

# Preliminary Environmental Information Report

## Chapter 5: Environmental Impact Assessment Methodology

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## 5.0 Environmental Impact Assessment Methodology

### 5.1 Introduction

- 5.1.1 Environmental Impact Assessment (EIA) is the assessment of the likely environmental consequences, both adverse and beneficial, of a Proposed Development, with the purpose of informing decision making prior to seeking development consent. The Preliminary Environmental Information Report (PEIR) is the written output of the EIA that has been undertaken to date for the Proposed Development. The PEIR builds upon information presented in the EIA Scoping Report (**Appendix 1C**) to enable members of the public, consultation bodies, and other stakeholders to develop an informed view of the likely significant impacts of the Proposed Development. Feedback from stakeholders can subsequently be incorporated into the ongoing design process of the Proposed Development and Environmental Statement (ES).
- 5.1.2 The EIA process concludes with the publication of an ES written in accordance with The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations 2017) (Ref 5-1) which will inform the determination of the application for a Development Consent Order (DCO) for Future Energy Llanwern Solar Farm (the Proposed Development). The ES will ensure that significant environmental impacts caused by the construction, operation and maintenance, and decommissioning of the Proposed Development are sufficiently assessed in order to help inform decision-making.
- 5.1.3 This Chapter sets out the approach to the EIA for the Proposed Development. This represents the approach upon which subsequent technical chapters are based to support consultation being undertaken under Sections 42 – 47 of the Planning Act 2008 (Ref 5-2). This consultation will inform the evolution of the Proposed Development before a formal application is made for it to be authorised under that Act.
- 5.1.4 The technical assessments have been approached using the methodology and processes defined in this Chapter and, where appropriate, topics have refined the

approach to properly address their individual requirements. Any relevant changes to the methodology are detailed in the technical chapters (**Chapters 6 to 17**). The collation of information available at this time enables the PEIR to provide an early assessment of the ‘likely significant environmental effects’ of the Proposed Development and allows decision-makers to form an informed response to its design. The remainder of this Chapter is structured as follows:

- **Section 5.2: EIA Scoping** – this section sets out the legislative and guidance background for the scoping process, and a history of the scoping process undertaken for the Proposed Development;
- **Section 5.3: The EIA Process** – this section sets out an overview of the legislative and guidance background of the EIA process;
- **Section 5.4: Design Envelope** – this section sets out the envelope of assessment that has been utilised within this PEIR;
- **Section 5.5: The PEIR Assessment Boundary** – this section sets out the assessment boundary that the PEIR is based upon and describes how it has evolved since publication of the EIA Scoping Report;
- **Section 5.6: Delivering proportionate EIA** – this section describes the considerations and commitments being undertaken to ensure a robust yet focused and proportionate EIA;
- **Section 5.7: Scope of the Assessment** - this section describes the scope of the assessment in terms of the technical scope (topics), the geographical area (spatial scope) and the time periods considered (temporal scope);
- **Section 5.8 Approach to Environmental Measures** – this section describes the types of mitigation (environmental measures) and how they are considered within this PEIR;
- **Section 5.9: Effect Significance Criteria** — this section outlines the overarching approach to evaluating significance of likely environmental effects of the Proposed Development;

- **Section 5.10: Cumulative Effects Assessment** – this section details the approaches to the cumulative effects assessment of the Proposed Development;
- **Section 5.11: Inter-related Effects Assessment** – this section sets out how inter-related effects have been identified;
- **Section 5.12: Transboundary** – this section identifies the need for a transboundary effects assessment and how it is addressed in this PEIR; and
- **Section 5.13: Planning Inspectorate’s Scoping Opinion Response** – this section documents the Planning Inspectorate’s Scoping Opinion comments relevant to this Chapter and how they have been addressed in this PEIR.

5.1.5 This Chapter is also supported by the following appendices:

- **Appendix 5A: Cumulative Effects Assessment Search and Screening Criteria;** and
- **Appendix 5B: Cumulative Effects Assessment Short List.**

## 5.2 EIA Scoping

5.2.1 An EIA Scoping Report (**Appendix 1C**) was submitted by Future Energy Llanwern Limited (the Applicant), to the Secretary of State (SoS) for Energy Security and Net Zero on 6 December 2024. The EIA Scoping Report presented a scoping boundary which defined the area within which the Proposed Development would be located, including the temporary and permanent construction and operational work areas.

5.2.2 An EIA Scoping Opinion (**Appendix 1D**) was adopted by the Planning Inspectorate, on behalf of the SoS, on 29 January 2025. The EIA Scoping Opinion and the statutory consultee responses have subsequently informed the assessment work and design evolution. Responses to the comments detailed in the Scoping Opinion, with information on how these have been addressed within this PEIR, are provided within each of the technical chapters. Given the preliminary nature of this report, the comments pending a full response are identified with next steps clarified.

5.2.3 A summary of the engagement undertaken to date is set out in **Chapter 1:**

**Introduction.** Details of ongoing technical engagement with consultees on topic-specific matters are set out in the technical chapters (**Chapters 6 to 17**).

## 5.3 The EIA Process

5.3.1 The purpose of the EIA process is to identify potential significant adverse and beneficial effects of the Proposed Development and to inform the decision making process.

5.3.2 The EIA will conclude with the writing of an ES in accordance with the EIA Regulations 2017 (Ref 5-1), which set out the procedures to be followed in relation to the EIAs undertaken for Nationally Significant Infrastructure Projects in England and Wales. The ES provides an assessment of likely significant effects of the Proposed Development on the environment during construction, operation and decommissioning phases to provide a detailed understanding and inform decision making.

5.3.3 The EIA for a DCO is reported in two stages:

- PEIR is prepared early in the project planning process to inform decision makers and the public about the Proposed Development and its likely significant environmental effects; and
- The ES is a comprehensive document that provides a detailed analysis of the environmental impacts of a Proposed Development. It accompanies the DCO Application and is used to inform final decision making and ensure compliance with environmental regulations.

5.3.4 This PEIR has been prepared in accordance with the EIA Regulations 2017 (Ref 5-1) and the Planning Inspectorate Advice Note Seven (Ref 5-3). As such, the assessment has, and will continue to, focus on topics and matters where a likely significant effect may occur. This approach ensures that the EIA process is proportionate and focuses effort in those areas where significant effects are likely.

5.3.5 The PEIR presents a level of preliminary assessment to appropriately enable the public and other stakeholders to develop an informed understanding of likely environmental effects of the Proposed Development and help inform their consultation responses on the Proposed Development during the pre-application

stage. This will then enable both the design of the Proposed Development and the EIA to take into consideration comments received through consultation.

- 5.3.6 In compliance with the EIA Regulations 2017 (Ref 5-1), an EIA is being undertaken and will be reported in an ES, which will accompany and support the DCO Application. The purpose of the ES is to inform the decision maker, statutory consultees, other stakeholders and the public on the predicted significant effects on the environment, both adverse and beneficial, and the scope for avoiding, preventing, reducing, and if possible, offsetting them, before a decision is made as to whether to permit development.
- 5.3.7 The ES supporting the forthcoming DCO Application will have to be written in compliance with, at a minimum, Regulation 14 and Schedule 4 of the EIA Regulations 2017 (Ref 5-1) and the technical guidance published for NSIPs, specifically the Technical Advice Page for Scoping Solar Development (Ref 5-4). Planning Inspectorate Advice Note Seven states that the ES should clearly explain the processes and forecasting methods followed to prevent, reduce, and offset significant adverse effects on the environment. (Ref 5-3).
- 5.3.8 To ensure that the EIA process is proportionate, the assessment has, and will continue to, focus on topics and matters where a likely significant effect may occur, as in accordance with the Ministry of Housing, Communities and Local Government's (MHCLG) EIA Planning Practice Guidance and Planning Inspectorate Advice Note Seven (Ref 53).
- 5.3.9 Regulation 12 of the EIA Regulations 2017 (Ref 5-1) defines preliminary environmental information as information referred to in Regulation 14(2) (Ref 5-1) which:
- “a) has been compiled by the applicant; and*
- b) is reasonably required for the consultation bodies to develop an informed view of the likely significant environmental effects of the development (and of any associated development.)”*
- 5.3.10 The findings presented in this PEIR are based on a preliminary assessment and reflect the current stage in the design process and understanding of baseline

conditions. A precautionary approach is applied where the design is still evolving to ensure the assessment of a maximum design scenario (MDS), which represents the worst-case scenario for each topic. Each individual technical Chapter provides commentary on the appropriate reasonable worst-case scenario adopted for the individual assessments. In using this precautionary approach to the assessment, the level of effect may be overstated and subsequently reduced at the time of Application.

It is important to note that this PEIR represents a preliminary assessment of environmental effects, based on the current stage in the design process. The remainder of this Chapter provides further detail around the key stages in this process with a focus on those stages most relevant to this preliminary stage of the assessment. **Table 5-1** signposts to where the information is provided in the PEIR pursuant to Regulation 14 and Schedule 4 of the EIA Regulations 2017 (Ref 5-1).

Table 5-1 Compliance with the EIA Regulations 2017 (Ref 5-1) and location of the information in this PEIR

Text from Schedule requirement and Regulation 14	Location in this PEIR
<p><b>Text from Regulation 14</b></p>	
<p>2. An environmental statement is a statement that includes at least:</p> <p>(a) a description of the proposed development comprising information on the site, design, size and other relevant features of the development;</p> <p>(b) a description of the likely significant effects of the proposed development on the environment;</p> <p>(c) a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;</p> <p>(d) a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;</p> <p>(e) a non-technical summary of the information referred to in subparagraphs (a) to (d); and</p> <p>(f) any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.</p>	<p><b>Non-Technical Summary, Chapter 2: Description of The Proposed Development, Chapter 3: Alternatives and Design Evolution,</b> technical assessment chapters <b>(Chapters 6 to 17), Figures and Appendices.</b></p>
<p>3. The environmental statement referred to in paragraph (1) must – (a) where a scoping opinion has been adopted, be based on the most recent scoping opinion adopted (so far as</p>	<p><b>Chapter 1: Introduction, Chapter 5: Environmental Impact Assessment</b></p>

Text from Schedule requirement and Regulation 14	Location in this PEIR
<p>the proposed development remains materially the same as the proposed development which was subject to that opinion;</p> <p>(b) include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment; and</p> <p>(c) be prepared, taking into account the results of any relevant UK environmental assessment, which is reasonably available to the applicant with a view to avoiding duplication of assessment.</p>	<p><b>Methodology</b>, technical assessment chapters (<b>Chapters 6 to 17</b>), and <b>Appendices</b></p>
<p>4. In order to ensure the completeness and quality of the environmental statement –</p> <p>(a) the applicant must ensure that the environmental statement is prepared by competent experts; and</p> <p>(b) the environmental statement must be accompanied by a statement from the applicant outlining the relevant expertise or qualifications of such experts.</p>	<p><b>Chapter 1: Introduction and Appendices – Appendix 1B: Competent experts.</b></p>
<b>Text from Schedule 4</b>	
<p>1. A description of the development, including in particular:</p> <p>(a) a description of the location of the development;</p> <p>(b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works and the land-use requirements during the construction and operational phases;</p> <p>(c) a description of the main characteristics of the operational phase of the development (in</p>	<p><b>Chapter 2: Description of The Proposed Development</b> and technical assessment chapters (<b>Chapters 6 to 17</b>).</p>

Text from Schedule requirement and Regulation 14	Location in this PEIR
<p>particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and</p> <p>(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and sub soil pollution, noise, vibration, light, heat, radiation, and quantities and types of waste produced during the construction and operation phases.</p>	
<p>2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer which are relevant to the proposed project and its specific location in this PEIR characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.</p>	<p><b>Chapter 3: Alternatives and Design Evolution.</b></p>
<p>3. A description of the relevant topics of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.</p>	<p>Technical assessment chapters (<b>Chapters 6 to 17</b>).</p>
<p>4. A description of the factors specified in regulation 5 (2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora) land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water</p>	<p>Technical assessment chapters (<b>Chapters 6 to 17</b>), <b>Figures</b> and <b>Appendices</b>. Topics that need to be</p>

Text from Schedule requirement and Regulation 14	Location in this PEIR
<p>(for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological topics, and landscape.</p>	<p>assessed under the EIA Regulations 2017 (Ref 5-1) and relevant PEIR Chapters:</p> <p><b>Chapter 6: GHG Assessment;</b>  <b>Chapter 7: Cultural Heritage and Archaeology;</b> <b>Chapter 8: Ecology,</b>  <b>Chapter 9: Ornithology;</b> <b>Chapter 10: Water Environment;</b> <b>Chapter 11: Landscape and Visual Amenity,</b>  <b>Chapter 12 Glint and Glare Assessment,</b> <b>Chapter 13: Noise and Vibration,</b> <b>Chapter 14: Socio-Economics, Tourism and Recreation,</b> <b>Chapter 15: Transport and Access;</b> <b>Chapter 16: Ground Conditions;</b> <b>Chapter 17: Other Environmental Topics</b></p>
<p>5. A description of the likely significant effects of the development on the environment resulting from, inter alia:</p>	<p>Technical assessment chapters (<b>Chapters 6 to 17</b>).</p>

## Text from Schedule requirement and Regulation 14

## Location in this PEIR

- (a) The construction and existence of the development including, where relevant, demolition works;
- (b) The use of natural resources, in particular, land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
- (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances and the disposal and recovery of waste;
- (d) The risks to human health, cultural heritage or the environment (for example due to accidents or disasters);
- (e) The cumulation of effects with other existing and/or approved projects taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
- (f) The impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; and
- (g) The technology and the substances used. The description of the likely significant effects on the factors specified in regulation 5 (2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, beneficial and adverse effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC (Ref 5-5) and Directive 2009/147/EC (Ref 5-6).

Text from Schedule requirement and Regulation 14	Location in this PEIR
<p>6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.</p>	<p><b>Chapter 5: Environmental Impact Assessment Methodology</b> and technical assessment <b>Chapters 6 to 17.</b></p>
<p>7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.</p>	<p><b>Chapter 5: Environmental Impact Assessment Methodology</b> and technical assessment <b>Chapters 6 to 17.</b></p>
<p>8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council (Ref 5-7) or Council Directive 2009/71/Euratom (Ref 5-8) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.</p>	<p><b>Chapter 17: Other Environmental Topics</b></p>

Text from Schedule requirement and Regulation 14	Location in this PEIR
9. A non-technical summary of the information provided under paragraphs 1 to 8.	<b>Non-Technical Summary</b>
10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	<b>Chapter 5: Environmental Impact Assessment Methodology</b> and technical assessment <b>Chapters 6 to 17</b> . Separate references are provided with each chapter.

## Preliminary Environmental Information Report

5.3.11 This PEIR summarises the outcomes to date of the following ongoing EIA activities:

- Establishing baseline conditions;
- Consultation with statutory and non-statutory consultees;
- Consideration of relevant local, regional and national planning policies, guidelines and legislation relevant to the EIA;
- Consideration of technical standards for the development of significance criteria and specialist assessment methodologies;
- Design review;
- Review of secondary information, previous environmental studies, publicly available information and databases;
- Expert opinion;
- Physical surveys and monitoring;
- Desk based studies;
- Modelling and calculations; and
- Reference to current guidance.

5.3.12 Each technical chapter follows the same structure for ease of reference.

## 5.4 Design Envelope

5.4.1 In order to establish the scope of environmental assessment, the PEIR adopts what is termed a 'Rochdale Envelope' or parameter-based design envelope approach. The Planning Inspectorate has produced Advice Note Nine: Rochdale Envelope (Ref 5-10), which outlines the approach that can be taken, in accordance with the requirements of the EIA Regulations 2017 (Ref 5-1) where the details of a Proposed Development have not been confirmed when the application is submitted to ensure flexibility to approach uncertainties inherent to the Proposed Development, such as changing market conditions. Assessing using a parameter-based design envelope approach means that the alternative designs under the Rochdale Envelope have been considered and assessed to predict the worst-case scenario for each technical

topic. As the Proposed Development design evolves, key design elements will remain fixed, however flexibility is maintained within the likely worst-case envelope to make improvements in the future in ways that cannot be predicted at the time of submission of the DCO Application.

## 5.5 The PEIR Assessment Boundary

### Application of the PEIR Assessment Boundary

- 5.5.1 The PEIR Assessment Boundary is the area where the Proposed Development and associated infrastructure will be located including temporary and permanent construction and operational work areas. With the implementation of the evolutionary design process, this boundary allows for flexibility to refine the design when leading to the DCO Application, whilst providing a boundary upon which a preliminary assessment can be undertaken.
- 5.5.2 The total area of the PEIR Assessment Boundary is 547.69 hectares (ha). In addition to the solar infrastructure, the PEIR Assessment Boundary accommodates the temporary construction working areas and compounds, locations proposed for horizontal directional drilling (HDD), cable route and likely temporary access points described in **Chapter 2: Description of the Proposed Development**. The PEIR Assessment Boundary will be further refined as ongoing engineering and environmental information is gathered and incorporated into the design of the Proposed Development for the ES.
- 5.5.3 **Chapter 3: Alternatives and Design Evolution**, describes the amendments that have occurred to the assessment boundary since the submission of the EIA Scoping Report (**Appendix 1C**).

### Design evolution process

- 5.5.4 The evolutionary nature of the EIA process allows for opportunities to address environmental concerns raised from the Scoping Opinion (**Appendix 1D**) and engagement with stakeholders into the design of the Proposed Development throughout the progression of the DCO Application. Typically, multiple design iterations take place during the EIA process prior to final design submission for approval in response to feedback from consultation to allow statutory and non-

statutory consultees to understand and influence the design as it progresses.

- 5.5.5 From the outset the commitment to the environment has been central to the design of the Proposed Development. This is demonstrated at the PEIR stage through the development of a Commitments Register initially presented in the EIA Scoping Report (**Appendix 1C**) (described in **Section 5.5** and presented in full in **Appendix 19A**). With this approach, the commitments made and embedded during design evolution are identified.
- 5.5.6 The Applicant is seeking to achieve a sustainable and good design for the Proposed Development as referred to in the Planning Act 2008 (Ref 5-2), which complies with relevant British and International Codes and Standards. A design will be selected that meets operational requirements at the same time as limiting and mitigating the environmental effects of the Proposed Development as far as practical.
- 5.5.7 The design evolution process and activities undertaken to date are described in **Chapter 3: Alternatives and Design Evolution**. This process has included a combination of engagement, EIA surveys and other technical studies to further refine the Scoping Boundary to the PEIR Assessment Boundary, which is illustrated in **Figure 1-1**. The characteristics of the PEIR Assessment Boundary are described in **Chapter 2: Description of the Proposed Development**.

## 5.6 Delivering a Proportionate EIA

### Overview

- 5.6.1 To ensure that the EIA and resultant ES are robust and focused to help inform the decision-making process, the EIA will be carried out taking into consideration the Institute of Environmental Management and Assessment (IEMA)'s guidance document Delivering Proportionate EIA: A Collaborative Strategy for Enhancing UK Environmental Impact Assessment Practice (Ref 5-9) which aims to help ensure that 'proportionate' EIA is delivered in support of projects in the UK. IEMA guidance (Ref 5-5) specifically highlights industry-wide concerns relating to

*“...individual EIAs being too broadly scoped and their related Environmental Statement (ES) to be overly long and cumbersome”*

5.6.2 The following key tools/approaches have been adopted from the scoping stage for the Proposed Development, to assist in the delivery of proportionate EIA:

- use of existing evidence base;
- Commitments Register (informed by the site selection exercise, the ongoing design evolution process, good and standard practices); and
- approach to appropriate level of assessment.

5.6.3 A proactive, early stage scoping process was undertaken in 2024 to ensure that the EIA and ES will be robust whilst suitably focused on topics of the environment likely to be subject to significant effects. Responses to the Scoping Opinion comments, detailing how they have been addressed within this PEIR are provided within each of the technical chapters.

### Commitments Register

5.6.4 As part of the ongoing EIA process, to enable a refinement of the likely significant effects of the Proposed Development to be taken forward and assessed as part of the EIA, a Commitments Register which identifies at this early stage certain environmental measures has been established (**Appendix 19A**). The Commitments Register will be embedded into design, also referred to as 'embedded environmental measures' and /or 'primary mitigation'.

5.6.5 This Commitments Register has been populated with a range of environmental measures including proposed avoidance measures which have been informed by the ongoing site selection exercise (see **Chapter 3: Alternatives and Design Evolution**), and best practice and design commitments which were adopted as part of the design evolution process.

5.6.6 The Commitments Register is presented in full in **Appendix 19A** and will be regularly updated and maintained throughout the EIA, forming an intrinsic part of the design evolution narrative.

### Appropriate level of assessment

5.6.7 The assessment of whether an effect has the potential of a likely significant impact has been based upon the following

- a review of an existing evidence base;
- the consideration of commitments made;
- professional judgement; and
- where relevant, recommended specific methodologies relevant to topics and established practice.

5.6.8 The application of this judgement as a simple test ensures that significant effects of sufficient importance are taken into consideration when making a development control decision.

5.6.9 For matters that are ‘scoped in’ for assessment, the approach to determining level of assessment is tiered. The tiers of assessment within each environmental topic are as follows:

- The ‘simple assessment’ approach which may include secondary data collection, such as through desk-based surveys, and qualitative assessment methodologies; and
- The ‘detailed assessment’ approach which may include primary data collection, such as through site surveys, and quantitative assessment methodologies.

5.6.10 Environmental topics that are not considered to be significant have been scoped out of the EIA. Full justification behind scoping out these topics and amendments made following receipt of the Scoping Opinion has been detailed in each relevant technical chapters.

## 5.7 Scope of the Assessment

### Determining the Baseline Conditions

5.7.1 Existing environmental conditions are important in the EIA process and can be established through desk-based study or surveys of the Study Area. This information provides a baseline to compare changes that result from the construction, operation and maintenance, and decommissioning of the Proposed Development. This is explained within each relevant technical chapter in **Chapters 6 to 17**.

5.7.2 It is also considered whether there would be a likely change in baseline conditions in the absence of the Proposed Development. For some topics such as transport, there will be changes based on regional and national trends that are normally applied to transport-related receptors regardless of development. For some topics, it is possible for a specific part of the Study Area to see a predicted change, due to the potential for other developments to take place here and introduce future sensitive receptors.

## Technical Scope

5.7.3 The technical scope has been informed by the Scoping Opinion (**Appendix 1D**) and subsequent consultation to address topics in the ES which are likely to give rise to significant effects. These effects are presented in the technical chapters (**Chapters 6 to 17**):

- **Chapter 6: Greenhouse Gases;**
- **Chapter 7: Cultural Heritage and Archaeology;**
- **Chapter 8: Ecology;**
- **Chapter 9: Ornithology;**
- **Chapter 10: Water Environment;**
- **Chapter 11: Landscape and Visual Amenity;**
- **Chapter 12: Glint and Glare;**
- **Chapter 13: Noise and Vibration;**
- **Chapter 14: Socio-economics, Tourism and Recreation;**
- **Chapter 15: Transport and Access;**
- **Chapter 16: Ground Conditions;** and
- **Chapter 17: Other Environmental Topics.**

5.7.4 The EIA Scoping Opinion (**Appendix 1D**) identified the requirement to consider the topics summarised in **Table 5-1**.

## Spatial Scope

- 5.7.5 The PEIR Assessment Boundary as defined in **Chapter 1: Introduction**, is the area where the Proposed Development and associated infrastructure will be located including temporary and permanent construction and operational work areas. With the implementation of the evolutionary design process, this boundary allows for flexibility to refine the design when leading to DCO Application, whilst providing a boundary upon which a preliminary assessment can be undertaken.
- 5.7.6 The spatial scope for each topic depends on the nature of the potential environmental effects and the location of the receptors that could be impacted. Relevant Study Areas are detailed within the technical chapters in order to take into account of the following:
- physical area of the Proposed Development;
  - nature of the baseline environment; and
  - manner and extent to which environmental effects may occur.

## Temporal Scope: Timescales and Assessment Years

- 5.7.7 The temporal scope refers to the time periods over which impacts and effects may be experienced by sensitive receptors which may be short term or long term and subsequently, temporary and permanent. The EIA will organise these impacts as temporary and permanent in accordance with their timing and duration. The temporal scope has been established in discussion with relevant consultees in line with the evolutionary design process. The EIA will assess effects during the construction, operation and maintenance and where appropriate, decommissioning phases of the Proposed Development.

## Construction Phase Effects

- 5.7.8 For the purposes of the assessment, the construction phase effects are those effects that result from activities during enabling works, construction, and commissioning activities. This covers sources of effects such as construction traffic, noise and vibration from construction activities, dust generation, site runoff, mud on roads, risk of fuel/oil spillage, and the visual intrusion of plant and machinery on site. Some aspects of construction related effects will last for longer than others. For example,

impacts related to earth moving are likely to be relatively short in duration compared with the construction of energy infrastructure and landscaping activities, which are likely to persist throughout the entire construction period.

### Operational Phase Effects

5.7.9 Operational effects are the effects that are associated with operational and maintenance activities during the generating lifetime of the Proposed Development. This includes the effects of the physical presence of the energy infrastructure, and its operation, use and maintenance. Timescales associated with these enduring effects are as follows:

- Short term – endures for up to 12 months;
- Medium term – endures for 1-5 years;
- Long term – endures for 5-15 years;
- Reversible Long-Term Effects – long-term effects, which endure throughout the lifetime of the Proposed Development, but which cease once the Scheme has been decommissioned; and
- Permanent Effects – effects which cannot be reversed following decommissioning (e.g. where buried archaeology is permanently removed during construction).

### Decommissioning Phase Effects

5.7.10 Decommissioning effects are changes resulting from activities beginning and ending during the decommissioning stage. This covers sources of effects such as decommissioning site traffic, noise and vibration from decommissioning activities, dust generation, site runoff, mud on roads, risk of fuel/oil spillage, and the visual intrusion of plant and machinery on site, for example. Typically, decommissioning phase effects are similar in nature to the construction phase, although may be of shorter duration and slightly less intensity.

### Assessment Years

5.7.11 The assessment considers the environmental impacts of the Scheme at key stages in its construction and operation and, as far as practicable, its decommissioning.

5.7.12 The 'existing baseline' date is 2025 since this is the period in which the baseline studies for the EIA are being undertaken. As described above, 'future baseline' conditions are also predicted for each assessment scenario, whereby the conditions anticipated to prevail at a certain point in the future (assuming the Proposed Development does not progress) are identified for comparison with the predicted conditions with the Proposed Development. This can include the introduction of new receptors and resources into an area, or new development schemes that have the potential to change the baseline, where these form committed developments. Committed developments are those with current planning permission or allocated in adopted development plans.

5.7.13 The assessment scenarios that are being considered for the purposes of the EIA (and considered in this PEIR) are as follows:

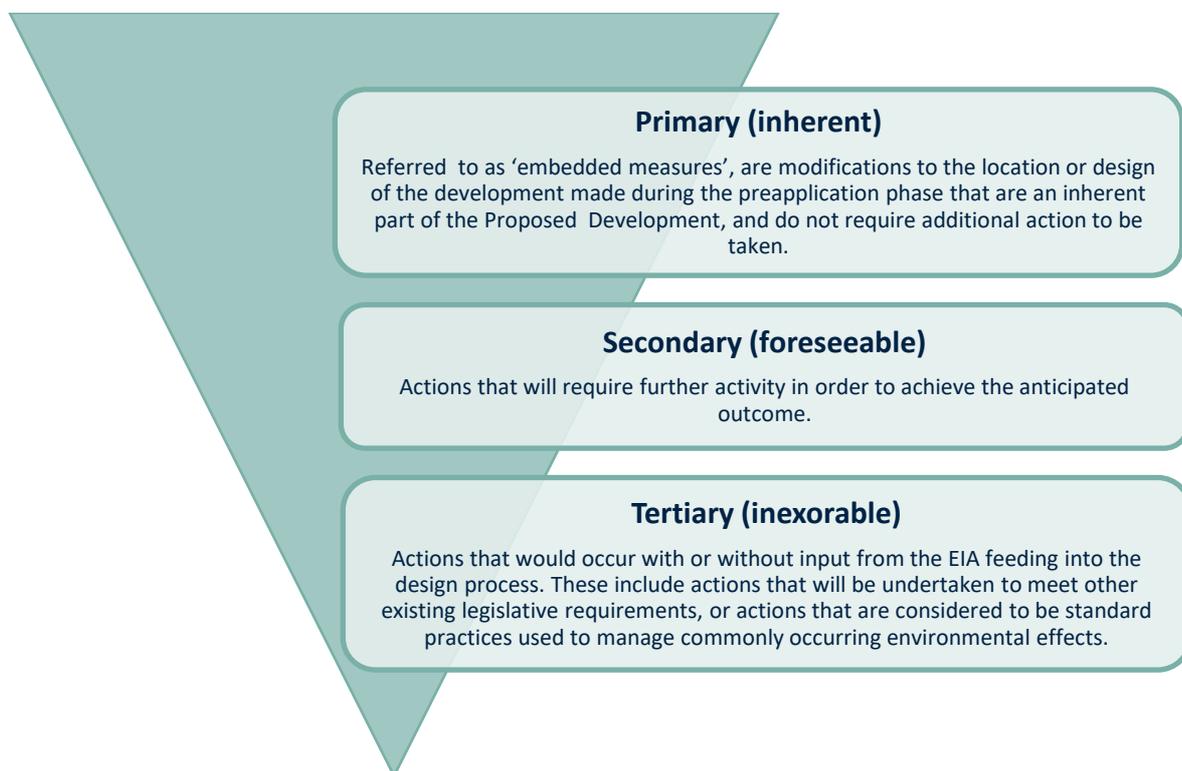
- Existing Baseline (2025) – this is the principal baseline against which environmental effects will be assessed;
- Future Baseline (No Development) in 2071; and
- Construction (2028) (With Development).
  - Assumes commencement of construction in 2028 and that the Proposed Development is built out over a three year period, with the whole Site constructed concurrently. This is a likely worst case from a traffic generation point of view because it compresses the trip numbers into a shorter duration and represents the greatest impact on the highway network. A lengthened construction phase would likely result in lower traffic and noise impacts; therefore, the likely worst case scenario has been assessed within the PEIR.
- Operation (2031) (With Development):
- This is the opening year of the Proposed Development; this assumes that the Proposed Development will be operational by Spring 2031.
- Decommissioning (2071) – this is the proposed year when the design life of the Proposed Development has been achieved, albeit the assessment will be high level and qualitative and the operational life may extend beyond this date.

- 5.7.14 A future year of 2046 will also be considered for specific topics including landscape and visual amenity, in terms of the maturation of vegetation (i.e. 15 years after the operational assessment year to allow the consideration of mitigation planting).

## 5.8 Approach to Environmental Measures

### Embedded Environmental Measures

- 5.8.1 Due to the iterative nature of the EIA process, opportunities for mitigation, referred to as ‘embedded environmental measures’, have been considered throughout the Proposed Development’s design evolution. Where possible, these measures have been developed with input from key stakeholders together with appropriate technical standards, policies and guidance.
- 5.8.2 These embedded environmental measures include both avoidance, best practice and design commitments, which are classified into primary, secondary or tertiary measures in accordance with the IEMA ‘Implementing the Mitigation hierarchy from Concept to Construction’ (Ref 5-11) definitions. Primary, or inherent, measures refer to ‘embedded measures’ made during the pre-application phase that result in the modification of the location or design of the Proposed Development. These measures do not require additional action to be taken. Secondary, or foreseeable, measures Tertiary, or inexorable, measures refer to actions that are required to be implemented regardless of input from the EIA feeding into the design process. These include measures that are undertaken to meet existing legislative requirements or measures considered to be standard practices to manage commonly occurring environmental effects.
- 5.8.3 In the context of this PEIR and the ES that will follow, embedded environmental measures incorporate all of the types of measures as set out in **Table 5-1**. The iterative design evolution process followed has been driven by collaborative working between the design, environment and landowner teams, and in consultation with key stakeholders. This may have been through the consideration and adoption of alternatives or through measures incorporated within the design itself.



5.8.4 The Commitments Register described in **Section 5.5** (presented in full in **Appendix 19A**) has been used as the primary tool to capture and agree all embedded environmental measures and the mechanism of securing them. As the intention is to implement all measures as part of the design of the Proposed Development, the preliminary assessment of likely significant effects is based on this assumption.

## Monitoring Measures

5.8.5 Monitoring measures may be required in relation to any significant adverse effects on the environment caused by the Proposed Development, including any environmental measures that are committed to and imposed as a Requirement of the DCO. Whilst the need for and type of monitoring is still evolving and will be detailed in the ES; any monitoring proposed at this stage with respect to significant adverse effects will be identified in the technical chapters (**Chapters 6 to 17**).

## 5.9 Effect Significance Criteria

5.9.1 The evaluation of the significance of an effect is a key aspect of an EIA; it is the significance that determines the resources and measures put in place to avoid or mitigate a significant adverse effect, or conversely the added value of a beneficial

effect.

5.9.2 The impacts of the Proposed Development have been assessed using a range of subjective and objective measures by which the significance of the impacts can be identified.

5.9.3 The significance of residual effects will be determined by reference to criteria for each technical assessment topic. A general process of evaluating significance involves incorporating the consideration of magnitude of impact, value or sensitivity of the receptor, and any environmental measures that are embedded into the design of the project to reduce likely impacts. This approach, informed by the EIA Regulations 2017 (Ref 5-1), has been applied in undertaking the EIA, as part of the PEIR and will also be applied for the ES.

5.9.4 The significance of residual effects will be determined by reference to criteria for each assessment topic. Specific significance criteria for each technical discipline has been developed, giving due regard to the following:

- Extent and magnitude of the impact (described as high, medium, low and very low);
- Effect duration (see **Paragraph 5.7.2**), and whether effects are temporary, reversible or permanent;
- Effect nature (whether direct or indirect, reversible or irreversible, beneficial or adverse);
- Whether the effect occurs in isolation, is cumulative or interacts with other effects;
- Performance against any relevant environmental quality standards;
- Sensitivity of the receptor (described as high, medium, low and very low); and
- Compatibility with environmental policies.

5.9.5 In order to provide a consistent approach to expressing the outcomes of the various studies undertaken as part of the EIA, and thereby enable comparison between effects upon different environmental topics, the following terminology is used in the

PEIR to define residual effects:

- Adverse – detrimental or adverse effects to an environmental/socioeconomic resource or receptor; or
- Negligible (also referred to as ‘neutral’ for some topics) – imperceptible effects to an environmental/socio-economic resource or receptor; or
- Beneficial – advantageous or beneficial effect to an environmental/socioeconomic resource or receptor.

5.9.6 Where adverse or beneficial effects are identified, these will be assessed against the following:

- **Minor** – slight, very short or highly localised effect of no significant consequence;
- **Moderate** – noticeable effect (by extent, duration or magnitude) which may be considered significant; and
- **Major** – considerable effect (by extent, duration or magnitude) of more than local significance or in breach of recognised acceptability, legislation, policy or standards; considered significant.

5.9.7 Variations to the approach, which may be applicable to specific environmental topics, are detailed in each environmental technical chapter (**Chapters 6 to 17**).

5.9.8 **Table 5-2** demonstrates the classification of effects matrix.

*Table 5-2 Example matrix to classify environmental effects*

		Magnitude of change				
		Very high	High	Medium	Low	Very low
Sensitivity/importance/ value	Very high	Major (Significant)	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably significant)
	High	Major (Significant)	Major (Significant)	Major (Significant)	Moderate (Probably significant)	Minor (Not significant)
	Medium	Major (Significant)	Major (Significant)	Moderate	Minor	Negligible

		Magnitude of change				
		Very high	High	Medium	Low	Very low
				(Probably significant)	(Not significant)	(Not significant)
	Low	Major (Significant)	Moderate (Probably significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)
	Very Low	Moderate (Probably significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)	Negligible (Not significant)

5.9.9 Once an effect has been classified, a clear statement will be made within the respective technical chapters as to whether the effect is significant or not significant. The lightly shaded cells in **Table 5-2** above are considered to be significant, whilst those shaded darker are considered to be not significant. However, professional judgement will be applied, including taking account of whether the effect is permanent or temporary, its duration / frequency, whether it is reversible, and / or its likelihood of occurrence. Generic definitions for the classification of effects are shown in **Table 5-3**.

*Table 5-3 - Generic effect descriptions*

Effect	Generic description
<b>Major</b>	These effects may represent key factors in the decision-making process. Potentially associated with sites and features of national importance or likely to be important considerations at a regional or district scale. Major effects may relate to resources or features which are unique and which, if lost, cannot be replaced or relocated.
<b>Moderate</b>	These effects, if adverse, are likely to be important at a local scale and on their own could have a material influence on decision making.
<b>Minor</b>	These effects may be raised as local issues and may be of relevance in the detailed design of the project but are unlikely to be critical in the decision-making process.
<b>Negligible</b>	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision making, irrespective of other effects.

- 5.9.10 Where mitigation measures are identified to mitigate or reduce adverse impacts, these have either been incorporated into the design of the Proposed Development; translated into construction commitments; or operational or managerial standards / procedures. The PEIR will highlight 'residual' effects, which remain following the implementation of suitable mitigation measures, and classify these in accordance with the effect classification terminology given above.
- 5.9.11 It should be noted that some technical disciplines may utilise different criteria when undertaking assessments due to differences in industry accepted guidelines and specifications. Where this is the case, the technical topic will discuss how the assessment methodology or classification of effects differs for the general EIA methodology as described in this section and provide justification.

### **Assessment of Construction and Decommissioning Effects**

- 5.9.12 The assessment of construction and decommissioning effects will be undertaken based on existing knowledge, techniques and equipment. A 'reasonable worst-case' scenario will be used with respect to the envisaged construction methods, location (proximity to sensitive receptors), phasing and timing of construction activities.
- 5.9.13 As described above, the assessment of construction and decommissioning effects assume the implementation of standard good practice measures, for example the use of dust suppression measures on haul roads, using containers with 110% capacity to store fuel and other chemicals onsite, etc. The purpose of this is to focus on the specific effects of the Proposed Development, rather than generic construction effects that can be easily addressed using generic good practice mitigation measures. Construction and decommissioning assumptions, including what has been assumed in terms of good practice measures, will be set out within the PEIR, and the Outline Construction Environmental Management Plan (oCEMP). The PEIR will identify and assess construction and decommissioning effects that are likely to remain after these mitigation measures are in place.

## **5.10 Cumulative Effects Assessment**

- 5.10.1 A cumulative effects assessment (CEA) is being carried out in accordance with the EIA Regulations 2017 and Planning Inspectorate's NSIP: Advice on Cumulative Effects Assessment Guidance (Ref 5-12).

5.10.2 The Planning Inspectorate guidance suggests that other developments that are deemed likely to go ahead or are going ahead should be taken forward for consideration. For the purposes of the CEA, the types of 'other development' include:

- Projects that are under construction;
- Projects that have planning permission or marine licences;
- Projects for which planning or marine licence applications have been submitted to the relevant authority;
- Projects which are on the Planning Inspectorate's Programme of Projects whether a report has been submitted or not; and
- Projects that are identified in development plans and in other plans and programmes as may be relevant.

5.10.3 The CEA focuses on developments in proximity to the Proposed Development which may have effects on the same resources and receptors. As set out in Schedule 3 of the EIA Regulations 2017 (Ref 5-1), generally developments where an EIA is required are considered appropriate for inclusion in the CEA. The CEA includes other developments that may begin construction, operation or be decommissioned within the same period as the construction or operational phases of the Proposed Development. With regards to the Decommissioning phase of the Proposed Development, it is considered to be too far into the future for any meaningful consideration of cumulative effects with other developments and is therefore not addressed.

5.10.4 As part of the screening of the long list of other developments, timescales will be reviewed periodically up until a point prior to the submission of the DCO Application to determine whether the other developments should fall within the CEA. In line with Planning Inspectorate NSIP: Advice on Cumulative Effects Assessment Guidance (Ref 5-12) where other developments are expected to be completed before construction of the Proposed Development, and the effects of those other developments are fully determined, effects arising from them will be considered as part of the current baseline and will therefore be included as part of both the construction and operational assessment.

- 5.10.5 The CEA will consider impacts upon receptors during each project phase arising from the Proposed Development alongside all past (unless incorporated within the baseline), present or reasonably foreseeable projects, programmes or plans that result in an additive effect with any element of the Proposed Development. The assessment will also consider the contribution of the Proposed Development to those impacts.
- 5.10.6 The other developments identified by each technical topic as having a potential cumulative effect are detailed and assessed in **Chapters 6 to 17**. The list of developments will be reviewed periodically as the EIA progresses to ensure that new developments which arise up until submission of the DCO Application for development consent are included in the ES.
- 5.10.7 Where there may be changes caused by other developments that will occur over time and will be representative of the anticipated baseline at the start of each assessment phase (construction, operation and decommissioning), these changes will be considered in the future baseline.
- 5.10.8 **Appendix 5A** sets out the CEA detailed search and screening criteria relevant to the Proposed Development. **Appendix 5B** presents the CEA shortlist.

## 5.11 Inter-related effects

- 5.11.1 Paragraph 5(2)(e) of the EIA Regulations 2017 (Ref 5-1) requires that the EIA consider the interaction of environmental effects associated with the Proposed Development. The inter-related effects assessment considers likely significant effects from multiple impacts and activities from the construction, operation and decommissioning of the Proposed Development on the same receptor, or group of receptors. The inter-related effects assessment does not include effects on receptors as a result of the Proposed Development and other developments, which is assessed within the CEA.
- 5.11.2 Inter-related effects can be the following:
- Project lifetime effects: i.e., those arising throughout more than one phase of the Proposed Development (construction, operation, and decommissioning) to interact to potentially create a more significant effect on a receptor than if just one phase were assessed in isolation; and

- Receptor led effects: assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor (or group). Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects.

5.11.3 Common receptors for environmental topics have been identified, and consideration given to whether the topic effects on any common receptors are likely to combine. This consideration looked at:

- identification of the common receptor(s) from the individual technical assessments;
- identification of impact source pathways that can affect the common receptor(s);
- identification of potential effects on the identified common receptor(s); and
- the inter-related effects across the construction, operation and maintenance and decommissioning phases where appropriate.

5.11.4 It should be noted that some elements of the preliminary assessment inherently consider inter-related effects. For example, the ecology assessment of effects takes into account the potential for multiple impacts affecting particular features such as disturbance effects on faunal receptors resulting from noise and vibration, visual disturbance etc. Where this is the case, this is described within the individual technical chapters.

5.11.5 Given the preliminary stage of the process, sufficient detail is not currently available to enable a detailed assessment of inter-related effects to be undertaken. Following Statutory Consultation, the inter-related effects assessment will be updated and fully reported in the ES. The inter-related effects assessment at ES stage will identify any significant residual inter-related effects (and non-significant effects, greater than negligible or neutral significance, which could combine to create a perceivably significant effect) on common receptors or receptor groups set out in individual technical assessments, and qualitatively comment on the potential for actual or perceived significant residual effects for such receptors. This will be informed by an over-arching matrix setting out where topics have reached an assessment of relevant effects per receptor or receptor group, followed by a narrative explaining

the effects for each receptor.

- 5.11.6 The preliminary inter-related effects is set out in **Chapter 18: Cumulative Effects and Interactions**.

## 5.12 Transboundary Effects

5.12.1 Transboundary effects arise when impacts from a development within one European Economic Area (EEA) states affects the environment of another EEA state(s). The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, which was adopted in 1991 as the 'Espoo Convention', was negotiated to enhance the cooperation between EEA states in assessing environmental effects in a transboundary context. The Espoo Convention has been implemented by the EIA Directive and transposed into UK law for NSIPs by way of the EIA Regulations 2017 (Ref 5-1) specifically under Regulation 32 which sets out the process for consultation and notification.

5.12.2 Regulation 32 of the EIA Regulations 2017 (Ref 5-1) requires that where the SoS is of the view that a development that is the subject of an EIA is likely to have significant effects on the environment of another EEA State a notification is made by the SoS to that other EEA State.

5.12.3 As set out in Advice Note Twelve: Transboundary Impacts and Process (Ref 5-13), the role of the Planning Inspectorate, where an NSIP has been identified as an EIA development, includes the screening for likely significant effects on the environment of another EEA State. Screening may take place at any time when new relevant information becomes available.

5.12.4 The EIA Scoping Opinion received 29 January 2025 confirmed

*'The likelihood of transboundary effects resulting from the proposed development is so low that it does not warrant the issue of a detailed transboundary screening.'*

5.12.5 As such, a Transboundary Screening Matrix has not been included in support of the PEIR. However this will be continuously reviewed and should any new or materially different information be presented which would have the potential to alter the conclusion above, a Transboundary Screening Matrix will be presented in the ES.

## 5.13 Planning Inspectorate Scoping Opinion Responses

- 5.13.1 Technical chapters will set out the comments received in the Planning Inspectorate's Scoping Opinion (**Appendix 1D**) relevant to each topic and detail the approach to the EIA as well as how these have been addressed in this PEIR. Regard has also been given to other stakeholder comments that were received in relation to the EIA Scoping Report (**Appendix 1C**). The information provided in the PEIR is preliminary and therefore not all the EIA Scoping Opinion comments have been able to be addressed at this stage, however all comments will be addressed within the ES.

## 5.14 References

- Ref 5-1 The Infrastructure Planning (Environmental Impact Assessment) Regulations (2017). Available at:  
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- Ref 5-2 The Planning Act (2008), [Online]. Available at:  
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- Ref 5-3 Nationally Significant Infrastructure Projects - Advice Note Seven: Environmental Impact Assessment: process, preliminary environmental information and environmental statements, Planning Inspectorate (2020), [Online]. Available at:  
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- Ref 5-4 Nationally Significant Infrastructure Projects: Technical Advice Page for Scoping Solar Development (2024), [Online]. Available at:  
<https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-technical-advice-page-for-scoping-solar-development> [Accessed November 2025].
- Ref 5-5 Council Directive 92/43/EEC (1992), [Online]. Available at:  
<https://www.legislation.gov.uk/eudr/1992/43/contents> [Accessed November 2025].
- Ref 5-6 Directive 2009/147/EC of the European Parliament and of the Council (2009), [Online]. Available at: <https://www.legislation.gov.uk/eudr/2009/147> [Accessed November 2025].
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- Ref 5-8 Council Directive 2009/71/Euratom (2009), [Online]. Available at:  
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- Ref 5-12 Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment, Planning Inspectorate (2024), [Online]. Available at: Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK [Accessed November 2025].
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