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# **EAST YORKSHIRE SOLAR FARM**

**East Yorkshire Solar Farm  
EN010143**

## **Environmental Statement**

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## 5. Environmental Impact Assessment Methodology

### 5.1 Introduction

#### EIA Process

- 5.1.1 Environmental Impact Assessment (EIA) is the process undertaken to identify and evaluate the likely significant effects of a proposed development on the environment and to identify measures to mitigate or manage any significant negative effects. The EIA process is informed by consultation with statutory consultees, other interested bodies, and members of the public. The purpose of identifying significant effects is to ensure decision makers are able to make an informed judgement on the environmental impacts of a proposal.
- 5.1.2 The key elements in EIA for a Nationally Significant Infrastructure Project (NSIP) are:
- a. Iterative project design, taking feedback from consultation, and applying it to the development design process on an ongoing basis throughout the EIA process;
  - b. Scoping and ongoing consultation, including consideration of responses and how these should be addressed as part of the EIA;
  - c. Technical environmental impact assessments, including baseline studies, input to the design process, and identification of potential significant environmental effects;
  - d. Consultation on the Preliminary Environmental Information (PEI) Report, which was disclosed as part of the statutory consultation process; and
  - e. Preparation and submission of an Environmental Statement (ES) (this document). Mitigation to be proposed where available and appropriate to reduce or prevent likely significant adverse effects.
- 5.1.3 Each of the technical assessments follows a systematic approach, with the principal steps being:
- a. Description of baseline conditions;
  - b. Identification of appropriate embedded mitigation measures, including design changes;
  - c. Assessment of likely significant effects;
  - d. Identification of appropriate additional mitigation and enhancement measures where likely significant effects are identified;
  - e. Assessment of residual (likely) environmental effects that remain following application of additional mitigation and enhancement measures; and
  - f. Assessment of cumulative effects when considering the Scheme along with the potential effects of other planned developments in the area.

## General Assessment Approach

- 5.1.4 This ES has been prepared to identify and evaluate the likely significant effects of the Scheme on the environment and to identify measures to mitigate or manage any significant negative effects. In turn this will help to ensure that the decision makers are able to make an informed judgement on the environmental impacts of a proposal. Additionally, care has been taken to ensure that the ES satisfies the requirements of The Infrastructure Planning (EIA) Regulations 2017, as amended, (hereafter referred to as ‘the EIA Regulations’) (Ref. 5-1).
- 5.1.5 In preparing this ES, reference has been made to the following guidance:
- a. Planning Inspectorate Advice Note 2: The Role of Local Authorities in the Development Consent Process (Ref. 5-2);
  - b. Planning Inspectorate Advice Note 3: EIA Consultation and Notification (Ref. 5-3);
  - c. Planning Inspectorate Advice Note 7: Environmental Impact Assessment: Process: Preliminary Environmental Information, Screening and Scoping (Ref. 5-4);
  - d. Planning Inspectorate Advice Note 9: Rochdale Envelope (Ref. 5-5);
  - e. Planning Inspectorate Advice Note 10: Habitats Regulations Assessment relevant to Nationally Significant Infrastructure Projects (Ref. 5-6);
  - f. Planning Inspectorate Advice Note 11: Working with Public Bodies in the Infrastructure Planning Process (Ref. 5-7);
  - g. Planning Inspectorate Advice Note 17: Cumulative Effects Assessment (Ref. 5-8);
  - h. Planning Inspectorate Advice Note 18: The Water Framework Directive (Ref. 5-9); and
  - i. European Commission (1999) Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (Ref. 5-10).

## EIA Scoping

- 5.1.6 The aim of the scoping process is to identify key expected environmental issues at an early stage, to determine which elements of the Scheme are likely to result in significant effects on the environment and to establish the extent of survey and assessment requirements for the EIA.
- 5.1.7 The issues to be addressed within this ES were identified in the EIA Scoping Report (**Appendix 1-1: EIA Scoping Report, ES Volume 2 [EN010143/APP/6.2]**) submitted to the Planning Inspectorate on 9 September 2022. The Planning Inspectorate reviewed and consulted on the EIA Scoping Report and adopted (on behalf of the Secretary of State) a Scoping Opinion on 20 October 2022. The Scoping Opinion (**Appendix 1-2: EIA Scoping Opinion, ES Volume 2 [EN010143/APP/6.2]**) included the formal responses received by the Planning Inspectorate from consultees.

- 5.1.8 Key issues raised in the Scoping Opinion are summarised along with the Applicant team's responses in **Appendix 1-3: EIA Scoping Opinion Responses, ES Volume 2 [EN010143/APP/6.2]**. All issues raised in the Scoping Opinion have been considered during the EIA process.
- 5.1.9 Owing to factors such as updated guidance being issued following submission of the Scoping Report, some chapters deviate from the assessment approach presented with the Scoping Report (**Appendix 1-1: EIA Scoping Report, ES Volume 2 [EN010143/APP/6.2]**). Where this occurs, it is discussed within the relevant technical chapter along with any relevant communications with statutory authorities and within the Applicant team's responses in **Appendix 1-3: EIA Scoping Opinion Responses, ES Volume 2 [EN010143/APP/6.2]** where relevant.
- 5.1.10 In response to the Scoping Opinion, the EIA presented in **ES Volume 1 [EN010143/APP/6.1]** includes assessments for the following environmental topics:
- a. **Chapter 6: Climate Change;**
  - b. **Chapter 7: Cultural Heritage;**
  - c. **Chapter 8: Ecology;**
  - d. **Chapter 9: Flood Risk, Drainage and Water Environment;**
  - e. **Chapter 10: Landscape and Visual Amenity;**
  - f. **Chapter 11: Noise and Vibration;**
  - g. **Chapter 12: Socio-Economics and Land Use;**
  - h. **Chapter 13: Transport and Access;**
  - i. **Chapter 14: Human Health;** and
  - j. **Chapter 15: Soils and Agricultural Land.**
- 5.1.11 The EIA Scoping Report (**Appendix 1-1: EIA Scoping Report, ES Volume 2 [EN010143/APP/6.2]**) concluded that several topics did not require a full chapter within the ES, and this proportional approach was accepted by the Planning Inspectorate in their Scoping Opinion (**Appendix 1-2: EIA Scoping Opinion, ES Volume 2 [EN010143/APP/6.2]**). These topics and information on potential impacts and assessments are described in:
- a. **Chapter 16: Other Environmental Topics.** This includes:
    - i. Air Quality;
    - ii. Glint and Glare
    - iii. Ground Conditions;
    - iv. Major Accidents and Disasters;
    - v. Telecommunications, Television Reception and Utilities;
    - vi. Materials and Waste; and
    - vii. Electric and Magnetic Fields (EMF).
- 5.1.12 A discussion of the potential impacts of EMF was not included within the Scoping Report (**Appendix 1-1: EIA Scoping Report, ES Volume 2**

**[EN010143/APP/6.2]**) but has been incorporated into this ES following a comment by the Planning Inspectorate in paragraph 2.2.1 of the Scoping Opinion (**Appendix 1-2: EIA Scoping Opinion, ES Volume 2 [EN010143/APP/6.2]**).

- 5.1.13 Paragraph 4 within Schedule 4 (information for inclusion in environmental statements) of the EIA Regulations (Ref. 5-1) states that the ES should include “*description of the factors [...] 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 (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 aspects, and landscape*”. These factors are addressed within the relevant chapters listed above.

## **Environmental Statement**

- 5.1.14 This ES presents the outcomes of the following ongoing EIA activities:

- a. Establishing baseline conditions;
- b. Consultation with statutory and non-statutory consultees;
- c. Consideration of relevant local, regional and national planning policies, guidelines and legislation relevant to the EIA;
- d. Consideration of technical standards for the development of significance criteria and specialist assessment methodologies;
- e. Identification of effects, design review and design change to reduce environmental effects;
- f. Review of secondary information, previous environmental studies, publicly available information and databases;
- g. Physical surveys and monitoring;
- h. Desk-top studies;
- i. Modelling and calculations;
- j. Reporting of effects following implementation of mitigation;
- k. Production of construction, operational and decommissioning phase framework plans to secure the proposed mitigation; and
- l. Reference to current guidance.

- 5.1.15 For ease of reference, where possible, each technical chapter follows the same structure as outlined in **Table 5-1** below. Notable exceptions are the different topic areas in **Chapter 16: Other Environmental Topics, ES Volume 1 [EN010143/APP/6.1]**.

**Table 5-1. Sections within each technical chapter in the ES and their function with the chapter**

<b>Section heading</b>	<b>Function of section</b>
Introduction	Provides a brief background to the assessment and outlines the content of the chapter. It notes if any other chapters should be read in conjunction with the chapter and if there are any supporting figures or appendices.
Legislation, Policy and Guidance	Refers to any legislation, policy and guidance which is relevant to the specific assessment within the technical chapter and the significant effects of the Scheme. This section refers to topic specific appendices that provide more information on the relevant legislation, policy and guidance.
Consultation	<p>Summarises the requirements collected from the Scoping Opinion responses which were received following the Scoping exercise in Summer 2022, as well as how and where the comments have been addressed.</p> <p>Summarises the topic specific responses which were received following Statutory Consultation (which ran from 9 May to 20 June 2023), as well as how and where the comments have been addressed.</p> <p>Describes any additional consultation undertaken outside of the Scoping exercise and Statutory Consultation.</p>
Assessment Method	Describes the assessment methodology used for the chapter, in accordance with the latest and applicable technical guidance and consultant expertise. This section also defines the scope of the assessment in terms of matters scoped in or scoped out by agreement with the Planning Inspectorate or appropriate statutory body. It also explains the Study Area relevant to the assessment; and any assumptions, limitations and uncertainties regarding the information contained in the chapter.
Baseline Conditions	Describes the baseline characteristics (i.e., pre-existing conditions) of the Site and relevant Study Area in regard to the chapter prior to the Scheme; and the data sources used. Where relevant it also considers the future baseline conditions in the years when construction, operation, or decommissioning are planned, against which the assessment has been made.
Embedded Mitigation	Outlines in-built design measures embedded in the Scheme description and standard industry practice relevant to the chapter.
Assessment of Likely Impacts and Effects	Provides a summary of the likely effects during construction, operation, and decommissioning of the Scheme, taking account of the embedded mitigation measures.
Additional Mitigation, Enhancement	Outlines any additional mitigation measures which may be required based on the outcome of the assessment for the



Section heading	Function of section
Measures and Monitoring	chapter. Additional mitigation measures are only required if significant effects are identified in the assessment and may include measures beyond industry standard controls such as bespoke/site specific measures. Enhancement is described if additional measures are proposed that are not required to mitigate effects and benefit the Scheme. Alternatively, an explanation is provided if there are no additional mitigation or enhancement measures required. Where relevant, proposed monitoring is also described.
Residual Effects	Provides a summary of the remaining likely effects during construction, operation and decommissioning of the Scheme, taking account the embedded mitigation and additional mitigation and enhancement measures.
Cumulative Effects	Presents an assessment of the potential for cumulative effects between the Scheme and other proposed and committed plans and developments.
References	Details a list of sources of information referred to throughout the chapter.

5.1.16 Where the specific requirements of the technical assessment require, additional headings may be added to improve clarity of reporting.

## 5.2 Rochdale Envelope

- 5.2.1 As discussed in **Chapter 2: The Scheme, ES Volume 2 [EN010143/APP/6.1]**, a Rochdale Envelope approach has been adopted to provide flexibility in the ES and the Development Consent Order (DCO), as some technical parameters will not be determined until after the granting of the DCO. This is important as the technology for solar Photovoltaic (PV) and Battery Energy Storage Systems (BESS) continues to evolve, to maintain flexibility to meet the changing demands of the UK market prior to construction and to enable East Yorkshire Solar Farm Limited (hereafter referred to as 'the Applicant') to adopt the most up to date technology at the point of commencement of development. This approach has therefore been applied to ensure a robust assessment of the likely significant environmental effects of the Scheme, in accordance with the Planning Inspectorate's Advice Note 9: The Rochdale Envelope (Planning Inspectorate, 2018) (Ref. 5-5) which involves assessing the maximum parameters.
- 5.2.2 Additionally, paragraph 4.2.18 of Draft NPS EN-1 (2023) (Ref. 5 13) states that "*the Secretary of State should consider the worst case impacts in its consideration of the application and consent, providing some flexibility in the consent to account for uncertainties in specific project details*".
- 5.2.3 As is relevant for each technical discipline, the maximum (and where relevant, minimum) parameters for the elements where flexibility needs to be retained have been assessed under the Rochdale Envelope approach. The approach also recognises that the worst-case parameter for one technical assessment may differ from another, ensuring that worst case overall

impacts are predicted. Each of the topic chapters (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) describe the parameters applied in relation to the particular discipline. Where flexibility is to be retained in the DCO Application, any changes to design parameters after consent will remain within the likely worst-case envelope.

- 5.2.4 Whilst the design presented in the Site Layout Plan (**Figure 2-3, ES Volume 3 [EN010143/APP/6.3]**) is indicative, all topic chapters have assessed the likely significant effects arising from the worse-case parameters listed within the **Outline Design Principles Statement [EN010143/APP/7.4]**.
- 5.2.5 The approach taken to the assessment in each technical chapter is explained in the relevant chapter.

## 5.3 Spatial Scope

- 5.3.1 The topic chapters of this ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) describe the spatial scope, including the rationale for determining the specific area within which the assessment is focussed. The Study Areas are a function of the nature of the impacts and the locations of potentially affected environmental resources or receptors. Justification for the spatial scope considered appropriate is documented in each topic chapter (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**).

## 5.4 Determining the Baseline Conditions

- 5.4.1 In order to predict the potential environmental effects of the Scheme, it is important to determine the environmental conditions that currently exist within the Site and surrounding area in the absence of the Scheme. These are known as 'baseline conditions'.
- 5.4.2 Detailed environmental baseline information has been collected and the methodology for the collection process is detailed within each topic chapter of the ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**). The baseline information has been gathered from various sources, including:
  - a. Online / digital resources;
  - b. Data searches e.g. GroundSure, Historic Environment Record;
  - c. Stakeholder engagement; and
  - d. Baseline site surveys.
- 5.4.3 Where required, consideration has also been given to how the baseline conditions would evolve over the proposed lifetime of the Scheme known as the 'future baseline'. As described in **Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1]**, this involves the consideration of the 'no development' or 'do nothing' scenario and, where required, allows impact assessments to consider and compare the scale of environmental changes, such as noise levels, with and without the Scheme in place for each phase.

## 5.5 Development Design, Impact Avoidance and Mitigation

- 5.5.1 Regulation 14, paragraph (2)(c) of the EIA Regulations (Ref. 5-1) requires the ES to provide “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”. These are commonly referred to as mitigation measures.
- 5.5.2 The Scheme has adopted a standard hierarchical approach to identifying mitigation requirements:
- a. Avoid or Prevent: In the first instance, mitigation will seek to avoid or prevent the adverse effect at source, for example by routeing the Grid Connection Corridor or siting PV panels away from a sensitive receptor;
  - b. Reduce: If the effect is unavoidable, mitigation measures will be implemented which seek to reduce the significance of the effect for example, the use of noise barriers to reduce construction noise at nearby noise sensitive receptors; and
  - c. Offset: If the effect can neither be avoided nor reduced, mitigation will seek to offset the effect through the implementation of compensatory mitigation, for example habitat creation to replace any habitat losses.
- 5.5.3 Mitigation measures fall into two categories: ‘embedded mitigation measures’ (also referred to sometimes as ‘in-built mitigation measures’), which are built into the design of the Scheme, and ‘additional mitigation measures’, which are implemented alongside design commitments to reduce or avoid significant adverse effects identified in the assessment.
- 5.5.4 The design process for the Scheme has been heavily influenced by the findings of early environmental appraisals (such as those presented in the PEI Report) and the EIA process. The Scheme has had several measures incorporated into the design to avoid or minimise environmental impacts, for example through the appropriate routeing and siting of infrastructure. The key aspects where the design has evolved are described in **Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1]**. These elements of the design evolution include measures needed for legal compliance, as well as measures that implement the requirements of good practice guidance documents.
- 5.5.5 Once these measures are incorporated into the design, they are termed ‘embedded measures’. Embedded measures relevant to the construction phase have been described within each topic chapter of the ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**). For the operational phase, such embedded measures have been represented primarily in the design but have also been described in each topic chapter of the ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**), where required/relevant. Embedded measures are therefore either incorporated into the design from the outset or identified through the assessment process. The embedded measures also include good industry practices, which are standard control measures that will be implemented during construction, operation and decommissioning, such as segregating waste materials to maximise recycling. These good industry practices are outlined along with design measures in-built into the

- design as part of the description of embedded measures in each topic chapter of the ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**).
- 5.5.6 The assessment presented in this ES has been undertaken on the basis that these embedded measures are incorporated in the design and construction, operation and decommissioning practices.
- 5.5.7 Embedded mitigation measures for the construction phase are collated and set out in the **Framework Construction Environmental Management Plan (CEMP) [EN010143/APP/7.7]** including, but not limited to, measures such as construction and exclusion zones in relation to retained vegetation, ensuring a tidy and neat working area, and the sustainable management and handling of soil resources in accordance with best practice measures. The Framework CEMP will be developed into a detailed (or construction issue) CEMP by the appointed Contractor prior to the start of construction and will provide the framework within which the appointed Contractor (including any sub-contractors or suppliers involved in the works) will plan, implement and deliver environmental management, mitigation and monitoring requirements during the construction phase of the Scheme. The detailed CEMP will be agreed with the LPAs following grant of the DCO and prior to the start of construction.
- 5.5.8 Embedded mitigation measures for the operational phase are collated and set out in the **Framework Operational Environmental Management Plan (OEMP) [EN010143/APP/7.8]**. The Framework OEMP will be developed into a detailed document by the Applicant prior to the start of construction and will provide the framework for the environmental management of the operational Scheme. The detailed OEMP will be agreed with the LPAs following grant of the DCO and prior to the start of operation.
- 5.5.9 Embedded mitigation measures for the operational phase are collated and set out in the **Framework Decommissioning Environmental Management Plan (DEMP) [EN010143/APP/7.9]**. The Framework DEMP will be developed into a detailed document by the Applicant or appointed Contractor for the decommissioning prior to the start of decommissioning. The detailed DEMP will reflect the appropriate environmental legislation and good practice at the time of decommissioning and will provide the framework for the environmental management of the decommissioning phase.
- 5.5.10 Production of the detailed environmental management plans as mentioned above will be secured through a Requirement attached to the DCO. It is intended that the detailed plans will be 'live' documents and updated to reflect changes such as new legislation being issued or additional information becoming available.
- 5.5.11 Implementation of embedded mitigation relied upon in the assessment will be secured in the DCO, including by ensuring the works described in Schedule 1 of the DCO are restricted to their corresponding works areas shown on the **Works Plan [EN010143/APP/2.3]**, DCO requirements requiring compliance of detailed design of the Scheme with the Design Principles, or through DCO requirements requiring compliance with a management strategy, plan, or requirement document.
- 5.5.12 Where likely significant effects are identified as part of the assessment, consideration has been given to any 'additional mitigation' over and above the embedded mitigation that may be required to mitigate any significant

adverse effects. These additional measures are presented within each of the topic chapters (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**), where required, and may include measures beyond industry standard controls such as bespoke/ site specific measures like temporary fencing to prevent glint and glare until the vegetation planting has properly established. The topic chapter also explains how the additional mitigation will be secured, for example via a specific DCO requirement or via a management plan, or document secured by a DCO requirement.

- 5.5.13 The residual effects (after the implementation of mitigation) have then been assessed and are presented in each topic chapter (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**). Significant residual effects are also summarised in **Chapter 18: Summary of Environmental Effects, ES Volume 2 [EN010143/APP/6.1]**.
- 5.5.14 Where relevant, enhancement measures have also been identified. Enhancement measures are not required to mitigate significant effects of the Scheme and are not factored into the determination of residual effects. They are further measures which would have additional beneficial outcomes should they be implemented.

## 5.6 Temporal Scope: Timescales and Assessment Years

### Construction Phase Effects

- 5.6.1 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 the establishment of construction compounds are likely to be relatively short in duration in respect of the whole construction period, whereas the construction of energy infrastructure and landscaping activities are likely to persist throughout the entire construction period. By their nature, most construction impacts will be temporary and reversible. Within the ES construction is assessed as being 2025 to 2027.

### Operational Phase Effects

- 5.6.2 Operational effects are the effects that are associated with operational and maintenance activities during the generating lifetime of the Scheme, this is a period of 40 years from final commissioning (currently anticipated to be 2027 to 2067). Operational effects include the effects of the physical presence of the Solar PV infrastructure, and its operation, use and maintenance. Timescales associated with these enduring effects fall into the following categories (unless otherwise specified within a topic chapter (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**):
- a. Short term – endures for up to 12 months after construction or decommissioning;
  - b. Medium term – endures for one to five years after construction or decommissioning;

- c. Long term – endures for more than five years after construction or decommissioning;
  - d. Reversible long-term effects – long-term effects, which endure throughout the lifetime of the Scheme but which cease once the Scheme has been decommissioned (in relation to the Scheme, operational effects will all fall into this category); and
  - e. Permanent effects – effects which cannot be reversed following decommissioning (e.g., should buried archaeology be permanently removed during construction).
- 5.6.3 As stated in paragraph 5.5.8, environmental management and mitigation measures for the operational phase of the Scheme will be planned, implemented and delivered through a detailed OEMP to be prepared following grant of the DCO and secured through a requirement in the DCO. A **Framework OEMP** is presented with the DCO Application [EN010143/APP/7.8].

### **Decommissioning Phase Effects**

- 5.6.4 The design life of the Scheme is 40 years, with decommissioning to commence 40 years after final commissioning (currently anticipated to be 2067).
- 5.6.5 Within the ES, decommissioning period effects have been taken to be those for which the source begins and ends during the decommissioning phase, and the effects do not endure beyond the completion of the decommissioning phase. For example, this covers sources of effects such as decommissioning 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. Typically, decommissioning phase effects are similar in nature to the construction phase, although may be of shorter duration and of slightly less intensity. As with construction phase effects, some aspects of decommissioning will endure for longer than others.

### **Assessment Years**

- 5.6.6 The assessment considers the environmental impacts of the Scheme at key stages in its construction and operation and, as far as practicable, its decommissioning.
- 5.6.7 The 'existing baseline' date is 2022/2023, since this is the period in which the baseline studies for the EIA have been undertaken. As described in paragraph 5.4.3, '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 Scheme does not progress) are identified for comparison with the predicted conditions with the Scheme. 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.
- 5.6.8 The assessment scenarios considered for the purposes of the EIA (and considered in this ES) are as follows:
- a. Existing Baseline (2022/2023) – this is the principal baseline against which environmental effects will be assessed;



- b. Future Baseline (No Development) in 2025–2027 which are the expected construction years. A future baseline scenario in 2042 is also included for landscape, visual and heritage setting only, reflecting Year 15 (post construction), in accordance with industry good practice. Where relevant consideration will also be given to a future baseline approximately 40 years after commencement of operation (2067) to assess decommissioning impacts against. These future assessment years are explained in paragraph 5.6.10.
  - c. Construction (2025–2027) (With Development) – the peak construction year for the purpose of the EIA is anticipated to be 2025; this assumes commencement of construction in 2025 and that the Scheme is built out rapidly over a 24-month period (with construction of the Grid Connection Cable requiring 12-months and commencing in year one). 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, air quality and noise impacts; therefore, the likely worst-case scenario has been assessed within this ES. Where it is not the worst case, this is discussed in the relevant topic chapter of the ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) to ensure an actual or worst case effect has been determined. The peak construction assessment year will be reviewed as the anticipated construction programme is considered in more detail during design development. A full justification for the reasonable worst-case scenario that is assessed has been provided in the topic chapters of the ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**).
  - d. Decommissioning (40 years from final commissioning, approximately 2067) – this would be the earliest year when decommissioning would commence based on the 40-year design life of the Scheme.
- 5.6.9 The proposed operational assessment year for the purpose of the EIA is 2027. This is expected to be the earliest the Scheme can be fully built out and operational. The Solar PV Site comprises 16 Solar PV Areas and these will be constructed sequentially so that construction of some parts of the Scheme will be completed in advance of others.
- 5.6.10 A future year of 2042 has also been considered for in relation to landscape and visual amenity (**Chapter 10: Landscape and Visual Amenity, ES Volume 1 [EN010143/APP/6.1]**), in terms of the maturation of vegetation (i.e. 15 years after the operational assessment year to allow the consideration of mitigation planting). This is a requirement of the Landscape Institute guidelines. Other topics such as Socio-economics and Land Use (**Chapter 12: Socio-Economics and Land Use, ES Volume 1 [EN010143/APP/6.1]**) have presented data for alternative future years as per their assessment methodology.

## 5.7 Significance Effect Criteria

- 5.7.1 The evaluation of the significance of an effect is important; it is the significance that determines the resources that should be deployed in avoiding or mitigating a significant adverse effect, or conversely, the actual

value of a beneficial effect. The overall environmental acceptability of the Scheme is a matter for the Secretary of State to determine, having taken into account, amongst other matters, the environmental information set out in the ES, including all likely beneficial and adverse environmental effects. Where it has not been possible to quantify effects, qualitative assessments have been undertaken, based on available knowledge and professional judgment. Where uncertainty exists, this has been noted in the relevant topic chapter (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) and valid assumptions made/a worst case approach taken as appropriate.

- 5.7.2 The significance of residual effects has been determined by reference to criteria for each assessment topic. Specific effect significance criteria for each technical discipline has been developed, giving due regard to the following:
- a. Extent and magnitude of the impact (i.e. the magnitude of change from the baseline condition) (described as high, medium, low and very low);
  - b. Effect duration (see paragraph 5.6.2), and whether effects are temporary, reversible or permanent;
  - c. Effect nature (whether direct or indirect, reversible or irreversible, beneficial or adverse);
  - d. Whether the effect occurs in isolation, is cumulative or interacts with other effects;
  - e. Performance against any relevant environmental quality standards;
  - f. Sensitivity of the receptor (described as high, medium, low and very low); and
  - g. Compatibility with environmental policies.
- 5.7.3 The significance of residual effects has been evaluated with reference to available definitive standards, accepted criteria and legislation, where applicable. For issues where definitive quality standards do not exist, significance has been based upon the following:
- a. Local, district, regional or national scale or value of the resource affected;
  - b. Number of receptors affected;
  - c. Sensitivity of these receptors; and
  - d. Duration of the effect.
- 5.7.4 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 has been used in this ES to define residual effects:
- a. Adverse – detrimental or negative effects to an environmental / socio-economic resource or receptor;
  - b. Negligible (also referred to as ‘neutral’ for some topics) – imperceptible effects to an environmental / socio-economic resource or receptor;
  - c. No effect – where there would be no effects upon the environmental / socio-economic resource or receptor; or



- d. Beneficial – advantageous or positive effects to an environmental/socio-economic resource or receptor.

5.7.5 Where adverse or beneficial effects are identified, these have been assessed against the following scale:

- a. Negligible – effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error and are of no significant consequence;
- b. Minor – slight, very short or highly localised effect of no significant consequence;
- c. Moderate – noticeable effect (by extent, duration or magnitude) which may be considered significant; or
- d. 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.

5.7.6 Each of the topic chapters (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) provide the criteria, including sources and justifications, for quantifying the different categories of effect. Where possible, this has been based upon quantitative and accepted criteria (for example, noise assessment guidelines), together with the use of value judgment and expert interpretation to establish to what extent an effect is environmentally significant.

5.7.7 **Table 5-2** illustrates an example of the classification of effects matrix.

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

Sensitivity or value of resource / receptor	Magnitude of impact			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Very low	Minor	Negligible	Negligible	Negligible

5.7.8 Following the classification of an effect, clear statements have been made within the topic chapters (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) as to whether an effect is significant or not significant. As a rule, major and moderate effects are considered to be significant (as shown by the shaded cells in **Table 5-2** above), whilst minor and negligible effects are considered to be not significant. However, professional judgement has been applied, including taking account of whether the effect is permanent or temporary, its duration and 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**

<b>Generic effect</b>	<b>Description</b>
<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, are likely to be important at a local scale and on their own could have an important and relevant influence on decision making.
<b>Minor</b>	These effects may be raised as local issues and may be of relevance in the detailed design 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.

5.7.9 Where mitigation measures are identified to eliminate, mitigate or reduce adverse impacts, these have either been incorporated into the design of the Scheme, translated into construction commitments, or included as operational or managerial standards / procedures. The topic chapters (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) in this ES present any 'residual' effects, which are the effects which remain following the implementation of embedded and additional mitigation measures and classify these in accordance with the effect classification terminology given above.

5.7.10 It should be noted that some technical disciplines may have utilised different criteria when undertaking assessments due to differences in industry accepted guidelines and specifications. Where this is the case, the technical topic has discussed 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**

5.7.11 The assessment of construction and decommissioning effects has been undertaken based on existing knowledge, techniques and equipment. A 'reasonable worst-case' scenario has been used with respect to the envisaged construction methods, location (proximity to sensitive receptors), phasing, and timing of construction activities. Typically, decommissioning phase effects are similar in nature to the construction phase, although may be of shorter duration and of slightly less intensity.

5.7.12 The assessment of construction and decommissioning effects assumes the implementation of standard good practice measures, for example the use of dust suppression measures on haul roads and using containers with 110 %

capacity to store fuel and other chemicals onsite. The purpose of this is to focus on the Scheme-specific effects, rather than generic construction effects that can be easily addressed using generic good practice mitigation measures which the Applicant has committed to. Construction and decommissioning assumptions, including what has been assumed in terms of good practice measures, are set out within the topic chapters of the ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) and the Framework CEMP (**Appendix 2-1, ES Volume 2 [EN010143/APP/6.2]**), and will also be updated and submitted with the DCO Application. Each topic chapter of the ES identifies and assesses construction and decommissioning effects that are likely to remain after these mitigation measures are in place.

## 5.8 Interaction and Accumulation

- 5.8.1 In accordance with the Schedule 4, paragraph 5 of the EIA Regulations (Ref. 5-1) 'cumulative effects' have been considered in the ES. By definition, these are effects that result from incremental changes caused by other past, present, or reasonably foreseeable actions cumulatively with the Scheme.
- 5.8.2 For the cumulative impact assessment presented in the ES, two types of impact have been considered:
- a. The combined effect of individual impacts from the Scheme, for example where a single receptor is affected by noise and traffic disruption during the construction of the Scheme (these are referred to as 'effect interactions'); and
  - b. The combined effects of other development scheme(s) which may interact cumulatively with the Scheme. The effects of these schemes may, on an individual basis be insignificant but, cumulatively with the Scheme, have a new or different likely significant effect (these are referred to as 'cumulative effects').
- 5.8.3 The assessment has been based upon the best available data from other proposed and committed developments and associated information which is currently in the public domain or has been provided to the Scheme. The assessment has assumed that publicly available information is accurate; the assessment has also been reliant on collaboration with a range of statutory consultees, neighbouring authorities and other developers to identify changes in information which may be pertinent to the assessment.
- 5.8.4 Where there are specific limitations associated with data, these have been highlighted.
- 5.8.5 **Figure 17-3, ES Volume 3 [EN010143/APP/6.3]** illustrates the location of other developments (cumulative projects) in the local area that have the potential to increase the impacts associated with the Scheme. These cumulative schemes have been discussed with the relevant LPAs and the effects reviewed following statutory consultation. **Appendix 17-1, ES Volume 2 [EN010143/APP/6.2]** presents the list of relevant cumulative developments considered in the assessment.
- 5.8.6 Each of the topic chapters of this ES (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) contains an assessment of relevant cumulative effects.

## Effect Interactions

- 5.8.7 There is no single agreed EIA methodology for assessing and quantifying effect interactions that lead to combined effects on sensitive receptors, however, the European Commission (EC) has produced guidelines for assessing effect interactions “*which are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project...*” (Ref. 5-10).
- 5.8.8 AECOM has reviewed these guidelines and has developed an approach based upon professional judgement which uses the defined residual effects of the Scheme to determine the potential for effect interactions that lead to combined effects. This approach was followed on Sunnica Energy Farm, Gate Burton Energy Park, and Longfield Solar Farm, which are all solar NSIPs and have been accepted for examination and/or granted consent.
- 5.8.9 The EIA predicts beneficial and adverse effects during construction, operation, and decommissioning of the Scheme, which are classified as minor, moderate or major. Several effects on one receptor or receptor group could theoretically interact or combine to produce a combined significant overall effect.
- 5.8.10 An exercise which tabulates the effects on receptors or receptor groups has been undertaken to determine the potential for effect interactions and therefore any combined effects (**Chapter 17: Cumulative Effects and Interactions, ES Volume 1 [EN010143/APP/6.1]**). Only adverse or beneficial residual effects classified as minor, moderate, or major have been considered in relation to potential effect interactions. Residual effects classified as negligible are excluded from the assessment of the effect interactions as, by virtue of their definition (see **Table 5-3**), they are considered to be imperceptible effects on an environmental/socio-economic resource or receptor which would not have the potential to lead to effect interactions.

## Cumulative Effects with Other Developments

- 5.8.11 The Planning Inspectorate’s Advice Note 17 on the assessment of cumulative effects (Ref. 5-8) identifies a four-stage approach. Adopting that approach, as appropriate, the Applicant’s methodology for the assessment of cumulative effects is as follows:
- Stage 1 – Establish the NSIP’s Zone of Influence and identify long list of ‘other development’**
- 5.8.12 A review of other developments has been undertaken, initially encompassing a ‘zone of influence’ (Zol) defined by the environmental topic specialists to prepare a long list of ‘other development’. Five kilometres is considered the maximum Zol for any individual assessment and, therefore, the likely maximum range of any potential significant effects.
- 5.8.13 The list of ‘other developments’ included in the assessment of cumulative effects (**Appendix 17-1, ES Volume 2 [EN010143/APP/6.2]**) were reviewed and developed in consultation with the local planning authorities, statutory consultees, and other relevant organisations.
- 5.8.14 Developments included in the initial long-list were based on the following criteria determined by AECOM and agreed with the local planning

authorities. The criteria were developed having regard to Advice Note 17 (Ref. 5-8) and utilising experience of assessing cumulative effects for schemes of a similar nature and scale to the Scheme:

- a. Development currently under construction that would have previously met one of (d) to (g);
- b. Approved applications which have not yet been implemented (covering the past five years and taking account of those that received planning consent over three years ago and are still valid but have not yet been implemented), and meet one of (d) to (g);
- c. Submitted applications not yet determined meeting one of (d) to (g);
- d. Development listed on the National Infrastructure Planning Programme of Projects within 5 km of the Order limits<sup>1</sup>;
- e. Other applications for EIA development within 5 km of the Order limits, including applications for EIA screening and scoping opinions;
- f. Development allocations identified in the relevant Development Plan (and emerging Development Plans) within 5 km of the Order limits; and
- g. Other, non-EIA applications for solar development, excluding householder or small-scale roof mounted solar developments, within 5 km of the Order limits.

### **Stage 2 – Identify shortlist of ‘other development’ for Cumulative Effects Assessment**

- 5.8.15 At Stage 2, any developments of a nature or scale without the potential to result in likely significant cumulative effects were excluded, following discussion with the local planning authorities and consideration of the likely Zol for each environmental topic. The long list of cumulative developments has informed the shortlist presented in (**Appendix 17-1, ES Volume 2 [EN010143/APP/6.2]**) and the shortlist of schemes discussed within each technical chapter of this ES, which for each technical discipline is topic specific, and based on their own methodology and justification.
- 5.8.16 The shortlist of cumulative developments presented in **Appendix 17-1, ES Volume 2 [EN010143/APP/6.2]** has been based on:
- a. The scale of the other developments;
  - b. The developments that fall within the Zol of specialists topics (**Figures 17-1 and 17-2, ES Volume 3 [EN010143/APP/6.3]**); and
  - c. If there is the potential for any temporal overlap between the Scheme and other developments.
- 5.8.17 Although not included in the shortlist of cumulative developments, as it does not meet any of the criteria in paragraph 5.8.14, where relevant, the technical chapters of this ES also consider the works which will be undertaken by National Grid at their Drax Substation to allow the power generated by the Scheme to be transmitted to the national grid (see **Chapter**

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<sup>1</sup> In this case, Order limits does not include the accesses which are beyond the extend of the Solar PV Site, Ecological Mitigation Area and Grid Connection Corridor.

## **2: The Scheme and Chapter 17: Cumulative Effects and Interactions, ES Volume 1 [EN010143/APP/6.1].**

### **Stage 3 – information gathering**

- 5.8.18 Information relating to other developments presented in **Appendix 17-1, ES Volume 2 [EN010143/APP/6.2]**, has been collected from the appropriate sources (which may include the local planning authorities, the Planning Inspectorate or directly from the Applicant) and include, but are not limited to:
- a. Proposed design and location information;
  - b. Proposed programme of demolition, construction, operation and/or decommissioning; and
  - c. Environmental assessments that set out baseline data and effects arising from ‘other developments’.

### **Stage 4 – Assessment**

- 5.8.19 The full assessment of cumulative effects is contained within the topic chapters (**Chapter 6 to 16, ES Volume 1 [EN010143/APP/6.1]**) and a summary is presented in **Chapter 17: Cumulative Effects and Interactions [EN010143/APP/6.1]** which includes a list of developments considered to have the potential to generate a cumulative effect together with the Scheme. These are documented in a table which includes the following:
- a. A brief description of the development;
  - b. An assessment of the cumulative effect with the Scheme;
  - c. Proposed mitigation applicable to the Scheme including any apportionment; and
  - d. The likely residual cumulative effect.
- 5.8.20 The criteria for determining the significance of any cumulative effect has been based upon the criteria presented in section 5.6.10 of this chapter which takes into account:
- a. The duration of effect, i.e. will it be temporary or permanent;
  - b. The extent of effect, e.g. the geographical area of an effect;
  - c. The type of effect, e.g. whether additive or synergistic;
  - d. The frequency of the effect;
  - e. The ‘value’ and resilience of the receptor affected; and
  - f. The likely success of mitigation.
- 5.8.21 Negligible effects from the Scheme are not considered in the cumulative assessment; it is not expected that these effects, which are generally miniscule or imperceptible by nature, would contribute to and elevate the effects associated with other developments. Where there are minor, moderate, or major effects associated with the Scheme and there exists the potential for these to be affected by impacts from other developments, a statement is made in the relevant technical chapter on whether the cumulative effect is different to the residual effect associated with the Scheme.

- 5.8.22 Where the cumulative effect differs to the residual effect, the chapter clarifies whether the cumulative effect is anticipated to be significant or not significant.
- 5.8.23 In reporting the overall significance of cumulative effects, it is appropriate to also acknowledge the relative contributions different projects make to a cumulative effect, and carefully consider whether the cumulative effect is significant. For example, where a large-scale project is predicted to result in significant effects in its own right and a smaller proposed development would not have significant effects, the cumulative assessment should only conclude that there is a significant cumulative effect if the effect of both projects together is of greater significance than the larger project in isolation. Consequently, care has been taken not to simply propagate such effects as being cumulative, but rather to focus on the nature and scale to which genuine cumulative effects might result.



## 5.9 References

- Ref. 5-1 His Majesty's Stationery Office (HMSO) (2011) The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended by The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018). Available at: [http://www.legislation.gov.uk/ukxi/2017/572/pdfs/ukxi\\_20170572\\_en.pdf](http://www.legislation.gov.uk/ukxi/2017/572/pdfs/ukxi_20170572_en.pdf) and [http://www.legislation.gov.uk/ukxi/2018/695/pdfs/ukxi\\_20180695\\_en.pdf](http://www.legislation.gov.uk/ukxi/2018/695/pdfs/ukxi_20180695_en.pdf). [Accessed 28 June 2023].
- Ref. 5-2 Planning Inspectorate (2015) Advice Note 2: The Role of Local Authorities in the Development Consent Process. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-two-the-role-of-local-authorities-in-the-development-consent-process/> [Accessed 28 June 2023].
- Ref. 5-3 Planning Inspectorate (2018) Advice Note 3: EIA Notification and Consultation. Planning Inspectorate (2020) Advice Note 7: EIA: Process, Preliminary Environmental Information, Screening and Scoping. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-three-eia-notification-and-consultation-2/> [Accessed 28 June 2023].
- Ref. 5-4 Planning Inspectorate (2020). Advice Note 7: Environmental Impact Assessment: Process, Preliminary Environmental Information and Environmental Statements. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-seven-environmental-impact-assessment-process-preliminary-environmental-information-and-environmental-statements/> [Accessed 28 June 2023].
- Ref. 5-5 Planning Inspectorate (2018); Advice Note 9: Using the Rochdale Envelope. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-nine-rochdale-envelope/> [Accessed 28 June 2023].
- Ref. 5-6 Planning Inspectorate (2022). Advice Note 10 (Version 9): Habitats Regulations Assessment relevant to Nationally Significant Infrastructure Projects. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-ten/> [Accessed 28 June 2023].
- Ref. 5-7 Planning Inspectorate (2017). Advice Note 11: Working with Public Bodies in the Infrastructure Planning Process. Available at: <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-eleven-working-with-public-bodies-in-the-infrastructure-planning-process/> [Accessed 28 June 2023].
- Ref. 5-8 Planning Inspectorate (2019). Advice Note 17 (Version 2): Cumulative Effects Assessment Relevant to Nationally Significant Infrastructure Projects. Available at: (main document) <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/> [Accessed 28 June 2023].



Appendix 1 – [https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/an17\\_appendix\\_1.pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/an17_appendix_1.pdf).

Appendix 2 - [https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/an17\\_appendix\\_2.pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2015/12/an17_appendix_2.pdf).

Ref. 5-9 Planning Inspectorate (2017) Advice Note 18: The Water Framework Directive. Available at:

<https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-18/> [Accessed 28 June 2023].

Ref. 5-10 European Commission (1999) Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. Available at:

<https://ec.europa.eu/environment/archives/eia/eia-studies-and-reports/pdf/guidel.pdf> [Accessed 28 June 2023].