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Environmental Statement

Interim Environmental Report (IER) Volume 1, Chapter 11: Climate Change

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Contents

11 Climate change 2
11.1 Introduction 2
11.2 Scope of the assessment 2
11.3 Consultation 3
11.4 Legislation and policy 3
11.5 Baseline conditions 9

List of tables

Table 11-1 Lifecycle stages included within the assessment 3
Table 11-2 Sources and lifecycle stages for project carbon emissions 6
Table 11-3 Impact magnitude criteria 8
Table 11-4 Effect significance 9
Table 11-5 Description of the key materials and waste receptors that will be assessed 10

11 Climate change

11.1 Introduction

11.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) of effects on the environment with respect to climate change as a result of the Scheme.

11.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects on the environment with respect to climate change during the construction and operation and maintenance phases.

11.1.3 The information presented within this chapter has been informed by the Scheme information and description provided in Volume 1, Chapter 2 Scheme description.

11.2 Scope of the assessment

11.2.1 Chapter 9 of the Environmental Impact Assessment Scoping Report[1] identifies the likely significant effects that could arise as a result of the Scheme, on both Greenhouse Gas (GHG) emissions, for the construction, operational, and decommissioning phases. Table 11-1 provides a summary of the Scoping assessment.

11.2.2 Through the adoption of the Scoping Opinion[2] the Secretary of State has confirmed that the climate change assessment must assess the scope set out in Table 11-1. Relevant aspects of climate change risk, primarily flooding, are assessed within Volume 1, Chapter 16 Water environment.

11.2.3 No further comments were received from stakeholders and independent parties with regard to the Scoping Report. The Scoping Opinion has amended the scope set out in the Scoping Report by scoping in some assessments. Table 11-1 therefore sets out the definitive scope.

[1] Arrow Valley Solar Limited (2026) Arrow Valley Solar. Environmental Impact Assessment Scoping Report. Volume I: Main Report (Document Reference AVS-ATR-GEN-AA-DOC-ENV-000001, Rev. A). Planning Inspectorate Reference EN0110033. Available at: https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN0110033-000002-20260327%20Arrow%20Valley%20EIA%20Scoping%20Report%20Volume%201%20Main%20Report%20Rev.%20A.pdf

[2] Planning Inspectorate (2026) Scoping Opinion: Proposed Arrow Valley Solar (Case Reference EN0110033). Adopted on behalf of the Secretary of State pursuant to Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, 7 May 2026. Available at: https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN0110033-000010-Arrow%20Valley%20Solar%20Scoping%20Opinion.pdf

Table 11-1 Lifecycle stages included within the assessment

Topic	Scoped in / out			Justification
	Construction phase and panel/battery replacement	Operational phase (routine maintenance)	Decommissioning phase	
Greenhouse gas (GHG) emissions	Scoped in	Scoped in	Scoped out	GHG emissions from the construction phase of the Scheme will contribute to climate change. The magnitude and significance of these emissions will be determined as part of the ES assessment. The generation of energy from the Scheme will contribute low-carbon electricity to the UK's electricity supply reducing its reliance on fossil fuel-based marginal generation that would otherwise be required to meet project growth in UK electricity demand. This could lead to a beneficial significant effect on climate. GHG emissions from the decommissioning phase of the Scheme are unlikely to affect the Government's ability to meet its carbon reduction targets, therefore resulting in a non-significant effect on climate. The Planning Inspectorate (PINS) agreed via the Scoping Opinion that the decommissioning phase can remain scoped out from further assessment, providing appropriate good practice measures are secured within the outline Decommissioning Environmental Management Plan (oDEMP). Following receipt of the Scoping Opinion from the Planning Inspectorate, the scope of the assessment remains unchanged.

11.3 Consultation

Consultation to date

11.3.1 No consultation with stakeholders has been undertaken to date.

11.4 Legislation and policy

Legislation

11.4.1 The below listed legislation has been taken into account in the climate change assessment. Volume 3, Appendix 11.1 Legislation, policy and guidance relevant to the climate change assessment, provides further detail on how the below listed legislation has informed the climate change assessment:

- Environmental Impact Assessment (EIA) Regulations Schedule 5(f)[3];
- Paris Agreement 2015[4];
- Climate Change Act 2008 as amended in 2019[5];
- Carbon Budgets Orders 2009[6], 2011[7], 2016[8], 2021[9], 2026[10]; and
- The Kyoto Protocol 1997[11].

[3] Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/572/contents
[4] UNFCCC (2016). Conference of the Parties, Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015. FCCC/CP/2015/10 (online). Available at: https://unfccc.int/sites/default/files/resource/docs/2015/cop21/eng/10a01.pdf
[5] The Climate Change Act 2008 (2050 Target Amendment) Order 2019. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111187654
[6] Department for Energy Security and Net Zero (2009) Carbon Budgets Order 2009. Available at: https://www.legislation.gov.uk/uksi/2009/1259/contents/made
[7] Department for Energy Security and Net Zero (2011) Carbon Budgets Order 2011. Available at: https://www.legislation.gov.uk/uksi/2011/1603/made
[8] Department for Energy Security and Net Zero (2016) Carbon Budgets Order 2016. Available at: https://www.legislation.gov.uk/uksi/2016/785/made
[9] Department for Energy Security and Net Zero (2021) Carbon Budgets Order 2021. Available at: https://www.legislation.gov.uk/uksi/2021/750/contents/made
[10] The Carbon Budget Order (2026). Available at: https://www.legislation.gov.uk/ukdsi/2026/9780348283815
[11] United Nations Framework Convention on Climate Change (1997) The Kyoto Protocol. Available at: https://unfccc.int/process-and-meetings/the-kyoto-protocol

Policy

11.4.2 The below listed policy has been taken into account in the climate change assessment. Volume 3, Appendix 11.1 Legislation and policy relevant to the climate change assessment, provides further detail on how the below listed policy has informed the climate change assessment.

- Overarching National Policy Statement (NPS) for energy (EN-1)[12];
- NPS for renewable energy infrastructure (EN-3)[13];
- NPS for electricity networks infrastructure (EN-5)[14];
- National Planning Policy Framework (NPPF) (2026)[15];
- UK Net Zero Strategy[16];
- Clean Power 2030 Action Plan[17];
- The Clean Growth Strategy[18];
- Powering our Net Zero Future[19];
- Review of Net Zero[20];
- Construction 2025 (UK Government 2013)[21];
- Warwickshire County Council (WaCC), Delivery Plan 2025-2027[22];
- WaCC Sustainable Futures Strategy[23];
- Worcestershire County Council (WoCC) Environment Improvement Plan[24];
- Stratford-on-Avon District Council (SoADC) Climate Change and Nature Recovery Strategy 2024-2029[25]; and
- Wychavon District Council (WyDC) Intelligently Green Plan 2020-2030[26].

Guidance documents

11.4.3 The climate change assessment has been undertaken in accordance with the following guidance documents:

- Planning Practice Guidance (PPG) (2024)[27];
- Institute of Sustainability and Environmental Professionals (ISEP) Assessing Green House Gases (GHG) Emissions and Evaluating their Significance (GHG Guidance) 2022[28];
- ISEP Climate Change Adaption Practitioner Guidance (2022)[29];
- Public Available Specifications (PAS) 2080: 2023 Carbon Management in Buildings and Infrastructure[30];
- Royal Institution of Chartered Surveyors' (RICS) Whole Life Carbon Assessment for the Built Environment, RICS Professional Standard, 2nd edition 2023[31]; and
- Natural England Carbon Storage And Sequestration By Habitat 2021[32].

[12] Department for Energy Security and Net Zero (2026) Overarching National Policy Statement for Energy (EN-1). Available at: https://www.gov.uk/government/publications/overarching-national-policy-statement-for-energy-en-1-2025
[13] Department for Energy Security and Net Zero (2026) National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3-2025
[14] Department for Energy Security and Net Zero (2026) National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://www.gov.uk/government/publications/national-policy-statement-for-electricity-networks-infrastructure-en-5-2025
[15] Ministry of Housing, Communities & Local Government (2026) National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2
[16] HM Government, October (2022) Net Zero Strategy: Build Back Greener. Available at: https://assets.publishing.service.gov.uk/media/6194dfa4d3bf7f0555071b1b/net-zero-strategy-beis.pdf
[17] Department for Energy Security and Net Zero (2025) Clean Power 2030 Action Plan. Available at: https://www.gov.uk/government/publications/clean-power-2030-action-plan
[18] Department for Energy Security and Net Zero (2018) Clean Growth Strategy. Available at: https://www.gov.uk/government/publications/clean-growth-strategy
[19] Department for Energy Security and Net Zero (2020) Powering our net zero future. Available at: https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future
[20] Department for Energy Security and Net Zero (2023) Review of Net Zero. Available at: https://www.gov.uk/government/publications/review-of-net-zero
[21] Department for Business, Innovation and Skills (2023) Construction 2025: Strategy. Available at: https://www.gov.uk/government/publications/construction-2025-strategy
[22] Warwickshire County Council (2022) Council Delivery Plan 2025-2027. Available at: https://www.warwickshire.gov.uk/councilplan
[23] Warwickshire County Council (2023) Sustainable Futures Strategy. Available at: https://democracy.warwickshire.gov.uk/documents/s33794/Appendix%201%20for%20Sustainable%20Futures%20Strategy.pdf
[24] Worcestershire County Council (2024) Environment Improvement Plan. Available at: https://www.worcestershire.gov.uk/sites/default/files/2024-07/65693%20Environment%20Improvement%20Strategy%202024%20Compressed%20V02%20%28WEB%29.pdf
[25] Stratford-on-Avon District Council (2024) Climate Change and Nature Recovery Strategy 2024-2029. Available at: https://www.stratford.gov.uk/doc/213546/name/Climate%20Change%20and%20Nature%20Recovery%20Strategy%20JAN25%20.pdf
[26] Wychavon District Council (2026) Community and Living Intelligently Green Plan. Available at: https://www.wychavon.gov.uk/community-and-living/intelligently-green
[27] Ministry of Housing, Communities and Local Government (2016) Planning Practice Guidance. Available at: https://www.gov.uk/government/collections/planning-practice-guidance
[28] ISEP (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance. Available at: https://www.isepglobal.org/resources/blogs/2026/april/defining-significance-in-a-net-zero-era-the-next-step-for-greenhouse-gas-emissions-assessment-in-environmental-impact-assessment/
[29] ISEP (2022) Climate Change Adaption Practitioner Guidance. Available at: https://www.isepglobal.org/resources/blogs/2022/11/11/isep-publishes-guidance-on-climate-change-adaptation/
[30] BSI (2023) PAS 2080:2023 Carbon Management in Buildings and Infrastructure. Available at: https://www.bsigroup.com/en-GB/insights-and-media/insights/brochures/pas-2080-carbon-management-in-infrastructure-and-built-environment/
[31] RICS (2017) Whole Life Carbon Assessment for the Built Environment, RICS Professional Standard, 2nd edition. Available at: https://consultations.rics.org/whole_life_carbon_standard/viewCompoundDoc?docid=13626324&sessionid=&voteid=
[32] Natural England (2021) Carbon Storage And Sequestration By Habitat. Available at: https://publications.naturalengland.org.uk/publication/5419124441481216

Establishing the baseline

Study area

11.4.4 The study area includes the Order Limits, all GHG emitting activities within the Order Limits, and all relevant GHG emitting activities beyond the Order Limits that contribute to the total GHG emissions of the Scheme during its lifetime. There is no fixed geographical boundary to the study area and instead a set of emissions sources are included within the assessment.

11.4.5 It should be noted that the sources of GHG emissions can be wide-ranging in terms of geographical location. They will originate from the Scheme and from sources within the supply chain; therefore, there is no spatial study area, which instead focuses on all activities related to the Scheme.

Desk study

11.4.6 The following sources have been used to determine the baseline greenhouse gas emissions:

- UK Government published greenhouse gas statistics[33];
- UK Government's carbon budgets[34]; and
- Natural England's Carbon Storage and Sequestration by Habitat 2021[32].

Surveys

11.4.7 No surveys were required for the assessment.

Determining value

11.4.8 The atmosphere is the single, global receptor of GHG emissions. The value of the receptor does not change with the source of emissions, and this assessment is based solely upon the magnitude of GHG emissions in the context of the baseline and efforts to reduce emissions nationally and locally. The atmosphere is considered a high value receptor.

Impact assessment

Assessment approach

11.4.9 It is key to note that whilst the GHG assessment is a wide-ranging topic in terms of potential sources, it is simple in terms of its receptors and impacts because:

- There is only one receptor, the atmosphere;
- There is only one direct impact, global warming; and
- All units of CO_2e can be considered to have the same impact no matter where they are emitted.

11.4.10 Whilst climate change has many serious impacts, including increased flood risk, more extreme weather events, changes on ecosystems etc., the assessment of the effects of the Scheme on climate is limited to quantification of the magnitude of GHG emissions, from individual sources and in total, the difference between these emissions relative to the baseline. Significance is assessed in the context of the UK Government's 2050 Net Zero target and Carbon Budgets and whether GHGs from the Scheme are consistent with the trajectory to Net Zero by 2050.

11.4.11 The goal of the assessment is to calculate the emissions anticipated to be generated by the Scheme to:

- Determine the magnitude of the Scheme's effect on climate, in comparison with the baseline scenario;
- Assess the significance of the effect on climate by considering it in context with UK Government's carbon budgets and 2050 Net Zero target; and
- Enable identification of GHG emissions hot spots within the construction and operation of the Scheme to inform identification of appropriate mitigation measures.

11.4.12 Emissions calculations are carried out by multiplying activity data by an emission factor associated with the activity being measured. Activity data is a quantitative measure of an activity that results in emissions during a given period of time, (e.g., kilometres driven, kWh electricity consumed, tonnes of waste sent to landfill). An emission factor is a measure of the mass of emissions relative to a unit of activity.

11.4.13 The lifecycle stages and carbon emissions sources included within the assessment are presented in Table 11-2 and are in line with the principles set out in PAS 2080.

[33] Department for Business, Innovation, Science and Trade (2025) Provisional UK Greenhouse Gas Emissions Statistics. Available at: https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-statistics-2025/2025-uk-greenhouse-gas-emissions-provisional-figures-statistical-release

[34] Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2021) Carbon budgets. Available at: https://www.gov.uk/guidance/carbon-budgets

Table 11-2 Sources and lifecycle stages for project carbon emissions

Main stage of project lifecycle	Sub-stage of life cycle	Potential sources of carbon emissions (not exhaustive)	Included within assessment?
Construction Stage	A1 – 3 Embodied carbon from material supply	Embodied carbon emissions associated with the required raw materials, transportation from source and their manufacture	Yes
	A4 Transportation of materials to worksite	Emissions from the transportation of workers and materials to site	Yes – Transportation of materials Yes – The average number of FTE staff required on site is expected to be 473 workers
	A5 Construction processes	Activities for organisations conducting construction work, including plant use, fuel emissions and construction practices.	Yes
	Land-Use Change	Carbon emissions from vegetation or soil loss during construction	Yes
Operation Stage	B1 Use (including Land use and forestry)	Ongoing land use carbon emissions / sequestration each year	Yes
	B2 Maintenance	Emissions associated with routine maintenance	Yes
	B3 Repair	Emissions associated with repair of broken assets and materials	Yes
	B4 Replacement	Emissions from the replacement of assets and materials	Yes
	B5 Refurbishment	Emissions from the improvement or upgrading of assets	No – no planned refurbishment of assets is anticipated
	B6 Operational Energy	Emissions from the use of operational energy during operation	Yes
	B7 Operational Water	Emissions from the use of operational water during operation	No – Operational water use will be limited to emergency water tanks at the BESS sites for the purposes of fire safety which will only be refilled in exceptional circumstances. Operational water will also be used for the cleaning of panels; however, no assessment is required as emissions are anticipated to be low enough to be within the margin of error.
	B8 User Utilisation	Emissions from the transport of person to and from site .	No – only 20 FTE workers will be required on-site during operation and emissions are anticipated <1% of total emissions, therefore no assessment is required as emissions are anticipated to be low enough to be within the margin of error.
	Land use and forestry	Carbon emissions from ongoing sequestration	Yes

Calculating construction emissions

11.4.14 Scheme emissions have been calculated using Scheme data from the maximum parameters of design based on the Rochdale Envelope and relevant carbon conversion factors. The material data, transportation data, and construction stage data has been informed by the Applicant's depth of experience in the industry and by its previous NSIP-scale projects, to ensure a robust assessment has been undertaken. Any assumptions made have been validated by references or are based on professional judgment.

11.4.15 A quantification of construction phase GHG emissions has been calculated using an appropriate carbon tool and carbon factors sourced from the following:

- Inventory of Carbon and Energy (ICE, versions 3.0 and 4.0)[35]; and
- Department for Energy Security and Net Zero GHG Reporting Conversion Factors[36].

Transportation of materials

11.4.16 Information relating to where materials will be sourced is not yet able to be confirmed, as this will be determined following grant of consent as the Scheme approaches commencement of construction. Therefore, Table 17 in the RICS 'Whole life carbon assessment for the built environment' guidance[31], has been used to provide the likely distances that the construction materials are to be transported to the Order Limits. For the purposes of assessment, it is assumed that all materials will be transported via heavy goods vehicles following the routes outlined in Volume 1, Chapter 12 Transport and access, and that each vehicle is carrying an average load. In reality, the Applicant will work with its contractors to maximise the load of vehicles to reduce total trip numbers.

Calculating operational emissions

11.4.17 The anticipated operational requirements of the Scheme are acquired from the proposed design and include the operational energy and material requirements of the Scheme. Where data is not available, benchmark data will be used to calculate the emissions during the operation of the Scheme.

11.4.18 The Scheme will require maintenance due to standard wear and tear from operational use as well as possible damage from external events (e.g. storms or flooding). Whilst it is not possible to identify when the latter occurs given the Scheme is specifically designed to be resilient to such events, a regular maintenance programme will take place to manage the former. Information from the design has been used to identify the anticipated maintenance regime of the Scheme. Emissions from elements that will require partial or full replacement are calculated via the same method used to calculate those elements during the construction phase (i.e. emissions from material production, transportation and installation).

11.4.19 The Scheme will require replacement of assets that reach the end of their lifespan over its 60-year operational phase. The components of the Scheme are anticipated to have the following approximate lifespans:

- Photovoltaic (PV) Panels – 40 years; and
- Batteries – 15 to 20 years.

11.4.20 It is therefore estimated that the PV Panels could require replacement once, and the batteries up to four times, during the operation of the Scheme. The effects of maintenance and replacement activities are anticipated to be lesser than the Construction Phase due to the mounting frames, cabling, substation and other infrastructure already being in situ and not needing replacement. These activities would be controlled and managed through appropriate management plans and by the requirements of the DCO.

Calculating Land Use and Land-Use Change (LULUC) emissions and removals

11.4.21 LULUC plays an important role in the balance and transfer of carbon through global carbon cycles. Carbon is stored in and exchanged between the atmosphere and biosphere, which includes plants and soils. When humans alter land-use, they impact the carbon stocks held within the biosphere and the exchange of carbon with the atmosphere. These changes can have adverse climate change impacts but also provide key mitigation opportunities by removing carbon from the atmosphere and storing it in terrestrial biospheres. The construction and operation of the Scheme has the potential to:

- Change and disturb land-uses, leading to the release of carbon dioxide (CO_2) into the atmosphere from vegetation and soils; and
- Create and enhance carbon stocks in vegetation and soils, encouraging increased removals of greenhouse gases from the atmosphere

[35] Circular Economy (2026) Embodied Carbon - The ICE Database. Available at: https://circularecology.com/ice-database.html

[36] Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2025) Government conversion factors for company reporting of greenhouse gas emissions. Available at: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting

11.4.22 Baseline calculations have been calculated by establishing annual sequestration or emission rates per hectare of each habitat present on site. These rates were then multiplied by the total area for each habitat, derived from the UKHab surveys (see Volume 1, Chapter 8 Ecology and biodiversity), which provided the area of land-use type which would be lost or disturbed by construction work for each option and variation. The results provided the annual sequestration or emission rate of each habitat, assuming it remains the same in future. The totals for each habitat type were then summed to give the total emissions, and multiplied by 60, to produce the total for the operational appraisal period.

11.4.23 The same data were used to derive the emissions for the operational assessment as a result of the change in sequestration over the 60-year period. It should be noted that this is a conservative approach, as it assumes that land-uses would continue to sequester carbon in their current state. In reality, once a land-use is established (this takes different lengths of time depending on the land-use and management methods), it is likely to be neutral in terms of its emissions / removals, i.e., the two will balance each other out in any given year. A conservative approach of including projected sequestration for existing land-uses has been taken to prevent an under-estimation of the impact.

11.4.24 A 'value-transfer' approach was taken to ascribing carbon stock data, whereby data from existing studies into similar land-use types were applied to the study area. Based on the habitats present, the data sources used included the following:

- Natural England (2021) Carbon storage and sequestration by habitat: a review of the evidence (second edition)[32].

11.4.25 Table 11-3 sets out the criteria for determining impact magnitude.

Table 11-3 Impact magnitude criteria

Impact magnitude	Criteria
High	Adverse: The Scheme's carbon emissions impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. The Scheme produces significant residual emissions and does not make a meaningful contribution to achieving the trajectory to limit global temperature increases to 1.5° C as mandated in the Paris Agreement[4].
	Beneficial: The Scheme's net emissions are below zero and cause a reduction in atmospheric carbon emissions, whether directly or indirectly compared to the baseline and make a major and meaningful contribution to achieving 1.5°C.
Medium	Adverse: The Scheme's carbon emission impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy for projects of this type. The Scheme produces significant residual emissions and falls short of a full contribution to achieving the 1.5°C trajectory.
	Beneficial: The Scheme's net emissions are below zero and cause a reduction in atmospheric carbon emissions, whether directly or indirectly compared to the baseline and make a moderate contribution to achieving 1.5°C.
Low	Adverse: A Scheme that is fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. Fully compatible with the budgeted, science-based 1.5°C trajectory.
	Beneficial: The Scheme's net emissions are below zero and cause a reduction in atmospheric carbon emissions, whether directly or indirectly compared to the baseline and make a minor contribution to achieving 1.5°C.
Negligible	A Scheme in which emissions mitigation goes substantially beyond the existing and emerging policy and design standards for projects of this type, such that it is well ahead of the 1.5C trajectory to meet net zero. Minimal residual emissions are emitted from the project, or the project has a minimal contribution to the 1.5°C trajectory.

Determining effect significance

11.4.26 The assessment of the effects and significance of lifecycle GHG emissions attributed to the Scheme will be undertaken in accordance with the ISEP guidance for GHG assessment, and take account of the requirements of NPS EN-1 and EN-3. ISEP guidance places emphasis on mitigation and the alignment of generated GHG emissions with relevant proxies for net-zero trajectories, such as the UK Carbon Budgets. In particular, the ISEP guidance states:

> *"The crux of significance is not whether a project emits GHG emissions, nor even the magnitude of GHG emissions alone, but whether it contributes to reducing GHG emissions relative to a comparable baseline consistent with a trajectory towards net zero by 2050".*

11.4.27 Given this, there are three key areas to be considered when evaluating the significance of a project's GHG impact:

1) The magnitude of lifecycle GHG emissions associated with the Scheme and the extent to which these emissions are consistent with the trajectory and objectives of the UK Carbon Budgets.
2) The Scheme's estimated net operational GHG impact relative to the future baseline scenario in which the Scheme is not developed, and electricity generation continues to be supplied by the current UK grid mix (and its associated carbon figures) (i.e., the 'business-as-usual' scenario).
3) Assessment of the Scheme's alignment with relevant UK policy and its contribution to delivering UK Government strategic objectives, statutory targets and NESO future energy scenarios.

11.4.28 As such, the Environmental Statement will present its results in this context, to reach an ultimate judgement on significance.

11.4.29 Effect significance has been determined by combining the receptor sensitivity (i.e. the atmosphere which has a high sensitivity) by the impact magnitude as set out in Table 11-3. Effects which have been determined as Major or Moderate are deemed significant and Minor and Negligible effects are not significant. Effects can be either beneficial or adverse.

Table 11-4 Effect significance

	Impact magnitude			
Receptor sensitivity	**High**	**Medium**	**Low**	**Negligible**
High	Major	Moderate	Minor	Negligible

11.5 Baseline conditions

11.5.1 The baseline environment for the assessment is informed by the total GHG emissions from UK GHG emissions, as provided by national statistics, to inform understanding and significance of the baseline environment.

National emissions

11.5.2 The UK's net total territorial GHG emissions for the year 2025 were 367 million tonnes CO_2e, which is 54% lower than in 1990 and 2% lower than in 2024[37]. The fall in CO_2e emissions was driven by decreased blast furnace use in the industry sector and decreased coal use in the electricity supply sector. Electricity generation in the UK in 2026 is anticipated to emit 0.13096 $kgCO_2e/kWh$[38].

Site-specific emissions

11.5.3 The Order Limits primarily consists of agricultural land adjacent to established vegetation in the form of blocks of woodland and hedgerows. Other than standard agricultural activities, there are no major GHG emitting activities occurring across the Order Limits. Arable land has limited carbon sequestration value due to the harvesting of crops on a regular basis and is often a net emitter of carbon. Other agricultural activities (e.g. plant machinery) are anticipated to have a negligible level of emissions when compared to the UK Government carbon budgets.

Future baseline

11.5.4 The future baseline will account for a 'without scheme' scenario. This is in line with ISEP guidance for GHG assessment which requires baselines as a reference point that projects can be compared to establish a net effect.

11.5.5 Without the Scheme, the landscape is expected to be broadly similar to the current site-specific baseline assuming that existing (largely agricultural) land-uses remain the same.

[37] Department for Energy Security & Net Zero (2026) 2025 UK greenhouse gas emissions: provisional figures – statistical release. Available from: https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-statistics-2025/2025-uk-greenhouse-gas-emissions-provisional-figures-statistical-release

[38] Department for Energy Security & Net Zero (2026) Greenhouse gas reporting: conversion factors 2026. Available from: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fassets.publishing.service.gov.uk%2Fmedia%2F6a29392bade52dc0882218a8%2Fghg-conversion-factors-2026-full-set.xlsx&wdOrigin=BROWSELINK

11.5.6 UK electricity demand is projected to grow in the future and additional energy generation projects will be required to meet this demand. Electricity generation in the UK currently emits an average of 0.13096 kgCO_2e per kWh of energy generated. The future carbon emissions from electricity generation are unknown and in line with recent decision letters from the Secretary of State, the future baseline for electricity generation in the UK is considered to the be current electricity generation carbon factor of 0.13096 kgCO_2e/kWh.

11.5.7 It should be noted however that the Scheme's lifecycle assessment will include the embodied carbon of solar panels, and their replacements. These emissions are not included in the UK grid average figure, meaning that the comparison is not matched in terms of scope and will ultimately underestimate the benefit of renewable electricity as the grid decarbonises, and so the assessment will be conservative.

Embedded mitigation

11.5.8 The development of the climate change assessment for the Scheme has taken into consideration the embedded mitigation as defined in Volume 1, Chapter 2 Scheme description, Section 2.7 of this ES and design evolution outlined in Volume 1, Chapter 4 Consideration of alternatives of this ES. For climate change this includes:

- E-GEN.1 - Implementation of Outline Construction Environmental Management Plan (oCEMP)
- E-GEN.2 - Implementation of Landscape and Ecological Management Plan (LEMP)
- E-GEN.3 - Implementation of Outline Operational Environmental Management Plan (oOEMP)
- E-GEN.4 - Implementation of Outline Decommissioning Environmental Management Plan (oDEMP)
- E-WR.1 - The use of existing access tracks
- E-LV.2 - Retention and enhancement of existing vegetation

Receptor summary

11.5.9 A summary of the receptors which have been assessed in the Climate change chapter are described in Table 11-5.

Table 11-5 Description of the key materials and waste receptors that will be assessed

Name	Detail	Value
Atmosphere	The atmosphere is the sole receptor of greenhouse gas emissions that are generated as part of the scheme.	High

Arrow Valley Solar