network, external road network and bridge construction was provided by the project team. The information provided was deemed to suitably capture the material types and quantities to be used for the EMG2 Project.
- An estimated bill of materials for the drainage infrastructure was provided by the project team. The information provided relates to the site-wide drainage solution, with high-level details provided only, reflecting the level of design available at the time of assessment. The information provided was deemed however to suitably capture the material types and quantities to be used for the EMG2 Project.
- Emissions associated with the construction plant during the construction-phase was calculated using a plant schedule provided by the project team, scaled by the construction programme outlined in **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**). It is considered that this is representative of the construction work to be undertaken for the EMG2 Project.
- Emissions associated with construction and operational traffic movements were informed by detailed traffic modelling. The assumptions underlying this modelling can be found in **Chapter 6: Traffic and Transport** (**Document DCO 6.6/MCO 6.6**). In particular, operational traffic models are based on a 2038 reference year. To maintain consistency with this reference year, operational traffic emissions for the Highways Works have been calculated using a 2038 input year for the Emissions Factor Toolkit (EFT) v13.1 (Defra, 2025).
- Emissions associated with building energy demand has included both regulated and unregulated energy[1], to ensure all material downstream impacts of the EMG2 Project buildings have been accounted for. However, unregulated energy demand has been calculated without knowledge of occupier activities (including whether warehouses will be predominantly refrigerated or unrefrigerated), and as such has used standard UK Government National Calculation Methodology (NCM) templates for buildings within the B8 category. As such, true energy consumption (and resultant emissions) will vary significantly depending on how the end user utilises the building. NCM templates are considered to reflect an appropriately conservative estimate of unregulated energy demand.

19.2.50. With regards to emissions associated with operational traffic movements, it is important to note that the EMG2 Project forms the second phase of the East Midlands Gateway Logistics Park (EMG1). The existing EMG1 Rail Freight Terminal will serve both existing occupiers and new occupiers on the EMG2 Works and MCO Scheme (Plot 16). By utilising the Rail Freight Terminal, tenants could reduce the number of long-haul heavy goods vehicle (HGV)

[1] Regulated energy arises from controlled fixed building services and fittings, such as space heating and cooling, lighting, hot water and ventilation. Unregulated energy arises from other tenant installations and non-fixed appliances.

movements required, hence reducing operational emissions associated with transport movements.

19.2.51. However, as stated in **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**), no additional capacity for train movements is proposed at the rail freight interchange. It is not possible for the Applicant to determine the extent to which future tenants will utilise the Rail Freight Terminal. The impact of emissions reductions from the use of the Rail Freight Terminal by EMG2 Works and MCO Scheme occupiers therefore cannot be quantified within the main assessment presented in Sections 19.5, 19.6 and 19.7.

19.2.52. Instead, the impacts have been considered qualitatively within Sections 19.5, 19.6 and 19.7 as relevant. Emissions associated with the transport of goods by HGV exceeds those associated with rail (0.10163 kgCO_2e per tonne per km for average laden HGVs, compared to 0.02779 kgCO_2e per tonne per km for rail, offering a 73% reduction (DESNZ and Defra, 2025)). As such, any use of the rail freight interchange during the operation of the EMG2 Project will likely result in a reduced magnitude of emissions compared to those assessed. The assessment presented therefore represents a conservative scenario with regards to emissions arising from operational HGV movements.

19.2.53. The above uncertainties are integral to the assessment of climate change effects, but a precautionary approach has been taken as far as practicable to provide a reasonable worst case assessment.

19.2.54. On the basis of the above, it is considered that limitations to the assessment have been minimised and that the results provide a robust estimate of the effects of the EMG2 Project.

19.3. Policy, Guidance and Legislative Context

19.3.1. A summary of relevant policy, guidance and legislation is given in this section. Full references and detail are provided in **Appendix 19A: Climate Change Policy Review** (**Document DCO 6.19A/MCO 6.19A**). This section of the chapter is common to both the DCO Application and the MCO Application.

National Planning Policy and Legislative Context

Climate Change Act 2008

19.3.2. The Climate Change Act 2008 as amended created a framework for setting a series of interim national carbon budgets and plans for national adaptation to climate risks. The Act requires the UK Government to set carbon budgets[2] for the whole of the UK.

19.3.3. At present, the Fourth, Fifth and Sixth Carbon Budgets, set through the Carbon Budget Orders 2011, 2016 and 2021 are 1.95 giga tonnes carbon dioxide equivalent ($GtCO_2e$) for 2021-2027, 1.73 $GtCO_2e$ for 2028-2032, and 0.97 $GtCO_2e$ for 2033-2037 respectively. The Sixth Carbon Budget is the first Carbon Budget that is consistent with the UK's net zero target, requiring a 78% reduction in GHG emissions by 2035 from 1990 levels.

19.3.4. The Act also established a requirement for the UK Government to publish a CCRA every five years to assess the risks for the UK from the current and predicted impacts of climate change.

19.3.5. The UK's Nationally Determined Contributions (NDC) (BEIS, 2022; DESNZ, 2025) under the Paris Agreement to the United Nations Framework Convention on Climate Change (UNFCCC) commits the UK to reducing economy-wide GHG emissions by at least 68% by 2030 and 81% by 2035, compared to 1990 levels.

National Networks National Policy Statement

19.3.6. The National Networks National Policy Statement (NPS) (Department for Transport, March 2024) sets out the UK Government's policy for the delivery of nationally significant road and rail networks. It sets out requirements for both climate change adaptation and climate change mitigation, including:

- *"Applicants must consider the direct (e.g., flooding of road or rail infrastructure) and indirect (e.g., flooding of other parts of the road or rail network) impacts of climate change when planning the location, design, build, operation and maintenance"* (paragraph 4.39).
- Paragraphs 4.40-4.42 requires that the latest UK Climate Projections and associated research and expert guidance (such as the Environment Agency's Climate Change

[2] A carbon budget places restrictions on the total amount of GHGs that can be emitted. The budget balances the input of CO_2 to the atmosphere by emissions from human activities, by the storage of carbon (i.e. in carbon reservoirs on land or in the ocean).

Allowances for Floor Risk Assessments) should be used to identify and assess mitigation or adaptation measures.

- Paragraphs 5.31 to 5.34 require the applicant to assess GHG emissions across the lifecycle of a project. *"All proposals for national network infrastructure projects should include a Whole Life Carbon Assessment at critical stages in the project lifecycle."*
- Paragraph 5.35 sets out that *"a carbon management plan should be produced as part of the Development Consent Order submission"*, which should include a WLC assessment, details of the mitigation measures taken to reduce GHG impacts using the carbon reduction hierarchy, and the level of any residual emissions in the context of relevant statutory carbon budgets.

19.3.7. Further detail of the National Networks National Policy Statement is presented in **Appendix 19A** (**Document DCO 6.19A/MCO 6.19A**).

National Planning Policy Framework (NPPF)

19.3.8. The NPPF (2024) highlights the importance of the UK's transition to a low carbon future in a changing climate and stresses the overarching objective to achieve sustainable development.

19.3.9. Paragraph 161 states that the planning system should "shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience" and "encourage the reuse of existing resources".

19.3.10. Paragraph 164 states that new development should "avoid increased vulnerability to the range of impacts arising from climate change… care should be taken to ensure that risks can be managed through suitable adaptation measures". Further, new development should be planned in ways that "help to reduce greenhouse gas emissions, such as through its location, orientation and design".

19.3.11. Paragraph 165 supports the deployment of renewable and low carbon energy sources, where opportunities should be identified for development *"to draw its energy supply from decentralised, renewable or low carbon energy supply systems"*.

National Climate Change Policy and Strategy

19.3.12. National climate change policy and strategy (as detailed within **Appendix 19A** (**Document DCO 6.19A/MCO 6.19A**) provides additional information with regards to the UK's approach to reach net zero by 2050. Key drivers detailed include the decarbonisation of UK electricity supply through the increased supply of renewable and low carbon energy, improved building energy efficiency, and decarbonisation of the built environment through material substitution and increased resource efficiency.

19.3.13. The National Infrastructure Strategy focuses on the investment and delivery of infrastructure, which is fundamental to delivering net zero emissions by 2050 (HM Treasury, 2020). The strategy sets out the UK Government's plans to deliver on this target, decarbonising the economy and adapting to climate change, through reforms in power, transport and buildings.

19.3.14. The Net Zero Strategy: Build Back Greener (BEIS, 2021a) sets out the UK's long term plans to meet net zero emissions by 2050, promoting the transition to low carbon buildings by focusing on the phase out of natural gas, increased energy efficiency, and improved resource efficiency and material substitution.

19.3.15. The Industrial Decarbonisation Strategy (BEIS, 2021c) covers the full range of UK industry sectors, including construction, and sets out the ambition to decarbonise industry in line with the UK's net zero by 2050 target. The Strategy supports and encourages resource efficiency and material substitution and supports circular economy principles within construction, including reuse, repair, recycling and reducing the quantity of materials used within manufacturing.

19.3.16. The Heat and Buildings Strategy (BEIS, 2021b) sets out how construction and improvement of new and existing buildings can follow in line with a low-carbon future, and to achieve the elimination of "virtually all emissions arising from heating, cooling and energy use in our buildings". The Strategy highlights that to achieve this, there must be improvements in the thermal efficiency of buildings, internal heat and cooling distribution systems, energy storage and smart technologies to control and monitoring of energy usage.

19.3.17. The Seventh Carbon Budget: Advice for the UK Government (Climate Change Committee, 2025) provides advice on the volume of emissions that can be emitted during the period 2038-2042 and sets out changes to policy that could achieve the emissions targets. It also includes measures for non-residential buildings and industrial sectors to achieve the carbon budget, including continued electrification of buildings and construction processes, and building efficiency measures. Developments should also have climate resilience in mind to account for the impacts of future climate change.

Local Policy

North West Leicestershire Local Plan 2011-2031

19.3.18. Chapter 12 of the North West Leicestershire Local Plan 2011-2031 (North West Leicestershire District Council (NWLDC), 2021) states its intention to prepare for, limit and adapt to climate change by *"ensuring a sustainable pattern of development"* and *"ensuring that new developments incorporate appropriate adaptation and mitigation for climate change"*. The Plan outlines several examples of climate change mitigation and adaptation measures to be included within development design. The supporting text at Paragraph 6.25 for Policy D1 (Design of New Development) include *"incorporating small scale renewables into the design of new developments"*, *"planting, shading and advanced glazing systems to reduce solar heat gain during the summer"*, and *"incorporating EV charging points where viable and appropriate to do so"*.

Draft North West Leicestershire Local Plan

19.3.19. The Draft North West Leicestershire Local Plan (Regulation 18 consultation) sets out draft policies to replace the existing Local Plan (NWLDC, 2024). It should be noted that the content of the draft plan does not constitute current policy. The draft Plan includes requirements for developments to "*achieve energy efficiency targets in line with the latest standards*", "*demonstrate that measures have been taken to minimise energy consumption*

by following the steps in the energy hierarchy", "*demonstrate that measures have been taken to reduce lifecycle carbon emissions"* and "*renewable energy generation should be maximised as much as possible onsite".*

North West Leicestershire District Council Climate Emergency

19.3.20. NWLDC declared a climate emergency in 2019, prompting the publication of their Zero Carbon Roadmap (NWLDC, 2019) and Action Plan (NWLDC, 2020) which go further than local policy and outline the ways in which NWLDC could achieve Zero Carbon by 2030 (Council emissions only), and Zero Carbon for the district as a whole by 2050. While the EMG2 Project aligns with the actions recommended within the roadmap and action plan, it is important to note that they do not constitute official guidance or policy. Further detail is provided within **Appendix 19A** (**Document DCO 6.19A/MCO 6.19A**).

Guidance and Recommendations

19.3.21. The main guidance used for the assessment of GHG emissions in EIA is the IEMA guide *'Assessing Greenhouse Gas Emissions and Evaluating their Significance'* (IEMA, 2022). The DMRB guidance document LA 114: Climate (National Highways, 2021) has also been used for the assessment of GHG emissions.

19.3.22. The main guidance documents with regard to climate risk and resilience assessment within the context of EIA is the *'Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation'* (IEMA, 2020) and the DMRB guidance document LA 114: Climate (National Highways, 2021).

19.3.23. Additional guidance used for the quantification of GHG emissions includes:

- The Greenhouse Gas Protocol suite of documents (World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD), 2004);
- UK Government GHG Conversion Factors for Company Reporting (DESNZ and Defra, 2025);
- Royal Institute for Chartered Surveyors (RICS) Professional Standard: Whole Life Carbon Assessment for the Built Environment (2nd Edition) (RICS, 2024); and
- PAS 2080 – Carbon Management in Buildings and Infrastructure (The British Standards Institution (BSI), 2023).

19.4. Approach to Assessment of Applications

19.4.1. In recognition that this Chapter forms part of a single ES covering both the DCO Application and the MCO Application (as explained in Section 19.1 and in full within **Chapter 1: Introduction and Scope (Document DCO6.1/MCO 6.1)**) it makes a clear distinction between the component parts and, consistent with the dual application approach, assesses the impacts arising from the DCO Application and MCO Application separately and then together as the EMG2 Project in combination.

19.4.2. An assessment of the cumulative impacts of the EMG2 Project with other existing and, or approved developments, has also been completed using the list of projects identified in **Appendix 21B** to **Chapter 21: Cumulative Impacts** (**Document DCO 6.21B/MCO 6.21B**).

19.4.3. Accordingly, the remaining sections of this Chapter are structured as follows:

- An Assessment of the DCO Scheme within Section 19.5;
- An Assessment of the MCO Scheme within Section 19.6;
- An Assessment of the EMG2 Project as a whole, comprising the DCO Scheme and MCO Scheme together, within Section 19.7;
- An Assessment of the EMG2 Project as a whole in combination with other planned development (i.e. the cumulative effects), within Section 19.8; and
- An overall summary and conclusions of the above within Section 19.9.

19.5. Assessment of DCO Application

19.5.1. As set out in Section 1 of this Chapter, and at **Table 9.1**, the DCO Scheme is comprised of the following component parts:

- The EMG2 Works: Logistics and advanced manufacturing development located on the EMG2 Main Site together with the provision of a Community Park, HGV parking, a bus interchange, and an upgrade to the EMG1 substation; and
- The Highway Works**:** Works to the highway network: the A453 EMG2 access junction works; significant improvements at Junction 24 of the M1 (referred to as the J24 Improvements) and works to the wider highway network including active travel works.

Baseline Conditions

Current Baseline

19.5.2. With regard to current climate, the baseline is the local and regional climate and resulting weather patterns recorded in Met Office data. This is in the context, however, of wider trends in global climatic changes affecting the UK climate, which at their present rates may be considered part of the known baseline. The current climate baseline is set out in **Appendix 19C** (**Document DCO 6.19C/MCO 6.19C**) and summarised below. The climate baseline (set out below in paragraphs 19.5.3 to 19.5.6) is common to both the DCO Scheme, the MCO Scheme and hence the EMG2 Project as a whole.

19.5.3. The Midlands region experiences a temperate climate, with annual average maximum and minimum temperatures of 13.9°C and 6.1°C respectively, recorded at Sutton Bonington climate station (Met Office, 2020). Over the 1981-2010 baseline period, average maximum temperatures reached 21.7°C in July and minimum temperatures fell to an average of 1.3°C in February. This is consistent with regional climate patterns for the Midlands, though temperatures recorded at Sutton Bonington climate station are slightly warmer than the wider region. In recent years, temperature fluctuations have resulted in extreme high temperatures in the summer months, including in July 2022 when a temperature of 40.2°C was recorded in Pitsford, Northants (Met Office, 2024a).

19.5.4. Annual average precipitation recorded at Sutton Bonington climate station is lower than that reported regionally and nationally, at 620.2 mm a year (compared to 792.7 mm in the Midlands region and 1,142.0 mm across the UK). However, recent extreme weather events have resulted in very large amounts of rainfall in the Midlands region, with 186 mm of rain falling in Leicestershire in September 2024 (Met Office, 2024b).

19.5.5. Annual average wind speeds at Sutton Bonington are lower than the wider Midlands region and the UK as a whole, at 6.89 kn (compared to 7.97 kn in the Midlands region and 9.37 kn across the UK).

19.5.6. Overall, the DCO Scheme is located in an area with a warm, relatively dry and sheltered climate compared to the UK as a whole. Rainfall is consistently lower throughout the year than the UK average.

19.5.7. With regard to GHG emissions, the current baseline is the current use of the site and any associated GHG emissions or removals. This includes predominantly agricultural land divided by hedgerows with no previous development and the EMG1 substation and adjoining amenity grassland (EMG2 Works), and the existing road network, public footpaths, and land adjacent to the road network (Highways Works).

Future Baseline

19.5.8. With regard to future climate, the future baseline can be considered using the UK Climate Projections 2018 (UKCP18) published by the Met Office Hadley Centre, which encompass the potential climatic outcomes in the UK from a range of potential global emissions and climate change scenarios. The change in baseline over time for climate change is set out in **Appendix 19C** (**Document DCO 6.19C/MCO 6.19C**) and summarised below. This future baseline section is common to both the DCO Scheme, the MCO Scheme and hence the EMG2 Project as a whole.

19.5.9. Climate change has been identified as a process that is already taking place in the UK, in both academic research and all legislation and policy referenced in **Appendix 19A** (**Document DCO 6.19A/MCO 6.19A**). In the near future, roughly within the next few years to a decade, variations in average temperature and precipitation are likely to be the most visible in terms of year-to-year changes in climate. In subsequent decades, within the operating lifetime of the EMG2 Project, anthropogenic climatic changes are expected to become more apparent.

19.5.10. In summary, the data presented in **Appendix 19C** (**Document DCO 6.19C/MCO 6.19C**) shows increased intensity in seasonal precipitation trends: precipitation is predicted to increase during the wettest season and decrease during the driest season. Temperatures are anticipated to increase across the year, both during the coldest and hottest seasons and months. Additionally, humidity is anticipated to increase. These trends will continue and amplify towards the end of the century.

19.5.11. With regard to GHG emissions, the future baseline trend is towards the decarbonisation of the built environment and transport sector. This is based within the context of the 'climate emergency' as declared by the UK Government, and the reaffirmed commitments to the Paris Agreement targets within the recent Conference of Parties (COP29). Further, under the Climate Change Act 2008 as amended, the UK is committed to achieving net zero emissions nationally by 2050.

19.5.12. The future baseline encompasses changes in the baseline carbon intensity of factors such as electricity, heating fuel, transport fuel or energy and the embodied carbon in construction materials. It also encompasses changes in baseline road user emissions. All of these are expected to decrease over time in line with national decarbonisation policy goals. For the purpose of this assessment, present-day values have been used (appropriately representative of the construction period and initial year of operation) to provide a conservative assessment. Decarbonisation scenarios have been assessed qualitatively, where relevant. It is noted that notwithstanding the specific mitigation for the DCO Scheme, operational emissions from energy consumption and road user emissions are likely to decrease during its lifetime due to the decarbonisation of the grid and shift towards electric vehicles as set out in national policy.

19.5.13. The future baseline GHG emissions for existing land-use without the DCO Scheme are expected to remain similar.

Potential Impacts

19.5.14. This section of the Chapter considers the potential impacts of the DCO Scheme. It first outlines the embedded mitigation before continuing with the potential impact assessments, split into construction and operation phases, for both the assessment of climate risk and resilience (the CCRA), and the assessment of the DCO Scheme on climate change (the GHG Assessment).

Embedded Mitigation

19.5.15. As part of the DCO Scheme design process, a number of embedded mitigation design measures have been proposed to reduce the potential for impacts on and from climate change. They are considered at every stage of the DCO Scheme through design and best practice and, as there is a commitment to implementing these measures, these have been considered in the assessment presented in this section.

Construction Phase

GHG mitigation measures

19.5.16. The Highway Works design will minimise the need for slope stabilisation by designing shallow (1 in 3 or shallower) slopes. As such, no slope stabilisation measures have been specified in the design.

19.5.17. The DCO Scheme's principal earthworks strategy relates to the EMG2 Works and a cut/fill balance will be achieved. On-site materials (i.e. excavated soils) will be used for bund creation to minimise the requirement for imported materials.

19.5.18. As part of the drainage strategy, the EMG2 Works will include permeable paving which, owing to the materials used in permeable paving compared to conventional surfacing, has a reduced GHG intensity per m^2 of developed area. Further details of the drainage strategy can be found in **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13/MCO 6.13**).

Operation Phase

CCRA mitigation measures

19.5.19. Flood risk protection and resilience across the DCO Application should be implemented as specified in **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13/MCO 6.13**).

19.5.20. Measures to mitigate against other climate change risks are set out in **Appendix 19C** (**DCO Document 6.19C/MCO 6.19C**). These comprise standard best practice design measures, and include:

- **EMG2 Works**:
    - Building design to include adequate ventilation, in line with building regulations, and design to minimise excessive solar gain during the summer.
    - Building design to maximise water efficiency during operations and include water recycling measures within building design.
    - Building design to follow regulations for structural design with safety margin. Ensure appropriate maintenance schedule.
    - Green infrastructure to be included within development design, which has the potential to reduce urban temperatures.
    - Internal road and parking design to be in line with best practice design standards.
    - Regular maintenance of road and parking surfaces to be undertaken.
    - Drainage infrastructure will be designed to adequately manage rainfall and runoff.
- **Highway Works**:
    - Road design in line with latest available National Highways design standards, including for structural safety, emergency and maintenance vehicle access.
    - Regular maintenance of road surfaces to be undertaken.
    - Bridge design in line with latest available National Highways design standards.

GHG mitigation measures

19.5.21. Warehouse units will be designed such that they have the ability for occupiers to be net zero in operation. This will be achieved through wide ranging energy efficiency initiatives including targeting an EPC 'A' rating and a minimum of BREEAM 'Excellent' as part of SEGRO base build specification and on-site installation of solar PV generating renewable energy for occupiers, and enabling decarbonisation in parallel with grid electricity. Specific mitigation measures are set out in more detail below.

19.5.22. The Energy Report appended to this chapter (**Appendix 19D (Document DCO 6.19D/MCO 6.19D**) details the means by which the emissions associated with the operational energy demand of the DCO Scheme buildings will be reduced. The strategy follows the energy hierarchy: be lean (reduce building energy consumption), be clean (supply the energy required in an efficient manner), and be green (supply remaining energy from low carbon and renewable energy sources).

- 'Be lean' mitigation measures are:
    - Building fabric elements and glazing specifications significantly improved to the Building Regulation requirements.
    - Reduced air permeability compared to maximum required standards.
    - Specification of efficient heating services and control systems.
    - Energy efficient lighting throughout the development.

- The Energy Report has evaluated the feasibility of 'be clean' measures, notably connection of the EMG2 Works to an area wide heat network, and use of a Combined Heat and Power (CHP) unit. Both have been assessed as infeasible due to the lack of existing district heating networks and major local heat sources, and low heating demand of the EMG2 Works.
- With regards to the final level of the energy hierarchy – be green – solar PV will be installed on 20% of unit available roof areas to provide renewable energy supply for the remaining demand after energy efficiency measures are applied. In addition, the structural design of the buildings allows for 100% of unit available roof areas to be covered by solar PV to enable the buildings to be 'future-proofed' should there be additional demand for renewable energy on-site. This aligns with the National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2024) and North West Leicestershire Local Plan (NWLDC, 2021) which supports the deployment of renewable and low carbon sources (see Appendix 19A **Document DCO 6.19A/MCO 6.19A** and Appendix 19D **Document DCO 6.19D/MCO 6.19D**, for further detail).
- Overall, the buildings will be designed to meet the requirements of the Future Buildings Standard.

19.5.23. As part of the landscaping design, areas of woodland planting with the EMG2 Works are proposed. The landscape planting proposed would sequester carbon over the DCO Scheme's lifetime as the woodland matures.

Construction Phase

CCRA

19.5.24. Due to the relatively short construction programme (construction is anticipated to be phased over a 5 year period, with all components of the EMG2 Project anticipated to be fully operational by 2032), variations in climatic parameters would be minimal compared to the present day baseline. Construction work practices are being adapted to existing climate conditions and weather in the UK. **Appendix 19C** (**Document DCO 6.19C/MCO 6.19C**) summarises potential changes in climatic parameters further into the future. These changes are likely to occur gradually, and it is considered that construction contractors will be able to adapt working methods over time, if necessary, should the development be built in later phases. For example, warmer winter conditions may extend the time certain construction activities, such as concrete pouring, can be carried out. A greater chance of summer heatwave conditions may require adaptations, such as shading work areas or increased attention to construction dust control measures.

19.5.25. Direct short term negligible and therefore no significant effects are predicted in the construction phase as a result of climate change for the DCO Scheme. As such, no further consideration of construction phase impacts of climate change will be given.

GHG Assessment

19.5.26. This section considers the embodied carbon emissions associated with the consumption of materials and fuel required to construct the elements of the DCO Scheme. Construction emissions correspond to LCA stages A1-A5[3].

19.5.27. A summary of the methodology used to calculate construction stage emissions is provided in the paragraphs below, common to both the DCO Scheme and MCO Scheme. Further details are provided in **Appendix 19B** (**Document DCO 6.19B/MCO 6.19B**). The impacts of the DCO Scheme are summarised in **Table 19.7**.

19.5.28. Construction emissions associated with the EMG2 Works would arise from the following:

- embodied emissions from the manufacturing and construction of the buildings;
- embodied emissions from the manufacturing and construction of the ancillary infrastructure;
- construction activities (including transport of materials to site and energy use by construction plant); and
- land use change including landscape planting and bunding.

19.5.29. Construction emissions resultant from the Highway Works would arise from the following activities:

- manufacturing and construction of strategic and local highways infrastructure;
- construction activities (including transport of materials to site and energy use by construction plant); and
- land use change.

19.5.30. A published benchmark (OneClick LCA, 2023) has been used to estimate emissions associated with the construction of the EMG2 Works buildings without mitigation, given such benchmarks present business-as-usual construction emissions intensities. The benchmark (605 $kgCO_2e/m^2$) is specific to UK warehouses, and corresponds to LCA stages A1-A3. This benchmark was scaled by the total gross internal area (GIA) of the buildings, as informed by the Parameters Plans (**Document DCO 2.5/MCO 2.5**) and Illustrative Masterplans (**Document DCO 2.6** and **Document MCO 2.6**).

19.5.31. Construction phase emissions associated with the proposed solar PV have been calculated by scaling the proposed roof area PV coverage, by an EPD for monocrystalline solar panels (148 $kgCO_2e/m^2$) (OneClick, 2025).

19.5.32. Infrastructure emissions across the DCO Scheme (i.e. internal and external road network, parking and loading areas, access works, drainage and additional civil infrastructure such as the bridge) have been informed by material estimates provided by the project design

[3] Carbon life-cycle stages A1-A3 refer to the 'product' stage embodied emissions (i.e. the emissions associated with the extraction, processing and manufacturing of building materials). Carbon life-cycle stages A4 and A5 refer to the 'construction' stage embodied emissions (i.e. the emissions associated with the transport of building materials to the construction site and all construction processes on-site) (RICS, 2024).

team. These were then scaled by relevant emissions factors, as reported within the OneClick LCA Materials database (OneClick LCA, 2025) and manufacturer-specific Environmental Product Declarations (EPDs). Emissions factors used align with business-as-usual material specifications, and do not account for any best practice reduced embodied carbon materials.

19.5.33. The potential impact of the substation plant has been estimated using data from EPDs for switchgear (2,466 kgCO_2e per unit), alongside a published benchmark (RICS, 2012) to estimate emissions associated with the substation buildings.

19.5.34. Emissions associated with transport of material and personnel to site (LCA stage A4) have been calculated based on total construction HGV, light goods vehicle and car movements, scaled by average travel distances (RICS, 2024; Department for Transport, 2024b) and appropriate emissions factors (DESNZ and Defra, 2025).

19.5.35. Indicative on-site plant specifications and hours of use over the construction period were used in combination with appropriate emissions factors (OneClick LCA, 2025), to calculate emissions associated with the site construction activities (LCA stage A5).

19.5.36. The current land use for the DCO Scheme is predominantly arable and undeveloped land, existing road network, public footpaths, and land adjacent to the road network. Desk study and field study data (see **Chapter 15: Agriculture and Soils**, **(Document DCO 6.15/MCO 6.15)**, and **Chapter 14: Ground Conditions** (**Document DCO 6.14/MCO 6.14**) demonstrate the absence of any significant carbon stores across the site, such as peat or woodland. As such any emissions resulting from the change in land use would be negligible.

Magnitude of Impact

19.5.37. The estimated GHG emissions arising from the construction stage of the DCO Scheme is presented in **Table 19.7**.

Table 19.7: DCO Application – estimated construction stage GHG emissions (potential impacts)

LCA Stage	Item	Magnitude of Impact (tCO_2e)
A1-A3	Buildings	185,449
	Infrastructure	16,363
A4-A5	Construction transport and site activities	38,636
A1-A5	Total	240,448

Sensitivity of the Receptor

19.5.38. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.5.39. The magnitude of impact of the DCO Scheme is assessed to be 240,448 tCO_2e and the sensitivity of the receptor is high. Consistent with paragraph 19.2.30, the magnitude of emissions has been considered within the context of the UK Carbon Budget (set out in paragraph 19.3.3) and comprises 0.002% and 0.011% of the Fourth and Fifth UK Carbon Budgets (accounting for the phased construction detailed within **Chapter 3: Project Description, Document DCO 6.3/MCO 6.3**).

19.5.40. While the contribution of the DCO Scheme to the UK Carbon Budgets is negligible, the embedded mitigation measures detailed above are not considered to be sufficient to enable the construction of DCO Scheme to go above a 'business as usual' approach, and align with current and emerging local and national climate policy regarding the transition towards net zero.

19.5.41. Therefore, considering the magnitude of GHG emissions set out in **Table 19.7** and the absence of mitigation or reduction of emissions, based on the definitions in paragraphs 19.2.31 and 19.2.32 the magnitude of impact of DCO Scheme on the high sensitivity receptor would result in a significant moderate adverse construction-stage effect, prior to consideration of further mitigation measures.

Operational Phase

CCRA

19.5.42. As set out in paragraph 19.2.41, assessment of climate change risk cannot easily assign a magnitude of impact or sensitivity of receptor to determine a significance of effect. Instead, a risk-based approach has been applied, which considers the hazard, the likelihood of the effect on the DCO Scheme and its users, and the consequence of that effect. Likelihood and consequence criteria are set out in **Table 19.4** and **Table 19.5**, and the subsequent significance matrix is set out in **Table 19.6**.

19.5.43. The risk assessment in **Appendix 19C** (**Document DCO 6.19C/MCO 6.19C**) identifies several risks to the DCO Scheme that have the potential to be significant. These are set out below, with the exception of flood risk, which is assessed separately in **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13/MCO 6.13**):

- High temperatures resulting in overheating within buildings leading to worker health impacts, for the EMG2 Works.
- High temperatures and temperature fluctuations causing thermal contraction and expansion of the pavement, resulting in pavement surfaces cracking.
- Structural damage to buildings and pavement resulting from subsidence caused by drought (shrinking and swelling of soils due to excessive rainfall and drought), for the EMG2 Works.
- Structural damage to buildings resulting from extreme weather events (storms or snow loads) for the EMG2 Works.

- Structural damage to bridge structure resulting from subsidence caused by drought (shrinking and swelling of soils due to excessive rainfall and drought), for the Highway Works.

19.5.44. Considering the mitigation measures set out in paragraphs 19.5.19 and 19.5.20, the CCRA concluded that the effect of climate change on the operation of the DCO Scheme is negligible with no risk being assessed as significant. This is not significant in EIA terms.

GHG Assessment

19.5.45. This section considers the GHG emissions associated with the operation of the DCO Scheme. Operational emissions correspond to LCA stages B1-B8[4].

19.5.46. The use of the DCO Scheme post-completion would result in direct and indirect GHG emissions due to the combustion of fuel and use of electricity within the buildings and the road traffic generated by the DCO Scheme, and the use of materials required for material replacement and maintenance activities.

19.5.47. Operational emissions associated with the EMG2 Works would arise from the operational energy use within the buildings, road user emissions from HGV and commuter movements, and emissions from maintenance and material replacement activities. Operational emissions associated with the Highways Works include modified traffic flows from users of the road network as a result of the highways improvements, alongside emissions from maintenance and material replacement activities.

19.5.48. A summary of the methodology used to calculate such operational stage emissions is provided below. Further details are provided in **Appendix 19B** (**Document DCO 6.19B/MCO 6.19B**). The impact of the DCO Scheme is summarised in **Table 19.8**.

19.5.49. Energy demand associated with the EMG2 Works buildings was calculated within **Appendix 19D**: **Energy Statement** (**Document DCO 6.19D/MCO 6.19D**). Energy modelling was undertaken using the Government approved Integrated Environmental Solutions (IES) thermal modelling methodology. Embedded mitigation measures set out in paragraph 19.5.22 were considered in the modelling and ensure that the EMG2 Works buildings are in line with the indicative Future Buildings Standard specifications for non-domestic buildings (Department for Levelling up, Housing and Communities, 2024), with high levels of energy efficiency and no fossil fuel heating.

19.5.50. Annual GHG emissions resultant from the EMG2 Works buildings were calculated by scaling the calculated energy demand by relevant emission factors (DESNZ and Defra, 2025).

19.5.51. It should be noted that current static figures from the DESNZ and Defra (2025) GHG conversion factors have been used, and as such, the operational GHG emissions form a fixed current year estimate. As such, the annual emissions figure presented in **Table 19.8** below does not account for the steady decarbonisation of electricity that is expected in line

[4] Carbon life-cycle stages B1-B5 refer to in-use embodied emissions (i.e. emissions associated with the maintenance, repair, replacement and refurbishment of a development, including the embodied emissions of the required materials). Carbon life-cycle stages B6-B7 refer to the 'operational carbon' arising from operational energy and water use. Carbon life-cycle stage B8 refers to other 'user carbon' not included in operational energy and water use, which includes road user emissions (RICS, 2024).

with policy and legislation as the UK moves towards its net zero 2050 target. This therefore presents a conservative assumption for the magnitude of impact.

19.5.52. To calculate emissions associated with traffic movements to/from the EMG2 Works**,** annual average daily traffic (AADT) values for operational traffic movements have been sourced from **Chapter 6: Traffic and Transport** (**Document DCO 6.6/MCO 6.6**). These movements were scaled by average journey distance factors for HGV freight and commuters (Department for Transport, 2024b). Annual GHG emissions were then calculated by scaling the journey distances by relevant emissions factors (DESNZ and Defra, 2025).

19.5.53. It should be noted that, similarly to paragraph 19.5.51, the figure presented in **Table 19.8** below for traffic GHG emissions does not account for the steady decarbonisation of the transport sector that is in line with policy and legislation as the UK moves towards its net zero 2050 target. Furthermore, as detailed at paragraph 19.2.50 to 19.2.52, the calculation of emissions associated with HGV movements has not accounted for the use of the rail freight by tenants of the EMG2 Works, which would enable a reduction in the number of long-haul HGV movements in place of rail freight movements, likely resulting in a reduction of associated emissions.

19.5.54. Maintenance and repair (B2-B3) emissions have been calculated using industry benchmarks based on the total buildings construction area, in the absence of detailed maintenance and repair information (RICS, 2024). Material replacement (B4) emissions have been calculated by applying material design lifetimes from RICS (2024) and OneClick (2023), to the materials used to construct the EMG2 Works buildings and infrastructure.

19.5.55. It should be noted that, similarly to paragraph 19.5.51 above, annual refurbishment and maintenance emissions value presented in **Table 19.8** below do not account for the steady decarbonisation of the construction sector that is in line with policy and legislation as the UK moves towards its net zero 2050 target.

19.5.56. The operational emissions associated with the Highways Works include modified traffic flows from users of the road network as a result of the highways improvements. Emissions have been calculated using the EFT v13.1 toolkit (Defra, 2025), based on projected traffic flows with and without the Highways Works. A reference year of 2038 was used for the modelling, in line with the wider transport modelling.

19.5.57. There will be substantial landscape planting at the EMG2 Works, including mixed broadleaved woodland. When managed sustainably, woodland acts as a “carbon sink”, sequestering or removing CO_2 from the atmosphere over time. As such, the landscape planting will reduce total lifetime emissions associated with the DCO Scheme. The landscape plan (**Appendix 10D (Document DCO 6.10D/MCO 6.10D)**) includes an area of approximately 10.8 ha for mixed broadleaf woodland planting.

19.5.58. The emissions removals from woodland planting have been calculated using Woodland Carbon Code (WCC) modelling, an internationally recognised standard for calculating carbon storage from woodland restoration and planting projects.

Magnitude of Impact

19.5.59. The estimated GHG emissions arising from the operation of the DCO Scheme are presented in **Table 19.8**.

Table 19.8: DCO Application - operational GHG emissions (potential impacts)

LCA Stage	Item	Emissions per year of operation (tCO_2e)
B1-B4	Refurbishment and maintenance	920
B6	Energy use	12,667
B8	Transport	114,479
N/A	Land use change	-75
B1-B8	Total	127,992

Sensitivity of the Receptor

19.5.60. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.5.61. The magnitude of impact is assessed to be 127,992 tCO_2e per year and the sensitivity of the receptor is high. Consistent with paragraph 19.2.30, the magnitude of emissions comprises 0.007% and 0.066% of the Fifth and Sixth UK Carbon Budgets, respectively (set out in paragraph 19.3.3).

19.5.62. As noted in paragraph 19.5.12, the per annum energy consumption emissions do not account for future UK electricity grid decarbonisation, as the penetration of renewable energy resources increases: the UK government target is to achieve a fully decarbonised power system by 2035 (DESNZ, 2023). Additionally, the per annum transport emissions do not incorporate an increase in the proportion of zero emission vehicles on UK roads, or the use of the EMG1 Rail Freight Terminal (and thereby the associated reduction in long-haul HGV movements, replaced by lower emissions rail freight movements). The per annum refurbishment and maintenance emissions do not incorporate the projected decarbonisation of UK construction activities. As such, the magnitude of operational emissions reported likely presents an overestimate. Such factors have been accounted for qualitatively within the assessment.

19.5.63. ‘Be lean’ and ‘be green’ mitigation measures for the EMG2 Works buildings result in a 100% reduction in regulated energy emissions, compared to “business as usual” building design. The majority of building energy emissions arise from unregulated energy use, which the DCO Applicant has limited influence over.

19.5.64. The Net Zero Carbon Building Standard (NZCBS) pilot edition (UK Green Building Council, 2024) provides technical details on how UK buildings should be constructed and operated in a low-carbon way. A building that verifiably demonstrates alignment with the NZCBS is

classified as ‘Net Zero Carbon Aligned’. Should all UK buildings align to the NZCBS, the buildings sector would meet its share of the UK carbon budgets to enable a 1.5°C trajectory.

19.5.65. The pilot NZCBS contains limits for operational energy use specific to warehousing. For unrefrigerated warehouses, with construction starting in 2028, the operational energy use limit is 32 kWh/m^2 GIA per year, and for refrigerated warehouses the limit is 72 kWh/m^2 GIA per year. The EMG2 Works building operational intensity has been calculated to exceed the NZCBS limits. However, unregulated energy demand has been calculated without knowledge of occupier activities (including whether warehouses will be predominantly refrigerated or unrefrigerated), and as such has used standard UK Government National Calculation Methodology (NCM) templates for buildings within the B8 category, and true energy consumption (and resultant emissions) will vary significantly depending on how the end user utilises the building. It is therefore considered that the design of the buildings has reduced operational emissions as far as feasible, within the influence of the DCO Applicant.

19.5.66. As set out in paragraph 19.5.22 it is considered that the buildings elements of the EMG2 Works are in line with the indicative Future Buildings Standard requirements and are designed to have an EPC A rating. To do so, the building design has maximised fabric energy efficiency, specified energy efficient space heating, ventilation and lighting services and specified 20% available roof coverage of PV. Additionally, no gas boilers will be installed as part of the DCO Scheme. As such, no further retrofits will be necessary to enable the buildings to reduce operational emissions in line with the projected national grid decarbonisation.

19.5.67. Whilst 20% available roof coverage of PV has been specified at this stage (as future tenant energy demand is unknown at this stage), the DCO Applicant is committed to engaging with future tenants to reduce their operational energy emissions. As such, the warehouses have been designed to be capable of structurally providing 100% PV coverage on available roof space. The generation potential of such coverage is detailed within **Appendix 19D**: **Energy Statement** (**Document DCO 6.19D/MCO 6.19D**), and totals 29 MWp, or approximately 25,832 MWh per year.

19.5.68. Overall, it is considered that the design of the buildings has reduced operational emissions as far as feasible within the influence of the DCO Applicant.

19.5.69. No further contextualisation of the Highways Works against other highways projects has been undertaken for operational emissions, as these are largely made up of road user emissions. The magnitude of such emissions is not dependent on the length of a road, but other factors such as geographical location, existing traffic congestion levels and the type of vehicles predicted to use the infrastructure. Further, the DCO Applicant has little to no influence on these emissions. As such, there is little value in comparing operational emissions from the Highways Works to other highways projects.

19.5.70. The embedded mitigation measures set out in paragraphs 19.5.21 to 19.5.23 are supported by national and local energy and climate change policy (in particular the UK Net Zero Strategy (BEIS, 2021a), the North West Leicestershire Local Plan (NWLDC, 2021) and the Heat and Buildings Strategy (BEIS, 2021b)).

19.5.71. Considering the emissions reductions, the magnitude of emissions in the context of national carbon budgets, proposed mitigation measures, and alignment with local and national policy

regarding the transition towards net zero, based on the definitions in paragraphs 19.2.31 and 19.2.32 the magnitude of impact of DCO Scheme on the high sensitivity receptor would result in a minor adverse operation-stage effect, which is not significant.

Mitigation Measures

Construction Phase

GHG Mitigation Measures

19.5.72. One of SEGRO's strategic priorities, as part of its Responsible SEGRO framework, is "Championing Low Carbon Growth". Emissions associated with the construction phase of both the proposed buildings and infrastructure will be reduced where practicable through low carbon procurement and encouraging low carbon construction practices.

19.5.73. The Carbon Management Plan (**Appendix 19E** (**Document DCO 6.19E/MCO 6.19E)**) sets out how SEGRO will minimise GHG emissions throughout the lifetime of the DCO Scheme. Measures specific to the construction phase are set out below.

19.5.74. The DCO Applicant is committed to reducing embodied emissions in its buildings, given their commitment to achieve Net Zero across all business operations by 2050 at the latest. As such, all new construction projects aim to have an embodied emissions intensity of less than 320 $kgCO_2e/m^2$ lettable floor area. This target covers emissions from LCA stages A1-A5, and includes all major building elements, external parking and paving areas, though excludes internal furnishings and mechanical and electrical plant. The target applies to the EMG2 Works buildings, and will be achieved through the following measures, where feasible:

- Use of recycled steel in building structure, including structural steel and steel rebar.
- Use of low carbon concrete in building structure. For example, low to medium strength grade concrete could include recycled cement binders, or ground granulated blast furnace slag (GGBS) as a cement replacement.
- Use of cross laminated timber rather than steel within office buildings, where feasible.
- Use of recycled materials within asphalt for parking areas.
- Low carbon construction site activities.
- Additionally, the DCO Applicant is targeting BREEAM 'Excellent' and Energy Performance Certificate (EPC) 'A' rating for all buildings, with sustainable design and performance essential to achieve this.

19.5.75. The DCO Applicant is also committed to reducing embodied emissions in the infrastructure elements of the EMG2 Works. This will be achieved through the following measures:

- Material reduction ("no build").
    - Where feasible, kerbs and pavements will be reduced and provided on one side of internal roads, in particular in areas where there is no frontage.

- Material replacement (low carbon alternatives).
    - Warm mix asphalt will be used as preference across the DCO Scheme. Warm mix asphalts require a lower temperature at which material is mixed in comparison with hot mix asphalts. As such, less fuel is required allowing a less carbon intense manufacturing process.
    - Recycled plastic content would be considered as a bitumen replacement for internal roads and pavements as a lower carbon alternative. Basalt geogrid could also be considered in internal road design to reduce the quantity of bitumen required.
    - Recycled aggregates, if locally sourced, would be considered for use across the DCO Scheme. Recycled aggregate pavement comprises crushed asphalt pavement usually from road resurfacing projects. The material is reused within the new road surface.
    - Permeable paving/eco grids would be considered for use in parking areas and footways. These would be used in place of concrete or asphalt surfaced areas as a lower carbon alternative, and the inclusions of such paving would also aid in the provision of sustainable drainage systems (SuDS).
    - Recycled plastic pipework for drainage infrastructure will be used in place of pre-cast concrete options where feasible.

19.5.76. It should be noted that embodied carbon mitigation measures for the Highway Works infrastructure are constrained by National Highways requirements for road design. As such, whilst the range of mitigation measures in paragraph 19.5.74 and 19.5.75 will be explored where relevant to highways infrastructure, any specific measures must align with the National Highways design requirements in the "Manual of Contract Documents for Highway Works" (National Highways, 2024) at the time of construction. Any updates made by National Highways to their design requirements will be kept under review; the DCO Applicant may seek to use lower carbon materials where they become available for use on the strategic road network. Warm mix asphalt will however be specified across the Highway Works.

19.5.77. Good working practices during the construction of the DCO Scheme are being defined through the submitted Construction Environmental Management Plan (CEMP) (**Document DCO 6.3A**). The CEMP will ensure that, where possible, construction activities generating GHG emissions are undertaken efficiently in order to minimise emissions in the following ways:

- where practicable, pre-fabricated elements would be delivered to the site ready for assembly, which will reduce on-site construction waste and reduce vehicle movements as part of the construction process;
- construction materials should be sourced locally where practicable, to minimise the impact of transportation;
- vehicles used in road deliveries of materials, equipment and waste arisings on- and off-site would be loaded to full capacity to minimise the number of journeys associated with the transport of these items;

- all machinery and plant would be procured to adhere with emissions standards prevailing at the time and should be maintained in good repair to remain fuel efficient;
- when not in use, vehicles and plant machinery involved in site operations would be switched off to further reduce fuel consumption;
- where possible, local waste management facilities would be used to dispose of all waste arisings, to reduce distant travelled and associated emissions;
- the volume of waste generated would be minimised, and resource efficiency maximised, by applying the principles of the waste hierarchy throughout the construction period. Segregated waste storage should be employed to maximise recycling potential for materials; and
- equipment and machinery requiring electricity would only be switched on when required for use. Procedures should be implemented to ensure that staff adhere to good energy management practices, e.g. through turning off lights, computers and heating/air conditioning units when leaving buildings.

19.5.78. Additional plant efficiency improvements that will be explored to further reduce emissions associated with construction plant include: the use of telematics and/or real-time operator feedback, alongside automatic control for idling, acceleration, and braking; hybrid excavators with energy recovery on the swing system; and GPS precision control for areas/levels/slopes during earth movement to reduce idling time while marking out areas, and to avoid reworking areas.

19.5.79. Alternative construction plant fuel may be used in place of diesel where there is availability. For example, biodiesel can now be used across construction projects and may provide a significant reduction in construction plant emissions. Electric construction plant are becoming more accessible and are anticipated to be included within the plant fleet to be used during the site preparation works. Should such plant be charged using electricity collected directly from on-site solar photovoltaics (PV), then resultant emissions would be zero; should grid electricity be used then operational emissions resultant from such plant would still be significantly lower than those arising from similar plant fuelled by diesel.

19.5.80. Good practice soil management construction practices are set out in the site-specific Soil Management Plan (SMP), in **Appendix 15C** (**Document DCO 6.15C/MCO 6.15C**). Adherence to the SMP will protect soil resources, ensuring their availability for use in landscaping, and minimise soil disturbance.

Operational Phase

GHG Mitigation Measures

19.5.81. No significant effects have been identified during the operational phase of the EMG2 Works (see paragraph 19.5.71). Nevertheless, a Carbon Management Plan (**Document DCO 6.19E/MCO 6.19E**) has been prepared as part of the application, in line with the requirements of the National Networks National Policy Statement (Department for Transport, 2024a). This Plan sets out how SEGRO will minimise GHG emissions throughout the lifetime of the DCO Scheme. Measures specific to the operational phase are set out below.

19.5.82. SEGRO is committed to reducing operational carbon emissions, including occupier emissions, by 42% of 2020 levels by 2030 (see **Chapter 3: Project Description**, **Document DCO 6.3/MCO 6.3**). As such, SEGRO will engage with its future tenants to reduce unregulated building energy use and maximise the use of renewable energy across the EMG2 Works. To achieve this, SEGRO will purchase certified renewable electricity for SEGRO's own use and for tenants for whom SEGRO will procure energy on their behalf. Where tenants procure their own energy, SEGRO will encourage tenants to procure certified renewable electricity and track uptake through "green lease" clauses in tenancy agreements.

19.5.83. With regards to operational transport emissions, a Sustainable Transport Strategy (STS) has been prepared and submitted as part of the DCO Scheme (**Appendix 6B (Document DCO 6.6B/MCO 6.6B))**. The STS sets out how sustainable travel will be enhanced and proposed at the DCO Scheme, to ensure that future employees have viable and attractive options to walk, cycle, use public transport, car share or use electric vehicles to reach the site.

19.5.84. The STS seeks to build on the success of embedding sustainable travel at EMG1 by incorporating the measures that have had the greatest impact. Key targets and measures included in the STS are:

- 18% of employees should car share to site within 5 years of full occupation.
- 9% of employees should arrive by public transport within 5 years of full occupation.
- 6% of employees should arrive by walking or cycling within 5 years of full occupation.
- Provision of new Active Travel Link throughout and between the EMG2 Works and EMG1, alongside wider connectivity enhancements to facilitate pedestrian and cycling movements within and beyond the site.
- Existing bus services will be routed to serve the proposed bus interchange on the EMG2 Works, in addition to the provision of a new site electric shuttle bus service. Additional capacity for local bus services will also be funded and secured as part of the DCO.
- Expand the existing car share platform at EMG1 to encompass the DCO Scheme.
- Provision of EV charging capability for at least 20% of all car parking spaces.
- Provide sustainable transport options from first occupation of the site.
- Working with local stakeholders, transport authorities and operators to jointly deliver strategies, and reporting annually on the effectiveness of the implemented initiatives.

19.5.85. Further, SEGRO will engage with its future tenants to reduce emissions from HGVs where feasible. Measures could include the use of electric HGVs by tenants, and the provision of electric HGV charging points.

19.5.86. In order to minimise emissions from maintenance and material replacement, SEGRO will include sustainability criteria within procurement contracts for maintenance and repair contractors. Where substantial works take place (e.g. material replacement), the construction emission reduction measures set out in 19.5.74 and 19.5.75 also apply.

Residual Effects

Construction Phase

CCRA

19.5.87. As per paragraphs 19.5.24 and 19.5.25, short term negligible and not significant effects are predicted in the construction phase as a result of climate change for the DCO Scheme.

GHG Assessment

19.5.88. The mitigation measures set out in paragraphs 19.5.72 to 19.5.80 have been taken into consideration to calculate a realistic and achievable reduction in embodied carbon from the calculated potential impacts for the DCO Scheme. It is anticipated that not all of the above mitigation measures will be implemented across the DCO Scheme, due to impact on cost, delivery programme and local availability of materials, for example. As such, contractors will be contractually obligated to apply value engineering and incorporate all mitigation measures listed above where feasible to achieve the level of reductions detailed below, and to meet SEGRO's minimum sustainability requirements, including achieving building emission intensity limits of 320 $kgCO_2e/m^2$ GIA, as set out in paragraph 19.5.74. Contractor roles and responsibilities with regard to minimisation of construction emissions are set out in the Carbon Management Plan **(Appendix 19E**, **Document DCO 6.19E/MCO 6.19E**).

19.5.89. A summary of the methodology used to calculate post-mitigation construction emissions is provided in the paragraphs below. Further details are provided in **Appendix 19B** (**Document DCO 6.19B/MCO 6.19B**). The impacts of the DCO Scheme are summarised in **Table 19.9**.

19.5.90. To calculate the emissions from the buildings, accounting for further mitigation measures, an estimated bill of quantities has been calculated, informed by WLC assessments of nine recently completed developments by the DCO Applicant. These developments are considered to represent the DCO Applicant's current design standards for buildings comparable to the DCO Scheme. As such, this estimated bill of quantities is considered reflective of likely material use at the DCO Scheme, including the ambition of mitigation measures as set out in paragraph 19.5.74. The estimated bill of quantities was subsequently scaled by emission factors also sourced from other completed developments by SEGRO.

19.5.91. Construction phase emissions associated with the PV proposed to be installed on the building roofs have been calculated by scaling the proposed roof area PV coverage, by an EPD for monocrystalline solar panels (148 $kgCO_2e/m^2$) (OneClick, 2025).

19.5.92. Emission reductions from use of warm mix asphalt and recycled aggregate (an indicative selection of mitigation measures as set out in paragraph 19.5.75) across the internal road network, parking and HGV areas and bus interchange, and the use of warm mix asphalt across the external road network were calculated using emissions factors sourced from the OneClick LCA Materials database (OneClick LCA, 2025). Emissions from the substation plant remain consistent with those presented in the assessment of potential impacts.

19.5.93. The mitigation measures set out in paragraphs 19.5.76 to 19.5.799 are anticipated to reduce the magnitude of emissions from the DCO Scheme plant activities (A4-A5). Given the

information available at this stage to calculate emissions associated with plant activities however, it is not possible to quantitatively assess the proposed mitigation. Therefore, mitigation measures have been considered qualitatively within the assessment of significance.

19.5.94. As per paragraph 19.5.36 above, minimal carbon emissions are anticipated from land use change. Further, good practice soil management construction practices are set out in the site-specific Soil Management Plan (SMP) (**Appendix 15C (Document DCO 6.15C/MCO 6.15C)**). Adherence to the SMP will protect soil resources ensuring their availability for use in landscaping, and minimise soil disturbance. Emissions have therefore not been assessed quantitatively.

Magnitude of Impact

19.5.95. The estimated GHG emissions arising from the construction phase of the DCO Scheme are presented in **Table 19.9**.

Table 19.9: DCO Scheme – estimated construction stage GHG emissions (residual effects)

LCA Stage	Item	Magnitude of Impact (tCO_2e)
A1-A3	Buildings	93,924
	Infrastructure	15,022
A4-A5	Construction transport and site activities	38,636
A1-A5	Total	147,582

Sensitivity of the Receptor

19.5.96. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of the Effect

19.5.97. The magnitude of impact of the DCO Application is assessed to be 147,582tCO_2e and the sensitivity of the receptor is high. Consistent with paragraph 19.2.30, the magnitude of emissions comprises 0.002% and 0.007% of the Fourth and Fifth UK Carbon Budgets, respectively (set out in paragraph 19.3.3).

19.5.98. The total post-mitigation magnitude of emissions has been calculated to be a 39% emissions reduction compared to the emissions presented in the assessment of potential impacts. In addition, further mitigation measures set out in paragraphs 19.5.75 to 19.5.80 are likely to further reduce the magnitude of emissions. Detailed WLC assessments will be undertaken prior to construction, and post practical completion, which will provide further details on the low-carbon design measures selected for the DCO Scheme.

19.5.99. The Net Zero Carbon Building Standard (NZCBS) pilot edition (UK Green Building Council, 2024) provides technical details on how UK buildings should be constructed and operated in a low-carbon way. A building that verifiably demonstrates alignment with the NZCBS is classified as 'Net Zero Carbon Aligned'. Should all UK buildings align to the NZCBS, the buildings sector would meet its share of the UK carbon budgets to enable a 1.5°C trajectory.

19.5.100. The NZCBS contains limits for upfront embodied carbon specific to warehousing; with construction starting in 2028 (in line with the timescales presented in **Chapter 3: Project Description** (**Document DCO 6.3/MCO 6.3**)), the limit is 540 $kgCO_2e/m^2$ GIA (including LCA modules A1-A5).

19.5.101. **Table 19.10** presents the construction emissions intensities for the EMG2 Works buildings in the context of the NZCBS embodied carbon intensity limits, and the SEGRO embodied carbon intensity target of 320 $kgCO_2e/m^2$. These two intensities are not directly comparable, as the SEGRO target covers LCA modules A1-A3, whilst the NZCBS limit covers LCA modules A1-A5. As such, two intensities have been calculated for the EMG2 Works buildings – an A1-A3 intensity and an A1-A5 intensity (both presented as tCO_2e per m^2 GIA). Note that the intensities set out below exclude the embodied carbon associated with PV manufacture and installation, in line with both NZCBS methodology and the SEGRO LCA methodology.

Table 19.10: Construction stage GHG emission intensities

Module	Element	Intensity	Applicable limit/target	Limit/target intensity
A1-A3	EMG2 Works buildings	300 $kgCO_2e/m^2$	SEGRO	320 $kgCO_2e/m^2$
A1-A5	EMG2 Works buildings	402 $kgCO_2e/m^2$	NZCBS	540 $kgCO_2e/m^2$

19.5.102. It can be seen that the EMG2 Works building emission intensities are lower than the NZCBS limit and the SEGRO embodied carbon target. As such, it can be concluded that the construction emissions from the building elements of the DCO Scheme are in keeping with the UK's net zero carbon trajectory, and local and national policy.

19.5.103. It should be noted that the NZCBS includes minor, non-structural building elements not covered in the emission intensities in **Table 19.10**, owing to the data available at this early design stage (for example, mechanical and electrical plant (MEP) are excluded). However, the EMG2 Works buildings intensities are 26% lower than the NZCBS. Given the extent to which these intensities are lower than the NZCBS limit, it is considered that the incorporation of the additional building elements are unlikely to result in the NZCBS limits being exceeded.

19.5.104. No comparable embodied carbon benchmarks or targets are available for infrastructure developments. However, in line with National Highways (2021) guidance, **Table 19.11** benchmarks the Highways Works construction emissions against other road infrastructure projects, normalised by road length. There are minimal project examples available that present the appropriate information to be included within such benchmarking and are of a comparable scale to the Highways Works. As such, three recent DCO schemes (selected based on relevant ESs submitted from 2020 onwards) have been presented for comparison

against the Highways Works. It should be noted that there are several factors that influence construction emissions other than length, including road width (e.g. number of lanes), or inclusion of more complex structures (e.g. tunnels and bridges), and as such direct comparison of different road infrastructure projects should be approached with caution.

19.5.105. **Table 19.11** indicates that emissions associated with the Highways Works are at the lower end of the schemes selected. This is predominantly due to resurfacing of existing roads prioritised over construction of new roads where possible (with the exception of the new link road), as well as specification of materials with low embodied carbon intensity. As such, it is considered that emissions from the Highways Works have been reduced as low as is practicable, and hence the Highways Works has a lower carbon intensity than other recent highways schemes.

Table 19.11: Comparison of the Highway Works' construction stage GHG emissions with other road infrastructure

	Highways Works	A46 Coventry Junctions (Walsgrave)	M25 Junction 28 Improvement Scheme	A12 Chelmsford to A120
A1-A3 emissions (tCO_2e)	4,897	13,058	11,561	238,050
A4-A5 emissions (tCO_2e)	8,128	965	25,393	149,515
Road length (km)	3.63[5]	3.67	3.36	24
A1-A5 intensity (tCO_2e/km)	3,588	3,821	10,998	16,172

19.5.106. Considering the quantifiable emissions reductions set out in paragraph 19.5.74, the magnitude of emissions in the context of national carbon budgets, proposed mitigation measures set out above, alignment with net zero-aligned benchmarks, and alignment with local and national policy, based on the definitions in paragraphs 19.2.31 and 19.2.32 the magnitude of impact of the DCO Scheme on the high sensitivity receptor would result in a minor adverse construction-stage effect, which is not significant.

[5] To ensure an appropriately conservative comparison, only DCO Works 8, 9, 10 and 11 have been included in the calculation of road length. These works comprise the majority of construction emissions.

Operational Phase

CCRA

19.5.107. As per paragraphs 19.5.24 and 19.5.25, negligible and not significant effects are predicted in the operational phase as a result of climate change for the DCO Scheme.

GHG Assessment

19.5.108. No significant effects have been identified during the operational phase of the DCO Scheme (see paragraph 19.5.71). Nevertheless, a Carbon Management Plan (**Appendix 19E (Document DCO 6.19E/MCO 6.19E**) has been prepared and submitted as part of the application, which sets out how SEGRO will minimise GHG emissions throughout the lifetime of the DCO Scheme. As such, additional operational emissions reductions, to be secured through the Carbon Management Plan, have been quantified in this section.

19.5.109. Where emission reduction measures cannot be quantified at this stage (owing to the early design stage of the DCO Scheme), additional context around the potential emissions savings has been provided where possible. This context has been based on the implementation of similar mitigation measures at EMG1. SEGRO's roles and responsibilities with regard to the minimisation of operational emissions are set out in the Carbon Management Plan **(Appendix 19E (Document DCO 6.19E/MCO 6.19E)**).

19.5.110. A summary of the methodology used to calculate post-mitigation operational emissions is provided in paragraphs 19.5.111 to 19.5.115 below. Further details are provided in **Appendix 19B (Document DCO 6.19B/MCO 6.19B)**. The impacts of the DCO Scheme are summarised in **Table 19.12**.

19.5.111. The mitigation measures set out in paragraph 19.5.82 are anticipated to further reduce the magnitude of emissions from the EMG2 Works building energy use. However, given the quantification of mitigation measures would rely on measurement of future tenant occupancy activities, it is not possible to quantitatively assess the proposed further mitigation. Therefore, mitigation measures have been considered qualitatively within the assessment of significance, and the magnitude presented is consistent with that presented for the assessment of potential impacts.

19.5.112. The application of the STS, as detailed in paragraphs 19.5.83 and 19.5.84, is anticipated to reduce operational transport movements, and hence reduce the magnitude of emissions from operational transport at the EMG2 Works. A similar STS has been implemented at EMG1 with associated emissions savings. Potential emissions savings for the DCO Scheme at full occupation have been forecast, assuming that the DCO Scheme achieves a similar level of sustainable commuting as EMG1. Refer to Appendix B to the Framework Travel Plan **(Document DCO 6.6D)** for further information on the STS, EMG1 commuter-related carbon calculations and associated CO_2e savings.

19.5.113. Operational transport emissions associated with the Highways Works remain as per emissions associated with the assessment of potential impacts, as the DCO Applicant has limited control over this emission source.

19.5.114. Maintenance and repair (module B2-B3) emissions remain the same as emissions associated with the assessment of potential impacts, in accordance with RICS (2023) guidance. Material replacement (module B4) emissions have been calculated by applying material lifetimes from RICS (2024) and OneClick (2025) to estimated material quantities for the EMG2 Works buildings and infrastructure, applying the mitigation measures in paragraph 19.5.86.

19.5.115. Average yearly GHG removals due to woodland planting have been calculated in line with paragraph 19.5.58.

Magnitude of Impact

19.5.116. The estimated GHG emissions per year arising from operation of the DCO Scheme are presented in **Table 19.12**.

Table 19.12: DCO Application – estimated operational GHG emissions (residual effects)

LCA Stage	Item	Emissions per year of operation (tCO_2e)
B1-B4	Refurbishment and maintenance	604
B6	Energy use	12,667
B8	Transport	113,690
N/A	Land use change	-75
B1-B8	Total	126,886

Sensitivity of the Receptor

19.5.117. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.5.118. The magnitude of impact is assessed to be 126,886 tCO_2e per year and the sensitivity of the receptor is high. Consistent with paragraph 19.2.30, the magnitude of emissions comprises 0.007% and 0.066% of the Fifth and Sixth UK Carbon Budgets, respectively (set out in paragraph 19.3.3).

19.5.119. The total post-mitigation magnitude of emissions has been calculated to be a 0.9% emissions reduction compared to the emissions presented in the assessment of potential impacts. These reductions arise from the following measures:

- Implementation of the STS, resulting in a 10% reduction in commuter transport emissions.
- Low carbon materials used in refurbishment, resulting in a 35% reduction in refurbishment emissions.

19.5.120. Overall, for the reasons set out in paragraphs 19.5.65 to 19.5.71, the significance of effect remains minor adverse, which is not significant in EIA terms.

Assessment of Whole Life Effects

Magnitude of Impact

19.5.121. It is noted in the IEMA guidance (2022) that due to the nature of GHG emissions, it is good practice to include a section that reports on the whole life GHG emissions associated with a project, alongside the sections that assess construction, operation, and decommissioning effects in isolation. As such, net GHG emissions from the DCO Scheme (total construction-emissions and yearly operational-stage emissions, including committed mitigation measures) are shown in **Table 19.13**.

Table 19.13: DCO Scheme net GHG impact

Project Stage	GHG Emissions (tCO_2e)
Construction	147,582
Operation (per year)	126,886
Total	274,468

Sensitivity of the Receptor

19.5.122. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.5.123. Consistent with paragraph 19.2.30, **Table 19.14** presents the net emissions in the context of the UK and Carbon Budgets for the DCO Scheme.

Table 19.14: DCO Scheme – Net emissions and carbon budgets

	2023-2027	2028-2032	2033-2037	Total[6]
Emissions (tCO_2e)	29,516	244,951	634,430	908,897
Emissions as a percentage of UK carbon budgets (%)	0.002%	0.014%	0.066%	0.020%

19.5.124. As can be seen in **Table 19.14**, the DCO Scheme does not make a material contribution to the UK Carbon Budgets. The magnitude of whole life emissions take into account the mitigation measures set out from paragraph 19.5.72, which are in line with local and national climate change policy.

[6] Note that this total represents total emissions during the carbon budget periods (2023-2037), not the EMG2 Project's lifetime.

19.5.125. The emissions summarised within **Table 19.14** are likely to provide a conservative overestimate of emissions resultant from the DCO Scheme, particularly with regards to the operational-stage emissions. Emissions resulting from electricity demand have been calculated using current grid average carbon intensity. As noted at paragraph 19.5.12, this does not take into account future decarbonisation of grid electricity and the transport sector in line with national policy and legislation, which will in turn result in reduced operational emissions resultant from the proposed buildings and traffic movements over the DCO Scheme's lifetime. Furthermore, the per annum transport emissions do not incorporate an increase in the proportion of zero emission vehicles on UK roads, or the use of the EMG1 Rail Freight Terminal (and thereby the associated reduction in long-haul HGV movements, replaced by lower emissions rail freight movements).

19.5.126. Using the definitions in paragraphs 19.2.31 and 19.2.32, the impact of whole-life GHG emissions from the DCO Scheme on the high sensitivity receptor would result in a minor adverse whole life effect, which is not significant.

19.6. Assessment of MCO Application

19.6.1. As set out in Section 1 of this Chapter, and at **Table 19.1,** the MCO Scheme comprises of the EMG1 Works which in summary provide for additional warehousing development within Plot 16 of the EMG1 site together with works to increase the permitted height of the cranes at the EMG1 rail-freight terminal, improvements to the public transport interchange, site management building and the EMG1 Pedestrian Crossing.

Baseline Conditions

Current Baseline

19.6.2. The climate baseline (set out above in paragraphs 19.5.3 to 19.5.6) is common to both the DCO Scheme, the MCO Scheme and hence the EMG2 Project as a whole, and as such is not re-stated within this section.

19.6.3. With regard to GHG emissions, the current baseline is the current use of the site and any associated GHG emissions or removals. This includes undeveloped land, associated with Plot 16. The remainder of the MCO Scheme site is existing development, including hardstanding, rail freight interchange and public transport interchange area. No additional capacity for train movements is proposed at the rail freight interchange, as such the proposed MCO Scheme will not result in additional emissions associated with train movements beyond those considered as part of the baseline.

Future Baseline

19.6.4. The future climate baseline (set out in paragraphs 19.5.8 to 19.5.10) is common to both the DCO Scheme, the MCO Scheme and hence the EMG2 Project as a whole, and as such is not re-stated within this section.

19.6.5. The future baseline for the MCO Scheme is consistent with that set out in paragraphs 19.5.12 and 19.5.13, and as such is not re-stated within this section.

Potential Impacts

19.6.6. This section of the chapter considers the potential impacts of the MCO Scheme. It first outlines the embedded mitigation before continuing with the potential impact assessments, split into construction and operation phases, for both the assessment of climate risk and resilience (the CCRA), and the assessment of the MCO Scheme on climate change (the GHG Assessment).

Embedded Mitigation

19.6.7. Embedded mitigation is broadly similar for the MCO Scheme as for the DCO Scheme and is set out as follows.

Construction Phase

GHG mitigation measures

19.6.8. The MCO Scheme design will minimise the need for slope stabilisation by designing shallow (1 in 3 or shallower) slopes. As such, no slope stabilisation measures have been specified in the design.

19.6.9. As part of the drainage strategy, the MCO Scheme will include permeable paving which, owing to the materials used in permeable paving compared to conventional surfacing, has a reduced GHG intensity per m^2 of developed area. Further details of the drainage strategy can be found in **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13/MCO 6.13**).

Operation Phase

CCRA mitigation measures

19.6.10. Flood risk protection and resilience across the MCO Scheme should be implemented as specified in **Chapter 13: Flood Risk and Drainage (Document DCO 6.13/MCO 6.13**).

19.6.11. Measures to mitigate against other climate change risks are set out in **Appendix 19C (Document DCO 6.19C/MCO 6.19C**). These comprise standard best practice design measures, and include:

- Building design to include adequate ventilation, in line with building regulations, and design to minimise excessive solar gain during the summer.
- Building design to maximise water efficiency during operations and include water recycling measures within building design.
- Building design to follow regulations for structural design with safety margin. Ensure appropriate maintenance schedule.
- Green infrastructure to be included within development design, which has the potential to reduce urban temperatures.
- Internal road and parking design to be in line with best practice design standards.
- Regular maintenance of road and parking surfaces to be undertaken.
- Drainage infrastructure will be designed to adequately manage rainfall and runoff.

GHG mitigation measures

19.6.12. Warehouse units will be designed such that they have the ability for occupiers to be net zero in operation. This will be achieved through wide ranging energy efficiency initiatives including targeting an EPC 'A' rating and a minimum of BREEAM 'Excellent' as part of SEGRO base build specification and on-site installation of solar PV generating renewable energy for occupiers, and enabling decarbonisation in parallel with grid electricity. Specific mitigation measures are set out in more detail below.

19.6.13. The Energy Report appended to this chapter (**Appendix 19D (Document DCO 6.19D/MCO 6.19D)**) details the means by which the emissions associated with the operational energy

demand of the MCO Scheme buildings will be reduced. The strategy follows the energy hierarchy: be lean (reduce building energy consumption), be clean (supply the energy required in an efficient manner), and be green (supply remaining energy from low carbon and renewable energy sources). Specific measures, which also apply to the MCO Scheme buildings equally, are set out in paragraph 19.5.22 above.

Construction Phase

CCRA

19.6.14. For the reasons in paragraph 19.5.24, short term negligible and not significant effects are predicted in the construction phase as a result of climate change for the MCO Scheme. As such, no further consideration of construction phase impacts of climate change will be given.

GHG Assessment

19.6.15. This section considers the embodied carbon emissions associated with the consumption of materials and fuel required to construct the elements of the MCO Scheme. Construction emissions correspond to LCA stages A1-A5.

19.6.16. Construction emissions resultant from the MCO Scheme would arise from the same sources as reported in paragraph 19.5.28 above in relation to Plot 16. Improvements to the existing EMG1 Rail Freight Terminal are to increase crane heights, with no substantial construction works taking place. Public Transport Interchange enhancements also result in minimal construction works and include EV charging infrastructure installation and the provision of a drop-off layby. As such, construction emissions from rail freight terminal improvements and Public Transport Interchange enhancements are likely to be negligible and immaterial in the context of the wider works, and have not been quantitatively assessed further.

19.6.17. The methodology used to calculate construction stage emissions associated with the MCO Scheme are consistent with that set out from paragraphs 19.5.30 to 19.5.36. Further details are provided in **Appendix 19B** (**Document DCO 6.19B/MCO 6.19B**). The impacts of the MCO Scheme are summarised in **Table 19.15**.

Magnitude of Impact

19.6.18. The estimated GHG emissions arising from the construction stage of the MCO Scheme is presented in **Table 19.15**.

Table 19.15: MCO Application –estimated construction stage GHG emissions (potential impacts)

LCA Stage	Item	Magnitude of Impact (tCO_2e)
A1-A3	Buildings	16,407
	Infrastructure	1,542
A4-A5	Construction transport and site activities	4,730
A1-A5	Total	22,679

Sensitivity of the Receptor

19.6.19. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of the Effect

19.6.20. The magnitude of impact of the MCO Scheme is assessed to be 22,679 tCO_2e and the sensitivity of the receptor is high. The magnitude of emissions comprises 0.0002% and 0.001% of the Fourth and Fifth UK Carbon Budgets. For the reasons set out in paragraphs 19.5.40 and 19.5.41, the magnitude of impact of the MCO Scheme on the high sensitivity receptor would result in a significant moderate adverse construction-stage effect, prior to consideration of additional mitigation measures.

Operational Phase

CCRA

19.6.21. As set out in paragraph 19.2.41, assessment of climate change risk cannot easily assign a magnitude of impact or sensitivity of receptor to determine a significance of effect. Instead, a risk-based approach has been applied, which considers the hazard, the likelihood of the effect on the MCO Scheme and its users, and the consequence of that effect. Likelihood and consequence criteria are set out in **Table 19.4** and **Table 19.5**, and the subsequent significance matrix is set out in **Table 19.6**.

19.6.22. The risk assessment in **Appendix 19C** (**Document DCO 6.19C/MCO 6.19C**) identifies several risks to the MCO Scheme that have the potential to be significant. These are set out below, with the exception of flood risk, which is assessed separately in **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13/MCO 6.13**):

- High temperatures resulting in overheating within buildings leading to worker health impacts.
- High temperatures and temperature fluctuations causing thermal contraction and expansion of the pavement, resulting in pavement surfaces cracking.
- Structural damage to buildings and pavement resulting from subsidence caused by drought (shrinking and swelling of soils due to excessive rainfall and drought).

- Structural damage to buildings resulting from extreme weather events (storms or snow loads).

19.6.23. Considering the mitigation measures set out in paragraphs 19.6.10 and 19.6.11, the CCRA concluded that the effect of climate change on the operation of the MCO Scheme is negligible with no risk being assessed as significant. This is not significant in EIA terms.

GHG Assessment

19.6.24. This section considers the GHG emissions associated with the operation of the MCO Scheme. Operational emissions correspond to LCA stages B1-B8.

19.6.25. The use of the MCO Scheme post-completion would result in direct and indirect GHG emissions due to the combustion of fuel and use of electricity within the buildings and the road traffic generated by the MCO Scheme, and the use of materials required for material replacement and maintenance activities. As set out in **Chapter 3**: **Project Description** (**DCO Document DCO 6.3/MCO 6.3**) and further referenced at paragraph 19.2.51, no additional capacity for train movements is proposed at the rail freight interchange. As such, emissions associated with train movements have not been assessed as part of the MCO Scheme in isolation.

19.6.26. The methodology used to calculate operational stage emissions associated with the MCO Scheme are consistent with that set out from paragraphs 19.5.49 to 19.5.58. Further details are provided in **Appendix 19B** (**Document DCO 6.19B/MCO 6.19B**). The impacts of the MCO Scheme are summarised in **Table 19.16**.

Magnitude of Impact

19.6.27. The estimated GHG emissions arising from the operation of the MCO Scheme are presented in **Table 19.16**.

Table 19.16: MCO Application – operational GHG emissions (potential impacts)

LCA Stage	Item	Emissions per year of operation (tCO_2e)
B1-B4	Refurbishment and maintenance	78
B6	Energy use	184
B8	Transport	9,198
N/A	Land use change	0
B1-B8	Total	9,460

Sensitivity of the Receptor

19.6.28. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.6.29. The magnitude of impact of the MCO Scheme is assessed to be 9,460 tCO_2e per year, and the sensitivity of the receptor is high. The magnitude of emissions comprises 0.001% and 0.005% of the Fifth and Sixth UK Carbon Budgets, respectively. The embedded mitigation measures proposed for the MCO Scheme buildings result in a 100% reduction in regulated energy emissions, compared to a "business as usual" building design, as a result of the inclusion of solar PV.

19.6.30. The operational energy intensity for the MCO Scheme buildings exceeds the NZCBS limit for unrefrigerated warehouses but is lower than the NZCBS limit for refrigerated warehouses. However, as highlighted in paragraph 19.5.65, unregulated energy demand has been calculated without knowledge of occupier activities.

19.6.31. As set out in paragraph 19.5.22 it is considered that the buildings elements of the MCO Scheme are in line with the indicative Future Buildings Standard requirements, and are designed to have an EPC A rating.

19.6.32. As detailed within paragraph 19.5.62, both the per annum energy consumption emissions and transport emissions present a conservative assessment, as they do not quantitatively account for the future UK electricity grid decarbonisation, increased proportion of zero emissions vehicles on UK roads, the use of the EMG1 Rail Freight Terminal, or the decarbonisation of refurbishment and maintenance emissions in line with the projected decarbonisation of UK construction activities. Such factors have been accounted for qualitatively within the assessment.

19.6.33. As detailed within paragraph **Error! Reference source not found.**, whilst 20% available roof coverage of PV has been specified at this stage (as future tenant energy demand is unknown at this stage), the MCO Applicant is committed to engaging with future tenants to reduce their operational energy emissions. As such, the warehouses have been designed to be capable of structurally providing 100% PV coverage on available roof space. The generation potential of such coverage is detailed within **Appendix 19D**: **Energy Statement** (**Document DCO 6.19D/MCO 6.19D**), and totals 2.8 MWp, or approximately 2,452 MWh per year.

19.6.34. For the reasons set out above and in paragraphs 19.5.65 to 19.5.71, the magnitude of impact of the MCO Scheme on the high sensitivity receptor would result in a minor adverse operational stage effect, which is not significant.

Mitigation Measures

Construction Phase

GHG Mitigation Measures

19.6.35. Mitigation measures are consistent with those proposed for DCO Scheme in paragraphs 19.5.72 to 19.5.80 above, with the exception of landscaping, which is already present at EMG1 and as such no additional landscape planting is proposed. The MCO Scheme will be

governed by the EMG1 Construction Management Framework Plan, which sets out best practice measures to minimise construction activity impacts on environmental receptors.

Operational Phase

GHG Mitigation Measures

19.6.36. Mitigation measures are consistent with those proposed for the DCO Scheme in paragraphs 19.5.81 to 19.5.82, and 19.5.85 to 19.5.86 above. The MCO Scheme will operate under the existing STS that operates for EMG1.

Residual Effects

Construction Phase

CCRA

19.6.37. As per paragraphs 19.5.24 and 19.5.25, short term negligible and not significant effects are predicted in the construction phase as a result of climate change for the MCO Scheme.

GHG Assessment

19.6.38. The mitigation measures set out from paragraph 19.6.35 have been taken into consideration to calculate a realistic and achievable reduction in embodied carbon from the emissions associated with the assessment of potential impacts. It is anticipated that not all of the above mitigation measures will be implemented across the MCO Scheme, due to impact on cost, delivery programme and local availability of materials, for example. As such, contractors will be contractually obligated to apply value engineering and incorporate all mitigation measures listed above where feasible to achieve the level of reductions detailed below, and to meet SEGRO's minimum sustainability requirements, including achieving building emission intensity limits of 320 $kgCO_2e/m^2$ GIA, as set out in paragraph 19.5.74. Contractor roles and responsibilities with regard to minimisation of construction emissions are set out in the Carbon Management Plan **(Appendix 19E**, **Document DCO 6.19E/MCO 6.19E**).

19.6.39. The methodology used to calculate operational stage emissions associated with the MCO Scheme are consistent with that set out from paragraphs 19.5.90 to 19.5.94. Further details are provided in **Appendix 19B** (**Document DCO 6.19B/MCO 6.19B**). The impacts of the MCO Scheme are summarised in **Table 19.17**.

Magnitude of Impact

19.6.40. The estimated GHG emissions arising from the construction phase of the MCO Scheme are presented in **Table 19.17**.

Table 19.17: MCO Application – estimated construction stage GHG emissions (residual effects)

LCA Stage	Item	Magnitude of Impact (tCO_2e)
A1-A3	Buildings	8,554
	Infrastructure	1,436
A4-A5	Construction transport and site activities	4,730
A1-A5	Total	14,720

Sensitivity of the Receptor

19.6.41. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of the Effect

19.6.42. The magnitude of impact of MCO Scheme is assessed to be 14,720 tCO_2e and the sensitivity of the receptor is high. The magnitude of emissions comprises 0.0002% and 0.0007% of the Fourth and Fifth UK Carbon Budgets. This represents a 35% reduction compared to emissions presented in the assessment of potential impacts. In addition, further mitigation measures set out from paragraph 19.6.35 are likely to further reduce the magnitude of emissions. Detailed WLC assessments will be undertaken prior to construction, and post practical completion, which will provide further details on the low-carbon design measures selected for the MCO Scheme.

19.6.43. Consistent with the context provided at paragraphs 19.5.99 to 19.5.103 with regards to the NZCBS, **Table 19.18** presents the construction emissions intensities for the MCO Scheme buildings in the context of the NZCBS embodied carbon limits (which covers LCA modules A1-A5), and the SEGRO embodied carbon intensity target of 320 $kgCO_2e/m^2$ (which covers LCA modules A1-A3). It can be seen that the MCO Scheme building emission intensities are lower than both the NZCBS limit and the SEGRO embodied carbon target. As such, it can be concluded that the construction emissions from the building elements of the MCO Scheme aligned with the UK's net zero carbon trajectory, and local and national policy.

Table 19.18: Construction stage GHG emission intensities (residual effects)

Module	Element	Intensity	Applicable limit/target	Limit/target intensity
A1-A3	EMG1 Works buildings	309 $kgCO_2e/m^2$	SEGRO	320 $kgCO_2e/m^2$
A1-A5	EMG1 Works buildings	487 $kgCO_2e/m^2$	NZCBS	540 $kgCO_2e/m^2$

19.6.44. For the reasons set out in paragraph 19.5.106, the magnitude of impact of the MCO Scheme on the high sensitivity receptor would result in a minor adverse construction-stage effect, which is not significant.

Operational Phase

CCRA

19.6.45. As per paragraphs 19.5.24 and 19.5.25, negligible and not significant effects are predicted in the operational phase as a result of climate change for the MCO Scheme.

GHG Assessment

19.6.46. No significant effects have been identified during the operational phase of the MCO Scheme (see paragraph 19.6.34). Nevertheless, a Carbon Management Plan (**Appendix 19E (Document DCO 6.19E/MCO 6.19E**) has been prepared and submitted as part of the application, which sets out how SEGRO will minimise GHG emissions throughout the lifetime of the MCO Scheme. As such, additional operational emissions reductions, to be secured through the Carbon Management Plan, have been quantified in this section.

19.6.47. Consistent with the methodology presented at paragraphs 19.5.109 to 19.5.115, emissions reductions associated with the further mitigation set out at from paragraph 19.6.35 have been considered quantitatively where feasible, and accounted for qualitatively within the assessment of significance where further quantification is not feasible. The estimated resultant annual GHG emissions are presented in **Table 19.19**, below.

Magnitude of Impact

19.6.48. The estimated GHG emissions per year arising from operation of the MCO Scheme are presented in **Table 19.19**.

Table 19.19: MCO Scheme – estimated operational GHG emissions (residual effects)

LCA Stage	Item	Emissions per year of operation (tCO_2e)
B1-B4	Refurbishment and maintenance	54
B6	Energy use	184
B8	Transport	9,198
N/A	Land use change	0
B1-B8	Total	9,436

Sensitivity of the Receptor

19.6.49. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.6.50. The magnitude of impact is assessed to be 9,436 tCO_2e per year and the sensitivity of the receptor is high. Consistent with paragraph 19.2.30, the magnitude of emissions comprises 0.001% and 0.005% of the Fifth and Sixth UK Carbon Budgets, respectively.

19.6.51. Total emissions present a 0.3% reduction compared to the emissions presented in the assessment of potential impacts. These reductions arise from the following measures:

- Low carbon materials used in refurbishment, resulting in a 31% reduction in refurbishment emissions.

19.6.52. Overall, as above, the significance of effect remains minor adverse, which is not significant in EIA terms.

Assessment of Whole Life Effects

Magnitude of Impact

19.6.53. It is noted in the IEMA guidance (2022) that due to the nature of GHG emissions, it is good practice to include a section that reports on the whole life GHG emissions associated with a project, alongside the sections that assess construction, operation, and decommissioning effects in isolation. As such, net GHG emissions from the MCO Scheme (total construction-emissions and yearly operational-stage emissions, including committed mitigation measures) are shown in **Table 19.20**.

Table 19.20: MCO Application net GHG impact

Project Stage	GHG Emissions (tCO_2e)
Construction	14,720
Operation (per year)	9,436
Total	24,156

Sensitivity of the Receptor

19.6.54. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.6.55. Consistent with paragraph 19.2.30, **Table 19.21** presents the net emissions in the context of the UK and Carbon Budgets for the MCO Scheme.

Table 19.21: MCO Scheme – Net emissions and carbon budgets

	2023-2027	2028-2032	2033-2037	Total[7]
Emissions (tCO_2e)	2,944	21,212	47,179	71,335
Emissions as a percentage of UK carbon budgets (%)	>0.001%	0.001%	0.005%	0.002%

19.6.56. As can be seen in **Table 19.21**, the MCO Scheme does not make a material contribution to the UK Carbon Budgets. The magnitude of whole life emissions take into account the mitigation measures set out from paragraph 19.6.35, which are in line with local and national climate change policy.

19.6.57. Consistent with paragraph 19.5.125, the emissions summarised within **Table 19.21** are likely to provide a conservative overestimate of emissions resultant from the MCO Scheme, particularly with regards to the operational-stage emissions. Emissions resulting from electricity demand have been calculated using current grid average carbon intensity. As noted at paragraph 19.5.12, this does not take into account future decarbonisation of grid electricity and the transport sector in line with national policy and legislation, which will in turn result in reduced operational emissions resultant from the proposed buildings and traffic movements over the MCO Scheme lifetime. Furthermore, the per annum transport emissions do not incorporate an increase in the proportion of zero emission vehicles on UK roads, or the use of the EMG1 Rail Freight Terminal (and thereby the associated reduction in long-haul HGV movements, replaced by lower emissions rail freight movements).

19.6.58. Using the definitions in paragraphs 19.2.31 and 19.2.32, the impact of whole-life GHG emissions from the MCO Application on the high sensitivity receptor would result in a minor adverse whole life effect, which is not significant.

[7] Note that this total represents total emissions during the carbon budget periods (2023-2037), not the EMG2 Project's lifetime.

19.7. Assessment of EMG2 Project

19.7.1. As set out in Section 1 of this Chapter, and at **Table 19.1,** the EMG2 Project as a whole is the combination of the DCO Scheme and the MCO Scheme which have been assessed in Sections 19.5 and 19.6 of this Chapter.

Baseline Conditions

Current Baseline

19.7.2. The climate baseline (set out above in paragraphs 19.5.3 to 19.5.6) is common to both the DCO Scheme, the MCO Scheme and hence the EMG2 Project as a whole, and as such is not re-stated within this section.

19.7.3. With regard to GHG emissions, the current baseline is the current use of the site and any associated GHG emissions or removals, as set out in paragraphs 19.5.7 and 19.6.3.

Future Baseline

19.7.4. The future climate baseline (set out in paragraphs 19.5.8 to 19.5.10) is common to both the DCO Scheme, the MCO Scheme and hence the EMG2 Project as a whole, and as such is not re-stated within this section.

19.7.5. The future baseline for the EMG2 Project is consistent with that set out in paragraphs 19.5.12 and 19.5.13, and as such is not re-stated within this section.

Potential Impacts

19.7.6. This section of the chapter considers the potential impacts of the EMG2 Project. It first outlines the embedded mitigation before continuing with the potential impact assessments, split into construction and operation phases, for both the assessment of climate risk and resilience (the CCRA), and the assessment of the EMG2 Project on climate change (the GHG Assessment).

Embedded Mitigation

19.7.7. Embedded mitigation associated with the EMG2 Project is detailed from paragraphs 19.5.15 to 19.5.23 (with regards to the DCO Scheme) and from paragraphs 19.6.7 to 19.6.13 (with regards to the MCO Scheme). Such embedded mitigation includes measures proposed to reduce the potential for impacts on and from climate change.

Construction Phase

CCRA

19.7.8. Consistent with the assessments of climate risk detailed at paragraph 19.5.24 and 19.6.14, short term negligible and not significant effects are predicted in the construction phase as a

result of climate change for the EMG2 Project. As such, no further consideration of construction phase impacts of climate change will be given.

GHG Assessment

Magnitude of Impact

19.7.9. Informed by the assessments detailed in Sections 19.5 and 19.6, the estimated GHG emissions arising from the construction stage of the EMG2 Project, split by the DCO Scheme, the MCO Scheme and the EMG2 Project as a whole are presented in **Table 19.22**.

Table 19.22: EMG2 Project estimated construction stage GHG emissions (potential impacts)

LCA Stage	Item	Magnitude of Impact (tCO_2e)		
		DCO Application	MCO Application	EMG2 Project
A1-A3	Buildings	185,449	16,407	201,586
	Infrastructure	16,363	1,542	17,906
A4-A5	Construction transport and site activities	38,636	4,730	43,366
A1-A5	Total	240,448	22,679	263,127

Sensitivity of the Receptor

19.7.10. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.7.11. Overall, the magnitude of impact of the EMG2 Project is assessed to be 263,127 tCO_2e and the sensitivity of the receptor is high. The magnitude of emissions comprises 0.003% and 0.012% of the Fourth and Fifth UK Carbon Budgets. For the reasons set out in paragraphs 19.5.40 and 19.5.41, it is not considered that the EMG2 Project aligns with current and emerging local and national policy regarding the transition towards net zero. As such, the magnitude of impact of the EMG2 Project on the high sensitivity receptor would result in a significant moderate adverse construction-stage effect, prior to consideration of additional mitigation measures.

Operational Phase

CCRA

19.7.12. The risk assessment in **Appendix 19C** (**Document DCO 6.19C/MCO 6.19C**) identifies several risks to the EMG2 Project that have the potential to be significant. These are set out at paragraphs 19.5.43 and 19.6.22, with the exception of flood risk, which is assessed separately in **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13/MCO 6.13**).

19.7.13. Considering the mitigation measures set out in paragraphs 19.5.19 and 19.5.20 (regarding the DCO Scheme), and paragraphs 19.6.10 and 19.6.11 (regarding the MCO Scheme), the CCRA concluded that the effect of climate change on the operation of the EMG Project is negligible with no risk being assessed as significant. This is not significant in EIA terms.

GHG Assessment

Magnitude of Impact

19.7.14. Informed by the assessments detailed in Sections 0 and 0, the estimated GHG emissions arising from the operation of the EMG2 Project, split by the DCO Scheme, MCO Scheme and the EMG2 Project as a whole are presented in **Table 19.23**.

Table 19.23: EMG2 Project operational GHG emissions (potential impacts)

LCA Stage	Item	Emissions per year of operation (tCO_2e)		
		DCO Application	MCO Application	EMG2 Project
B1-B4	Refurbishment and maintenance	920	78	999
B6	Energy use	12,667	184	12,851
B8	Transport	114,479	9,198	123,677
N/A	Land use change	-75	0	-75
B1-B8	Total	127,992	9,460	137,452

Sensitivity of the Receptor

19.7.15. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.7.16. Overall, the magnitude of impact of the EMG2 Project is assessed to be 137,452 tCO_2e per annum and the sensitivity of the receptor is high. Consistent with paragraph 19.2.30, the magnitude of emissions comprises 0.008% and 0.071% of the Fifth and Sixth UK Carbon Budgets, respectively (set out in paragraph 19.3.3).

19.7.17. For the reasons set out in paragraphs 19.5.65 to 19.5.71, and 19.6.30 to 19.6.32, it is considered that the EMG2 Project aligns with national and local energy and climate change policy regarding the transition towards net zero, and as such the magnitude of impact of the EMG2 Project on the high sensitivity receptor would result in a minor adverse operational stage effect, which is not significant.

Mitigation Measures

Construction Phase

GHG Mitigation Measures

19.7.18. Mitigation associated with the construction of the EMG2 Project is detailed from paragraphs 19.5.72 to 19.5.80 (with regards to the DCO Scheme) and at paragraph 19.6.35 (with regards to the MCO Scheme).

Operational Phase

GHG Mitigation Measures

19.7.19. Mitigation associated with the operation of the EMG2 Project is detailed from paragraphs 19.5.81 to 19.5.86 (with regards to the DCO Scheme) and at paragraph 19.6.36 (with regards to the MCO Scheme).

Residual Effects

Construction Phase

CCRA

19.7.20. As per paragraphs 19.5.24 and 19.5.25, short term negligible and not significant effects are predicted in the construction phase as a result of climate change for the EMG2 Project.

GHG Assessment

19.7.21. The mitigation measures set out in paragraphs 19.5.72 to 19.5.80 (with regards to the DCO Scheme) and at paragraph 19.6.35 (with regards to the MCO Scheme) have been taken into consideration to calculate a realistic and achievable reduction in embodied carbon from the emissions associated with the assessment of potential impacts. It is anticipated that not all of the above mitigation measures will be implemented across the EMG2 Project, due to impact on cost, delivery programme and local availability of materials, for example. As such, contractors will be contractually obligated to apply value engineering and incorporate all mitigation measures listed above where feasible to achieve the level of reductions detailed below, and to meet SEGRO's minimum sustainability requirements, including achieving building emission intensity limits of 320 $kgCO_2e/m^2$ GIA, as set out in paragraph 19.5.74. Contractor roles and responsibilities with regard to minimisation of construction emissions are set out in the Carbon Management Plan **(Appendix 19E**, **Document DCO 6.19E/MCO 6.19E**).

Magnitude of Impact

19.7.22. Informed by the assessments detailed in Sections 19.5 and 19.6, the estimated GHG emissions arising from the construction phase of the EMG2 Project, accounting for further mitigation and split by the DCO Scheme, MCO Scheme and the EMG2 Project as a whole are presented in **Table 19.24**.

Table 19.24: Estimated construction stage GHG emissions (residual effects)

LCA Stage	Item	Magnitude of Impact (tCO_2e)		
		DCO Application	MCO Application	EMG2 Project
A1-A3	Buildings	93,924	8,554	102,478
	Infrastructure	15,022	1,436	16,458
A4-A5	Construction transport and site activities	38,636	4,730	43,366
A1-A5	Total	147,582	14,720	162,302

Sensitivity of the Receptor

19.7.23. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.7.24. Overall, the magnitude of impact of the EMG2 Project is assessed to be 162,302 tCO_2e and the sensitivity of the receptor is high. The magnitude of emissions comprises 0.002% and 0.008% of the Fourth and Fifth UK Carbon Budgets. This represents a 38% reduction compared to emissions associated with the assessment of potential impacts, not accounting for the measures unable to be quantified which are likely to further reduce the magnitude of emissions.

19.7.25. Contextualisation of the DCO and MCO Scheme elements against the NZCBS embodied carbon limits, and SEGRO's internal carbon intensity target is presented at paragraphs 19.5.99 to 19.5.103 (with regards to the DCO Scheme) and at paragraph 19.6.43 (with regards to the MCO Scheme). Intensities across the EMG2 Works and EMG1 Works are lower than both the NZCBS and the SEGRO embodied carbon target. As such, it can be concluded that the construction emissions from the building elements are in keeping with the UK's net zero carbon trajectory, and local and national policy.

19.7.26. No comparable embodied carbon benchmarks or targets are available for infrastructure developments, as such emissions associated with the Highways Works have been contextualised against other road infrastructure projects. This contextualisation indicates that emissions associated with the Highways Works are at the lower end of the schemes selected.

19.7.27. Considering the quantifiable emissions reductions, the magnitude of emissions in the context of national carbon budgets, proposed mitigation measures, alignment with net zero-aligned benchmarks, and alignment with local and national policy, based on the definitions in paragraphs 19.2.31 and 19.2.32 the magnitude of impact of the EMG2 Project on the high sensitivity receptor would result in a minor adverse construction-stage effect, which is not significant.

Operational Phase

CCRA

19.7.28. As per paragraphs 19.5.24 and 19.5.25, negligible and not significant effects are predicted in the operational phase as a result of climate change for the EMG2 Project.

GHG Assessment

19.7.29. No significant effects have been identified during the operational phase of the EMG2 Project (see paragraphs 19.5.61 to 19.7.17). Nevertheless, a Carbon Management Plan (**Appendix 19E (Document DCO 6.19E/MCO 6.19E**) has been prepared and submitted as part of the application, which sets out how SEGRO will minimise GHG emissions throughout the lifetime of the EMG2 Project. As such, additional operational emissions reductions, to be secured through the Carbon Management Plan, have been quantified in this section, consistent with the assessments completed within Sections 19.5 and 19.6.

Magnitude of Impact

19.7.30. Informed by the assessments detailed in Sections 19.5 and 19.6, the estimated GHG emissions per year arising from operation of the EMG2 Project, accounting for further mitigation and split by the DCO Scheme, MCO Scheme and the EMG2 Project as a whole are presented in **Table 19.25**.

Table 19.25: Estimated operational GHG emissions (residual effects)

LCA Stage	Item	Emissions per year of operation (tCO_2e)		
		DCO Application	MCO Application	EMG2 Project
B1-B4	Refurbishment and maintenance	604	54	658
B6	Energy use	12,667	184	12,851
B8	Transport	113,690	9,198	122,888
N/A	Land use change	-75	0	-75
B1-B8	Total	126,886	9,436	136,322

Sensitivity of the Receptor

19.7.31. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.7.32. The magnitude of impact is assessed to be 136,322 tCO_2e per year and the sensitivity of the receptor is high. Consistent with paragraph 19.2.30, the magnitude of emissions comprises 0.008% and 0.071% of the Fifth and Sixth UK Carbon Budgets, respectively. Total

emissions are a 0.8% reduction compared to the emissions presented in the assessment of potential impacts. Overall, as above, it is considered that the EMG2 Project aligns with current and emerging local and national policy regarding the transition towards net zero, and as such the significance of effect remains minor adverse, which is not significant in EIA terms.

Assessment of Whole Life Effects

Magnitude of Impact

19.7.33. It is noted in the IEMA guidance (2022) that due to the nature of GHG emissions, it is good practice to include a section that reports on the whole life GHG emissions associated with a project, alongside the sections that assess construction, operation, and decommissioning effects in isolation. As such, net GHG emissions from the EMG2 Project (total construction-emissions and yearly operational-stage emissions, including committed mitigation measures) are shown in **Table 19.26**, split by the DCO Scheme, MCO Scheme and the EMG2 Project as a whole.

Table 19.26: EMG2 Project net GHG impact

Project Stage	GHG Emissions (tCO_2e)		
	DCO Application (EMG2 Works and Highway Works)	MCO Application (EMG1 Works)	EMG2 Project total
Construction	147,582	14,720	162,302
Operation (per year)	126,886	9,436	136,322
Total	274,468	24,156	298,624

Sensitivity of the Receptor

19.7.34. In accordance with paragraph 19.2.26, the receptor (global climate) is considered to be of high sensitivity.

Significance of Effect

19.7.35. Consistent with paragraph 19.2.30, **Table 19.27** presents the net emissions in the context of the UK and Carbon Budgets for the DCO Scheme, MCO Scheme and the EMG2 Project as a whole.

Table 19.27: Net emissions and carbon budgets

	2023-2027	2028-2032	2033-2037	Total[8]
Emissions (tCO_2e)	32,460	266,163	681,609	980,233
Emissions as a percentage of UK carbon budgets (%)	0.002%	0.015%	0.071%	0.021%

19.7.36. As can be seen in **Table 19.27** the EMG2 Project as a whole does not make a material contribution to the UK Carbon Budgets. The magnitudes of whole life emissions take into account the mitigation measures set out in Sections 19.5 and 19.6, which are in line with local and national climate change policy.

19.7.37. The emissions summarised within **Table 19.27** are likely to provide a conservative overestimate of emissions resultant from the EMG2 Project, particularly with regards to the operational-stage emissions. Emissions resulting from electricity demand have been calculated using current grid average carbon intensity. As noted at paragraph 19.5.12, this does not take into account future decarbonisation of grid electricity and the transport sector in line with national policy and legislation, which will in turn result in reduced operational emissions resultant from the proposed buildings and traffic movements over the EMG2 Project's lifetime. Furthermore, the per annum transport emissions do not incorporate an increase in the proportion of zero emission vehicles on UK roads, or the use of the EMG1 Rail Freight Terminal (and thereby the associated reduction in long-haul HGV movements, replaced by lower emissions rail freight movements).

19.7.38. Considering the magnitude of emissions in the context of national carbon budgets, proposed mitigation measures, and alignment with local and national policy regarding the transition towards net zero, using the definitions in paragraphs 19.2.31 and 19.2.32, the impact of whole-life GHG emissions from the EMG2 Project on the high sensitivity receptor would result in a minor adverse whole life effect, which is not significant.

[8] Note that this total represents total emissions during the carbon budget periods (2023-2037), not the EMG2 Project's lifetime.

19.8. Cumulative Effects

Intra-Project Effects

19.8.1. Assessment of intra-project effects, in-combination climate change impacts (ICCI), have been included within individual environmental topic chapters, where relevant, i.e. where climatic changes could modify the EMG2 Project's other environmental impacts. Climate projection data detailed within **Appendix 19B** (**Document DCO 6.19B/MCO 6.19B**) was circulated to all topic authors for consideration in-combination with effects identified as part of each impact assessment. Each assessment of intra-project effects with climate change was undertaken using the relevant topic-specific assessment methodology as detailed within each chapter of the ES.

19.8.2. The main areas where there is potential for intra-project effects, subject to assessment, are considered to be:

- **Chapter 9: Ecology and Biodiversity** (**Document DCO 6.9/MCO 6.9**);
- **Chapter 10: Landscape and Visual** (**Document DCO 6.10/MCO 6.10**);
- **Chapter 13: Flood Risk and Drainage** (**Document DCO 6.13/MCO 6.13**);
- **Chapter 14: Ground Conditions** (**Document DCO 6.14/MCO 6.14**); and
- **Chapter 17: Population and Human Health** (**Document DCO 6.17/MCO 6.17**).

Inter-Project Effects

19.8.3. 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. Consequently, cumulative effects due to other specific local development projects are not individually predicted but are considered when considering the impact of the EMG2 Project by defining the atmospheric mass of GHGs as a high sensitivity receptor.

19.9. Summary of Effects and Conclusions

19.9.1. The potential impact of GHG emissions due to the EMG2 Project, resulting in an effect on the global atmospheric GHG concentration that contributes to climate change, has been assessed and reported in this chapter. The impacts of climate change on the EMG2 Project (climate change risk and resilience) have also been assessed and reported. Assessments have been presented for the DCO Scheme (EMG2 Works and Highways Works), MCO Scheme (EMG1 Works), and the EMG2 Project as a whole.

Construction Impacts

19.9.2. The construction-stage emissions are set out in **Table 19.7**, **Table 19.15** and **Table 19.22** for the DCO Scheme, MCO Scheme and the EMG2 Project. Emissions arise from embodied emissions from the manufacturing and construction of buildings, roads and ancillary infrastructure, and energy use for site construction activities. Considering the magnitude of emissions, and the absence of mitigation measures in line with the UK's net zero trajectory, this would result in a moderate adverse effect, which is significant in EIA terms, for DCO Scheme, MCO Scheme and the EMG2 Project.

19.9.3. A selection of mitigation measures will be incorporated in order to meet the Applicant's embodied carbon target for new buildings, of 320 $kgCO_2e/m^2$, alongside mitigation measures to reduce emissions from other elements of the EMG2 Project (i.e. roads and ancillary infrastructure). Examples of such mitigation measures include the incorporation of lower carbon materials, lower carbon fuel alternatives for construction plant and the site compound, and energy efficiency measures for site activities. Mitigation measures apply to both the DCO Scheme and MCO Scheme. Embodied carbon reduction measures implemented would deliver a 38% emissions reduction across the EMG2 Project as a whole, with emissions set out in **Table 19.9**, **Table 19.17**, and **Table 19.24**.

19.9.4. The mitigation measures are in line with local and national policy, and the embodied carbon intensity for the buildings is in line with the NZCBS requirements for net zero aligned buildings. The post mitigation construction effect is therefore minor adverse, which is not significant in EIA terms, for DCO Scheme, MCO Scheme and the EMG2 Project.

Operational Impacts

19.9.5. The operational-stage emissions are set out in **Table 19.8, Table 19.16**, and **Table 19.23** for the DCO Scheme, MCO Scheme and the EMG2 Project. Operational emissions arise from building energy use, operational traffic and refurbishment and maintenance activities. The calculation of emissions considers embedded mitigation measures to minimise the energy demand of the buildings ('be lean') and generate electricity from low carbon sources ('be green'), to ensure that buildings achieve an EPC A rating, and achieve indicative Future Buildings Standard design requirements. Embedded mitigation measures are in line with local and national climate change policy, and it can be anticipated grid electricity will decarbonise in line with national net zero targets and policy, resulting in further decarbonisation of the remaining operational emissions. As such, the operational effect is minor adverse, which is not significant in EIA terms, for DCO Scheme, MCO Scheme and the EMG2 Project.

19.9.6. Further operational mitigation measures are detailed in the Carbon Management Plan (**Appendix 19E (Document DCO 6.19E/MCO 6.19E)**), which include use of low carbon materials for refurbishment, and the implementation of a travel plan. The implementation of these further mitigation measures would deliver a 0.8% emissions reduction across the EMG2 Project, with emissions set out in **Table 19.12, Table 19.19**, and **Table 19.25**. The post mitigation operational effect remains minor adverse, which is not significant in EIA terms.

19.9.7. Owing to the good practice design measures that will be incorporated into the EMG2 Project, including measures to address the risk of overheating and extreme weather, of the 17 potential risks to the EMG2 Project as a result of climate change, all effects were determined to be negligible and therefore not significant in EIA terms for DCO Scheme, MCO Scheme and the EMG2 Project.

Net Whole Life Emissions

19.9.8. The net emissions of the EMG2 Project (total construction emissions and yearly operational-stage emissions, including committed mitigation measures) are set out in **Table 19.26**. Considering the magnitude of emissions and alignment with national and local climate change policy and net zero building standards, the whole life net effect is minor adverse, which is not significant in EIA terms for DCO Scheme, MCO Scheme and the EMG2 Project.

Cumulative Effects

19.9.9. 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. Consequently, cumulative effects due to other specific local development projects are not individually predicted but are considered when considering the impact of the EMG2 Project by defining the atmospheric mass of GHGs as a high sensitivity receptor.

Table 19.28: Summary of Likely Significant Environmental Effects and Mitigation

Impact	Phase	Sensitivity of Receptor	Embedded Mitigation	Magnitude of Impact	Significance of Effect	Mitigation	Magnitude of Residual Impact	Significance of Residual Effect
GHG emissions	Construction	High	N/A	DCO Application: 240,448 tCO_2e MCO Application: 22,679 tCO_2e EMG2 Project: 263,127 tCO_2e	DCO: Moderate Adverse (significant) MCO: Moderate Adverse (significant) EMG2 Project: Moderate Adverse (significant)	Incorporation of lower carbon materials, lower carbon fuel alternatives for construction plant and the site compound, and energy efficiency measures for site activities.	DCO Application: 147,582 tCO_2e MCO Application: 14,720 tCO_2e EMG2 Project: 162,302 tCO_2e	DCO: Minor Adverse (not significant) MCO: Minor Adverse (not significant) EMG2 Project: Minor Adverse (not significant)
	Operation and Maintenance	High	Measures to minimise the energy demand of the buildings ('be lean') and generate electricity from low carbon sources ('be green'), to ensure that buildings achieve an EPC A rating, and achieve indicative	DCO Application: 127,992 tCO_2e per year MCO Application: 9,460 tCO_2e per year EMG2 Project: 137,452 tCO_2e per year	DCO: Minor Adverse (not significant) MCO: Minor Adverse (not significant) EMG2 Project: Minor Adverse (not significant)	Use of low carbon materials for material replacement, and the implementation of a travel plan.	DCO Application: 126,886 tCO_2e per year MCO Application: 9,436 tCO_2e EMG2 Project: 136,322 tCO_2e	DCO: Minor Adverse (not significant) MCO: Minor Adverse (not significant) EMG2 Project: Minor Adverse (not significant)

Impact	Phase	Sensitivity of Receptor	Embedded Mitigation	Magnitude of Impact	Significance of Effect	Mitigation	Magnitude of Residual Impact	Significance of Residual Effect
			Future Buildings Standard design requirements.					
Climate resilience	Operation and Maintenance	N/A	Best practice design measures to address the risk of overheating and extreme weather.	N/A	DCO: Negligible (not significant) MCO: Negligible (not significant) EMG2 Project: Negligible (not significant)	N/A	N/A	DCO: Negligible (not significant) MCO: Negligible (not significant) EMG2 Project: Negligible (not significant)

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