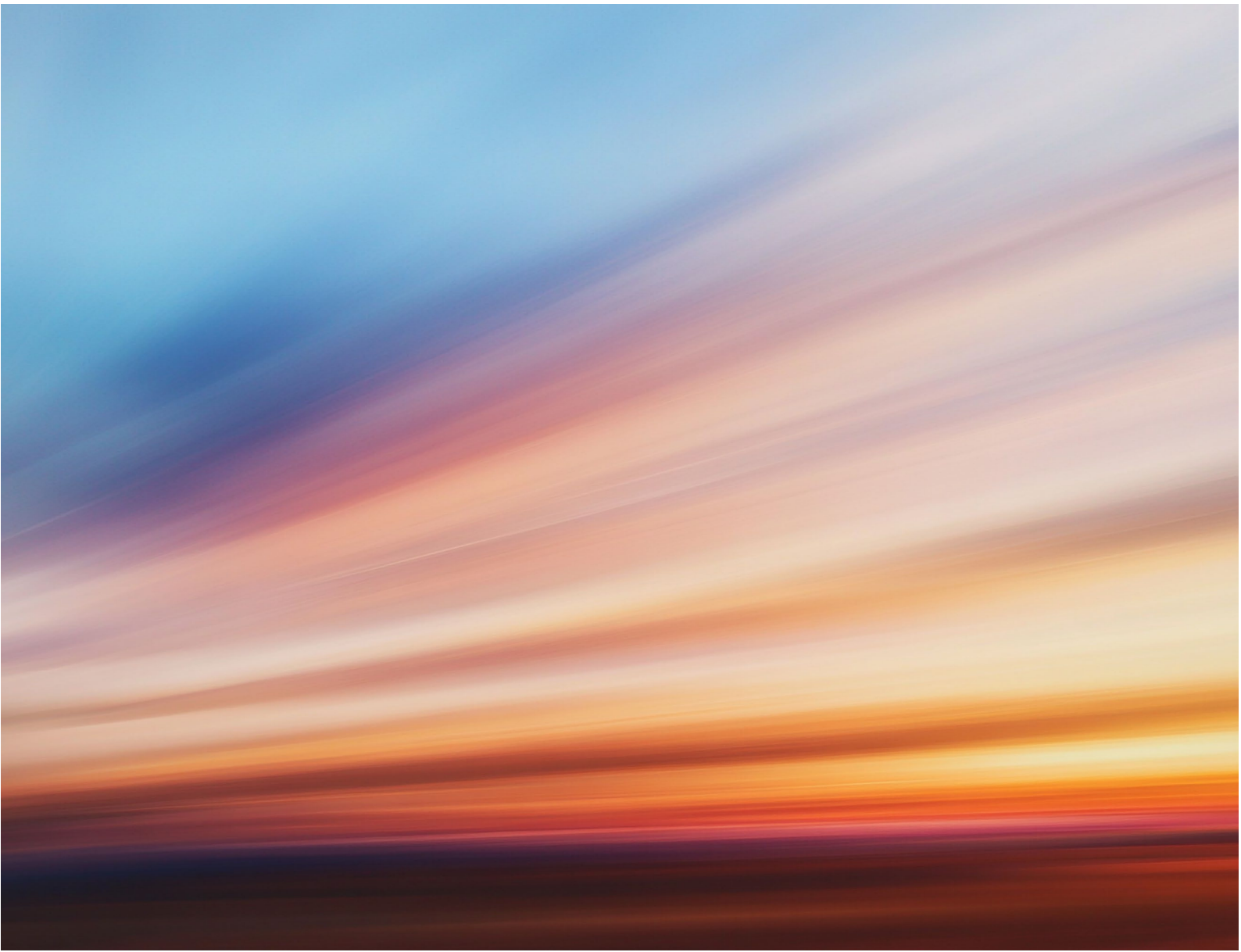
Mylen Leah Solar Farm

Preliminary Environmental Information Report (PEIR)

Volume 1

Chapter 8: Climate

April 2026



Contents

8. Climate

8.1 Introduction

8.1.1 This chapter presents a preliminary assessment of the likely significant effects arising on climate during the construction, operation and decommissioning phases of Mylen Leah Solar Farm.

8.1.2 This chapter should be read in conjunction with the following chapters in **Volume 1** and with the following appendices in **Volume 3**:

- **Chapter 14: Transport and Access**; and
- **Appendix 8.1: Climate Data Sources and Assumptions**.

8.1.3 The scope of this preliminary Greenhouse Gas (GHG) assessment includes the addition of GHG emissions directly from construction, operation, and decommissioning activities within the draft Order Limits, including fuel consumption. It also includes indirect emissions which would occur outside of the draft Order Limits but related to the activities of all stages of the Mylen Leah Solar Farm.

8.1.4 Following the EIA scoping process, the following receptors/matters have not been considered within this preliminary assessment:

- Climate change risk; and
- In-combination impact assessment.

8.1.5 **Section 8.8** below provides details of how Mylen Leah Solar Farm has been designed so far to be resilient to climate change risks. Potential risks to human health are discussed in **Chapter 18: Other Environmental Considerations** in **Volume 1**. Relevant climate change factors have been considered in **Chapter 7: Biodiversity** and **Chapter 15: Water** in **Volume 1**.

8.2 How have we engaged with others about climate so far?

8.2.1 No specific consultation with regards to climate has been undertaken to inform this preliminary assessment.

8.3 What legislation, planning policy and guidance is relevant to climate?

8.3.1 The general legislation and planning policy context for Mylen Leah Solar Farm is provided in **Section 1.4** of **Chapter 1: Introducing Mylen Leah Solar Farm** in **Volume 1**. Legislation, planning policy and guidance relevant to this preliminary climate assessment is detailed below:

- International treatiesThe 2015 Paris Agreement[1] - this is a legally binding international treaty which commits Parties to the United Nations Framework Convention on Climate Change to objectives to reduce GHG emissions, with the view to limiting the global average temperature rise to well below 2˚C above pre-industrial levels, whilst "*pursuing efforts to limit the temperature increase to 1.5˚C*";
- United Nations Framework Convention on Climate Change[2] - this came into force on 21 March 1994 and sought to stabilise the atmospheric concentrations of GHG at 'safe levels'. The Convention

provides an overall framework for international government efforts to address the challenges posed by climate change;

- Kyoto Protocol[3] - this was an international treaty with the aim to reduce global GHG emissions. It was adopted in 1997 and came into force in 2005. It outlined six categories of GHG emissions weighted by their global warming potential and aggregated to give total GHG emissions in carbon dioxide (CO_2) equivalents. The Kyoto Protocol was effectively replaced by the Paris Agreement, which came into effect in 2016;

Legislation

- European Union Renewable Energy Directive 2018/2001/EI[4] (amended 2023) - this created a new binding target for member states to achieve a renewable energy target of 42.5% by 2030 and aim for 45% The United Kingdom (UK) notified the European Union of its intention to leave the union in March 2017. The European Union (Withdrawal) Act 2018[5] (as amended by the European Union (Withdrawal Agreement) Act 2020[6]) requires that the European Union laws, rules and GHG emissions targets, which have been set in respect of climate change through European law, are transferred into UK domestic governance;
- Climate Change Act 2008 (as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019)[7] – sets a legally-binding target of reducing GHG emissions by 100% by 2050, relative to the baseline year of 1990. The Act further established the Climate Change Committee as an independent, statutory body to advise the UK and devolved Governments on emission reduction targets and report to Parliament on progress. The Climate Change Committee is further tasked with the production of the UK Climate Change Risk Assessment, followed by a National Adaptation Programme to address those risks every five years; and
- The Climate Change Committee (carbon budgets)[8] [9] [10] [11] [12] – the Climate Change Committee is an independent statutory body established under the Climate Change Act 2008 (as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019) to advise the UK Government and devolved administrations on reducing GHG emissions and preparing for climate change. The Climate Change Committee undertakes an annual assessment of GHG emissions to determine whether the UK is on course to meet its legal Net Zero target by 2050.
- Energy Act 2013[13] - UK legislation that introduced a framework to support secure, affordable, and low-carbon electricity generation, with the objective of incentivising investment in renewable and other low-carbon technologies whilst maintaining security of supply and contributing to the UK's greenhouse gas emissions reduction targets.

National planning policy

- Overarching National Policy Statement for Energy (NPS EN-1) (December 2025, published January 2026)[14] - Section 3 sets out the importance of Nationally Significant Infrastructure Projects and explicitly includes solar generation within its scope. Section 5.3 details the requirement for a GHG assessment as part of the Environmental Statement, and enhances the emphasis on mitigation and offset opportunities, encouraging developers to identify nature-based or technological mitigation measures. These measures should be consolidated into a GHG Reduction Strategy, expected to be secured under the DCO.
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (December 2025, published January 2026)[15] – Section 2.10 contains details on solar energy generation;
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (December 2025, published January 2026)[16] – Section 2.3 references requirements related to climate change adaptation and resilience;
- National Planning Policy Framework (NPPF) (2024)[17] – Section 14 describes how to meet the challenge of climate change, flooding and coastal change;
- British Energy Security Strategy (Department for Business, Energy & Industrial Strategy (BEIS now disbanded), and Department for Energy Security & Net Zero, 2022)[18];
- Energy White Paper: Powering our Net Zero Future (2020)[19];
- Powering Up Britain (2023)[20];
- Net Zero Strategy: Build Back Greener (2021) (charts and tables updated 2022)[21];
- The Ten Point Plan for a Green Industrial Revolution (2020)[22]; and
- The Clean Growth Strategy (2017) (updated 2018)[23].

Local planning policy

- East Riding of Yorkshire Council Climate Change Strategy 2022-2030[24] establishes the vision for how East Riding of Yorkshire Council (ERYC) will reduce carbon emissions and build resilience to climate change. It details the overarching climate change response for the Council; and
- East Riding Local Plan Update 2020-2039 (adopted April 2025)[25]emphasises the relatively high per capita GHG emissions in East Riding, influenced by the reliance on transport in the predominantly rural area. Key mitigation actions relate to reducing the need to travel and sustainable transport, alongside providing opportunities for renewable and low carbon energy technologies.

Guidance

8.3.2 The following guidance documents have been used during the preparation of this preliminary assessment:

- Assessing Greenhouse Gas Emissions and Evaluating their Significance (Institute of Environmental Management and Assessment (IEMA), 2022)[26];
- Planning Practice Guidance on Climate Change (Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government, 2019)[27];
- A Corporate Accounting and Reporting Standard (The Greenhouse Gas Protocol, 2004)[28]; and
- Whole Life Carbon Assessment for the Built Environment (Royal Institution of Chartered Surveyors, 2023)[29].

8.4 What study area has been used for climate?

8.4.1 The sensitive receptor for GHG emissions is the global atmosphere, which is considered highly sensitive to GHG emissions fluctuations. By proxy, this can also be extended to the UK commitments under the UK Climate Change Act 2008 (as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019) [7], which aligned with the goals of the 2015 Paris Agreement[1] to avoid dangerous climate change by limiting global warming to well below 2°C and pursuing efforts to limit it to 1.5°C.

8.4.2 Mylen Leah Solar Farm has the potential to affect the climate by the addition and avoidance of GHG emissions in comparison to the baseline and future baseline scenario.

8.4.3 The scope of the GHG emissions assessment includes the addition of GHG emissions directly from construction, operational and decommissioning activities undertaken within the draft Order Limits, including fuel consumption. It also extends to include emissions which would occur outside the draft Order Limits, but related to the activities of Mylen Leah Solar Farm, including those from:

- The extraction, manufacture, and transportation of materials to the construction Site (during construction and operation);
- The transportation of workers to Site (during construction and operation); and
- Offsite transport and disposal of waste materials (during construction, operation, and decommissioning).

8.4.4 This preliminary assessment also considers the GHG savings from Mylen Leah Solar Farm as a result of displacing fossil-fuel based energy in the national electricity network.

8.5 How have existing climate conditions been understood?

Data sources to inform the EIA baseline characterisation

8.5.1 A desktop assessment has been undertaken to understand prevailing site conditions to judge if the existing site is likely to have a likely significant effect for GHG emissions, either positive or negative.

8.5.2 Data have been obtained from the Applicant, where available, to undertake the lifecycle GHG assessment. In the absence of data, appropriate benchmarks have been used following Royal Institution of Chartered Surveyors guidance.

8.5.3 For more information, please refer to **Appendix 8.1: Climate Data Sources and Assumptions** in **Volume 3**.

Site visits/surveys

8.5.4 No specific site surveys have been undertaken to understand baseline conditions with regards to GHG emissions.

8.6 What are the existing climate conditions within the study area?

Existing baseline

8.6.1 The land within the draft Order Limits predominantly consists of a disused airfield, known as Melbourne Raceway (presently used for recreational and commercial use (motor racing and commercial motor vehicle use)), agricultural fields (mostly arable, some grassland and some grazing) interspersed with hedgerows, ditches, small woodland blocks and farm access tracks. The hedgerows within the draft Order Limits range from dense tall vegetation (shrub and tree species) to thin lines of vegetation with sporadic shrubs and trees present. The fields are bordered by a mix of hedgerows, wet ditches, and some of the many major named drains and dikes in the area.

8.6.2 The GHG baseline comprises the existing carbon stock and possible small emissions sources. These small emissions sources may comprise vehicle fuel and fertiliser use, with possible contributions from the land depending on soil and vegetation types.

8.6.3 In line with IEMA's Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)[26], baseline GHG emissions associated with "*agricultural fields may be harder to estimate"*, due to high spatial and temporal variability, changing land management practices, and the lack of reliable site-specific data. The IEMA Guide states *"it may be appropriate to assume zero baseline GHG emissions in such cases to ensure a reasonable worse-case approach to establishing the net GHG effect of project proposals*".

8.6.4 The Climate Change Committee is an independent statutory body established under the Climate Change Act 2008 (as amended by the Climate Change Act 2008 (2050 Target Amendment) Order 2019) to advise the UK Government and Devolved Administrations on reducing GHG emissions and preparing for climate change. The Climate Change Committee undertakes an annual assessment of GHG emissions to determine whether the UK is on

course to meet its target carbon budget. These budgets are presently set as follows in **Table 8.1**.

Table 8.1: UK Carbon Budgets

Carbon budget	Carbon budget level ($MMtCO_2e$) (Million Metric Tons of Carbon Dioxide Equivalent)	% reduction below 1990 base year
1st (2008 – 12)	3,018	23
2nd (2013 – 17)	2,782	29
3rd (2018 – 22)	2,544	35
4th (2023 – 27)	1,950	50
5th (2028 – 32)	1,725 (1,765 including international shipping)	57
6th (2033 – 37)	965 (including international aviation and shipping)	78
7th (2038 – 42)	535 (including international aviation and shipping)	87

8.6.6 In its most recent budget report (released in February 2025)[30], the Climate Change Committee recommended that the UK set a Seventh Carbon Budget which requires a reduction in emissions of 87% by 2040, relative to 1990 levels. This represents a world-leading commitment which is consistent with the over-arching objectives of the 2015 Paris Agreement[1].

Future baseline

Site level

8.6.7 No change is expected for the future baseline when compared to the current baseline, with regards to GHG emissions. In absence of Mylen Leah Solar Farm, the land would likely continue under the same agricultural and recreational use and therefore produce the same level of GHG emissions as the current baseline. The current baseline can be considered to have zero GHG emissions at a Site level, representing a worst-case scenario in line with IEMA's Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)[26]. It is unlikely that under a future 'business-as-usual' scenario there would be any significant changes to the amount of GHG emissions from the Site, either positive or negative.

National level

8.6.8 It is important to note that the UK's National Grid is expected to decarbonise, and the carbon intensity fall to near-zero levels by mid-century as a result of projected renewable energy developments, growth in nuclear capacity, and the deployment of low-carbon technologies such as carbon capture, utilisation and storage and hydrogen-fired power. Therefore, Mylen Leah Solar Farm already forms part of the future baseline assumption for future grid decarbonisation.

8.6.9 In addition, electricity demand is expected to increase significantly as transport and heating electrify, meaning that absolute emissions reductions in the electricity sector underpin broader national decarbonisation targets. These trends form the baseline assumption in national modelling for meeting

domestic net-zero goals and legally binding clean-power targets for 2030 and 2035.

8.7 How have the likely effects been assessed for climate?

Approach to design flexibility

8.7.1 **Chapter 5: How have we approached this preliminary assessment?** in **Volume 1** details how flexibility has been maintained in Mylen Leah Solar Farm design. For the purposes of the preliminary GHG assessment, a reasonable 'worst-case' scenario has been utilised with regards to material quantities, material composition, and all assumptions.

Assessment assumptions

8.7.2 A full list of assumptions and data sources is presented in **Appendix 8.1: Climate Data Sources and Assumptions** in **Volume 3**. Further assumptions relevant to the climate assessment are presented below.

Construction

8.7.3 The installation of underground cables has not been included within this preliminary GHG assessment. The emissions for this are expected to be minimal relative to the other components of Mylen Leah Solar Farm; however, it will be included within the GHG assessment for the ES.

8.7.4 To estimate construction fuel use, the following assumptions have been used, which are based upon previous project experience and data from similar developments:

- Plant and machinery would use 5,000 litres of diesel per week; and
- Generators would use 500 litres of diesel per week.

8.7.5 It should be noted that the above is based on the assumption that generators would run for six hours a day, six days a week over the 36-month construction period, using Royal Institution of Chartered Surveyors guidance. This assumes peak construction over the 36-month construction period and is therefore considered to be a worst case for the purposes of this preliminary assessment.

8.7.6 To estimate construction worker transportation (based on a peak construction workforce of 500), it has been assumed that 300 petrol cars (assuming 1.67 people per car) would travel a one-way commuting distance of 50km (distance based on experience of Nationally Significant Infrastructure Projects of a comparable size in the past two years), six days per week.

8.7.7 It has also been assumed that construction workers would consume and otherwise use 60 litres of water per person per day during construction[31].

8.7.8 To estimate emissions from material delivery and wastage, relevant Royal Institution of Chartered Surveyors guidance assumptions have been applied, in conjunction with reasonable assumptions provided by the Applicant. The assumed source locations of the products and materials used to construct Mylen Leah Solar Farm are summarised below:

- Solar PV, transformers, string Inverters, switchgear, substations and additional materials, sourced from Asia (this is a conservative assumption, as the source location for components is not yet known).
- Solar PV foundations (assumed steel pile), and frames sourced from Europe.

8.7.9 Either string or central inverters would be used as part of Mylen Leah Solar Farm. Given that it is not yet confirmed which type of inverter would be used, the worst-case scenario (string inverters) has been adopted in these calculations to ensure a conservative approach, as this would also represent a larger GHG impact.

8.7.10 Switchgear has been assumed as gas-insulated as opposed to air insulated as a worst-case scenario, as gas-insulated switchgear contain Sulphur Hexafluoride (SF6), a potent GHG, and represent a larger GHG impact.

Operation

8.7.11 To account for changes in energy generation over the operational lifetime of Mylen Leah Solar Farm, a degradation factor of 0.4%, based on operational information provided by the Applicant, has been applied each year to account for year-on-year reduction in yield. This is based on the assumption that the first-year installation capacity would be 689,000 megawatt-hours (MWh).

8.7.12 To estimate emissions associated with replacement of assets over the 50 year operational lifetime of Mylen Leah Solar Farm, the following assumptions have been applied in **Table 8.2**.

Table 8.2: Service life of Mylen Leah Solar Farm components

Item	Service life (years)
Solar PV	40
Solar PV frames	40
Solar PV foundations	40
String inverter	25
Transformer	25
Switchgear	40

8.7.13 The emissions associated with the construction of up to two On-Site Substations have been modelled using One Click Life-Cycle Assessment software (a life cycle assessment tool for calculating building and infrastructure whole life carbon emissions) and a 50 year service life has been applied. However, replacement of individual parts/elements of the buildings would likely be required and is therefore accounted for within the model. Therefore, there are some replacement emissions associated with these assets despite a 50 year service life being applied. The two On-Site Substations have been modelled as a worst-case scenario.

8.7.14 The following assumptions have been applied to estimate emissions associated with operational workers:

- 24 daily on-site workers, one-way commuting distance of 25km and travelling via petrol car;

- Twice monthly maintenance visits, one-way commuting distance of 25km and travelling via diesel van; and
- Operational worker and maintenance travel distance is assumed to be 25km, as based on a 50 year operational lifetime, operational workers are assumed be more local than the 50km construction commuting distance assumed. The Applicant has created bespoke travel benchmarks based on similar solar projects worked on in the past for both construction and operation phases.

8.7.15 Emissions associated with water consumption and water treatment for solar PV module cleaning have also been estimated. Based on publicly available information[32], it has been assumed that 76 litres of water would be required per MWh of anticipated annual generation. The initial year's expected generation (689,000MWh) has been applied and used for all subsequent years, given the number of solar PV modules would remain consistent during operational lifetime.

8.7.16 For operational water use associated with workers, it has been assumed that each worker would use 60 litres of water per day, as per the assumption applied for construction workers.

8.7.17 Emissions associated with maintenance activities during operation have been estimated as 1% of A1-5 emissions as per Royal Institution of Chartered Surveyors 2024 guidance.

8.7.18 Emissions associated with repair are assumed to equal 25% of emissions associated with maintenance or 10% of A1-5 emissions (see **Section 8.9.1** below for further detail) for electrical equipment, as per Royal Institution of Chartered Surveyors guidance.

Decommissioning

8.7.19 Publicly available data from disposal scenarios available in Environmental Product Declarations (a document that outlines the environmental performance, including the whole life carbon impact, of a product or material) have been used to inform assumptions on the waste destinations of dismantled materials.

8.7.20 All emission factors and Environmental Product Declarations used are presented in **Appendix 8.1: Climate Data Sources and Assumptions** in **Volume 3**.

8.7.21 For decommissioning fuel use (fuel required by plant to deconstruct Mylen Leah Solar Farm), it has been estimated that the fuel required would be 50% of the fuel used during the construction phase, as per Royal Institution of Chartered Surveyors guidance.

8.7.22 An off-site disposal distance of 22.1km has been applied to estimate emissions from transportation of waste materials from the Site to waste processing facilities at end of life. This is an average distance based on professional judgement following a review of industrial landfill and recycling facilities within close proximity to the Site.

8.7.23 IEMA's Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)[26] states *"activities that do not significantly change the*

result of the assessment can be excluded where expected emissions are less than 1% of total emissions, and where all such exclusions total a maximum of 5% of total emissions; all exclusions should be clearly stated". Emissions from land-use change are often considered to contribute less than 1% of total lifecycle emissions for a utility-scale solar project because, in most cases, the physical disturbance and carbon stock loss associated with the site is relatively small compared with emissions embodied in materials and construction activities. As the baseline consists of mostly low-carbon land types, such as arable fields, the expected emissions of the change in land use following decommissioning are expected to be less than 1% of total emissions and therefore are not considered further.

Assessment methodology and criteria

8.7.24 In accordance with the GHG Protocol[28], this preliminary assessment quantifies applicable Kyoto Protocol[3] GHGs as measured in tonnes of carbon dioxide equivalence (tCO_2e) (global warming potential), where equivalence means having the same warming effect as CO_2 over 100 years. The six original Kyoto Protocol gas groups are CO_2, methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) and perfluorocarbons (PFCs). Nitrogen trifluoride (NF_3), a chemical released in certain high-tech industries, was added in 2013. The global warming potential of each is presented in **Table 8.3**.

Table 8.3: Kyoto Protocol GHGs and their global warming potential based upon Intergovernmental Panel on Climate Change's Fifth Assessment Report[3]

Greenhouse gas/group	Chemical formula	Global warming potential (CO_2e)
Carbon dioxide	CO_2	1
Methane	CH_4	28
Nitrous oxide	N_2O	265
Hydrofluorocarbons	HFCs	Depends on specific gas
Sulphur hexafluoride	SF_6	23,500
Perfluorocarbons	PFCs	Depends on specific gas
Nitrogen Trifluoride	NF_3	16,100

8.7.25 Data associated with the activities contributing to the construction phase of Mylen Leah Solar Farm have been provided by the Applicant. Where it has not been possible to provide this data, as this preliminary assessment represents a forecast of emissions and some information may not yet be known, secondary data (such as estimates, extrapolations, benchmarks, and proxy data such as distance travelled) have been used. Emissions have then been quantified by applying the most relevant and up-to-date emission factors. All supporting data used is available in **Appendix 8.1: Climate Data Sources and Assumptions** in **Volume 3**.

8.7.26 An emission factor is a representative value that relates the quantity of a pollutant released into the atmosphere with an activity associated with the release of that pollutant. Emission factors are typically available from UK Government publications, independent agencies, and scientific research journals. However, the quality and accuracy of such factors can vary significantly. Factors can differ depending on the research body and/or

underlying methodologies applied. It is, therefore, good practice to apply emission factors only from reputable sources.

8.7.27 The approach to this preliminary GHG assessment follows the GHG Protocol's[28] core principles:

- **Relevance**: selecting an appropriate inventory boundary that reflects the GHG activities of Mylen Leah Solar Farm and serves the decision-making needs of users;
- **Completeness**: accounting for all emission sources within the chosen inventory boundary, with any specific exclusions disclosed and justified;
- **Consistency**: aiming to collect meaningful and consistent data over time whilst transparently documenting any significant changes to data quality and/or format;
- **Transparency**: addressing all relevant issues in a coherent and clear manner; and
- **Accuracy**: minimising uncertainty and avoiding systematic over- or under-quantification of emissions and ensuring any necessary estimates or assumptions required are conservative and guided by industry standards.

8.7.28 In line with the GHG Protocol[28] and IEMA's Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)[26], a materiality threshold of 1% may be set whereby emissions that are expected to contribute to less than 1% of the overall emissions inventory may be excluded from the assessment.

8.7.29 Emissions from materials have been quantified by utilising One Click life cycle assessment, scientific research papers, Environmental Product Declarations, Inventory of Carbon and Energy (University of Bath, 2019)[33] and Department for Energy Security and Net Zero's (2025)[34] conversion factors to use the most accurate densities and emission factors possible.

8.7.30 Conversions between mass, volume, and area have been calculated, where appropriate, to allow the application of specific emissions factors. Details of emission factors used have been included in **Appendix 8.1: Climate Data Sources and Assumptions** in **Volume 3**. In addition, some material types, build ups, weights, and dimensions have been based on publicly available information, where required.

Significance of effect

8.7.31 Impact assessments normally assess to what degree a development will affect the baseline environment of the study area. In the case of GHG emissions, any emissions will have a long-term, irreversible negative effect on the global atmosphere, which is considered to be highly receptive to any emissions of GHGs. A specific source of GHG emissions cannot be linked to impacts at a specific location but would have impacts globally.

8.7.32 This preliminary GHG assessment therefore evaluates the significance of emissions based upon guidance from IEMA's Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)[26],

which provides a framework for determining significance against the goals of the 2015 Paris Agreement (i.e., against a science-based 1.5°C trajectory) (see **Table 8.4**).

8.7.33 The IEMA Guide acknowledges that some projects may replace existing development or baseline activity with a higher GHG profile and thus the significance of a project's emissions should be based on its net impact over its lifetime which may be positive, negative or negligible. It states that significance should not be determined purely on the magnitude of GHG emissions, but whether a project contributes to reducing GHG emissions consistent with a trajectory towards net zero by 2050.

8.7.34 If GHG emissions cannot be avoided, a goal of the EIA process should be to identify mitigation options to reduce a project's residual emissions at all stages. If GHG emissions remain significant but cannot be further reduced, approaches to compensate a project's remaining emissions should be considered.

Table 8.4: Framework for assessment of significant GHG effects

Significance	Level	Criteria
Significant	Major adverse	Project adopts a business-as-usual approach, not compatible with the national Net Zero trajectory, or aligned with the goals of the 2015 Paris Agreement[1] (i.e., a science-based 1.5°C trajectory). GHG impacts are not mitigated or reduced in line with local or national policy for projects of this type.
	Moderate adverse	Project's GHG impacts are partially mitigated, and may partially meet up-to-date policy; however, emissions are still not compatible with the national Net Zero trajectory, or aligned with the goals of the 2015 Paris Agreement[1].
Not significant	Minor adverse	Project may have residual emissions, but the project is compatible with the goals of the 2015 Paris Agreement[1], complying with up-to-date policy and good practice.
	Negligible	Project has minimal residual emissions and goes substantially beyond the goals of the 2015 Paris Agreement[1], complying with up-to-date policy and best practice.
Significant	Beneficial	Project causes GHG emissions to be avoided or removed from the atmosphere, substantially exceeding the goals of the 2015 Paris Agreement[1] with a positive climate impact.

8.8 How has climate informed the design so far?

8.8.1 This preliminary assessment has been based on the principle that certain mitigation measures have been 'embedded' into the design of Mylen Leah Solar Farm to minimise likely significant effects as far as reasonably practicable at this stage of the design process, for example by the considered placement of infrastructure. Embedded (primary) environmental mitigation

measures relevant to this preliminary climate assessment are presented in **Table 8.5**.

Table 8.5: Embedded mitigation measures relevant to climate

Embedded mitigation measures relevant to climate	Function
GHG emissions	
Lean design to minimise use of concrete, steel, aggregates, etc.	Minimising the use of construction materials reduces product stage emissions associated with the construction of Mylen Leah Solar Farm.
Climate resilience	
The design of Mylen Leah Solar Farm considers climate change and the likelihood of extreme events (e.g. heat waves, high rainfall events) and sea level rise.	To protect Mylen Leah Solar Farm from climate change and extreme events.
Electrical infrastructure would be sited in locations at low risk of flooding and/or set at the necessary minimum ground levels.	Minimise the exposure to flood risk.
The condition and integrity of assets would be regularly assessed, and maintenance undertaken as early as required, giving consideration to materials with enhanced tolerance to fluctuating temperatures and exposure to rainfall.	Increasing the resilience of material and assets to climate related impacts.

8.9 What are the likely effects of Mylen Leah Solar Farm on climate?

8.9.1 GHG emissions associated with Mylen Leah Solar Farm have been reported using the modular structure as outlined in Royal Institution of Chartered Surveyors guidance. Modules are categorised based on the lifecycle stage as follows; 'A' refers to construction, 'B' refers to operation, and 'C' refers to decommissioning. The reporting modules are defined as follows:

- **A1-3 product stage** – this category includes the embodied emissions of materials used to construct Mylen Leah Solar Farm. It includes the emissions associated with raw material extraction, transport to the manufacturing site and manufacturing emissions;
- **A4 transport** – this comprises the emissions associated with the transport of materials from the manufacturing site to the construction site;
- **A5 construction and installation** – this source includes four sub-categories which include emissions from pre-construction demolition (if applicable), construction activities (such as equipment fuel use), material wastage and construction worker transport;

- **B1 in-use emissions** – emissions associated with refrigerant gas leaks (if applicable) and emission release from products or reabsorption into products (such as sequestration from timber);
- **B2-5 maintenance, repair, replacement, and refurbishment** – this includes emissions associated with routine maintenance (B2), repair (B3), replacement of materials (B4) and any planned refurbishment (B5);
- **B6 operational energy** – energy used during the operation of the asset;
- **B7 operational water** – water used during the operation of the asset;
- **B8 user activities not covered in B1-7** – emissions may include transport of persons to and from the asset during operation, for example; and
- **C1-4 end of life** – this category includes deconstruction and demolition emissions (C1), transport of waste materials from the Site to disposal sites (C2), waste processing for recycling (C3) and disposal emissions from landfill (C4).

8.9.2 Results within the tables of this chapter are accurate to the number of significant figures presented. Any inconsistencies in totals versus individual values are due to rounding and should not be viewed as erroneous.

Construction

8.9.3 The preliminary GHG assessment of construction emissions has calculated the life cycle emissions for the building materials and systems, accounting for their embodied and construction emissions.

8.9.4 **Table 8.6** provides an indication of the key emissions sources that are anticipated during the construction phase of Mylen Leah Solar Farm.

8.9.5 The total construction GHG emissions are 536,153tCO_2e, with 94% comprising those from the product stages (modules A1-3), and 6% from construction and installation processes (modules A4-5), which includes emissions from construction fuel and water use, wastage and worker transportation.

Table 8.6: Construction phase GHG emissions

Description	Emissions (tCO_2e)	Proportion of emissions (%)
Product Stage (A1-3)	506,660	94%
Construction and installation (A4 - A5)	29,494	6%
Total	536,153	100%

8.9.6 The largest emission sources from the A1-3 product stage are from Solar PV modules (86%) comprising 433,598tCO_2e of the total embodied emissions. A breakdown of the embodied emissions sources for the different components is provided below in **Table 8.7**.

Table 8.7: Embodied GHG emissions from the manufacture of materials and components

Description	Emissions (tCO_2e)	Proportion of emissions (%)
Solar PV modules	433,598	86%
String Inverters	6,935	1%
PV framework	36,429	7%
PV foundations	7,417	1%
Main Transformers	4,446	1%
Switchgear	72	<1%
Other materials	17,763	4%
Total	506,660	100%

Operation

8.9.7 Total operational GHG emissions equal 711,471tCO_2e, the majority of which (72%) come from the repair and replacement of the solar PV modules over the lifetime of Mylen Leah Solar Farm, as detailed in **Table 8.8**.

8.9.8 Given that Mylen Leah Solar Farm is a renewable energy development, the downstream impacts from end users are not an applicable emission source. Emissions from electricity arise from generation rather than direct use, and these emissions are included within the scope of this preliminary assessment. Whilst not directly comparable to Mylen Leah Solar Farm, this aligns with the precedent set in the Finch case[1].

Table 8.8: Operational GHG emissions

Lifecycle Stage	Description	Emissions (tCO_2e)	Proportion of emissions (%)
Operational Maintenance (B2)	Maintenance	5,106	1%
Operational Repair and Replacement (B3-4)	Solar PV Modules	510,467	72%
	String Inverters	7,742	1%
	PV framework	137,463	19%
	PV foundations	27,988	4%
	Main Transformers	5,346	1%
	Switchgear	84	<1%
	Other materials	5,742	1%
Operational Water Use (B7)	PV cleaning	945	<1%
Operational Water Use (B7)	Construction and operational worker water use	10	<1%
Operational User Activities Not Covered in B1-B7 (B8)	Worker transport	10,579	1%
Total		711,471	100%

[1] The Finch v Surrey County Council case is a landmark UK ruling that held planning authorities must consider downstream (Scope 3) greenhouse gas emissions, such as those produced when extracted oil is ultimately burned, when assessing the climate impacts of fossil fuel development projects.

Decommissioning

8.9.9 GHG emissions from the decommissioning phase of Mylen Leah Solar Farm are estimated to total 138,072tCO_2e. This estimate aligns with standard practice for life cycle assessments as detailed in **Table 8.9**. This phase includes emissions from decommissioning fuel use, transport of materials to disposal sites and emissions associated with recycling and landfill. These emissions are subject to a high level of uncertainty, as it is difficult to predict the decommissioning conditions 50 years into the future. However, it should be noted that calculations are guided by the Royal Institute of Chartered Surveyors guidance to ensure a best-practice approach.

Table 8.9: Anticipated key GHG emissions sources during the end-of-life stage

Description	Emissions (tCO_2e)	Proportion of emissions (%)
End of life (C1-4)	138,072	100%
Total	138,072	100%

Summary of GHG emissions

8.9.10 The predicted lifecycle GHG emissions of Mylen Leah Solar Farm (which includes all emissions from the construction, operation, and decommissioning phases) are 1,385,697tCO_2e. The operation stage emissions are the largest emissions source (51%), followed by Product Stage emissions (37%), as displayed in **Table 8.10**.

Table 8.10: Lifecycle GHG emissions from Mylen Leah Solar Farm

Description	Emissions (tCO_2e)	Proportion of emissions (%)
Product Stage (A1-3)	506,660	37%
Construction Process Stage (A4-A5)	29,494	2%
Operation (B1-8)	711,471	51%
End of life (C1-4)	138,072	10%
Total (not including GHG savings from operation)	1,385,697	100%

8.9.11 GHG emissions from Mylen Leah Solar Farm have been proportioned to the appropriate and available UK Carbon Budget cycle within the design life of Mylen Leah Solar Farm in **Table 8.11** (to date the UK has agreed up to the Seventh Carbon Budget which runs from 2038 to 2042)[30]. Those emissions falling within the 5th Carbon Budget (2028 to 2032) are largest as they include all the emissions from the construction stage. These estimations have adopted a conservative approach and are deemed to represent a reasonable worst-case scenario.

8.9.12 Estimated project emissions presented in **Table 8.11** breakdown total lifecycle emissions into annual emissions for comparison with the UK Carbon budgets up to 2042 (the Mylen Leah Solar Farm is operational up to 2082). The highest emissions are produced during the three year construction period between 2030-2032. Operational emissions are broken down per year, with peaks in 2058 (13,175 tCO_2e) and 2073 (63,9471 tCO_2e) when replacements are expected to take place. Replacement emissions are not

presented in the following **Table 8.11** and **Table 8.12** because the operational lifetime is beyond UK and Sectoral carbon budgets.

Table 8.11: UK Carbon budgets

Carbon budget	Carbon budget level ($ktCO_2e$)	Estimated project emissions ($ktCO_2e$)	Project emissions as a percentage of UK carbon budget
5th (2028-2032)	1,725,000	536	0.031%
6th (2033-2037)	965,000	6	0.001%
7th (2038-2042)	535,000	6	0.001%

8.9.13 The GHG emissions from Mylen Leah Solar Farm up until 2042 range between 0.001% and 0.031% of the UK carbon budget.

8.9.14 The sectoral carbon budgets (electricity supply)[30] have also been used to contextualise the magnitude of GHG emissions from Mylen Leah Solar Farm in **Table 8.12**, depending on the years in which the emissions are expected to occur. Construction emissions are anticipated to occur from 2030 to 2032, and Mylen Leah Solar Farm would be operational from no earlier than 2033. Annualised maintenance and repair emissions are displayed between 2033 and 2050 (the date to which sectoral carbon budgets run). Based upon the service lives of the assets, it is expected that multiple sets of equipment replacements would occur in 2058 and 2073 and would result in an anomalous spike in GHG emissions. The emissions in **Table 8.12** assume that the carbon intensity of components remains constant throughout Mylen Leah Solar Farm's operational lifetime; however, this is not expected to happen in reality and therefore the figures are anticipated to be an overestimate.

Table 8.12: Sectoral carbon budgets

Year	Lifecycle Stage	Carbon budget tCO_2e	Mylen Leah Solar Farm tCO_2e	% carbon budget
2030	Construction	9,779,644	178,718	1.8%
2031	Construction	8,642,360	178,718	2.1%
2032	Construction	7,505,075	178,718	2.4%
2033	Operation	6,857,107	1,226	0.0%
2034	Operation	6,209,139	1,226	0.0%
2035	Operation	5,561,171	1,226	0.0%
2036	Operation	5,368,784	1,226	0.0%
2037	Operation	5,176,398	1,226	0.0%
2038	Operation	4,984,011	1,226	0.0%
2039	Operation	4,791,625	1,226	0.0%
2040	Operation	4,599,238	1,226	0.0%
2041	Operation	4,038,111	1,226	0.0%
2042	Operation	3,476,984	1,226	0.0%
2043	Operation	2,915,857	1,226	0.0%
2044	Operation	2,354,730	1,226	0.1%
2045	Operation	1,793,603	1,226	0.1%
2046	Operation	1,635,285	1,226	0.1%

Year	Lifecycle Stage	Carbon budget tCO_2e	Mylen Leah Solar Farm tCO_2e	% carbon budget
2047	Operation	1,476,967	1,226	0.1%
2048	Operation	1,318,649	1,226	0.1%
2049	Operation	1,160,331	1,226	0.1%
2050	Operation	1,002,013	1,226	0.1%
Total (up to 2050)			558,213*	-
*Total emissions sum accounts for rounding raw figures				

GHG savings

8.9.15 GHG savings during the operational lifetime of Mylen Leah Solar Farm and the displacement of fossil-fuel derived electricity within the national electricity network are expected to be considerable and have been quantified below.

8.9.16 For the purposes of this preliminary assessment, Mylen Leah Solar Farm is anticipated to have an installed capacity of approximately 556MW, and generation of approximately 689,000MWh in the first year of operation. Taking into account an annual degradation factor of 0.4%, the total energy generation from the proposed 50 year operational lifetime is approximately 31,280,178MWh.

8.9.17 Dividing the lifetime emissions of Mylen Leah Solar Farm from the construction, operation and decommissioning phases (1,385,697tCO_2e) by the lifetime energy generation (31,280,178MWh) gives a total lifecycle carbon intensity value of 44.3gCO_2e/kWh.

8.9.18 However, the total lifecycle carbon intensity value cannot be directly compared with the UK grid carbon intensity or projected future intensities published by the Department for Energy Security and Net Zero and the Department for Business, Energy and Industrial Strategy (2022)[35]. This is because those intensities comprise direct operational emissions only and do not include emissions related to replacement and maintenance activities. When calculating the GHG emissions from electricity based upon the fuel mix, renewable energy, such as that from solar farms, is assumed to emit 0g/kWh.

8.9.19 Mylen Leah Solar Farm would provide electricity to the National Grid that may otherwise be generated by processes with higher carbon intensities and the benefit of Mylen Leah Solar Farm, with regards to climate, is to replace the electricity generation from fossil fuels. Therefore, to assess the GHG savings of Mylen Leah Solar Farm, operational emissions from a Combined Cycle Gas Turbine have been used as a comparison, as it is currently the most carbon-efficient fossil-fuelled technology available.

8.9.20 In the July 2024 Decision Letter for Gate Burton Energy Park[36], the Secretary of State commented that it considered a Combined Cycle Gas Turbine an inappropriate baseline for these comparisons as "*2011 NPS EN-1 requires all combustion power stations with a capacity over 300MW to be constructed Carbon Capture Ready*". This still holds true in NPS EN-1 (2025)[14]. The future energy baseline is uncertain, and whilst there are requirements for all combustion power stations with a capacity over 300MW to be constructed to be 'Carbon Capture Ready', this does not guarantee the application of carbon capture technology, nor the timeframes to which it may be applied.

The need for carbon abatement is immediate and technologies that can do so in the short-term, such as Mylen Leah Solar Farm, play a vital role in the pathway to Net Zero. As such, and in the absence of any more appropriate identified methodology, this preliminary assessment maintains that a comparison to Combined Cycle Gas Turbine emissions is a robust and appropriate method to understand the level of GHG savings from Mylen Leah Solar Farm.

8.9.21 In the July 2025 decision for Byers Gill Solar, the Secretary of State provided further commentary that *"a comparison against predicted grid average carbon intensity… is preferred as a comparator for contextualising GHG emissions benefits over an evaluation against a CCGT facility"*. The Secretary of State, however, further stated *"using either comparator, the Proposed Development [Byers Gill] would represent a significant beneficial effect due to the low carbon electricity generation during its operation."* As such, this preliminary assessment presents a comparison to Combined Cycle Gas Turbine emissions alongside other additional comparisons, including UK electricity grid emissions factors.

8.9.22 The carbon intensity of a Combined Cycle Gas Turbine is 354gCO_2e/kWh, and so Mylen Leah Solar Farm would emit 309.7g fewer CO_2e per kWh than if the same electricity was generated by a gas fired Combined Cycle Gas Turbine, representing savings of 85%. This is not a direct comparison, as the 44.3gCO_2e/kWh calculated here is a lifecycle carbon intensity value and the carbon intensity of the Combined Cycle Gas Turbine is assumed to represent operational emissions (not including maintenance, replacement and repair of components). This results in a conservative assessment of emissions savings for Mylen Leah Solar Farm.

8.9.23 Over the proposed 50 year operational lifetime, the operation of Mylen Leah Solar Farm results in GHG savings of over 9.6 million tCO_2e when compared to Combined Cycle Gas Turbine-generated electricity. It should be noted that, like the UK grid carbon intensities published by the UK Government, this comparison does not account for the embodied carbon in the Combined Cycle Gas Turbine and is therefore a conservative estimate.

Additional comparisons

UK electricity grid factors

8.9.24 Whilst the comparison to Combined Cycle Gas Turbine is deemed the most appropriate for the determination of the GHG emissions savings for Mylen Leah Solar Farm, recognition is given to observations made by the Secretary of State in the decision letters for Gate Burton Energy Park and Byers Gill Solar (detailed in **paragraphs 8.9.20** and **8.9.21** above). As such, additional comparisons have been undertaken here to support the findings that Mylen Leah Solar Farm has a significantly positive impact on the climate.

8.9.25 The UK Government publishes annual emissions factors for electricity supplied to the grid, to allow for annual company reporting[37]. For 2025 (the most recently published data), the average grid electricity emission factor is 177.00gCO_2e/kWh. However, this factor reflects "*only generator emissions in the operational phase and does not include emissions related to the fuel supply chain or maintenance activities*"[38]. The UK electricity well-to-tank

emissions factor, comprising those emissions associated with the extraction, refining, and transportation of primary fuels before their use in the generation of electricity, is 45.90gCO_2e/kWh. Therefore, the overall average grid emission factor, inclusive of well-to-tank, is 222.90gCO_2e/kWh. This is an emissions factor representative of purely operational emissions and does not include any emissions associated with the construction or decommissioning of the energy sources, and neither does this value include those emissions from the operational maintenance, repair and replacement of the energy sources.

8.9.26 When deriving this emissions factor, the UK Government includes those emissions from fossil fuel-, nuclear- and renewable-sourced energy, as well as those from imported electricity. Since renewable energy sources have no direct operational emissions, the emissions factor for their contribution to the grid is taken as 0g/kWh.

8.9.27 It is therefore inappropriate to compare these UK Government grid emissions factors with the operational emissions of solar developments (which comprise emissions from activities not considered under the government methodology, such as maintenance and repair activities). If the same methodology used in calculating National Grid emissions factors was adopted to assess the savings of Mylen Leah Solar Farm, the operational lifetime emissions from Mylen Leah Solar Farm would be 0gCO_2e/kWh, which would not allow for a meaningful comparison of GHG savings.

8.9.28 However, using the current UK emissions factor as a comparison, the operational carbon intensity of Mylen Leah Solar Farm compared with the average value for the UK grid in 2025 is presented in **Table 8.13**. The carbon intensity of Mylen Leah Solar Farm has been calculated as 44.30gCO_2e/kWh across the whole lifecycle (i.e., construction, operation, decommissioning). However, the UK average grid factor is calculated purely on operational emissions (emissions associated with fossil-fuel based energy). The carbon intensity of Mylen Leah Solar Farm based purely on operational emissions (repair, replacement and maintenance) therefore is 22.75gCO_2e/kWh.

Table 8.13: Comparison of operational emissions from Mylen Leah Solar Farm to the average UK grid factor in 2025

Source	Fossil fuel emissions	GHG intensity (gCO_2e/kWh)			Source
		Well to Tank emissions	Repair, maintenance and replacement emissions	Total	
Mylen Leah Solar Farm	0	0	22.75	22.75	Chapter 8: Climate in Volume 1 (this chapter)
UK Grid Electricity (2024)	177.00	45.90	Not included	222.90	DESNZ and Defra: UK Government GHG

Source	Fossil fuel emissions	GHG intensity (gCO_2e/kWh)			Source
		Well to Tank emissions	Repair, maintenance and replacement emissions	Total	
					Conversion Factors for Company Reporting[37]
Mylen Leah Solar Farm as % of UK grid average				10.2%	

8.9.29 **Table 8.13** shows that the emissions from Mylen Leah Solar Farm comprise 10.2% of the GHG emissions from the National Grid average in 2025 per kWh. For every unit of electricity generated, Mylen Leah Solar Farm produces one tenth of the GHG emissions than the current UK grid mix, making it approximately 9.8 times more emissions-efficient. Using this methodology, Mylen Leah Solar Farm therefore significantly contributes to the UK grid's transition to net zero.

Alternative forms of energy

8.9.30 The IEMA Guide[26] states that a comparable baseline must be established to serve as a reference point for assessing the impact of a new project. This baseline may include *"GHG emissions arising from an alternative project design for a project of this type."* If it is assumed that the future energy baseline necessitates increased integration of renewable technologies into the National Grid, then it may be appropriate to evaluate the impact of a solar development in comparison with other renewable energy technologies.

8.9.31 The carbon intensities of differing technologies are shown in **Table 8.14** and demonstrate that the operational intensity emissions of Mylen Leah Solar Farm are comparable with other low carbon energy generation.

Table 8.14: Estimated emissions of selected electricity generation technologies

Phase	Energy generation technology	GHG Intensity (gCO_2e/kWh)	Source
Operational	Mylen Leah Solar Farm	22.75	Chapter 8: Climate in Volume 1 (this chapter)
	Combined Cycle Gas Turbine	354	UK Parliament (2015)[39]
Lifetime	Mylen Leah Solar Farm	44.30	Chapter 8: Climate in Volume 1 (this chapter)
	Combined Cycle Gas Turbine	490 (410 – 650)	Intergovernmental Panel on Climate Change (IPCC) (2014) AR5[40]
	Solar – rooftop	41 (26 – 60)	
	Solar – utility	48 (18 – 180)	

Phase	Energy generation technology	GHG Intensity (gCO_2e/kWh)	Source
	Nuclear	12 (3.7 – 110)	
	Hydropower	24 (1.0 – 2200)	
	Onshore wind	11 (7 – 56)	
	Wind (type not specified)	8 – 20	Wiser *et al* (2011)[41]
	Wind (type not specified)	12 (1.7 – 81)	National Renewable Energy Laboratory[42]

8.10 What additional mitigation is proposed to avoid, prevent, reduce or offset likely effects on climate?

Construction

8.10.1 A large majority of GHG emissions associated with Mylen Leah Solar Farm comprise those embodied emissions from infrastructure (approximately 83% of overall emissions when also taking into account embodied emissions from component replacement), primarily the solar PV modules. The most effective additional mitigation would therefore be in the responsible sourcing of materials and infrastructure.

8.10.2 The Applicant will explore opportunities to reduce emissions associated with the supply chain and, where practicable, will look to propose environmentally friendly options to minimise emissions and benefit the local environment. The use of products with lower embodied/pre-use phase emissions would significantly improve the carbon balance of Mylen Leah Solar Farm. Further measures include the use of locally sourced and/or produced materials where possible and the use of recycled aggregates (where appropriate) for foundations, subbases, hard-standings and pavement materials.

8.10.3 In addition to procurement, an Outline Construction Environmental Management Plan (Outline CEMP), which includes measures to decrease GHG emissions from the construction phase, will be submitted in support of the DCO application. Examples of such measures are as follows:

- Implementing measures to decrease fuel use by maximising energy efficiencies, for example to ensure all vehicles switch off engines when stationary and ensure construction vehicles are well maintained and conform to current emissions standards;
- Promoting the use of sustainable fuels in construction vehicles, and where possible making use of electric vehicles to reduce fuel consumption;
- Liaising with construction staff to minimise GHG emissions associated with commute to site, including provision of staff minibuses, and promoting of lower carbon modes of travel such as car sharing options and use of public transport; and
- Actions to meet the waste hierarchy in accordance with the principles of the UK Government's Resources and Waste Strategy for England

2018[43]. Promoting the recycling of materials by segregating construction waste to be re-used and recycled where practical.

8.10.4 The Outline CEMP will also include measures relating to climate resilience. Furthermore, the requirement for a GHG Reduction Strategy will be secured by the DCO.

Operation

8.10.5 As the overall impact on climate during this phase is positive, no further additional mitigation measures are required.

8.10.6 However, the maintenance and replacement of components of Mylen Leah Solar Farm would be carried out in accordance with the additional mitigation measures set out above for the construction phase. These will be detailed and secured by the Outline Operational Environmental Management Plan (Outline OEMP) submitted in support of the DCO application.

Decommissioning

8.10.7 With consideration to the potential advancements in technology and best practice, it is anticipated that additional mitigation measures specific to the decommissioning phase would broadly emulate those set out for the construction phase. These measures would be reviewed prior to decommissioning with reference to the Outline Decommissioning Environmental Management Plan (Outline DEMP) and agreed with the relevant planning authority as a requirement of the DCO.

8.11 What likely effects would remain for climate following additional mitigation?

Lifecycle emissions

8.11.1 Renewable energy developments such as Mylen Leah Solar Farm have a major role to play in the transition to a low carbon economy, and the decarbonisation of the UK national electricity network. Without projects such as Mylen Leah Solar Farm, the GHG intensity of the UK's electricity generation would not decrease as projected and would severely compromise the UK's ability to meet its carbon reduction targets.

8.11.2 GHG emissions are inherently cumulative, and so, aligned with IEMA's Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022)[26], the significance of the impact of Mylen Leah Solar Farm on the global atmosphere is determined from its lifecycle impact (i.e. lifecycle GHG emissions and savings).

8.11.3 Emissions from the construction, operation and decommissioning phases of Mylen Leah Solar Farm total 1,385,697tCO_2e (**Table 8.10**). When taking into account whole lifecycle emissions, the net GHG savings, compared against equivalent gas-fired electricity generation, are over 9.6 million tCO_2e.

8.11.4 When assessed against whole lifecycle emissions, Mylen Leah Solar Farm has a carbon payback period of 6 years.

8.11.5 Mylen Leah Solar Farm is therefore considered likely to have a **significant beneficial** effect on the climate during its lifecycle.

8.12 What opportunities are there for environmental enhancement?

8.12.1 Mylen Leah Solar Farm is based on a clean, sustainable energy source. Mylen Leah Solar Farm would help reduce the energy requirements from fossil fuels, which emit harmful air pollutants, such as carbon dioxide (CO_2), NO_2, SO_2, and Particulate Matter.

8.13 What difficulties and uncertainties have been encountered in this preliminary climate assessment?

8.13.1 The information provided in this PEIR is preliminary and is based on the information available at the time of writing. A full assessment of likely significant effects of Mylen Leah Solar Farm will be reported in the ES.

8.13.2 The following difficulties and uncertainties have been encountered in undertaking this preliminary climate assessment:

- The accuracy of a GHG assessment depends on the quality of the data provided. Primary data should be used where available; however, the fact that this preliminary assessment represents a forecast from a future scenario means that all data is 'secondary' (extrapolated, estimated, or benchmarked). Assessments such as this, based largely on secondary data, should be viewed as an estimate of GHG emissions impact, and actual emissions may vary. To mitigate against this, a conservative approach has been adopted, whereby the most reasonable worst-case scenario has been assumed.
- The impact of additional mitigation measures on GHG emissions is considered impractical to quantify due to the measures themselves currently only being outlined and the challenges in assessing their impact in a quantitative way.
- While the emissions associated with the decommissioning phase of Mylen Leah Solar Farm have been quantified in this preliminary assessment, it is difficult to accurately determine the appropriate mitigation measures that would be implemented during decommissioning due to the potential advancements in technology and best practice between the present and the time in which decommissioning will take place.

8.14 What further work is required to inform the full climate assessment in the DCO application?

8.14.1 This preliminary assessment has considered the main expected material sources of GHG emissions for Mylen Leah Solar Farm and likely effects associated with climate resilience. The full ES will be based upon more accurate project data once the design has been finalised. Items that have been identified to be further refined at ES stage include more accurate detail on first-year installation capacity, degradation factor, worker transport, the number of daily on-site workers during operation, and operational water use. The inclusion of GHG emissions from the installation of underground cables will be included within the ES.

[1] United Nations Climate Change (2015) The Paris Agreement. Available online: The Paris Agreement | UNFCCC
[2] United Nations Framework Convention on Climate Change (1994). Available online: unfccc_eng.pdf
[3] Kyoto Protocol 1997. Available online: kpeng.pdf
[4] European Union (2018) European Union Renewable Energy Directive 2018/2001/EI. Available online: Directive - 2018/2001 - EN - EUR-Lex
[5] European Union (Withdrawal) Act 2018. Available online: European Union (Withdrawal) Act 2018
[6] European Union (Withdrawal Agreement) Act 2020. Available online: European Union (Withdrawal Agreement) Act 2020
[7] Climate Change Act 2008. Available online: Climate Change Act 2008
[8] Climate Change Committee. Available online: https://www.theccc.org.uk/
[9] The Carbon Budget Order 2009. Available online: https://www.legislation.gov.uk/uksi/2009/1259/introduction/made
[10] The Carbon Budget Order 2011. Available online: https://www.legislation.gov.uk/uksi/2011/1603/made
[11] The Carbon Budget Order 2016. Available online: https://www.legislation.gov.uk/uksi/2016/785/made
[12] The Carbon Budget Order 2021. Available online: https://www.legislation.gov.uk/uksi/2021/750/contents/made
[13] Energy Act 2013. Available online: Energy Act 2013
[14] Department for Energy Security and Net Zero (December 2025, published January 2026) Overarching National Policy Statement for Energy (EN-1). Available online: Overarching National Policy Statement for energy (EN-1), 2025 - GOV.UK
[15] Department for Energy Security and Net Zero (December 2025, published January 2026) National Policy Statement for Renewable Energy Infrastructure (EN-3). Available online: National Policy Statement for renewable energy infrastructure (EN-3), 2025 - GOV.UK
[16] Department for Energy Security and Net Zero (December 2025, published January 2026) National Policy Statement for Electricity Networks Infrastructure (EN-5). Available online: National Policy Statement for electricity networks infrastructure (EN-5), 2025 - GOV.UK
[17] Ministry of Housing, Communities & Local Government (2024) National Planning Policy Framework. Available online: National Planning Policy Framework - GOV.UK
[18] Department for Business, Energy & Industrial Strategy, and Department for Energy Security & Net Zero (2022). British Energy Security Strategy. Available online: British energy security strategy - GOV.UK
[19] HM Government (2020). Energy White Paper: Powering our Net Zero Future. Available online: Energy White Paper
[20] HM Government (2023). Powering Up Britain. Available online: Powering Up Britain - Joint Overview
[21] Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2021) Net Zero Strategy: Build Back Greener. Available online: Net Zero Strategy: Build Back Greener - GOV.UK

[22] Department for Energy Security and Net Zero (2020) The Ten Point Plan for a Green Industrial Revolution. Available online: The Ten Point Plan for a Green Industrial Revolution
[23] Department for Energy Security and Net Zero and Department for Business, Energy & Industrial Strategy (2017). The Clean Growth Strategy. Available online: Clean Growth Strategy - GOV.UK
[24] East Riding of Yorkshire Council (2021) East Riding of Yorkshire Council Climate Change Strategy 2022-2030. Available online: Climate change - what we do
[25] East Riding of Yorkshire Council (2025) East Riding Local Plan Update 2020-2039. Available online: East Riding Local Plan Update
[26] Institute of Environmental Management and Assessment (2022) Assessing Greenhouse Gas Emissions and Evaluating their Significance. Available online: eia-guide_ghg-assessment-and-significance_iema_16may17.pdf
[27] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government (2019) Planning Practice Guidance on Climate Change. available online: Climate change - GOV.UK
[28] GHG Protocol (2004) A Corporate Accounting and Reporting Standard. Available online: Corporate Standard | GHG Protocol
[29] Royal Institution of Chartered Surveyors (2023) Whole Life Carbon Assessment for the Built Environment. Available online: Whole_life_carbon_assessment_PS_Sept23.pdf
[30] Climate Change Committee (2025). The Seventh Carbon Budget. Available online: The Seventh Carbon Budget - Climate Change Committee
[31] British Standards Institution (2015) BS 8551:2015 – Provision and management of temporary water supplies and distribution networks (not including provisions for statutory emergencies). Code of practice. London: BSI.
[32] Solar Energy Industries Association (2025). Water Use Management. Available online: Water Use Management – SEIA
[33] University of Bath (2019). Inventory of Carbon and Energy. Available online: Embodied Carbon Footprint Database - Circular Ecology
[34] Department for Energy Security and Net Zero (2023). Conversion factors. Available online: Greenhouse gas reporting: conversion factors 2023 - GOV.UK
[35] Department for Business, Energy and Industrial Strategy (2022). Energy and emissions projections. Available online: Energy and emissions projections - GOV.UK
[36] Department for Energy Security and Net Zero (2024). Final decision letter for the Application for Development Consent for the Gate Burton Energy Park. Available online: EN010131-001744-Gate Burton Final Decision Letter.pdf
[37] Department for Energy Security and Net Zero (2025). Greenhouse gas reporting: conversion factors 2025. Available online: Greenhouse gas reporting: conversion factors 2025 - GOV.UK
[38] Department for Energy Security and Net Zero (2025). Fuel mix disclosure data table. Available online: Fuel mix disclosure data table, 2024-2025 - GOV.UK
[39] UK Parliament (2015). Fossil fuelled power stations: carbon emissions and nitrogen oxides – answer to written question 17799 tabled by Dr Alan

Whitehead MP. Available online: Written questions and answers - Written questions, answers and statements - UK Parliament

[40] Intergovernmental Panel on Climate Change (IPCC) (2014) Steffen Schlömer (ed.) Technology-specific Cost and Performance Parameters, Annex III of Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Available online: ipcc_wg3_ar5_annex-iii.pdf

[41] Wind Energy. In IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Available online: 2 Cover Sheet + Book TOC.indd

[42] National Renewable Energy Laboratory (NREL). (2013) Wind LCA Harmonization. NREL, vol. 2012.

[43] Department for Environment, Food & Rural Affairs and Environment Agency (2018) Resources and Waste Strategy for England. Available online: Resources and waste strategy for England - GOV.UK