



Meridian Solar Farm

EN010169

Volume 6

Environmental Statement

6.1 ES Chapter 16: Other
Environmental Topics

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16. Other Environmental Topics

16.1. Introduction

16.1.1. This chapter of the Environmental Statement (ES) presents the findings of an assessment of the likely significant effects on the following environmental topics as a result of the Scheme:

- Electric and Magnetic Fields (EMFs) (Section 16.3);
- Glint and Glare (Section 16.4);
- Major Accidents and Disasters (Section 16.5); and
- Materials and Waste (Section 16.6).

16.1.2. This chapter identifies and proposes measures to address the potential impacts and likely significant effects of the Scheme on the environmental topics listed above, during the construction, operation and decommissioning phases of the Scheme.

16.1.3. **ES Chapter 2: The Scheme** (Doc Ref. 6.1) describes the development parameters for the Scheme, against which the effects covered in this chapter have been assessed. The assessment has been based on likely worst-case parameters, in accordance with the Rochdale Envelope approach. For more details about the Scheme, refer to **ES Chapter 2: The Scheme** (Doc Ref. 6.1).

16.1.4. This chapter is supported by the following technical appendices:

- ES Appendix 16-1: Other Environmental Topics Legislation, Policy and Guidance (Doc Ref. 6.3);
- ES Appendix 16-2: Glint and Glare Assessment (Doc Ref. 6.3);
- ES Appendix 16-3: Long List of Major Accidents and Disasters (Doc Ref. 6.3); and
- ES Appendix 16-4: Unplanned Emissions Assessment from Battery Energy Storage System (BESS) (Doc Ref. 6.3).

16.1.5. In addition, a standalone **EMF Compliance Assessment** (Doc Ref. 7.8) has been submitted with the DCO Application, the results of which are summarised within this chapter.

16.2. Legislation and Planning Policy

- 16.2.1. A summary of the legislation, policy, and guidance of relevance to the assessment of Other Environmental Topics are provided in **ES Appendix 16-1: Other Environmental Topics Legislation, Policy and Guidance** (Doc Ref 6.3).

16.3. Electric and Magnetic Fields

Introduction

- 16.3.1. All electrical equipment emits EMFs. The movement of an electric charge causes EMFs to be produced in the space surrounding the charge. Human exposure to such fields can cause health problems, if they are persistent and/or they are of high strength. The magnitude of the effects is dependent on both the field strength and the exposure time.
- 16.3.2. This section summarises the effects of the Scheme on EMFs, as set out within the **EMF Compliance Assessment** (Doc Ref. 7.8).

Stakeholder Engagement

- 16.3.3. A request for an EIA Scoping Opinion, provided in **ES Appendix 1-1: EIA Scoping Report** (Doc Ref. 6.3), was sought from the Secretary of State through the Planning Inspectorate in 2024 as part of the EIA Scoping Process. A summary of the consultation responses received in relation to EMFs is provided within Table 16-1.

Table 16-1: Scoping Opinion responses in relation to EMFs

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
UK Health Security Agency (UKHSA)	Request that the ES considers possible health impacts of EMFs.	A standalone EMF Compliance Assessment (Doc Ref. 7.8) has been prepared with the DCO Application, the results of which are summarised within this chapter. No likely impacts on human health as a result of EMFs have been identified.	This section of ES Chapter 16 (Doc Ref. 6.1), which is supported by the EMF Compliance Assessment (Doc Ref. 7.8).

- 16.3.4. Further pre-application engagement was undertaken through the publication of the Preliminary Environmental Information Report (PEIR) as part of the statutory consultation. Table 16-2 outlines the main matters raised during the statutory consultation relating to EMFs and how these have been addressed through the ES. No additional comments from statutory stakeholders with regards to EMF impacts were received as part of targeted consultations.

Table 16-2: Key matters raised by prescribed or statutory consultees in relation to EMFs

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
Lincolnshire County Council (LCC)	<p>The Council requests a further high level assessment of EMFs within the ES, including an assessment of the health impacts from the electric and magnetic fields around substations, powerlines, and cables. It needs to be demonstrated that potential actual exposure to radiation (which includes EMFs) will comply with exposure limits developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Evidence on potential exposure to radiation must be considered.</p>	<p>A standalone EMF Compliance Assessment (Doc Ref. 7.8) has been prepared with the DCO Application, the results of which are summarised within this chapter. The EMF Compliance Assessment (Doc Ref. 7.8) includes an assessment of the potential EMFs from the Scheme against the exposure limits developed by ICNIRP and considers impacts with existing infrastructure and cumulative effects with the proposed overhead line schemes. Evidence on potential impacts from exposure to radiation has also been considered. A summary of the conclusions of the assessment is presented within this chapter.</p>	<p>This section of ES Chapter 16 (Doc Ref. 6.1), which is supported by the EMF Compliance Assessment (Doc Ref. 7.8).</p>

16.3.5. Table 16-3 provides a summary of further meetings held and key correspondence with relevant stakeholders for EMF impacts.

Table 16-3: Stakeholder engagement relating to EMFs

Meeting date	Attendees (organisation)	Summary of discussion
11/08/25	South Holland District Council (SHDC), LCC, Office for Health Improvement and Disparities (OHID), UKHSA	The meeting provided an overview of the health assessment approach, including a summary of the PEIR assessment results and proposed mitigation, a review of statutory consultation comments received in relation to the health assessment, an overview of the approach to the unplanned emissions assessment from BESS and the EMF assessment. In relation to the EMF assessment, the UKHSA requested that DECC (2012) 'Power Lines: Demonstrating compliance with EMF public exposure guidelines A voluntary Code of Practice' ¹ is referred to. This has been considered within the EMF Compliance Assessment (Doc Ref. 7.8).

Assessment Methodology

EMF Exposure Limits

- 16.3.6. The UK policy on public exposure limits to EMF radiation is designed to comply with the 1998 International Commission on the Non-Ionizing Radiation Protection (ICNIRP) guidelines². The public exposure limits in UK policy define reference levels for EMFs. Where field levels exceed these reference levels in significantly occupied spaces, further investigation is warranted.
- 16.3.7. The public exposure values stated in the ICNIRP 1998 guidelines are summarised within Table 16-4. Occupational exposure refers to EMF levels experienced by trained workers in environments where higher fields may occur as part of their job. These workers are aware of the risks and follow safety procedures, their allowable exposure limits are higher. Public exposure limits

¹ Department of Energy and Climate Change (DECC) (2012). Power Lines: Demonstrating compliance with EMF public exposure guidelines A voluntary Code of Practice. Available at: <https://assets.publishing.service.gov.uk/media/5a796799ed915d07d35b5397/1256-code-practice-emf-public-exp-guidelines.pdf> [Accessed 17/10/2025]

² ICNIRP (1998) ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz) (amended in 1999). Health Physics 74 (4):494-522; 1998. Available at: <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf> [Accessed 15/10/25]

apply to the general population in homes, businesses, and public areas. Public limits are more conservative and are set at one-fifth of the occupational values.

- 16.3.8. The basic restriction level, included within Table 16-4, represents the exposure level at or below which no adverse health effects are expected to occur. The reference levels provide a level above which further assessment is required to test whether the basic restriction is likely to be exceeded. Compliance with the reference level will ensure compliance with the basic restriction. The magnetic or electric field actually required is the field strength at which the basic restriction is likely to be exceeded.

Table 16-4: ICNIRP Exposure Limits 1998

ICNIRP 1998 – Public Exposure Limits				
Basic Restriction - milliamperes per square metre (mA m^{-2})	Magnetic Fields Reference Level- micro Tesla (μT)	Electric Fields Reference Level – kilo Volts per metre (kV m^{-1})	Magnetic Field Actually Required (μT)	Electric Field Actually Required (kV m^{-1})
2	100	5	360	9

- 16.3.9. In locations of significant exposure time, such as residences, EMF levels should be below:

- $100\mu\text{T}$ for magnetic fields; and
- 5kVm^{-1} for electric fields.

- 16.3.10. Values exceeding the limits above, at one metre above ground level, would suggest that further investigation is required.

Assessment Approach

- 16.3.11. During construction and prior to energisation, transmission equipment would not produce any significant EMFs. Therefore, construction effects are not considered further. Additionally, transmission equipment would not produce any significant EMFs at the decommissioning stage, given there would be no solar farm from which to transmit energy from. Therefore, decommissioning effects are not considered further.

- 16.3.12. The Scheme will include several potential EMF sources, as set out below:

- Solar Development Area:

- Solar stations (inverters, transformers and switchgears);
 - Battery Energy Storage System (BESS) Compound;
 - On-Site Substation Compounds (one 400 kV substation and three 132kV substations), comprising of the following:
 - On-Site substation, switch room buildings and ancillary equipment;
 - Transformers and switchgear;
 - Electrical devices in the control, welfare, security and office facilities;
 - Backup generator;
 - Surge arrester;
 - Circuit breaker;
 - Disconnecter and earth switch (DES);
 - On-site underground cabling (low and medium voltage);
 - Inter-Array Connection: Underground cabling with an operating voltage of 132kV and overhead line with an operating voltage of 132kV; and
 - Grid Connection Route: 400kV overhead line to the planned National Grid Weston Marsh B Substation, with one undergrounded section.
- 16.3.13. The **EMF Compliance Assessment** (Doc Ref. 7.8) considers the potential EMFs generated by the Scheme's electrical equipment and assesses the levels against the ICNIRP 1998 reference limits. The assessment also considers other existing and proposed infrastructure, the effects of which could combine with those of the Scheme.
- 16.3.14. The following aspects of the assessment have been scoped out:
- Underground cables eliminate the electric field altogether as it is screened out by the sheath around the cable, but they still produce magnetic fields. Therefore, effects of electric fields from underground cables are not considered within the assessment, but effects of magnetic fields have been considered further.
 - The Control of Electromagnetic Fields at Work Regulations 2016³ sets out the duties of employers in relation to controlling the risks of EMFs to

³ The Control of Electromagnetic Fields at Work Regulations 2016. Available at: <https://www.legislation.gov.uk/uksi/2016/588/contents> [Accessed 15/10/2025]

employees. This includes a requirement to assess employees' potential exposure to electro-magnetic fields with reference to action levels and exposure limit values. As the effects of EMFs on workers for the Scheme will be controlled and mitigated to acceptable levels through the legislative framework, impacts to workers are not considered within the assessment. The assessment therefore focusses on the potential impacts to the public.

- National Policy Statement (NPS) EN-5⁴ paragraph 2.9.59 recognises that there is little evidence that exposure of crops and farm animals to transmission line EMFs has any agriculturally significant consequences. Therefore, consideration of the impacts to agriculture has not been included within the assessment.

Embedded Mitigation

- 16.3.15. The Scheme has been designed in accordance with the National Grid Policy Statement PS(T) 103 EMF Policy Applied to Overhead Line Design⁵, issued 2 December 2013. In accordance with the PS(T) 103, no current or foreseen overhead line is capable of exceeding the 360 μ T magnetic field actually required to result in human health impacts (as referenced within Table 16-4), and the practical policy issues are solely with the electric fields. Furthermore, PS(T) 103 states that for most new 400kV overhead lines, a vertical clearance of 8.1m over open ground is sufficient to achieve compliance with the electric field actually required to avoid impacts on human health (9kV/m). As such, a minimum vertical clearance of 8.1m has been adopted within the design of the Grid Connection 400kV overhead line (and extended to 8.5m within the preliminary design where detailed terrain model data has not been available). A minimum vertical clearance of 6.7m has been adopted for the Inter-Array Connection 132kV overhead line. The minimum clearances above ground are set out within the **Design Parameters** (Doc Ref. 7.4).
- 16.3.16. Electrical equipment within solar stations, BESS Compound and On-Site Substation Compounds will be CE marked (Conformité Européene, or European Conformity marking), and/or 'UKCA' marked (UK Conformity Assessed). CE and UKCA marking indicate that a product has been assessed by the manufacturer and deemed to meet the safety, health and environmental

⁴ DESNZ (2025) National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: <https://assets.publishing.service.gov.uk/media/695d12e1b5c46330350ed9a1/national-policy-statement-for-electricity-networks-infrastructure-en-5-web-accessible.pdf> [Accessed 07/01/2026]

⁵ National Grid (2013) PS(T) 103 EMF Policy Applied to Overhead Line Design. Issued 2 December 2013.

protection requirements of the European Union⁶ and the United Kingdom⁷, respectively. CE marking requirements have been adopted and extended indefinitely in Great Britain since the UK left the EU in 2020. From 1 January 2021, the UKCA mark started to replace the CE mark for goods sold within Great Britain.

- 16.3.17. The relevant EU Directive for CE marking is Electromagnetic Compatibility Directive 2014/30/EU⁸. This was transposed into the UK legislation through Electromagnetic Compatibility Regulations 2016⁹, which underpins the UKCA marking. The EU Withdrawal Act 2018¹⁰ preserved the Regulations and enabled them to be amended, so as to continue to function effectively now that the UK has left the EU. Compliance with this legislation will ensure that electrical and electronic equipment within solar stations, BESS Compound and On-Site Substation Compounds does not generate or be affected by EMF disturbance.

Baseline Conditions

- 16.3.18. There are a number of existing Distribution Network Operator (DNO) and National Grid assets which cross the Order Limits of the Scheme. These include existing 11kV, 33kV, 132kV and 400kV overhead lines and are shown within the **EMF Compliance Assessment** (Doc Ref. 7.8).

Assessment of Potential Impacts and Likely Significant Effects

Overhead Lines and Underground Cabling

- 16.3.19. The estimated maximum EMF levels from the Scheme's overhead lines and underground cabling and the minimum clearance distance required to avoid the exceedance of the public exposure limits stated in the ICNIRP 1998 guidelines is provided within Table 16-5.

⁶ European Union Environmental Protection Requirements. Available at: https://europa.eu/youreurope/business/product-requirements/labels-markings/ce-marking/index_en.htm.

⁷ UK Environmental Protection Requirements. Available at: <https://www.gov.uk/guidance/using-the-ukca-marking>.

⁸ EU Directive for CE - Electromagnetic Compatibility Directive 2014/30/EU. Available at: https://ec.europa.eu/growth/sectors/electrical-engineering/emc-directive_en.

⁹ Electromagnetic Compatibility Regulations 2016. Available at: <https://www.gov.uk/government/publications/electromagnetic-compatibility-regulations-2016/electromagnetic-compatibility-regulations-2016-great-britain>. [Accessed 15/10/2025]

¹⁰ European Union (Withdrawal) Act 2018. <https://www.legislation.gov.uk/ukpga/2018/16/contents>. [Accessed 15/10/2025]

Table 16-5: Comparison against public exposure limit values

Type of Line	Estimated typical Magnetic Field (μ T)	Estimated typical Electric Field (kV/m)
Inter-Array Connection 132kV Underground cable (directly above at 1m above ground)	9.62 (below 100 limit)	Negligible (scoped out)
Inter-Array Connection: 132kV Overhead line (directly underneath at 1m above ground)	1 (below 100 limit)	0.6 (below 5 limit)
Grid Connection: 400kV Overhead line (directly underneath at 1m above ground)	6.4 (below 100 limit)	4.2 (below 5 limit)
Grid Connection: 400kV Underground cable (directly above at 1m above ground)	25 (below 100 limit)	Negligible (scoped out)

- 16.3.20. Table 16-5 shows that the estimated typical EMF values for the proposed 132kV and 400kV overhead lines and underground cables are below the ICNIRP 1998 public exposure limits. As such, **no significant effects** on health are predicted.
- 16.3.21. For users of roads and PRowS that run near the overhead line and agricultural workers on fields, any exposure to EMFs is expected to be minimal and **not significant** due to the transient nature of such exposure. Roads, PRowS and agricultural fields are typically not continuously occupied; rather, they represent moving receptors, as opposed to residential dwellings or workplaces in buildings.

16.3.22. When compared to the maximum magnetic fields produced by household electrical appliances¹¹, such as microwaves and washing machines (50 μ T), the typical magnetic fields from all proposed overhead lines and underground cables are lower. The maximum electric fields produced by household electrical appliances (0.18 kV/m-1) is, however, less than for the overhead lines.

EMFs from Other Sources

16.3.23. Potential sources of EMFs, other than the overhead lines and underground cables, will include the PV inverters and transformer stations housed within solar stations positioned across the Scheme, BESS Compound and On-Site Substation Compounds. Given compliance with the Electromagnetic Compatibility Regulations 2016 and that the electrical equipment will be housed within protective enclosures, the EMFs produced are predicted to be lower than those associated with underground cables and contained within the Order Limits. As such, **no significant effects** from EMFs are predicted to occur on properties adjacent to the Scheme.

16.3.24. For users of roads and PRowS that run past the Solar Development Areas, and any agricultural workers on adjacent fields, any EMF effects are expected to be minimal and **not significant** due to the transient nature of such exposure. As explained above, roads, PRowS and agricultural fields are typically not continuously occupied; rather, they represent moving receptors, as opposed to residential dwellings or workplaces in buildings.

Combined Effects with Existing Infrastructure

16.3.25. For a worst-case assessment, combined effects with existing 11kV, 33kV, and 132kV overhead lines within or near the Order Limits were considered with respect to EMF exposure and human health implications within the **EMF Compliance Assessment** (Doc Ref. 7.8).

16.3.26. The ICNIRP 1998 reference limits were not predicted to be exceeded, and as such, **no significant effects** were identified.

Additional Monitoring, Mitigation and Enhancement Measures

16.3.27. As no potential significant effects have been identified in the EMF assessment, no additional mitigation or monitoring is proposed.

¹¹ National Grid (und). Electric and Magnetic Fields. Available at: <https://www.nationalgrid.com/electricity-transmission/document/141896/download>. [Accessed 8 December 2025]

Residual Effects

- 16.3.28. **No significant effects** were identified in the assessment. Levels of EMFs from the Scheme are predicted to be well below 1998 ICNIRP reference levels at all surrounding locations where public exposure levels are relevant.

Cumulative Effects

- 16.3.29. Cumulative effects are the combined effects of several development schemes (in conjunction with the Scheme) which may, on an individual basis be insignificant but, cumulatively, have a significant effect. Cumulative effects with other development schemes are also referred to as inter-project cumulative effects. An assessment of the likely significant inter-project cumulative effects in relation to EMFs is provided below.
- 16.3.30. The assessment of cumulative effects has considered other committed developments outlined within **ES Appendix 4-1: List of Cumulative Schemes** (Doc Ref. 6.3). The Zone of Influence (Zoi) for the consideration of cumulative effects for EMFs is limited to the Order Limits.
- 16.3.31. The following cumulative developments with electrical equipment, which cross the Order Limits of the Scheme, were identified:
- Grimsby to Walpole overhead line and Weston Marsh substation (EN020036); and
 - Weston Marsh to East Leicestershire overhead line (EN0210007).
- 16.3.32. Whilst the Ossian Wind Farm (EN0210006) EIA Scoping Boundary overlaps with that for the Scheme, it was considered unlikely that the transmission infrastructure of the Ossian Wind Farm would cross the Order Limits, as it will approach the National Grid Weston Marsh substation from north, rather than south like the Scheme and, therefore, likely connect to Weston Marsh A Substation. The order limits for Ossian Wind Farm also overlaps with the location of Weston Marsh A Substation.
- 16.3.33. A worst-case cumulative assessment, combining the EMFs of two overhead lines (for example, the Scheme's 400kV overhead line and National Grid's proposed Grimsby to Walpole 400kV overhead line or Weston Marsh to East Leicestershire 400kV overhead line) was undertaken; further information is provided in the **EMF Compliance Assessment** (Doc Ref. 7.8). Based on the worst-case scenario whereby someone is stood directly under one of the 400kV overhead lines and at 80m from the other 400kV overhead line (which was considered as the minimum distance between overhead lines for close

parallel alignment), the resultant typical magnetic field is 6.5 – 6.8 μT , and the resultant typical electric field is 4.3kV/m⁻¹. The typical magnetic and electric fields therefore remain below the ICNIRP reference levels. As such, **no significant cumulative effects** were identified.

16.4. Glint and Glare

Introduction

- 16.4.1. This section of the Other Environmental Topics chapter presents the findings of an assessment of the likely effects related to Glint and Glare on ground-based receptors such as roads, bridleways and residential dwellings, in addition to aviation assets relevant to the Scheme.
- 16.4.2. This section is supported by a full Glint and Glare Assessment presented in **ES Appendix 16-2: Glint and Glare Assessment** (Doc Ref. 6.3).
- 16.4.3. The definition of glint and glare can vary; however, the definition used within this assessment is taken from the Federal Aviation Authority (FAA) guidance¹² and is widely accepted. The definitions are as follows:
- ‘Glint’ refers to a momentary flash of bright light typically received by moving receptors or from moving reflectors; and
 - ‘Glare’ refers to a continuous source of bright light typically received by static receptors or from large reflective surfaces.

Stakeholder Engagement

- 16.4.4. A request for an EIA Scoping Opinion, provided in **ES Appendix 1-1: EIA Scoping Report** (Doc Ref. 6.3), was sought from the Secretary of State through the Planning Inspectorate in 2024 as part of the EIA Scoping Process. A summary of consultation responses in relation to Glint and Glare is presented in Table 16-6.

¹² Federal Aviation Administration (FAA) (2010) Technical Guidance for Evaluating Selected Solar Technologies on Airport.

Table 16-6: Scoping Opinion responses in relation to Glint and Glare

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
Planning Inspectorate (PINS)	The Scoping Opinion states that in relation to rail receptors, significant effects are not likely and that impacts from glint and glare on rail receptors can be scoped out of further assessment.	No rail receptors are located within the 1km study area. As such, impact on railway infrastructure is not being considered for further assessment.	n/a
PINS	The Scoping Opinion states that the ES should provide an assessment of likely significant effects on users of local roads and PRowWs during the operational phase.	Impacts on bridleways and local roads have been considered. Pedestrian users of public rights of way (PRowWs) have been scoped out of the assessment as there will be no adverse safety risk from glint and glare impacts.	Section 16.4 Glint and Glare of this chapter. ES Appendix 16-2: Glint and Glare Assessment (Doc Ref 6.3)
PINS	The Scoping Opinion states that the ZTV should be used to identify ground-based receptors which may be affected by glint and glare, and that the ES should justify the choice of study area and sensitive receptors with reference to the extent of the likely impacts. Effort should be made to agree these details with relevant consultation bodies.	A study area of 1km surrounding the Solar Development Area is deemed sufficient for evaluating ground-based receptors, such as residential properties and roads, whereas a 30km study area has been used to assess aviation receptors. The further a receptor is from a solar farm, the less chance it has of being affected by glint and glare due to scattering of the reflected beam and atmospheric attenuation, in addition to obstructions	Section 16.4 Glint and Glare of this chapter. ES Appendix 16-2: Glint and Glare Assessment (Doc Ref 6.3)

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
		<p>from ground sources, such as any intervening vegetation or buildings. The study areas were based on best practice and previous experience of completing glint and glare assessments. The study areas were presented within the PEIR and consulted on as part of the statutory consultation.</p>	
PINS	<p>The Scoping Opinion states that if mitigation in the form of landscaping is being considered, the ES should assess the short to medium term effects of glint and glare from the Proposed Development prior to the establishment of such mitigation. Additionally, all landscaping should be detailed in the ES and provided within the outline LEMP.</p>	<p>No landscape mitigation has been deemed to be specifically required to reduce glint and glare impacts from the Scheme.</p> <p>The Outline Landscape and Ecology Management Plan (OLEMP) (Doc Ref. 7.16) provides details on landscaping. Landscaping proposed is also illustratively shown on ES Figure 2-2 (Doc Ref. 6.2).</p>	<p>Section 16.4 Glint and Glare of this chapter.</p> <p>ES Appendix 16-2: Glint and Glare Assessment (Doc Ref 6.3)</p> <p>ES Figure 2-2: Illustrative Solar Development Area and Inter-Array Layout Plan (Doc Ref. 6.2)</p> <p>OLEMP (Doc Ref. 7.16)</p>
PINS	<p>On the basis that the construction and decommissioning phases are unlikely to result in glint and glare effects greater than those of the operational phase, the Inspectorate</p>	<p>The construction and decommissioning phases have been scoped out of the Glint and Glare Assessment.</p>	<p>Section 16.4 Glint and Glare of this chapter.</p>

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
	agrees that this matter can be scoped out of the assessment.		ES Appendix 16-2: Glint and Glare Assessment (Doc Ref 6.3)

- 16.4.5. Further pre-application engagement was undertaken through the publication of the PEIR as part of the statutory consultation. Table 16-7 outlines the main matters raised during the statutory consultation relating to Glint and Glare and how these have been addressed through the ES. No further comments from statutory stakeholders were received as part of the targeted consultations.

Table 16-7: Key matters raised by prescribed or statutory consultees in relation to Glint and Glare

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
South Holland District Council	40 properties were suggested to be impacted by glint and glare at a moderate or high level resulting in a significant adverse effect. Steps must be taken to reduce this, such as discussed in PEIR Appendix 14-2. When the Environmental Statement is produced, a map showing the locations would be appreciated.	An updated glint and glare assessment has been undertaken and is provided within ES Appendix 16-2: Glint and Glare Assessment (Doc Ref. 6.3), which has considered the final design parameters of the Scheme. Following updates to the design parameters since statutory consultation, the updated glint and glare assessment demonstrates that no residual significant effects remain on residential properties.	Section 16.4 Glint and Glare of this chapter. ES Appendix 16-2: Glint and Glare Assessment (Doc Ref. 6.3)

- 16.4.6. Table 16-8 provides a summary of further meetings held and key correspondence with relevant stakeholders for glint and glare impacts.

Table 16-8: Stakeholder engagement relating to Glint and Glare

Meeting date	Attendees (organisation)	Summary of discussion
01/10/2024	Peterborough & Spalding Gliding	Peterborough & Spalding Gliding Club (Crowland Airfield) have raised concerns

Meeting date	Attendees (organisation)	Summary of discussion
	Club (Crowland Airfield)	about potential impacts on operations at the aerodrome. A meeting via Microsoft teams was held on 1 October 2024 to discuss all queries and safety requirements relating to Glint and Glare. The meeting confirmed that Peterborough & Spalding Gliding Club would be considered in the assessment. Furthermore, panels were removed from the Scheme at the runway thresholds at Crowland Airfield to avoid impacts on the operation of the airfield in relation to safety and glint and glare.
10/12/2025	Peterborough & Spalding Gliding Club (Crowland Airfield)	The Applicant met with the Peterborough & Spalding Gliding Club representative to present and discuss the draft glint and glare assessment results. No concerns with regards to the assessment results were raised.

Assessment Methodology

General Assessment Approach

- 16.4.7. The glint and glare assessment methodology for the Scheme was defined with reference to relevant policy and guidance as set out within **ES Appendix 16-1: Other Environmental Topics Legislation, Policy and Guidance** (Doc Ref. 6.3), and **ES Appendix 16-2: Glint and Glare Assessment** (Doc Ref. 6.3). The general approach was to determine whether a reflection from the proposed Solar Development Areas was geometrically possible in a bare earth scenario, with no obstructions. Where glint and/or glare were theoretically possible, a further visibility assessment was undertaken to determine a more accurate, real-world prediction of the impacts.
- 16.4.8. For the purposes of the Glint and Glare Assessment (**ES Appendix 16-2: Glint and Glare Assessment** (Doc Ref. 6.3)) and this ES Chapter, the Solar Development Areas were assessed as two separate sites due to the distance between the Solar Development Areas in Land Parcels A, B and C, and Land

Parcel D. Intra-project effects considering all parcels were scoped out as the distance between them is greater than 2km, and the study areas for each parcel do not overlap.

16.4.9. In summary, the assessment methodology adopted for the Scheme included the following:

- Identifying receptors in the study area surrounding the Scheme. Receptors were identified within the following groups:
 - Ground-based receptors, including residential receptors, local roads and bridleway users within 1km of the Solar Development Areas. No rail receptors were identified within the study area; and
 - Aviation receptors within 30km, with detailed assessment for large international aerodromes within 20km, military aerodromes within 10km and 5km for small aerodromes.
- Considering direct solar reflections from the Scheme towards the identified receptors by undertaking geometric calculations.
- Based on the results of the geometric calculations, determining whether a reflection can occur, and if so, at what time it will occur.
- Considering both the solar reflection from the Scheme and the location of the direct sunlight with respect to the receptor's position.
- Considering the solar reflection with respect to published studies and guidance – including intensity calculations, where appropriate.
- Determining whether a significant adverse effect is expected in line with the significance criteria.

16.4.10. The assessment of glint and glare focussed on operational phase effects of the Solar Development Area only, because it presents a worst-case scenario. By the nature of construction and decommissioning phases, i.e. the addition of panels during construction and the removal of panels during decommissioning, there will be the same or fewer panels during these two phases when compared to the fully built out Scheme during the operational phase. As such, the assessment of construction and decommissioning phases was scoped out.

Assessment Criteria - Static Receptors (Residential Properties)

16.4.11. There is no specific guidance on the basis of which to identify the significance of effects from solar reflections, however, the following criteria were set out for the assessment of impacts on residential properties:

- **High (significant)** – Solar reflections impact over 30 hours per year or over 30 minutes per day;
- **Medium (significant)** – Solar reflections impact above 20 hours but below 30 hours per year or above 20 minutes but below 30 minutes per day;
- **Low (not significant)** – Solar reflections impact up to and including 20 hours per year or up to and including 20 minutes per day; and
- **None** – Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening.

Assessment Criteria - Moving Receptors (Road, Bridleway and Aviation)

16.4.12. There is no specific guidance available to identify the magnitude of impact from solar reflections on moving receptors, except in aviation. It is considered that a similar approach should be applied to moving receptors as aviation, based on the ocular impact and the potential for after-image.

16.4.13. As such the following criteria were set out for the purposes of the assessment:

- **High (significant)** - Solar reflection impacts consisting of any amount of yellow glare¹³.
- **Low (not significant)** - Solar reflection impacts consisting of any amount of only green glare¹⁴.
- **None** - Effects not geometrically possible or no visibility of reflective surfaces likely due to high levels of intervening screening.

16.4.14. The FAA guidance¹² states that there should be no potential for glare or ‘low potential for after-image’ at any existing or future planned runway landing thresholds for the Scheme to be acceptable. In addition, no solar reflection towards the Air Traffic Control Towers (ATCT) should be produced by a proposed solar development, however, this should be assessed on a site-by-site case and will depend on the operations at a particular aerodrome.

Assessment Assumptions and Limitations

16.4.15. The assessment is based on the Scheme design set out in **ES Chapter 2: The Scheme** (Doc Ref. 6.1) and shown on **ES Figure 2-2: Illustrative Solar**

¹³ Yellow glare causes the potential for after image.

¹⁴ Green glare does not cause temporary flash blindness and happens at an instant with very slight disturbance. As per FAA guidelines, mitigation is only required for green glare when affecting an Air Traffic Control Tower, but not for when affecting pilots. Therefore, green glare is considered acceptable for ground-based receptors.

Development Area and Inter-Array Layout Plan (Doc Ref. 6.2). The PV panels have been assumed to be south-facing fixed tilt panels, inclined at an angle of between 10 and 25 degrees, and with a maximum height of 4.3m above ground, which aligns with the parameters secured within the **Design Parameters** (Doc Ref. 7.4).

- 16.4.16. Further details on assessment assumptions and limitations are set out within **ES Appendix 6-2: Glint and Glare Assessment** (Doc Ref. 6.3).

Baseline Conditions

- 16.4.17. This section describes the baseline environmental characteristics for the Scheme and surrounding areas with specific reference to glint and glare.

Ground Based Receptors - Land Parcels A, B and C

- 16.4.18. 73 residential receptors were identified within the study area of Land Parcels A, B and C, out of which two residential receptors were not considered to have the potential to experience glint and glare, as they were located within the no-reflection zone.
- 16.4.19. There are 13 roads within the study area that required a detailed glint and glare assessment. These are: New Road, Deeping High Bank, South Drove, Clout Drove, Washbank, Spalding Road, Peak Hill, Queens Bank, Eaugate Road, A16, B1166 (Hull's Drove), Martins Road and Gull Bank. In total, 147 road-based receptor points along these roads were identified. Out of the 147 identified road receptor points, glint and glare was assessed to be possible at 131 locations.
- 16.4.20. There are three bridleways within the study area, along Washbank, to the west of Peak Hill and continuing east from Queens Bank. 27 bridleway receptor points were located along these, out of which glint and glare were assessed to be possible at 24 locations.

Ground Based Receptors - Land Parcel D

- 16.4.21. 134 residential receptors were identified within the study area of Land Parcel D, out of which 22 residential receptors were not considered to have the potential to experience glint and glare, as they were located within no-reflection zones.
- 16.4.22. There are 14 roads within the study area that required a detailed glint and glare assessment. These are: Dog Drove North, Parsons Lane, Barr's Lane, B1168, B1166 (Long Lane), Langary Gate Road, West Drove North, North Road, Gedney Hill Gate, Mole Drove, Luton Gate Road, New Fen Dike, Inley Drove

and Bardling's. In total, 159 road-based receptor points along these roads were identified. Out of the 159 identified road receptor points, glint and glare were assessed to be possible at 139 locations.

- 16.4.23. There are two bridleways, along the South Holland Main Drain, within the study area of Land Parcel D that required a detailed glint and glare assessment. 21 bridleway receptor points were located along these, out of which glint and glare were assessed to be possible at 16 locations.

Aviation Receptors

- 16.4.24. There are 29 aerodromes within the 30km study area of the Solar Development Areas. However, only Fenland Airfield and Crowland Airfield required detailed assessments due to the Scheme falling within 5km radius of these airfields.
- 16.4.25. The other 27 aerodromes do not require detailed assessments due to their location in relation to the Solar Development Area falling outside of the safeguarding buffer zones.
- 16.4.26. A full list of all aerodromes within the study area is provided in **ES Appendix 16-2: Glint and Glare Assessment** (Doc Ref. 6.3).

Embedded Mitigation

- 16.4.27. The following measures have been considered as embedded mitigation for glint and glare:
- Careful siting of the Scheme and PV arrays with offsets from existing residential properties, existing vegetation and road networks, as set out within the **Works Plans** (Doc Ref. 2.3); and
 - Specification of anti-reflective coating, an industry standard for solar PV panels, to reduce the reflective properties of the panels, as set out within the **Design Parameters** (Doc Ref. 7.4) submitted with the DCO Application.
- 16.4.28. Proposed landscaping, as set out within the **OLEMP** (Doc Ref. 7.16), will further reduce glint and glare from the Scheme, however, is not specifically required to mitigate glint and glare impacts from the Scheme, and has not been considered within the assessment.

Assessment of Potential Impacts and Likely Significant Effects

- 16.4.29. As outlined within the British Research Establishment (BRE) document 'Planning Guidance for the Development of Large-Scale Ground Mounted

Solar PV Systems'¹⁵, solar PV panels are designed to absorb, not reflect, irradiation. Relevant studies generally agree that there is potential for glint and glare from PV panels to cause a hazard or nuisance for surrounding receptors, but that the intensity of such reflections is similar to that emanating from still water. This is considerably lower than for other man-made materials, such as glass, steel or white concrete¹⁶.

- 16.4.30. The US FAA Solar Guide¹⁷ includes a chapter on the impact and assessment of glint from solar panels on aviation receptors and provides a quantitative threshold which is lacking in the English guidance. It concludes that:

“...evidence suggests that either significant glare is not occurring during times of operation or if glare is occurring, it is not a negative effect and is a minor part of the landscape to which pilots and tower personnel are exposed.”

- 16.4.31. As such it is unlikely that adverse effects will be experienced from glint and glare due to the nature of the solar PV panels. This is discussed further in the following paragraphs for each receptor group.

Land Parcels A, B and C – Residential Receptors

- 16.4.32. Solar reflections are theoretically possible at 15 of the 71 residential receptors assessed within the 1km study area. The initial bare-earth scenario identified potential impacts as high at one receptor, low at 14 receptors and none at 56 receptors. Upon reviewing the actual visibility of the receptors, considering existing vegetation, man-made infrastructure, location of windows and sun position, impacts reduce to low at seven receptors and to none at the remaining 64 receptors. Therefore, the effects are **low** or **none** and there are considered to be **no significant effects** on residential receptors.

Land Parcels A, B and C – Road Receptors

- 16.4.33. Solar reflections are theoretically possible at 98 of the 131 road receptors assessed within the 1km study area. The initial bare-earth scenario identified potential impacts as high at 63 receptors, low at 35 receptors and none at the remaining 33 receptors. Upon reviewing the actual visibility of the receptors, considering existing vegetation, man-made infrastructure, and sun position, impacts reduce to low at 40 receptors and to none at the remaining 91

¹⁵ BRE (2013). Planning Guidance for the Development of Large-Scale Ground Mounted Solar PV Systems.

¹⁶ Pager Power (2022). Solar Photovoltaic Glint and Glare Study. Stansted PV Scheme Manchester Airport Group.

¹⁷ Federal Aviation Authority (2010). Technical Guidance for Evaluating Selected Solar Technologies on Airports.

receptors. Therefore, the effects are **low** or **none** and there are considered to be **no significant effects** on road receptors.

Land Parcels A, B and C – Bridleway Receptors

- 16.4.34. Solar reflections are theoretically possible at 24 of the 24 bridleway receptors assessed within the 1km study area. The initial bare-earth scenario identified potential impacts as high at 17 receptors, low at seven receptors. Upon reviewing the actual visibility of the receptors, considering existing vegetation, man-made infrastructure, and sun position, impacts reduce to low at 13 receptors and to none at the remaining 11 receptors. Therefore, the effects are **low** or **none** and there are considered to be **no significant effects** on bridleway receptors.

Land Parcels A, B and C - Aviation Receptors

- 16.4.35. Four runway approach paths and one ATCT were assessed in detail at Fenland Airfield, and four runway approach paths were assessed in detail at Crowland Airfield. There are no ATCTs at Crowland Airfield.
- 16.4.36. No glare was predicted to impact the runway approach paths or the ATCT at Fenland Airfield or the Runway 21 approach path at Crowland Airfield. Yellow glare and green glare were predicted to impact the Runway 03, 08 and 26 approach paths at Crowland Airfield. Yellow glare is not an acceptable impact on pilots approaching runways. However, upon reviewing the operating hours of the airfield (between 08:30 UTC and 17:00 UTC on days when the airfield is open), the times of day when glint and glare impacts are predicted to occur (before 09:00 UTC), the historical weather during the months of predicted impacts, and typical mitigation techniques used by pilots when flying in the direction of the sun, effects upon these runway approach paths reduce to **low** and **acceptable (not significant)**.

Land Parcel D – Residential Receptors

- 16.4.37. Solar reflections are theoretically possible at 67 of the 112 residential receptors assessed within the 1km study area. The initial bare-earth scenario identified potential impacts as high at six receptors, medium at 12 receptors, low at 49 receptors and none at 45 receptors. Upon reviewing the actual visibility of the receptors, considering existing vegetation, man-made infrastructure, location of windows and sun position, impacts reduce to low at 20 receptors and to none at the remaining 92 receptors. Therefore, the effects are **low** or **none** and there are considered to be **no significant effects** on residential receptors.

Land Parcel D – Road Receptors

- 16.4.38. Solar reflections are theoretically possible at 126 of the 139 road receptors assessed within the 1km study area. The initial bare-earth scenario identified potential impacts as high at 100 receptors, low at 26 receptors and none at the remaining 13 receptors. Upon reviewing the actual visibility of the receptors, considering existing vegetation, man-made infrastructure, and sun position, impacts reduce to low at 58 receptors and to none at the remaining 81 receptors. Therefore, the effects are **low** or **none** and there are considered to be **no significant effects** on road receptors.

Land Parcel D – Bridleway Receptors

- 16.4.39. Solar reflections are theoretically possible at 16 of the 16 bridleway receptors assessed within the 1km study area. The initial bare-earth scenario identified potential impacts as high at 14 receptors, low at two receptors. Upon reviewing the actual visibility of the receptors, considering existing vegetation, man-made infrastructure, and sun position, impacts reduce to **low** at 16 receptors. Therefore, the effects are **low** and there are considered to be **no significant effects** on bridleway receptors.

Land Parcel D - Aviation Receptors

- 16.4.40. Four runway approach paths and one ATCT were assessed in detail at Fenland Airfield, and four runway approach paths were assessed in detail at Crowland Airfield. There are no ATCTs at Crowland Airfield.
- 16.4.41. No glare was predicted to impact the Runway 26, 18 and 36 approach paths or the ATCT at Fenland Airfield or the Runway 21 and 26 approach paths at Crowland Airfield. Only green glare was predicted to impact the Runway 08 approach path at Fenland Airfield and the Runway 03 and 08 approach paths at Crowland Airfield. Green glare is a **low** and an **acceptable** effect upon pilots approaching runways. The predicted impacts occur outside the operational hours of Fenland Airfield, and therefore the impact upon Fenland Airfield is **none**, whilst the impact on Crowland Airfield remains **low** and **acceptable**.

Additional Monitoring, Mitigation and Enhancement Measures

- 16.4.42. No additional monitoring, mitigation or enhancement measures are required due to all effects being low (not significant) or none.

Residual Effects

- 16.4.43. The effects of glint and glare and their impact on local receptors have been analysed in detail and they are predicted to be only **low** (not significant) or **none**.

Cumulative Effects

- 16.4.44. Following a review of **ES Appendix 4-1: List of Cumulative Schemes** (Doc Ref. 6.3), it was concluded that there are no cumulative developments with the study area of the glint and glare assessment, which could provide cumulative glint and glare effects at the same receptor locations as assessed for the Scheme.

16.5. Major Accidents and Disasters

Introduction

- 16.5.1. This section of the Other Environmental Topics chapter presents the findings of an assessment of effects related to Major Accidents and Disasters.
- 16.5.2. As set out in the Institute of Sustainability and Environmental Professionals (ISEP) guidance document 'Major Accidents and Disasters in EIA: A Primer'¹⁸, an assessment should consider 'accidents' and 'disasters', whereby:
- 'Accidents' are an occurrence resulting from uncontrolled developments in the course of construction, operation, and maintenance, and decommissioning (e.g. a major emission, fire or explosion); and
 - 'Disasters' are naturally occurring extreme weather events or ground related hazard events (e.g. subsidence, landslide, earthquake).
- 16.5.3. This section is supported by the following appendices:
- **ES Appendix 16-3: Long List of Major Accidents and Disasters** (Doc Ref. 6.3); and
 - **ES Appendix 16-4: Unplanned Emissions Assessment from BESS** (Doc Ref. 6.3).

Stakeholder Engagement

- 16.5.4. A request for an EIA Scoping Opinion, provided in **ES Appendix 1-1: EIA Scoping Report** (Doc Ref. 6.3), was sought from the Secretary of State through the Planning Inspectorate in 2024 as part of the EIA Scoping Process. A summary of consultation responses in relation to Major Accidents and Disasters assessment is presented in Table 16-9.
- 16.5.5. Further pre-application engagement was undertaken through the publication of the PEIR as part of the statutory consultation. Table 16-10 outlines the main matters raised during the statutory consultation relating to Major Accidents and Disasters and how these have been addressed through the ES. No new comments were received from statutory stakeholders as part of targeted consultations.

¹⁸ ISEP (2020). Major Accidents and Disasters in EIA: A Primer. London: Institute of Environmental Management and Assessment.

Table 16-9: Scoping Opinion responses in relation to Major Accidents and Disasters assessment

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
PINS	The Scoping Report proposes to scope out events which are not realistically going to affect the Scheme, such as volcanic activity. The Inspectorate agrees that volcanic activity can be scoped out. The ES should include assessment of events that could potentially occur.	An updated appraisal of potential risk events is presented in ES Appendix 16-3: Long list of Major Accidents and Disasters (Doc Ref 6.3). This includes a list of events which are not realistically going to affect the Scheme.	ES Appendix 16-3: Long list of Major Accidents and Disasters (Doc Ref 6.3).
PINS	The Scoping Report states that a qualitative assessment of potential risk events will be carried out using professional judgement. The ES should contain clear explanations to justify the conclusions reached within the ES.	The assessment methodology is described within this Chapter and justification for the conclusions for each risk event is provided in ES Appendix 16-3: Long list of Major Accidents and Disasters (Doc Ref 6.3).	Section 16.5: Major Accidents and Disasters of this chapter. ES Appendix 16-3: Long list of Major Accidents and Disasters (Doc Ref 6.3).

Table 16-10: Key matters raised by prescribed or statutory consultees in relation to Major Accidents and Disasters

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
LCC	Request to clarify fire safety management measures for the BESS Compound and concern that the proposed location of the 400kV On-Site Substation and BESS Compound adjacent to the A16 Crowland Bypass could present difficulties to the Lincolnshire Fire & Rescue service.	<p>The Outline Battery Safety Management Plan (OBSMP) (Doc Ref. 7.18) sets out the BESS safety and firefighting requirements, which will be implemented in consultation with the Lincolnshire Fire & Rescue Service, in accordance with the requirements of the Draft DCO (Doc Ref. 3.1). The OBSMP (Doc Ref. 7.18) commits to detailed plume modelling being undertaken at detailed design. The outcomes of the modelling will be used to locate the BESS Compound at a safe distance from the A16.</p> <p>An Unplanned Emissions Assessment has been undertaken and considers the potential emissions that could be emitted during a thermal runaway event (Appendix 16-4: Unplanned Emissions Assessment from Battery Energy Storage System (Doc Ref. 6.3)). Detailed plume modelling would be undertaken at detailed design stage to confirm the suitability of the design.</p>	Section 16.5: Major Accidents and Disasters, Embedded Mitigation of this chapter. OBSMP (Doc Ref. 7.18)
SHDC	Request for further information regarding the increase in fire risk	As described within the OBSMP (Doc Ref. 7.18), potential boundary cooling water ingress points such as Heating, Ventilation	OBSMP (Doc Ref. 7.18)

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
	associated with overheating following heat waves.	and Air Cooling (HVAC) systems and deflagration vents will be considered as part of an incident response strategy. Furthermore, cooling of the battery modules will be provided by an independent liquid cooling system which is separate to the HVAC system. If temperatures exceed critical limits or the climate control system fails, the BESS will automatically shut down. These measures will reduce the fire risk associated with overheating from battery storage, including during heat waves.	
Health & Safety Executive (HSE)	According to HSE's records, the proposed Order Limits fall within the consultation zones of one major accident hazard pipeline (InterGen NTS to Spalding PS Pipeline) and no major accident hazard sites. The Applicant should contact the operator of the asset to verify its location and to inform an assessment of whether or not the Scheme is vulnerable to a possible major accident.	The InterGen major accident hazard pipeline has been included in the baseline and has been subject to an assessment within this chapter. It crosses the Order Limits at the northern end of the Grid Connection Route, where the indicative location of Weston Marsh Substation and an area of flexibility within the Scheme design have been identified. Subject to the final design and the location of infrastructure, the Applicant will contact the operator of the major accident hazard pipeline to review any proposed	Section 16.5: Major Accidents and Disasters of this chapter. ES Appendix 16-3: Long list of Major Accidents and Disasters (Doc Ref 6.3).

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
		arrangements for the protection of the pipeline and required working arrangements.	

Assessment Methodology

- 16.5.6. In general, Major Accidents and Disasters, as they relate to the Scheme, fall into three categories:
- Category 1 - Events that could not realistically occur, due to the nature of the Scheme or its location;
 - Category 2 - Events that could realistically occur, but for which the Scheme, and associated receptors, are no more vulnerable than any other development; and
 - Category 3 - Events that could occur, and to which the Scheme is particularly vulnerable, or which the Scheme has a particular capacity to exacerbate.
- 16.5.7. An initial exercise was undertaken and presented in the EIA Scoping Report (refer to **ES Appendix 1-1** (Doc Ref. 6.3)) to identify Category 3 risk events. The assessment was further developed in the PEIR and a long list of all potential Major Accidents and Disasters was developed. The long list was developed using the national risk register, local community risk registers, publicly available assessments of schemes of a similar nature, and professional judgement. The long list has since been updated and is presented in **ES Appendix 16-3: Long list of Major Accidents and Disasters** (Doc Ref 6.3).
- 16.5.8. From the long list, major accidents and disasters that fall within the definition of Category 1 and 2 risk events have not been considered further. In addition, where a risk event meets either of the following criteria, they have not been considered further within this assessment:
- Risk events are not considered to give rise to significant environmental effects when considering the nature, scale and location of the Scheme prior to mitigation; or
 - Where mitigation measures and management strategies embedded within the Scheme are considered to have designed out risk in relation to a major accident and disaster.
- 16.5.9. It is considered reasonable and proportionate to exclude construction workers, as a receptor, from the assessment because existing legal protection is considered to be sufficient to minimise any risk from major accidents or disasters as far as reasonably practicable. Therefore, in the context of this assessment, all risks to construction workers would be not significant. Legislation to ensure the protection of workers in the workplace includes:

- Health and Safety at Work etc. Act 1974¹⁹;
- The Management of Health and Safety at Work Regulations 1999²⁰;
- The Workplace (Health, Safety and Welfare) Regulations 1992²¹; and
- Construction (Design and Management) (CDM) 2015 Regulations²².

16.5.10. Although the majority of the major accident or disaster risk events within the short list are already considered under other legislative or design requirements, this is not considered to be a sufficient reason to automatically eliminate the major accident or disaster from any further consideration. This is consistent with the approach for other topics, for example the need to comply with nature conservation legislation does not mean that ecology and nature conservation do not need to be considered in the EIA. However, where it is concluded that the need for compliance is fundamental, and the risk of any receptors being affected differently is so remote, major accident or disaster risk events on the long list are not included on the short list.

16.5.11. The short list of risk events, and where they have been considered further in the DCO Application, is provided within Table 16-11. The short list was reviewed to identify, if there are any major accident and disaster risks which are not being considered within another ES chapter or appendix, document submitted with the DCO Application or by design. These events would be considered to warrant further assessment.

16.5.12. An effect is considered significant, if there is an increased risk of damage from a major accident or a disaster occurring as a result of the Scheme. Details on appropriate prevention measures and mitigation from such events are either provided in the sections below or within the referenced ES chapters or other DCO Application documents. Where the risk of major accidents and disasters

¹⁹ HMSO (1974). Health and Safety at Work Act 1974. Available at:
https://www.legislation.gov.uk/ukpga/1974/37/pdfs/ukpga_19740037_en.pdf [Accessed 08/09/2025]

²⁰ HMSO (1999). The Management of Health and Safety at Work Regulations 1999. Available at:
http://www.legislation.gov.uk/uksi/1999/3242/pdfs/uksi_19993242_en.pdf [Accessed 08/09/2025]

²¹ HMSO (1992). The Workplace (Health, Safety and Welfare). Regulations 1992. Available at:
<http://www.legislation.gov.uk/uksi/1992/3004/made/data.pdf> [Accessed 08/09/2025]

²² HMSO (2015). Construction (Design and Management). Regulations 2015. Available at:
http://www.legislation.gov.uk/uksi/2015/51/pdfs/uksi_20150051_en.pdf [Accessed 08/09/2025]

has been reduced to as low as reasonably practicable, these risks have been considered to be not significant within the assessment.

Assessment Assumptions and Limitations

16.5.13. The assumptions and limitations for Major Accidents and Disasters are as follows:

- No surveys beyond those undertaken to inform other EIA topics have been completed to establish the baseline for the Major Accident and Disasters assessment;
- No modelling or detailed calculations have been undertaken to support the assessment, rather a qualitative assessment approach has been adopted;
- Where information is not available (such as historical evidence on the likelihood and the environmental consequence of an event), professional judgement has been used to reach a conclusion; and
- This assessment is based on the construction, design and decommissioning information that is currently available.

Baseline Conditions

16.5.14. Measurements provided in this section have been taken based on the shortest distance (i.e. as-the-crow-flies) between the closest respective points of the Scheme and feature described.

Existing Hazards and Threats

16.5.15. The UK National Risk Register²³, along with the Lincolnshire Resilience Forum²⁴ and the Cambridgeshire and Peterborough Local Resilience Forum²⁵, have provided the basis for identifying existing hazards and threats (including natural hazards, major accident hazard sources, and other risks) that may be relevant to the Scheme or could potentially be exacerbated by it. These are summarised within **ES Appendix 16-3: Long list of Major Accidents and**

²³ HM Government. (2025). National Risk Register – 2025 edition. Available at: https://assets.publishing.service.gov.uk/media/67b5f85732b2aab18314bbe4/National_Risk_Register_2025.pdf [Accessed 08 September 2025]

²⁴ Lincolnshire Resilience Forum (no date) Lincolnshire Resilience Forum. Available at: Better Prepared | Lincolnshire Resilience Forum [Accessed 08 September 2025]

²⁵ Cambridgeshire and Peterborough Prepared (no date) Cambridgeshire and Peterborough Local Resilience Forum. Available at: Home | Cambridgeshire and Peterborough Prepared [Accessed 08 September 2025]

Disasters (Doc Ref 6.3). The section below provides a summary of Site-specific major accident hazards.

Man-Made Features and Site Specific Major Accident Hazards

- 16.5.16. There are only a limited number of man-made features and existing hazard sources that have been identified to lie in proximity to the Site. The man-made features and existing hazard sources within the Order Limits of the Scheme comprise:
- Inner, middle and outer consultation zone of InterGen (UK) Limited, operated major accident hazard pipeline, NTS to Spalding Energy PS Pipeline (HSE ref. 11622);
 - Moulton Bulb Company Ltd, a major accident hazard site, is located approximately 250m east of the Grid Connection Route (HSE ref. 4812); and
 - Existing electrical infrastructure, including overhead lines.
- 16.5.17. In addition, there are three airfields located within 10km of the Site:
- Crowland Airfield (adjacent to the Site at Land Parcel A);
 - Fenland Airfield (approximately 1.5km north-east of the Site); and
 - Jubilee Farm Airstrip (approximately 8.5km south-east of the Site).
- 16.5.18. A review of the Control of Major Accident Hazards (COMAH) 2015 Public Information Search²⁶ found that there are no COMAH registered sites within 5km of the Site. In addition, the HSE has indicated there are no licenced explosive sites in the vicinity of the Site.
- 16.5.19. A review of Zetica Maps indicates that the Site is located within an area which is characterised as being at low risk of Unexploded Ordnance²⁷. However, as set out within **ES Appendix 8-2: Cultural Heritage Desk Based Assessment** (Doc Ref. 6.3), there are known crash sites of World War II aircraft within and adjacent to the Order Limits. In addition, there is anecdotal evidence of fields at the northern end of Land Parcel D being subject to bomb offloading during

²⁶ Health and Safety Executive (HSE). (2015). Control of Major Accident Hazards (COMAH). Search 2015. Available at: COMAH 2015: Search [Accessed 08/09/2025].

²⁷ Zetica UXO (no date) Risk Maps. Available at: https://zeticauxo.com/guidance/risk-maps/?_gl=1*1zbr2f*_up*MQ..*_ga*MTMwMDM4NTI5My4xNzU3NDI5MTI4*_ga_J2E2GKLMQ5*czE3NTc0MjIxMjckbzEkZzAkdDE3NTc0MjIxMjckajYwJGwwJGgw [Accessed 08/09/2025].

World War II, albeit no specific records have been identified, and the Site has been subject to continuous agricultural activity since World War II.

Sensitive Receptors

- 16.5.20. **ES Chapter 2: The Scheme** (Doc Ref. 6.1) identifies several sensitive receptors present in the vicinity of the Scheme which could be vulnerable to major accidents or disasters, including towns, villages, farms and residential homes, roads, designated ecological sites, designated heritage sites, and underground utilities and services. Key receptors are shown on **ES Figure 2-1: Existing Site Constraints** (Doc Ref. 6.2). Further information on sensitive receptors within the Site and its surrounding area is provided within the relevant technical chapters of this ES.

Embedded Mitigation

- 16.5.21. The Scheme has been designed, as far as practicable, to avoid and reduce impacts and effects on Major Accidents and Disasters through the process embedding measures into the Scheme design. In addition, how the Scheme is constructed, operated and maintained, and decommissioned would be appropriately controlled in order to manage and minimise potential environmental effects (required as a result of legislative requirements and/or standard sectoral practices).
- 16.5.22. The following documents include measures to reduce risks associated with major accidents and disasters, as further explained in Table 16-11:
- Embedded mitigation measures to be applied during construction, operation and maintenance, and decommissioning, as set out in the **Outline Construction Environmental Management Plan (OCEMP)** (Doc Ref. 7.10), **Outline Operational Environmental Management Plan (OOEMP)** (Doc Ref. 7.11), **Outline Decommissioning Environmental Management Plan (ODEMP)** (Doc Ref. 7.12) and **Outline Construction Traffic Management Plan (OCTMP)** (Doc Ref. 7.13), and secured by the **Draft DCO** (Doc Ref. 3.1). These include (but are not limited to) establishing an Emergency Response Plan in consultation with the relevant local authority and emergency services and setting out measures for the protection of existing utilities (refer to the **OCEMP** (Doc Ref. 7.10), **OOEMP** (Doc Ref. 7.11) and the **ODEMP** (Doc Ref. 7.12)). The **OCTMP** (Doc Ref. 7.13) sets out measures to minimise road safety impacts.
 - An **Outline Battery Safety Management Plan (OBSMP)** (Doc Ref. 7.18) has been prepared for the Scheme to ensure that any risks relating to batteries

are properly mitigated. This will be updated and maintained as a 'live document' throughout the operational phase of the Scheme.

- The **Design Parameters** (Doc Ref. 7.4) and **ES Appendix 11-4: Outline Drainage Strategy** (Doc Ref. 6.3) set out measures for the protection of the Scheme from flood risk.
- Protective provisions are included within the **Draft DCO** (Doc Ref. 3.1) for statutory undertakers whose assets may be affected, and further bespoke protective provisions are being negotiated with statutory undertakers where necessary. These include the requirement for detailed design and safe working practices to be agreed with the statutory undertaker prior to construction.

Assessment of Potential Impacts and Likely Significant Effects

- 16.5.23. Table 16-11 presents the short list of major accident and disaster risk events that have been considered as part of the EIA process. A long list of all major accidents and disasters considered within the assessment is provided within **ES Appendix 16-3** (Doc Ref. 6.3).
- 16.5.24. As detailed in Table 16-11, considering the good industry practice measures, requirements to comply with relevant legislation and the mitigation measures discussed above, the risk of accidents and disasters during the construction, operation and decommissioning of the Scheme is considered low and **not significant**.

Table 16-11: Major Accidents and Disasters Short-listed for Consideration

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
Flooding	Residential properties and local residents as well as Scheme infrastructure	<p>Flood events can result in damage to property, pollution to land or water and impact communities through displacement. Flood events can also risk damaging the Scheme's infrastructure, including (but not limited to) solar stations, BESS Compound, On-Site Substation Compounds and the Cable Sealing End Compounds (CSECs).</p> <p>Both the vulnerability of the Scheme to flooding, and the potential for the Scheme to exacerbate flooding, are outlined in ES Chapter 11: Hydrology and Flood Risk (Doc Ref. 6.1) and further assessed in ES Appendix 11-3: Flood Risk Assessment (Doc Ref. 6.3).</p> <p>The assessment of effects reported in ES Chapter 11: Hydrology and Flood Risk (Doc Ref. 6.1) and explained in detail in ES Appendix 11-3: Flood Risk Assessment (Doc Ref. 6.3), considers the impact of flooding and flood risk from all sources to the Scheme and to other developments outside of the Order Limits, and concludes that the effects are not significant.</p>	<p>ES Chapter 11: Hydrology and Flood Risk (Doc Ref. 6.1).</p> <p>ES Appendix 11-3: Flood Risk Assessment (Doc Ref. 6.3).</p> <p>ES Appendix 11-4: Outline Drainage Strategy (Doc Ref. 6.3).</p>
Road Collision Risk	Road users and pedestrians	An assessment of road accidents is presented within ES Chapter 15: Traffic and Access (Doc Ref. 6.1). The assessment concludes there will be no significant effects as a result of the Scheme on the assessed categories for traffic and transport.	<p>ES Chapter 15: Traffic and Access (Doc Ref. 6.1)</p> <p>Section 16.4: Glint and Glare of this chapter.</p>

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
		<p>A glint and glare assessment has been carried out, as summarised in Section 16.4 of this chapter, and concludes that no significant effects on road users are anticipated.</p> <p>An OCTMP (Doc Ref. 7.13) has been produced which sets out proposals for the management of construction related traffic.</p> <p>Following the implementation of the mitigation measures outlined above, major accident and disasters risks associated with road accidents are considered not significant.</p>	<p>ES Appendix 16-2: Glint and Glare Assessment (Doc Ref. 6.3)</p> <p>OCTMP (Doc Ref. 7.13)</p>
Aircraft Disasters	Aircraft users	<p>The Scheme is located immediately adjacent to the Crowland Airfield, used by the Peterborough and Spalding Gliding Club. The following distances exist between the infrastructure proposed as part of the Scheme and the edge of the Crowland Airfield runway:</p> <ul style="list-style-type: none"> • 1.4km to the 400kV On-Site Substation and BESS Compound (maximum height 20m above ground); • 1.65km to the terminal pylon (maximum height 54m, including the vertical Limit of Deviation); and • 385m to the PV arrays (maximum height 4.3m above ground). 	<p>Section 16.4: Glint and Glare of this chapter.</p> <p>ES Appendix 16-2: Glint and Glare Assessment (Doc Ref. 6.3)</p>

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
		<p>Crowland Airfield is an unlicensed site and is not subject to statutory safeguarding under the Civil Aviation Authority regulations. However, in all of the above instances, the Scheme's infrastructure would be expected to be outside a theoretical Obstacle Limitation Surface of the airfield and, therefore, not impact on the operation of the airfield due to the Scheme's height, assuming an approach path of 365m and a worst-case approach angle of 2 degrees.</p> <p>There is potential for glint and glare from the Solar Development Area to impact nearby aviation infrastructure, namely Crowland Airfield and Fenland Airfield. A Glint and Glare assessment has been carried, as summarised within Section 16.4 of this chapter, which concludes that no significant effects are likely to occur.</p> <p>The Applicant has also engaged with the Peterborough and Spalding Gliding Club to ensure that the Scheme does not conflict with the operation of Crowland Airfield. For example, as summarised within ES Chapter 3: Alternatives and Design Evolution (Doc Ref. 6.1), the Inter-Array Connection between Land Parcels A and B was designed to be underground to avoid impacting on the operation of the Crowland Airfield.</p> <p>Considering the assessment work undertaken and the design of the Scheme to provide appropriate physical</p>	

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
		separation, major accident and disaster risks associated with aircraft are considered to be not significant .	
Fire or explosions	Residential properties, local residents, habitats and species, as well as Scheme infrastructure	Though considered unlikely, the BESS and substations associated with the Scheme present a risk of fire or explosions. As set out within the OBSMP (Doc Ref. 7.18), the BESS units proposed for the Scheme will have built in safety features including cooling systems, fire resistant construction, fire detection, suppression systems, emergency stop functions and isolation monitoring, which are designed to regulate temperatures to within safe conditions to minimise the risk of fire. The broader BESS compound will include further measures, including ensuring adequate provision of land for water storage, and adequate separation between battery enclosures to ensure an isolated fire would not become widespread and lead to a major incident. Fire risks associated with substations will be controlled through compliance with Construction (Design and Management) Regulations 2015 ²⁸ and Regulatory Reform (Fire Safety) Order 2005 ²⁹ , which will ensure that	OBSMP (Doc Ref. 7.18) OCEMP (Doc Ref. 7.10) ES Appendix 16-4: Unplanned Emissions Assessment from BESS (Doc Ref. 6.3)

²⁸ Construction (Design and Management) Regulations 2015. Available at: <https://www.legislation.gov.uk/uksi/2015/51/contents> [Accessed 22/11/2025]

²⁹ Regulatory Reform (Fire Safety) Order 2005. Available at: <https://www.legislation.gov.uk/uksi/2005/1541/contents> [Accessed 22/11/2025]

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
		<p>the risks are mitigated through design in accordance with a fire risk assessment.</p> <p>An Unplanned Emissions Assessment has been provided within ES Appendix 16-4 (Doc Ref. 6.3) to consider potential impacts from toxic emissions released in the unlikely event of a BESS fire. This document demonstrates that after a distance of approximately 200m from the fire, any toxic emissions (hydrogen fluoride used as a proxy) would reduce to below the acute exposure guideline levels published by Public Health England. Given that the BESS Compound would be sited a minimum of 350m from residential receptors, concentrations will be below relevant health thresholds at any existing residential receptor location.</p> <p>Section 2.12 of the OCEMP (Doc Ref. 7.10) also includes a requirement for an Emergency Response Plan which will be developed in consultation with the relevant local authority emergency planning officer, emergency services including the local fire service and will detail the procedures for responding to incidents and emergencies on site.</p> <p>Following the implementation of the above measures, major accident and disaster risks associated with fires and explosions are considered not significant.</p>	

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
<p>Utilities failure (gas, electricity, water, sewage, oil, communications)</p>	<p>Utilities assets, services to residential properties, local residents.</p>	<p>The Scheme is located within the inner, middle and outer consultation zones for a major accident hazard gas pipeline operated by InterGen (UK) Limited. It crosses the Order Limits at the northern end of the Grid Connection Route, where the indicative location of Weston Marsh Substation and an area of flexibility within the Scheme design has been identified.</p> <p>In addition, several other utilities intersect with the Order Limits, including existing DNO overhead lines. These most often follow the boundaries of fields in agricultural use or local roads, but not in all cases.</p> <p>The Scheme therefore has the potential to affect existing utility infrastructure above and below ground. As part of the works associated with the Grid Connection Route, a number of existing DNO assets will be crossed by the new 400kV overhead line, and therefore, they will need to be oversailed, diverted or undergrounded. In the absence of suitable mitigation, impacts to or failure of this infrastructure could potentially lead to a major accident and potential impacts to human health.</p> <p>Protective provisions are included within the Draft DCO (Doc Ref. 3.1) for statutory undertakers whose assets may be affected, and further bespoke protective provisions are being negotiated with statutory undertakers, where necessary. These include the requirement for detailed</p>	<p>Draft DCO (Doc Ref. 3.1) OCEMP (Doc Ref. 7.10)</p>

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
		<p>design and safe working practices to be agreed with the statutory undertaker prior to construction.</p> <p>In addition, the OCEMP (Doc Ref. 7.10) provides appropriate mitigation that will be followed to prevent any incidents. For example, measures in relation to safe working beneath overhead lines will be in place at all stages of the Scheme, for example ensuring adequate clearances are in place when plant and equipment is being moved beneath the overhead lines.</p> <p>Following the implementation of these measures, major accident and disaster risks associated with utility failure are considered not significant.</p>	
Unexploded Ordnance (UXO)	Residential properties, local residents.	<p>The surrounding area's utilisation for air bases, known aircraft crash sites, anecdotal knowledge of bomb offloading, as well as the nearby town of Spalding potential as a military and industrial target during World War II mean there is a risk of detonating UXO during the construction and decommissioning phase.</p> <p>A desk-based UXO study would be completed prior to construction, with on-Site investigations completed where necessary. UXO will be identified as part of a Scheme risk assessment during all phases. An Emergency Response Plan would be secured by the OCEMP (Doc Ref. 7.10) as part of the DCO Application.</p>	OCEMP (Doc Ref. 7.10)

Major Accident or Disaster	Potential Receptor	Comments	Relevant ES Chapter / Appendix / Application Document
		With the mitigation in place, the risk of a major accident occurring due to this hazard is considered not significant .	

Additional Monitoring, Mitigation and Enhancement Measures

16.5.25. As no potential significant effects have been identified in this assessment, no additional mitigation or monitoring is proposed.

Residual Effects

16.5.26. It is considered that all major accident and disaster risk events associated with the construction, operation and maintenance, and decommissioning of the Scheme can be appropriately mitigated through design and the application of management plans submitted as part of the DCO Application. **No significant** major accident and disaster effects would arise.

Cumulative Effects

16.5.27. The Major Accidents and Disasters assessment considers the vulnerability of the Scheme to major accident and disaster risks and considers the potential for the Scheme to result in new major accidents. Where other committed developments outlined within **ES Appendix 4-1: List of Cumulative Schemes** (Doc Ref. 6.3) introduce new residential properties or workplaces, these have been inherently considered within the assessment presented in this chapter under the general receptor groups assessed.

16.5.28. It is not considered that the other committed developments listed within **ES Appendix 4-1: List of Cumulative Schemes** (Doc Ref. 6.3) would introduce new sources of hazards that the Scheme might be susceptible to. Any construction and decommissioning works undertaken in close proximity to other schemes, such as the Grimsby to Walpole or Weston Marsh to East Leicestershire schemes, would be coordinated with the relevant party, to ensure that safe working practices are maintained.

16.5.29. Increased traffic during construction and decommissioning phases of the Scheme in combination with other developments could result in a greater risk of road accidents. However, this is appropriately assessed within **ES Chapter 15: Traffic and Access** (Doc Ref. 6.1).

16.5.30. No further assessment of cumulative effects is considered to be required and no potential for significant cumulative effects has been identified.

16.6. Materials and Waste

Introduction

- 16.6.1. This section of the Other Environmental Topics chapter presents the findings of an assessment of the likely effects on Materials and Waste which are relevant to the Scheme.
- 16.6.2. An **Outline Site Waste Management Plan (OSWMP)** (Doc Ref. 7.19) has been prepared for submission with the DCO Application.

Stakeholder Engagement

- 16.6.3. A request for an EIA Scoping Opinion, (**ES Appendix 1-1: EIA Scoping Report** (Doc Ref 6.3)), was sought from the Secretary of State through the Planning Inspectorate in 2024 as part of the EIA Scoping Process. A summary of consultation responses in relation to materials and waste are presented in Table 16-12 and demonstrate how the matters raised by the Scoping Opinion are addressed in the ES.
- 16.6.4. Further pre-application engagement was undertaken through the publication of the PEIR as part of the statutory consultation. Table 16-13 outlines the main matters raised during the statutory consultation relating to materials and waste and how these have been addressed through the ES. No further comments were received from statutory consultees as part of targeted consultations in relation to materials and waste.

Table 16-12: Scoping Opinion Responses in relation to Materials and Waste

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
PINS	<p>The Scoping Report proposed to scope out waste in its entirety. The Inspectorate notes the proposal for the ES to outline potential streams of construction waste and estimate volumes. The Scoping Report confirmed that the waste hierarchy will be followed, and that the ES will outline measures to be implemented to minimise waste and that a Site Waste Management Plan (SWMP) is proposed.</p> <p>The Inspectorate notes that excavations may be required for joining pits and pylon bases during construction, and that component replacement may be necessary during operation. In the absence of information demonstrating the quantities and type of waste anticipated, and the dependence on mitigation measure yet to be provided in the CEMP/outline decommissioning plan, the Inspectorate does not agree to scope this matter out of further assessment.</p>	<p>An assessment of the likely significant effects of the Scheme in relation to waste has been completed and is presented within this chapter. The assessment has been completed against worst case quantitative estimates by type and quantity of waste produced by the Scheme following ISEP guidance³⁰, specifically the Method W1 – Void Capacity. This includes the assessment of significance.</p> <p>Excavation estimates have been included within the assessment based on design information for soil excavation, which will be reused as fill.</p> <p>The assessment of likely impacts and effects includes estimates of quantities and type of waste during construction and their significance based on the</p>	Section 16.6 Materials and Waste of this chapter.

³⁰ ISEP (formerly IEMA) (2020) Materials and Waste in Environmental Impact Assessment. Guidance for a proportionate approach.

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
	<p>The ES should include estimates, by type and quantity, of expected residues and emissions and quantities and types of waste produced during the construction and operational phases of the Scheme. The ES should include an assessment of likely significant effects arising from the transportation and disposal of waste.</p>	<p>most up-to-date national and regional availabilities.</p> <p>Traffic estimates from the Scheme have been based on the estimated bill of quantities and waste quantities from the Scheme. An assessment of likely significant effects from traffic and transport is provided within ES Chapter 15: Traffic and Access (Doc Ref. 6.1).</p>	
PINS	<p>The Scoping Report states that infrastructure would be recycled 'where possible' at decommissioning. The ES should outline what measures, if any, are in place to ensure that components are able to be diverted from the waste chain and disposed of safely given that some types of solar panels can contain hazardous materials. The ES should assess the likely significant effects from waste at decommissioning to the extent possible at the time. The ES should also consider the requirement for cumulative impacts to be assessed at decommissioning due to several solar farms in the local area are also likely to be decommissioning in a similar timescale.</p>	<p>An assessment of the likely significant effects of the Scheme during the decommissioning phase has been completed. This has included consideration, during the decommissioning phase, of the likely significant cumulative effect of the Scheme alongside solar farms over 1MW within Lincolnshire.</p>	<p>Section 16.6 Materials and Waste of this chapter.</p>

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
LCC	As outlined within the Scoping Report a description of the potential streams of construction, operational and decommissioning waste and estimated volumes will be outlined within the ES, this is welcomed. Consideration should be given to the impact of this waste, in terms of how and where it is disposed of and its transportation from the site. Given the number of other solar schemes within Lincolnshire that would be operating on similar timescales there is potential for significant amounts of waste to be generated at the decommissioning stage. The impact from replacement of solar arrays and/or decommissioning should also be considered cumulatively with these other developments.	An assessment of effects from the Scheme on waste management infrastructure has been presented within this chapter. Cumulative effects assessment in relation to waste has considered all solar farms over 1MW within Lincolnshire.	Section 16.6 Materials and Waste of this chapter.
Anglian Water	Anglian Water requests information in relation to the Scheme's requirement for wastewater services and how it will be managed.	Wastewater and sewage from welfare facilities would be stored on-Site and removed by tanker to an approved wastewater and sewage treatment centre. Associated waste is anticipated to be of a low volume and therefore is not considered likely to give rise to significant effects.	Section 16.6 Materials and Waste of this chapter.

Table 16-13: Key matters raised by prescribed or statutory consultees in relation to Materials and Waste

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
LCC	It is welcomed that, having initially been scoped out, waste has now been included in the EIA (paragraph 14.5.32). However, although the EIA will focus (as per Table 14-5-1) on landfill capacity, the developer should also give regard to their stated intention to follow the waste hierarchy (paragraph 14.5.30) with landfill being the least preferred option. This aligns with the PINS scoping response (Table 14-5-2). This approach is confirmed at paragraph 14.5.60 and this will need to continue to be a priority.	Section 16.6 Materials and Waste of this chapter outlines mitigation including aiming to prioritise waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy. The waste hierarchy is also outlined in the OSWMP (Doc Ref. 7.19), OCEMP (Doc Ref. 7.10), OOEMP (Doc Ref. 7.11) and ODEMP (Doc Ref. 7.12).	Section 16.6 Materials and Waste of this chapter. OSWMP (Doc Ref. 7.19); OCEMP (Doc Ref. 7.10); OOEMP (Doc Ref. 7.11); and ODEMP (Doc Ref. 7.12).
LCC	It is noted that at paragraph 14.5.35 quantitative estimates of waste streams will be included within the ES once further information is available.	Section 16.6 Materials and Waste of this chapter provides quantitative estimates of waste streams.	Section 16.6 Materials and Waste of this chapter.
LCC	Although the study areas identified at paragraph 14.5.38 are acceptable, the developer should ensure that the proximity principle is always considered in the selection of final destinations.	The requirement to apply the proximity principle is included within the OSWMP (Doc Ref. 7.19), however, final destination of waste from the Scheme will be confirmed by the Contractor.	Section 16.6 Materials and Waste of this chapter. OSWMP (Doc Ref. 7.19)
LCC	At paragraph 14.5.48 it is suggested that, despite the scoping response by the Council and PINS Scoping Opinion (Table 14-5-2) raising the issue of cumulative impacts, it is “not necessary for	A cumulative assessment for waste has been provided.	Section 16.6 Materials and Waste of this chapter.

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
	<p>each development within the WPA area to duplicate the function of the WPA” in assessing these. On the contrary, this information needs to be provided so the Council as the WPA can take the impact of cumulative arisings into account in the calculation of how much capacity will be needed.</p>		
LCC	<p>Whilst it is correct that Councils have a responsibility to provide sufficient waste treatment and landfill capacity for waste generation at a regional scale (paragraph 14.5.51) the Councils need the forecasts from developers to be as accurate as possible in terms of quantity and type of waste at each stage of their project so that these figures can be fed into forecasting any future capacity gaps. Indeed, given that the Council is currently revising the Minerals and Waste Plan, it is particularly important at this time.</p>	<p>Quantitative estimates of waste streams have been provided.</p>	<p>Section 16.6 Materials and Waste of this chapter.</p>
LCC	<p>It is noted that there is an historic landfill site within the Inter-Array Area (paragraph 14.5.76) and the Council would wish to be kept updated, particularly if the situation/design changes and it is considered that excavation may be required.</p>	<p>The historic landfill site is no longer in the Inter-Array Area.</p>	<p>Section 16.6 Materials and Waste of this chapter.</p>

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
LCC	<p>The Council welcomes the acknowledgement that there would be some replacement of elements during the operational phase (paragraph 14.5.80 and following), however in light of that, the assumption made at paragraph 14.5.88 that “The amount of waste estimated to be generated is minimal” is called into question. This is particularly important in light of the current lack of sufficient capacity for recycling PV panels in the UK as recognised at paragraph 14.5.87, which references ‘emerging industry’, especially as there is likely to be cumulative waste arising from multiple projects. This will be more crucial during the decommissioning phase (paragraph 14.5.93). The developer should also note that, as per the waste hierarchy, panels/components should be refurbished or reused in preference to recycling.</p>	<p>Quantitative estimates of waste streams including replacement and decommissioning waste have been provided.</p>	<p>Section 16.6 Materials and Waste of this chapter.</p>
LCC	<p>Paragraph 14.5.100 assumes that ‘each development considered as part of the cumulative assessment would have embedded mitigation in place and additional mitigation, where necessary, to manage waste streams in accordance with the waste hierarchy and other relevant legislation and guidance’. This statement appears to pre-judge the impact of cumulative impacts on waste streams and does not take account of the</p>	<p>A cumulative assessment for waste has been provided.</p>	<p>Section 16.6 Materials and Waste of this chapter.</p>

Consultee	Summary of main matters raised	How has the matter been addressed?	Location of response in the ES
	cumulative impacts on available capacity for reuse, recycling, recovery and landfill during construction, operation and decommissioning phases		
LCC	Further to the identification at paragraph 12.6.50 that the south west corner of PV Array area A1 encroaches into a Sand and Gravel Mineral Safeguarding Area (MSA) as identified in both the current and emerging Lincolnshire Minerals and Waste Local Plan. It is noted that at paragraph 14.5.91 it is stated that “that any below ground infrastructure would be left in situ following decommissioning” which could introduce a constraint to the potential for any future extraction of the mineral resources. The PEIR does not include any information on the baseline conditions in relation to the minerals resource within the site boundary. As per the PINS Scoping Opinion, the ES should assess the potential for the temporary or permanent sterilisation of mineral resources, where significant effects are likely.	Mineral Safeguarding Areas have been considered in ES Chapter 14: Socio Economics and Land Use (Doc Ref. 6.1).	ES Chapter 14: Socio Economics and Land Use (Doc Ref. 6.1).

Assessment Methodology

Study Areas

- 16.6.5. The study areas for the assessment of impacts related to Materials and Waste have been defined in line with the ISEP Guidance³⁰, these are outlined below.
- 16.6.6. Two study areas are defined: a Scheme study area (within which waste associated with the Scheme is generated, construction materials are used and allocated/safeguarded mineral and waste sites are present), and an expansive study area (within which landfills and other waste management facilities that manage waste generated by the Scheme are likely to be located and construction materials are available).
- 16.6.7. Together the Scheme study area and expansive study area are referred to as 'the study areas'.

Scheme Study Area

- 16.6.8. The Scheme study area comprises the area within the Order Limits (i.e. the footprint of the proposed works, together with any temporary land requirements during preliminary works and construction). This includes temporary offices, compounds and storage areas.

Expansive Study Area

- 16.6.9. The Expansive study area for non-hazardous and inert waste management is a combination of sub-regions and covers the remaining landfill void capacity for each waste stream within the sub-regions covering the area likely to experience potential effects as a result of waste outputs from the Scheme. For data collection purposes, the Expansive study area covers the landfill void capacity for the former sub-regions below, as outlined in the Environment Agency's 2024 Waste Summary Tables for England - Version 1³¹:
- Cambridgeshire;
 - Leicestershire;
 - Lincolnshire;
 - Norfolk;

³¹ Environment Agency (2025). *2024 Waste Summary Tables for England - Version 1*. Available at: <https://www.data.gov.uk/dataset/81f9d676-e77c-4d68-ab0c-b67e0b0b353e/2024-waste-data-interrogator>. [Accessed 7 November 2025]

- Northamptonshire;
- Nottinghamshire; and
- Suffolk.

16.6.10. The expansive study area for hazardous waste management is England. The study area for hazardous waste management, covering landfill void capacity, is defined based on professional judgement and informed by consideration of the proximity principle. The proximity principle for hazardous waste in England is outlined in Principle 2 - Infrastructure Provision in the Strategy for Hazardous Waste Management in England³² and states: “we look to the market for the development of hazardous waste infrastructure, which implements the hierarchy for the management of hazardous waste and meets the needs of the UK to ensure that the country as a whole is self-sufficient in hazardous waste disposal, facilities are put in place for hazardous waste recovery in England, and the proximity principle is met”. Planning for hazardous waste management is also undertaken at a national level.

16.6.11. The expansive study area for the availability of key construction materials (aggregates, asphalt, concrete) is the East Midlands and national (United Kingdom) for steel.

Scope of Assessment

16.6.12. The assessment of materials and waste considers the following:

- Waste producers have a legal duty of care to manage their waste in accordance with regulations and to ensure that any waste leaving the site where it is generated is transferred to a suitably licensed facility for further treatment or disposal;
- Facilities transferring, treating or disposing of waste must be either licensed or apply for an exemption from a licence, and impacts arising from the operation of waste management facilities are considered as part of the planning and permitting process for these facilities themselves;
- Waste Planning Authorities (WPAs) are required to ensure that sufficient land is available to accommodate facilities for the treatment of all waste

³² Department for the Environment, Food and Rural Affairs (Defra) (2010). The Strategy for Hazardous Waste Management in England. No longer available online.

arising in the area, either within the WPA area, or through export to suitable facilities in other areas; and

- Mineral Planning Authorities are similarly required to ensure an adequate supply of minerals, sufficient to meet the needs of national and regional supply policies, and local development needs.

16.6.13. The following matters are not considered in the assessment of materials and waste:

- Waste arising from extraction, processing and manufacture of construction components and products. This assumes that these products and materials are being developed in a manufacturing environment with their own waste management plans, facilities, and supply chain, which are potentially in different regions of the UK or the world. Such matters cannot be accurately predicted and assessed as they relate to procurement decisions that cannot be assured. Waste arising from extraction, processing and manufacture of construction components and products are scoped out of the assessment.
- Other environmental impacts associated with the management of waste from the Scheme (e.g. on water resources, air quality, noise or traffic resulting from the generation, handling, on-site temporary storage or off-site transport of materials and waste) are not included in this assessment, as they are addressed separately in other relevant chapters of this ES.
- Environmental impacts at off-site waste management facilities are assumed to be assessed (and where necessary mitigated) under the planning and permitting regime for those sites and thus do not normally require assessment as part of an EIA for a scheme that uses such facilities for waste management as outlined in the ISEP Guidance³⁰. The exact facilities used by the Scheme are not yet confirmed and therefore it is not possible to assess further.
- Effects on the availability of materials during the operation and maintenance, and decommissioning of the Scheme. Any site wide replacement of solar panels and BESS would not require construction materials on the scale of construction, therefore forecast material quantities (using professional judgement) are considered to be of a lower magnitude than those used in construction.
- Direct impacts on safeguarded mineral and waste sites; these are considered within **ES Chapter 14: Socio-Economics and Land Use** (Doc Ref. 6.1).

16.6.14. Table 16-14 provides a summary of the outline scope of materials and waste assessment.

Table 16-14: Outline Scope of Materials and Waste Assessment

Scheme Phase	Potential Effects	Scope In/Out
Construction, Operation and Maintenance, and Decommissioning	Waste arising from extraction, processing and manufacture of construction components and products.	Out - further details are provided in Section 16.6.13 above.
	Other environmental impacts associated with the management of waste from the Scheme.	Out - further details are provided in Section 16.6.13 above.
	Environmental impacts at off-site waste management facilities.	Out - further details are provided in Section 16.6.13 above.
	Changes to allocated/safeguarded mineral site.	Out - these are considered within ES Chapter 14: Socio-Economics and Land Use (Doc Ref. 6.1).
	Changes to allocated/safeguarded waste site.	Out - there are no allocated / safeguarded waste sites identified within the Order Limits against the waste sites listed in the Lincolnshire Minerals and Waste Local Plan ³³ .
Construction	Changes in the availability of materials.	In
	Changes in available landfill void capacity.	In
Operation and Maintenance	Changes in the availability of materials.	Out - further details are provided in paragraph 16.6.13 above.

³³ Lincolnshire Council (2017). Lincolnshire Minerals and Waste Local Plan. Available at: <https://www.lincolnshire.gov.uk/downloads/file/2274/adopted-site-locations-pdf>. [Accessed 25 September 2025]

Scheme Phase	Potential Effects	Scope In/Out
	Changes in available landfill void capacity.	In
Decommissioning	Changes in the availability materials.	Out - further details are provided in paragraph 16.6.13 above.
	Changes in available landfill capacity.	In

Sources of Information

16.6.15. In the preparation of this chapter, the following sources of published information have been used:

- Environment Agency’s 2024 Waste Summary Tables for England - Version 1³⁴ - remaining land capacity;
- Environment Agency’s 2024 Waste Data Interrogator³⁵;
- Environment Agency’s Permitted Waste Sites - Authorised Landfill Site Boundaries³⁶;
- Environment Agency’s Historic Landfill Sites³⁷;
- Environment Agency’s Environmental Permitting Regulations - Waste Sites³⁸;

³⁴ Environment Agency (2025). *2024 Waste Summary Tables for England – Version 1*. Available at: <https://www.data.gov.uk/dataset/81f9d676-e77c-4d68-ab0c-b67e0b0b353e/2024-waste-data-interrogator>. [Accessed 7 November 2025]

³⁵ Environment Agency (2025). *2024 Waste Data Interrogator – Waste Received (Excel) – Version 1*. Available at: <https://www.data.gov.uk/dataset/81f9d676-e77c-4d68-ab0c-b67e0b0b353e/2024-waste-data-interrogator>. [Accessed 7 November 2025]

³⁶ Environment Agency (2025). *Permitted Waste Sites - Authorised Landfill Site Boundaries*. Available at: <https://www.data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permited-waste-sites-authorized-landfill-site-boundaries>. [Accessed 25 September 2025]

³⁷ Environment Agency (2025). *Historic Landfill Sites*. Available at: <https://www.data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites>. [Accessed 25 September 2025]

³⁸ Environment Agency (2025). *Environmental Permitting Regulations - Waste Sites*. Available at: <https://www.data.gov.uk/dataset/e2cc8101-d8b7-434d-a26a-9115061bb57c/environmental-permitting-regulations-waste-sites>. [Accessed 25 September 2025]

- Steel UK’s Key Statistics June 2025, 2024 data³⁹;
- Mineral Products Association’s Profile of the UK Mineral Products Industry, UK production of minerals and mineral products, 2023 data⁴⁰; and
- Relevant legislation and national policy, as detailed in ES Appendix 16-1: Other Environmental Topics Legislation, Policy, and Guidance (Doc Ref. 6.3).

Impact Assessment Methodology

Sensitivity of Receptors

16.6.16. The sensitivity of receptors for the Materials and Waste Assessment have been defined in line with the ISEP Guidance³⁰:

- Materials: National and regional availability of key construction materials, as defined by the ISEP Guidance “Materials are, in their own right, sensitive receptors. Consuming materials impacts upon their immediate and (in the case of primary material) long-term availability; this results in the depletion of natural resources and adversely impacts the environment”; and
- Waste: Landfill void capacity in the Expansive study area for seven sub-regions surrounding the scheme (non-hazardous and inert landfill void capacity) and England (hazardous landfill void capacity). As defined by the ISEP Guidance “Landfill is a finite resource, and hence – through the ongoing disposal of waste – there is a continued need to expand existing and develop new facilities, this requires the depletion of natural and other resources which, in turn, adversely impacts the environment.”

Materials

16.6.17. The sensitivity of materials relates to the availability and type of construction materials to be consumed by the Scheme. For this assessment, material receptor sensitivity is determined as ‘low’ for all key construction materials.

³⁹ UK Steel (2025). *Key Statistics June 2025*. Available at: https://www.uksteel.org/versions/2/wizard/modules/fileManager/downloadDigitalFile.php?url=https%3A%2F%2Ffiles.cdn-files-a.com%2Fuploads%2F8346772%2Fnormal_684ada57ddbcb.pdf. [Accessed 25 September 2025]

⁴⁰ Mineral Products Association (MPA) (2023). *Profile of the UK Mineral Products Industry: 2023 Edition*. Available at: https://www.mineralproducts.org/MPA/media/root/Publications/2023/Profile_of_the_UK_Mineral_Products_Industry_2023.pdf. [Accessed 25 September 2025]

The ISEP Guidance³⁰ criteria described within Table 16-15 is used to determine the sensitivity of materials.

Table 16-15: Materials Receptor Sensitivity

Effects	Criteria for Materials Receptor Sensitivity
Negligible	<p>On balance, the key materials required for the construction of the Scheme are forecast (through trend analysis and other information) to be free from known issues regarding supply and stock.</p> <p><i>And/or</i></p> <p>are available comprising a very high proportion of sustainable features and benefits compared to industry-standard materials. *</p>
Low	<p>On balance, the key materials required for the construction of the Scheme are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock.</p> <p><i>And/or</i></p> <p>are available comprising a high proportion of sustainable features and benefits compared to industry-standard materials.</p>
Medium	<p>On balance, the key materials required for the construction of the Scheme are forecast (through trend analysis and other information) to suffer from some potential issues regarding supply and stock.</p> <p><i>And/or</i></p> <p>are available comprising some sustainable features and benefits compared to industry-standard materials.</p>
High	<p>On balance, the key materials required for the construction of the Scheme are forecast (through trend analysis and other information) to suffer from known issues regarding supply and stock.</p> <p><i>And/or</i></p> <p>comprise little or no sustainable features and benefits compared to industry-standard materials.</p>

Effects	Criteria for Materials Receptor Sensitivity
Very High	<p>On balance, the key materials required for the construction of the Scheme are forecast are known to be insufficient in terms of production, supply and/or stock.</p> <p><i>And/or</i></p> <p>comprise no sustainable features and benefits compared to industry-standard materials.</p>

** Subject to supporting evidence, sustainable features and benefits could include, for example, materials or products that: comprise reused, secondary or recycled content (including excavated and other arisings); support the drive to a circular economy; or in some other way reduce lifetime environmental impacts.*

16.6.18. Material receptor sensitivity is determined as ‘low’. On balance, the key construction materials required for the construction of the Scheme are forecast (through trend analysis and other information) to be generally free from known issues regarding supply and stock. Key materials required for construction and operation and maintenance are likely to be available comprising a high proportion of sustainable features and benefits (e.g. recycled content).

16.6.19. Potential recycled content for the main construction materials is outlined in Table 16-24.

Waste

16.6.20. The sensitivity of waste relates to availability of landfill capacity in the absence of the Scheme. This is outlined in the ISEP Guidance³⁰ “*landfill capacity is recognised as an unsustainable and increasingly scarce option for managing waste.*” The sensitivity of landfill capacity is assessed based on a review of historic landfill void capacity trends where available and information from relevant policy documents.

16.6.21. The criteria described within Table 16-16 and Table 16-17 have been used to determine the sensitivity of landfill capacity.

16.6.22. As stated in the ISEP Guidance³⁰ “due to uncertainties relating to future technologies and infrastructure, this first edition of the guidance does not incorporate a proposed methodology to assess impacts and effects during decommissioning or end of first life”. However, the criteria in the ISEP Guidance are applied to decommissioning for the Scheme.

Table 16-16: Inert and Non-hazardous Landfill Capacity Sensitivity

Effects	Criteria for Inert and Non-Hazardous Landfill Capacity Sensitivity
Negligible	Across construction, operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e. without the Scheme) of regional inert and non-hazardous landfill capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.
Low	Across construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e., without the Scheme) of regional inert and non-hazardous landfill capacity is expected to reduce minimally by <1% as a result of wastes forecast.
Medium	Across construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e., without the Scheme) of regional inert and non-hazardous landfill capacity is expected to reduce noticeably by 1 to 5% as a result of wastes forecast.
High	Across construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e. without the Scheme) of regional inert and non-hazardous landfill capacity is expected to reduce considerably by 6 to 10% as a result of wastes forecast.
Very High	<p>Across construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e. without the Scheme) of regional inert and non-hazardous landfill capacity is:</p> <ul style="list-style-type: none"> • Expected to reduce very considerably (by >10%); • End during construction or operation; • Is already known to be unavailable; or • Would require new capacity or infrastructure to be put in place to meet forecast demand.

Table 16-17: Hazardous Waste Landfill Sensitivity

Effects	Criteria for hazardous landfill capacity sensitivity
Negligible	Across the construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e., without the

Effects	Criteria for hazardous landfill capacity sensitivity
	Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to remain unchanged or is expected to increase through a committed change in capacity.
Low	Across the construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to reduce minimally by <0.1% as a result of wastes forecast.
Medium	Across the construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to reduce noticeably by 0.1 to 0.5% as a result of wastes forecast.
High	Across the construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is expected to reduce considerably by 0.5 to 1% as a result of wastes forecast.
Very High	<p>Across the construction, and/or operation and maintenance, and decommissioning phases, the baseline/future baseline (i.e., without the Scheme) of regional (or where justified, national) hazardous landfill capacity is:</p> <ul style="list-style-type: none"> • Expected to reduce very considerably (by >1%); • End during construction or operation; • Is already known to be unavailable; or • Would require new capacity or infrastructure to be put in place to meet forecast demand.

16.6.23. Waste receptor sensitivity is determined as “very high”. A scenario in which no landfill void space is available is deemed to be unrealistic as outlined in paragraphs 16.6.48-16.6.52 below, however, since there is no publicly available information on any potential changes to landfill capacity by the time of the construction and operation and maintenance and decommissioning of the Scheme, a worst-case scenario is considered (e.g. landfill capacity is

assumed to remain the same but a very considerable reduction in capacity cannot be excluded).

Magnitude of Impact

16.6.24. The magnitude of impact describes the degree of variation from the baseline conditions as a result of the Scheme. The ISEP Guidance³⁰ for assessing the magnitude of impact from materials comprises a percentage-based approach that determines the influence of construction materials use on the baseline regional or national availability from the construction of the Scheme.

16.6.25. The criteria used to assess the magnitude of impact for materials are provided in Table 16-18.

Table 16-18: Materials Magnitude of Impacts

	Criteria for Materials Magnitude of Impacts
No change	Consumption of no materials is required.
Negligible	Consumption of no individual material type is equal to or greater than 1% by volume of the baseline availability.
Minor	Consumption of one or more materials is between 1 to 5% by volume of the baseline availability.
Moderate	Consumption of one or more materials is between 6 to 10% by volume of the baseline availability.
Major	Consumption of one or more materials is >10% by volume of the baseline availability.
A national baseline is used in the absence of regional construction material availability data for steel. A regional baseline is used for aggregates, asphalt and concrete.	

16.6.26. The ISEP Guidance³⁰ offers two methods to assess waste effects, Method W1 – Void Capacity and Method W2 – Landfill Diversion. For this assessment, Method W1 has been used.

16.6.27. W1 – Void Capacity is a more detailed methodology, appropriate for larger and more complex developments, and is recommended for statutory EIAs.

16.6.28. W2 – Landfill Diversion is a simpler approach for smaller and less-complex developments where developments are compared to a good practice landfill diversion rate of 90%.

16.6.29. The magnitude of impact from waste is assessed by determining the percentage of the remaining landfill void capacity that will be depleted by waste produced during the construction and/or operation and maintenance. In a worst case, where landfill sensitivity is very high, a significant effect would occur at a magnitude of minor, which for Scheme non-hazardous and inert waste is more than 1% of landfill capacity and for hazardous waste is more than 0.1% of landfill capacity. The criteria used to assess the magnitude of impact for inert and non-hazardous and hazardous waste is provided within Table 16-19 and Table 16-20 respectively.

Table 16-19: Method W1 Inert and Non-hazardous Waste - Magnitude of Impact

	Criteria for Inert and Non-hazardous Waste Magnitude of Impacts
No change	Zero waste generation and disposal from the Scheme.
Negligible	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by <1%.
Minor	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by 1 to 5%.
Moderate	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by 6 to 10%.
Major	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by >10%.
*Forecast as the worst-case scenario, during a defined construction, operation and maintenance and decommissioning phase.	

Table 16-20: Method W1 Hazardous Waste - Magnitude of Impact

	Criteria for Hazardous Waste Magnitude of Impacts
No change	Zero waste generation and disposal from the Scheme.
Negligible	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by <0.1%.
Minor	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by <0.1 to 0.5%.
Moderate	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by <0.5 to 1%.

Criteria for Hazardous Waste Magnitude of Impacts	
Major	Waste generated by the Scheme will reduce Expansive Study Area landfill capacity baseline* by >1%.
*Forecast as the worst-case scenario, during a defined construction, operation and maintenance and decommissioning phase.	

Significance of Criteria

16.6.30. The effect thresholds and the associated significance of effects are described within Table 16-21 and Table 16-22.

Table 16-21: Effect Thresholds

		Magnitude of Impact				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity of Receptor	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Table 16-22: Significance of Effects

Effect	Materials	Waste
Neutral	Not Significant	Not Significant
Slight		
Moderate	Significant	Significant
Large		

Effect	Materials	Waste
Very large		

16.6.31. Where a significance of effect could fall into two categories (i.e. neutral or slight, slight or moderate), professional judgement has been used to justify and determine which category a receptor falls into, to arrive at a single rating. Where professional judgement has been utilised in these cases a justification has also been provided.

16.6.32. Criteria specific to materials and waste, taken from the ISEP Guidance³⁰, has been used for assessment. Therefore, this assessment does not use the general criteria outlined in **ES Chapter 4: Overview of the EIA Process** (Doc Ref. 6.1).

Significance of Effect

Materials

16.6.33. Material receptor sensitivity is determined as ‘low’. At ‘low’ material receptor sensitivity, the point of significance is a major magnitude of impact. This point of significance is defined as the ‘consumption of one or more materials is >10% by volume of the baseline availability’³⁰.

Waste

16.6.34. Waste receptor sensitivity is determined as ‘very high’. At a waste receptor sensitivity of ‘very high’, the point of significance is a minor magnitude of impact:

- For inert and non-hazardous waste, a minor magnitude is a >1% reduction of the regional inert and non-hazardous landfill capacity;
- For hazardous waste, a minor magnitude is a >0.1% reduction of the national hazardous waste landfill capacity.

Assessment Assumptions and Limitations

16.6.35. The Materials and Waste Assessment has been undertaken on the basis of information available at the time of the assessment. Any assumptions made for the assessment, and the limitations this presents, are reported below:

- The future baseline is assumed to be the same as the current baseline;
- Materials and waste estimates are based upon project-specific information provided by the design team and other similar Nationally Significant Infrastructure Project (NSIP) solar developments (>50 megawatt (MW)). **ES**

Chapter 2: The Scheme (Doc Ref. 6.1) provides further information on the indicative design life for Scheme components;

- The PV panels, BESS and supporting infrastructure, would be manufactured off-site to specified sizes; and
- As outlined in Section 1.4 of **ES Appendix 16-1: Other Environmental Topics - Legislation, Policy and Guidance** (Doc Ref. 6.3), the national waste recovery target is 70% and was exceeded in 2022 in England at 94.3% (most recent year for which data is available).

Baseline Conditions

16.6.36. This section describes the existing and anticipated future baseline conditions for the Materials and Waste assessment.

Current Baseline

Regional and National Availability of Key Construction Materials

- 16.6.37. Table 16-23 outlines requirement and sales (providing an indication of availability) in 2024 for steel⁴¹ and 2022 for aggregates, asphalt and concrete⁴² (i.e. the most recent years for which data is available). These are expected to be the key materials used during the Scheme's construction.
- 16.6.38. Potential recycled content for the main construction materials is outlined in Table 16-24 below. These good practice rates are derived from the Waste and Resources Action Programme (WRAP) Designing Out Waste Tool for Civil Engineering⁴³.

⁴¹ UK Steel (2025). *Steel UK's Key Statistics June 2025*. Available at: https://www.uksteel.org/versions/2/wizard/modules/fileManager/downloadDigitalFile.php?url=https%3A%2F%2Ffiles.cdn-files-a.com%2Fuploads%2F8346772%2Fnormal_684ada57ddbcb.pdf. [Accessed 25 September 2025]

⁴² Mineral Products Association (MPA) (2023). *Profile of the UK Mineral Products Industry: 2023 Edition*. Available at: https://www.mineralproducts.org/MPA/media/root/Publications/2023/Profile_of_the_UK_Mineral_Products_Industry_2023.pdf. [Accessed 25 September 2025]

⁴³ Waste and Resources Action Programme (WRAP) (undated). *Designing Out Waste: A Design Team Guide for Civil Engineering*. No longer available online.

Table 16-23: Availability for Key Construction Materials

Material	Availability (Million Tonnes, Year)	10% of Availability (Tonnes, Year) *	Baseline Data Year	Data Description
Steel	16	1,600,000	2024	National requirement ⁴¹
Total aggregates (crushed rock and sand and gravel) (million tonnes)	36.7	3,670,000	2023	Regional sales East Midlands ⁴²
Ready-mixed concrete (converted to million tonnes from m ³ using a density of 2.4 t/m ³)	3.1	310,000	2023	Regional sales East Midlands ⁴²
Asphalt (million tonnes)	3.3	330,000	2023	Regional sales East Midlands ⁴²

*10% of availability noted as the point of significance for materials based on a sensitivity of low (see Table 16-18)

Table 16-24: Potential Recycled Content (Percentage by Weight)

Material Type	Potential Recycled Content (% by Weight)
Concrete	16
Asphalt	25
Aggregates	50
Steel reinforcement	100
Structural steel	60

Landfill Capacity

- 16.6.39. The remaining landfill capacities at the end of 2024 for the non-hazardous and inert waste Expansive study area (sub-regions listed in paragraph 16.6.9) and the hazardous waste Expansive study area (England) is shown in Table 16-25⁴⁴.
- 16.6.40. Merchant landfills are operated for commercial purposes, accepting waste from construction projects and operating businesses. Merchant landfills are therefore considered to form the baseline. In contrast, restricted landfills are sites that deal with their own produced waste (i.e. not operating for commercial purposes). Therefore, additional capacity from restricted landfills is excluded from the baseline. Some non-hazardous landfills have a Stable Non-Reactive Hazardous Waste (SNRHW) cell (e.g. for asbestos). SNRHW cells usually form only a small fraction of the overall capacity. Therefore, for assessment purposes non-hazardous landfills with SNRHW cells are considered in the same way as non-hazardous landfills.

⁴⁴ Environment Agency (2025). *2024 Waste Summary Tables for England - Version 1*. Available at: <https://www.data.gov.uk/dataset/81f9d676-e77c-4d68-ab0c-b67e0b0b353e/2024-waste-data-interrogator>. [Accessed 7 November 2025]

Table 16-25: Landfill Capacity (end of 2024) in the sub-regions of the Expansive Study Area and England

Landfill Type	Lincolnshire	Leicestershire	Nottinghamshire	Northamptonshire	Cambridgeshire	Norfolk	Suffolk	England	Point of significance based on a sensitivity of “very high”
	Landfill Capacity ('000s m ³)								
Hazardous merchant	Not applicable, assessment is completed at a national level only							9,167	9,167 (0.1% of national landfill capacity)
Non-hazardous with SNRHW cell	-	10,252	-	1,335	1,208	-	2,449	Not applicable, assessment is completed at a combined sub-region level only.	72,543 m ³ (1% of combined sub-region level landfill capacity)
Non-hazardous	7,965	20	4,486	-	9,728	3,460	-		
Inert	1,487	12,203	3,199	2,316	5,051	1,543	5,841		
Total non-hazardous and inert	9,452	22,475	7,685	3,651	15,987	5,003	8,290		

Waste Management Infrastructure

- 16.6.41. There are no permitted waste sites or waste site applications located within the Order Limits (Environmental Permitting Regulations – Waste Sites)⁴⁵.

Historic and Authorised Landfills

- 16.6.42. There are no historic and/or authorised landfills identified within the Order Limits as outlined in the Environment Agency's Permitted Waste Sites - Authorised Landfill Site Boundaries⁴⁶ or Historic Landfill Sites⁴⁷ datasets. One was previously identified within the Inter-Array Connection in Whaplode Drove at the PEIR Stage, however, the Order Limits have since shifted to avoid the historic landfill site.

Waste Targets

- 16.6.43. The national target for recovery of construction and demolition (C&D) waste is 70% by weight, as set out in the Waste Framework Directive⁴⁸ and the Waste Management Plan for England⁴⁹. The target specifically excludes naturally occurring materials with EWC Code 17 05 04 (17 05 04 soil and stones other than those mentioned in 17 05 03* (soils and stone containing dangerous substances)). An asterisk (*) at the end of an EWC code indicates that the waste is hazardous. Recovery is deemed to include reuse, recycling, and other recovery (e.g. energy recovery). A recovery rate of 70% is assumed be achievable for the purpose of the waste assessment.
- 16.6.44. A good practice landfill diversion target of 90% has been achieved and exceeded by major UK developments as outlined in the ISEP Guidance³⁰. In 2022, the most recent year for which data is available, England generated 63 million tonnes of non-hazardous C&D waste, of which 59.4 million tonnes was recovered. This represents a recovery rate of 94.3%⁵⁰.

⁴⁵ Environment Agency (2025). *Environmental Permitting Regulations - Waste Sites*. Available at: <https://www.data.gov.uk/dataset/e2cc8101-d8b7-434d-a26a-9115061bb57c/environmental-permitting-regulations-waste-sites1>. [Accessed 25 September 2025]

⁴⁶ Environment Agency (2024). *Permitted Waste Sites - Authorised Landfill Site Boundaries*. Available at: <https://www.data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permitted-waste-sites-authorised-landfill-site-boundaries>. [Accessed 25 September 2025]

⁴⁷ Environment Agency (2024). *Historic Landfill Sites*. Available at: <https://www.data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites>. [Accessed 25 September 2025]

⁴⁸ Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and repealing certain Directives (Waste Framework Directive). Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02008L0098-20180705>. [Accessed 25 September 2025]

⁴⁹ Defra (2021). *The Waste Management Plan for England*. Available at: <https://www.gov.uk/government/publications/waste-management-plan-for-england-2021>. [Accessed 25 September 2025]

⁵⁰ Defra (2025). *UK statistics on waste*. <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste#recovery-rate-from-non-hazardous-construction-and-demolition-cd-waste>. [Accessed 25 September 2025]

16.6.45. Standard, good and best practice recovery rates by material are provided by WRAP⁵¹. Recovery rates for key construction materials and other construction wastes relevant to the Scheme are provided in Table 16-26.

Table 16-26: Standard, Good and Best Practice Recovery Rates by Material

Material	Standard Practice Recovery (%)	Good Practice Recovery (%)	Best Practice Recovery (%)
Metals	95	100	100
Packaging	60	85	95
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical equipment	Limited information	70	95
Cement	Limited information	75	95
Liquids and oils	100	100	100
Hazardous	50	Limited information, cannot be 100% since some hazardous waste (e.g. asbestos) must be landfilled.	

16.6.46. In summary, the existing baseline for national annual steel availability is 16 million tonnes, and the regional annual availability of aggregates, concrete, and asphalt is approximately 36.7 million tonnes, 3.1 million tonnes, and 3.3 million tonnes, respectively. These baseline numbers are used in the materials assessment.

16.6.47. In summary, the existing baseline for landfill capacity is 9.2 million m³ for hazardous waste and a total of 73 million m³ for non-hazardous and inert waste.

⁵¹ WRAP (2007). *Waste Recovery Quick Wins. Improving Recovery Rates without Increasing Costs*. No longer available online.

Future Baseline

- 16.6.48. This section considers those changes to the baseline conditions, described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would have been in place.
- 16.6.49. There is no publicly available information on any potential changes to national or regional material availability by the time of the construction of the Scheme. Construction material demand, such as ready mixed concrete, is closely aligned to both the quantity of construction taking place and the general economy. It is deemed inappropriate to forecast future availability as the demand is unlikely to be linear and it is not possible to set a future baseline for materials. As such, future availability is assumed to remain the same as the current baseline as outlined in Table 16-23.
- 16.6.50. There is no publicly available information (collated at a regional level) regarding any potential changes to landfill capacity by the time of the Scheme's construction, operation and maintenance, and decommissioning.
- 16.6.51. Due to the cyclic nature of inert and hazardous landfill capacity (e.g. landfill capacity decreasing, and then new sites or landfill cells being opened with landfill capacity increasing), it is not realistic to forecast future landfill capacity. Therefore, inert and hazardous landfill capacity is assumed to remain the same as the current baseline as outlined in Table 16-25.
- 16.6.52. For non-hazardous waste, using the current rate of decline of landfill capacity and forecasting into the future would lead to the inevitable conclusion that there would be no void space remaining. However, this is not a credible scenario as if there is still a need for landfill, then the WPA will need to consent new landfill capacity to replace that which has been used up. Therefore, non-hazardous and hazardous landfill capacity is assumed to remain the same as the current baseline, as outlined in Table 16-25.

Potential Impacts

- 16.6.53. Embedded mitigation measures being incorporated into the design and construction of the Scheme are set out in the section below. Prior to the implementation of any mitigation (embedded or additional), the Scheme has the potential to affect materials and waste (positively or negatively), during construction, operation and decommissioning, in the following ways:
- Changes in availability of materials; and
 - Changes in available landfill void capacity.

Embedded Mitigation

- 16.6.54. The Scheme has been designed, as far as practicable, to avoid and reduce impacts and effects on materials and waste through the process embedding measures into the Scheme design. In addition, how the Scheme is constructed, operated and maintained, and decommissioned would be appropriately controlled to manage and minimise potential environmental effects (required as a result of legislative requirements and/or standard sectoral practices).
- 16.6.55. The following embedded mitigation measures have been incorporated into the Scheme design.

Construction, Operation and Decommissioning

- 16.6.56. The Scheme will aim to prioritise waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy, illustrated in Plate 16-1.

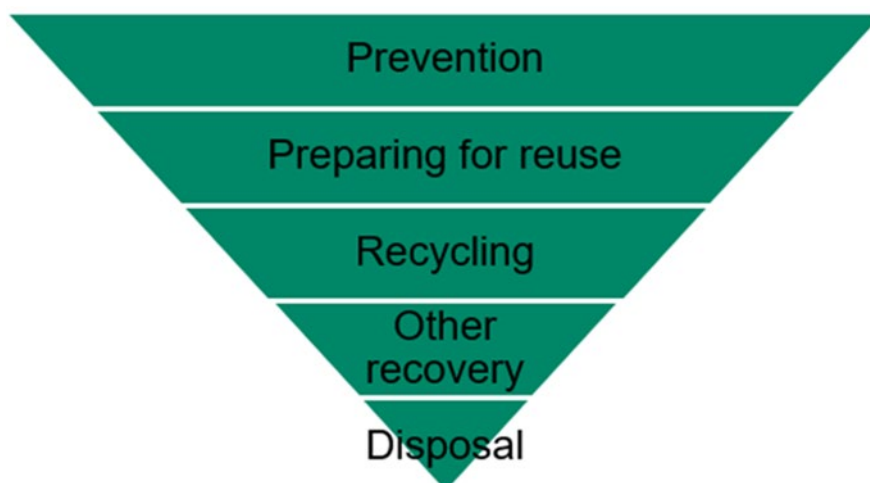


Plate 16-1: The Waste Hierarchy, from Defra's Guidance on Applying the Waste Hierarchy, recreated by AECOM⁵²

- 16.6.57. All waste management will be undertaken in accordance with the relevant regulations (as outlined in **ES Appendix 16-1: Other Environmental Topics Legislation, Policy and Guidance** (Doc Ref 6.3)) and waste would be

⁵² DEFRA (2011) Guidance on applying the Waste Hierarchy. Available at: <https://assets.publishing.service.gov.uk/media/5a795abde5274a2acd18c223/pb13530-waste-hierarchy-guidance.pdf> [Accessed 20/10/2025]

transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them.

- 16.6.58. The construction of the Scheme will be subject to the measures defined within the **OCEMP** (Doc Ref. 7.10) and the **OSWMP** (Doc Ref. 7.19) submitted with the DCO Application. The construction contractor will use the **OCEMP** (Doc Ref. 7.10) and the **OSWMP** (Doc Ref. 7.19) to produce their CEMP and SWMP, respectively, prior to works commencing on-site. As set out within the **OSWMP** (Doc Ref. 7.19), excavated material reuse would be determined via a Materials Management Plan (MMP) in accordance with the CL:AIRE Definition of Waste: Code of Practice (DoW CoP), exemption or environmental permit.
- 16.6.59. The operation and maintenance of the Scheme will be subject to measures and procedures defined within the **OOEMP** (Doc Ref. 7.11), which has been prepared to support the DCO Application. The Scheme operator will use the **OOEMP** (Doc Ref. 7.11) to produce their OEMP prior to operation commencement.
- 16.6.60. The decommissioning of the Scheme will be subject to measures and procedures defined within the **ODEMP** (Doc Ref. 7.12), which is submitted as part of the DCO Application and includes the principles for materials and waste management on-site. The decommissioning contractor will use the **ODEMP** (Doc Ref. 7.12) to produce their decommissioning strategy prior to decommissioning works on-site.
- 16.6.61. For example, measures and procedures for waste in both the **OOEMP** (Doc Ref. 7.11) and **ODEMP** (Doc Ref. 7.12) include (but are not limited to):
- Prioritising waste prevention, followed by preparing for reuse, recycling and recovery and lastly disposal to landfill as per the waste hierarchy.
 - Managing waste in accordance with the relevant regulations and waste will be transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them.

Assessment of Potential Impacts and Likely Significant Effects

- 16.6.62. This section considers the potential impacts outlined in paragraph 16.6.47 and, taking into account the committed mitigation measures as detailed between paragraphs 16.6.54 and 16.6.60, assesses the potential for the Scheme to generate effects using the methodology detailed above.

Construction

Construction Materials

- 16.6.63. The estimated main construction material types and their associated quantities to be used for the Scheme's construction are shown within Table 16-27 below.
- 16.6.64. For each material receptor the sensitivity is "low", as outlined in paragraph 16.6.16 above. At a "low" material receptor sensitivity, the point of significance is a major magnitude of impact, as the "consumption of one or more materials is >10% by volume of the baseline availability"³⁰.
- 16.6.65. For asphalt, concrete and steel the magnitude of impact is considered to be 'negligible', given the Scheme's estimated construction material requirements (<1% of national and regional availability (see Table 16-27)). Therefore, the magnitude of impact is negligible, and the effect is slight, which is considered to be **not significant**. For aggregates, magnitude of impact is considered to be 'minor', given the Scheme's estimated construction material requires 1-5% of regional availability (see Table 16-27). Therefore, the magnitude of impact is minor, and the effect is slight, which is considered to be **not significant**.

Table 16-27: Estimated construction materials

Material type	Quantity (tonnes)	Quantity (m ³)	National material availability (tonnes)	% of national material availability	Material availability (tonnes)	% of regional material availability	Sensitivity	Magnitude	Effect	Significance
Steel	15,129	1,940	16,000,000	0.1	Not applicable, assessed at a national level only		Low	Negligible	Slight	Not significant
Concrete	26,205	10,919	Not applicable, assessed at regional level only		3,120,000	0.8	Low	Negligible	Slight	Not significant
Aggregate	641,019	286,169			36,700,000	1.7	Low	Minor	Slight	Not significant
Asphalt	4,754	2,067			3,300,000	0.1	Low	Negligible	Slight	Not significant

Construction Waste

- 16.6.66. The majority of waste generated during construction is likely to comprise:
- General waste from site offices and welfare facilities;
 - Small quantities of waste from the maintenance of construction vehicles;
 - Packaging waste from incoming materials (e.g. cardboard, wood and plastic);
 - Other waste from construction of fencing, internal tracks, substations, construction compounds and other supporting infrastructure; and
 - The solar PV panels, BESS and supporting infrastructure, would be manufactured off-site to specified sizes therefore, wastage during installation is expected to be minimal.
- 16.6.67. Anticipated waste streams and quantities are based on Scheme-specific information provided by the design team and other similar NSIP solar schemes.

Table 16-28: Estimated Construction Waste

Waste Type	Estimated Waste Quantity (m ³)	Proposed Waste Management Route
General waste from site offices and welfare facilities	625	Recycling or energy recovery
Waste from the maintenance of construction vehicles	Minimal, e.g. <100 m ³	Recycling or energy recovery
Hazardous waste (e.g. chemicals, batteries, solvents, oils, oily rags aerosols etc.)	Minimal, e.g. <100 m ³	Recycling or energy recovery
Wood (e.g. pallets and cable drums)	2,794	Recycling or energy recovery
Plastic (e.g. packaging and protective foam layers)	717	Recycling or energy recovery
Paper and cardboard (e.g. packaging)	4,069	Recycling or energy recovery
Excess excavated soil	49,590	Reuse on or offsite (may be possible to reuse on-site)
Construction material wastage (based on a wastage rate for	22,418	Recycling or energy recovery

Waste Type	Estimated Waste Quantity (m ³)	Proposed Waste Management Route
aggregates, concrete, asphalt, steel and other construction materials e.g. cables)		
Removal of temporary construction materials at the end of construction e.g. aggregates.	113,779	Recycling
Total hazardous waste	Minimal, e.g. <100 m³	
Total hazardous landfill capacity	9,167,000 m³	
% hazardous landfill capacity	Anticipated to be <0.1%	
Total inert and non-hazardous waste	193,992 m³ (excluding minimal wastes)	
Total inert and non-hazardous landfill capacity	72,543,000 m³	
% of inert and non-hazardous landfill capacity	0.27%	

16.6.68. With embedded mitigation measures in place, the quantities of waste to be disposed of to landfill are anticipated to be below 1% of regional inert and non-hazardous landfill capacity and less than 0.1% of national hazardous landfill capacity. Therefore, the magnitude of impact is negligible, and the effect is slight, which is considered to be **not significant**.

16.6.69. Considering the above, it is concluded that **no significant** waste effects are expected during construction of the Scheme.

Operation

Operational Waste

16.6.70. During the Scheme operation, it is expected that Scheme will require up to 10 full time employees, albeit it is assumed that there will be no permanent on-site staff, with staff/visitors (e.g. maintenance workers) attending the Site, when necessary.

16.6.71. Waste arisings from this day-to-day operation would include:

- Welfare facility waste; and
- General waste (paper, cardboard, wood etc).

- 16.6.72. All management of waste will be in accordance with the relevant regulations and waste will be transported by licensed waste hauliers to waste management sites which hold the necessary regulatory authorisation and/or permits for those wastes consigned to them.
- 16.6.73. During operation, waste generation activity within the Scheme would be restricted principally to vegetation management, equipment maintenance and servicing, replacement of any components (i.e. that fail or reach the end of their lifespan), periodic fence inspections, and monitoring activity to ensure the continued effective operation and maintenance of the Scheme.
- 16.6.74. During operation, waste generation is expected to be negligible, as the Scheme does not generate any direct waste as part of the energy production process.

Component Replacement Waste

- 16.6.75. During the anticipated design life of the Scheme, it is expected that there will be requirement for the periodic replacement of some or all of the electrical infrastructure. Assumptions regarding the replacement of Scheme components is presented in **ES Chapter 2: The Scheme** (Doc Ref 6.1). The following assumptions have been made for the programme of replacement activities:
- Ad hoc replacement of solar PV panels based on a failure rate of 0.2%, and this would equate to 274m³ and minimal associated wood pallets, plastic and cardboard packaging waste;
 - It is expected all the solar PV panels will be replaced once during the Scheme's operational life, this would equate to 136,922m³ of solar panel waste and 1,598m³ of wood pallets and packaging waste;
 - It is expected that the BESS could be replaced up to three times during the Scheme's operational life; this would equate to 8,341 m³ of BESS waste at each replacement; and
 - Scheme components such as the PV mounting structures, cabling, the substation, the BESS area buildings and overhead lines are not anticipated to be replaced during the Scheme's operational life. No intrusive ground works are anticipated to replace solar PV panels or BESS.
- 16.6.76. Recycling routes are generally available for component replacement waste at present, and it is likely that there will be even greater opportunities for recycling in the future, not least because the recycling market will have expanded to meet demand as solar PV installations increase. A recovery rate of 70% is assumed be achievable for the purpose of the waste assessment.

- 16.6.77. It is likely that the solar PV panels and battery waste generated by the Scheme, during operation and maintenance and decommissioning phases, would be managed by specialist regional or national facilities; these facilities would be developed over the operation and maintenance phase of the Scheme in response to demand generated by the UK-wide solar energy industry. The capacity of such facilities is not expected to be influenced by other non-solar farm projects in the surrounding area; this is because the facilities will only be managing specific solar PV panel waste.
- 16.6.78. In addition, private sector waste companies will develop these facilities to respond to market demands. At present, solar PV panel waste generation is low, therefore there is a limited demand for facilities and their associated limited available capacity. It is therefore expected that the facilities which reuse, recycle, or recover end of-life solar PV panels will be developed as the quantities of this waste stream increase. The Waste Electrical and Electronic Equipment (WEEE) Regulations⁵³ and The Waste Batteries and Accumulators Regulations⁵⁴ place obligations on those who place solar PV panels and batteries on the market to finance the costs of collection, treatment, recovery and environmentally sound disposal; and the landfill tax strongly incentivise reuse, recycling and recovery.
- 16.6.79. The company Sol Recycle reports that they can provide solar panel recycling services recovering up to 95% of the materials and return them back to the production line⁵⁵.
- 16.6.80. The UK market for lithium-ion battery recycling is under development, as the fleet of electric vehicles and other lithium-ion battery users rapidly increases. A number of new investments have been announced, and an 80% recovery rate is reported⁵⁶.
- 16.6.81. It is assumed that specialist regional or national facilities would be in place at the time of component replacement and decommissioning, and these would be developed in response to demand generated by the UK-wide solar PV panel industry and waste components would be reused, recycled, or recovered and not

⁵³ Waste Electrical and Electronic Equipment (WEEE) Regulations 2013. Available at: <https://www.legislation.gov.uk/uksi/2013/3113/contents> [Accessed 29 September 2025]

⁵⁴ Waste Batteries and Accumulators Regulations. Available at: <https://www.legislation.gov.uk/uksi/2009/890/contents> [Accessed 29 September 2025]

⁵⁵ Sol Recycle (2025). Our Mission. Available at: <https://www.solrecycle.co.uk/>. [Accessed 29 September 2025]

⁵⁶ RS Bruce Metals and Machinery Ltd (2023). Battery Recycling. Available at: <https://www.rsbruce.com/battery-recycling>

disposed of to landfill. Appendix 1 of the Solar Roadmap⁵⁷ details the case for actions to support new and innovative methods of recycling solar panels.

- 16.6.82. The **OOEMP** (Doc Ref. 7.11), submitted with the DCO Application, sets out the commitment of the Applicant to maximise recycling and reuse of the Scheme components at the end of their life.
- 16.6.83. Waste receptor sensitivity is determined as 'very high'. With the embedded mitigation measures in place, the overall quantities of operational waste to be disposed of to landfill are anticipated to be below 1% of regional inert and non-hazardous landfill capacity, and less than 0.1% of national hazardous landfill capacity. Therefore, the magnitude of impact is negligible, and the effect is slight, which is considered to be **not significant**.
- 16.6.84. Considering the above, it is concluded that **no significant** waste effects are expected during operation of the Scheme.

Decommissioning

Materials

- 16.6.85. Some construction materials will be required during decommissioning e.g. aggregates for temporary tracks. The quantities of aggregates are anticipated to be of a lesser magnitude than construction. Therefore, the magnitude of impact is negligible, and the effect is slight, which is considered to be **not significant**.

Decommissioning Waste

- 16.6.86. As outlined in **ES Chapter 2: The Scheme** (Doc Ref. 6.1), decommissioning is expected to take up to 24 months and undertaken in phases. For the purposes of the assessment, it is expected to occur after 40-year design life of the Scheme.
- 16.6.87. At the end of the Scheme's operational phase, it is expected that the solar PV sites would be decommissioned, and the associated land would be restored to its original use and condition, as far as practicable. During this time, it is expected that all associated solar PV panels, mounting structure, cabling, conversion units, BESS Compounds, and On-Site Substations, overhead lines in the Inter-Array and Grid Connection, pylons and CSECs would be removed. Subsequently, these Scheme components will be recycled and/or disposed of in accordance with

⁵⁷ DESNZ (2025) Solar Roadmap. Appendix 1: Action table. Available at: <https://www.gov.uk/government/publications/solar-roadmap/appendix-1-action-table> [Accessed 20/10/2025]

industry good practice and the market conditions at that time of decommissioning.

- 16.6.88. The anticipated Scheme decommissioning waste streams, and their associated quantities, are based on Scheme-specific information provided by the design team and other similar NSIP schemes.

Table 16-29: Estimated Decommissioning Waste

Waste Type	Estimated Waste Quantity (m ³)	Proposed Waste Management Route
General waste from site offices and welfare facilities	625 (assumed the same as construction)	Recycling or energy recovery
Waste from the maintenance of construction vehicles	Minimal, e.g. <100 m ³	Recycling or energy recovery
Hazardous waste (e.g. chemicals, batteries, solvents, oils, oily rags aerosols etc.)	Minimal, e.g. <100 m ³	Recycling or energy recovery
Aggregates	76,960	Recycling
Asphalt	2,067	Recycling
Concrete	10,919	Recycling
Steel	1,940	Recycling
Other e.g. cabling, WEEE	21,820	Recycling
Solar PV panels	136,922	Recycling
BESS	8,341	Recycling
Total hazardous waste	Minimal, e.g. <100 m³	
Total hazardous landfill capacity	9,167,000 m³	
% hazardous landfill capacity	Anticipated to be <0.1%	

Waste Type	Estimated Waste Quantity (m ³)	Proposed Waste Management Route
Total inert and non-hazardous waste	259,593 m ³ (excluding minimal wastes)	
Total inert and non-hazardous landfill capacity	72,543,000 m ³	
% of inert and non-hazardous landfill capacity	0.4%	

- 16.6.89. Recycling routes are generally available for component replacement waste at present, and it is likely that there will be even greater opportunities for recycling in the future, not least because the market will have expanded to meet demand as solar PV installations increase. The assumptions outlined in paragraphs 16.6.74 to 16.6.83 will also apply to decommissioning.
- 16.6.90. Waste receptor sensitivity is determined as 'very high'. With the embedded mitigation measures in place, the overall quantities of decommissioning waste to be disposed of to landfill are anticipated to be below 1% of regional inert and non-hazardous landfill capacity and less than 0.1% of national hazardous landfill capacity. Therefore, the magnitude of impact is negligible, and the effect is slight, which is considered to be **not significant**.
- 16.6.91. The **ODEMP** (Doc Ref. 7.12) submitted with the DCO Application sets out the commitment of the Applicant to maximise reuse and recycling of Scheme components at the end of their life. Considering the above, it is concluded that **no significant** waste effects are not expected during decommissioning of the Scheme.

Additional Monitoring, Mitigation and Enhancement Measures

- 16.6.92. As no potential significant effects have been identified in this Materials and Waste assessment, no additional mitigation or monitoring is proposed.

Residual Effects and Conclusions

- 16.6.93. **No residual significant effects** have been identified for materials and waste.

Cumulative Effects Assessment

- 16.6.94. This section presents an assessment of cumulative effects between the Scheme and other proposed and committed plans and projects (referred to as ‘cumulative schemes’) within the surrounding area, as set out within **ES Appendix 4-1: List of Cumulative Schemes** (Doc Ref. 6.3).
- 16.6.95. This assessment has been made with reference to the methodology and guidance set out in **ES Chapter 4: Overview of the EIA Process** (Doc Ref 6.1) and considers all solar PV schemes in Lincolnshire above 1 MW with applications in the last five years.

Study areas

- 16.6.96. The study area for the cumulative assessment was based on solar schemes across the county of Lincolnshire. The landfill capacity in the combined sub-regions outlined in paragraph 16.6.9 are used for non-hazardous and inert waste and England is used for the hazardous waste study area.

Recovery Assumptions

- 16.6.97. Two assessments have been carried out, with different assumptions around recovery rates:
- A “realistic worst case” of a 70% recovery rate, based on current and likely future recovery rates. Recovery is defined as reuse, recycling and recovery e.g. (energy from waste).
 - An “absolute worst case” based on the assumption that all construction and demolition (C&D) waste goes to landfill.
- 16.6.98. The “absolute worst case” is considered to be extremely unlikely to occur, and the “realistic worst case” considered appropriately conservative for the following reasons:
- The 2022 C&D recovery rate for England was 94.3%⁵⁸, exceeding the national target of 70% recovery and has remained at a similar level since 2010. A 70% recovery rate is therefore considerably lower than this rate.
 - Waste generated by the Scheme comprises readily recyclable materials, with existing high recovery rates:

⁵⁸ Defra (2025). *UK statistics on waste*. Available at: <https://www.gov.uk/government/statistics/uk-waste-data/uk-statistics-on-waste>. [Accessed 25 September 2025]

- Concrete and aggregates are widely recycled for use in construction.
- Metals have a very high recovery rate with a well-developed market, historically driven by economics but increasingly also by the need for decarbonisation of the metal production sector.
- Solar PV panels are recyclable and there are numerous examples of companies recycling them. Capacity for solar PV panel recycling in the UK is relatively low at present, due to small volumes of waste being generated (since most solar PV panels that have been installed are still operating). There are strong economic and regulatory drivers for recycling, and it is technically proven, and hence it is realistic to expect a high recovery rate.
- Primary legislation (The Waste Electrical and Electronic Equipment Regulations⁵³ and The Waste Batteries and Accumulators Regulations⁵⁴) place an obligation on producers (manufacturers and importers) of electrical and electronic equipment (which includes solar PV panels) and batteries to finance the collection and recycling of their products. Producers of solar PV panels and batteries are obligated to join a Producer Compliance Scheme (PCS), which then ensures their legal obligations are met.

16.6.99. The assessment assumes that current policy, regulatory and fiscal incentives for recycling and otherwise diverting waste from landfill will be maintained. The Applicant considers this is a realistic worst case for assessment since:

- Any move away from the current policy framework would be inconsistent with the underlying principles of waste management that have been progressively implemented over the past 20+ years, as well as being inconsistent with the UK's policy objectives to achieve net zero (i.e., since recycling and recovery have a significant role to play in achieving net zero); and
- If, at any point, the policy framework were to move away from favouring recycling and recovery, then there would need to be a large expansion in landfill capacity to accommodate the waste that was no longer recovered or recycled; in which case landfill void capacity would no longer be considered a sensitive receptor. A move away from favouring recycling recovery without an associated increase in landfill void capacity would not be a tenable policy.

Cumulative Impacts

- 16.6.100. The cumulative assessment follows the same approach as the assessment of the Scheme presented above, and considers the waste generated from the following other solar PV schemes in Lincolnshire, outlined in Table 16-30. For individual receptors, this cumulative effect assessment identifies where the assessed effects of the Scheme could interact with effects arising from other plans and/or projects on a spatial and/or temporal basis. Waste estimates are not available for all these projects, and hence estimates have been generated specifically for this cumulative assessment by:
- Estimating PV module waste based on a nominal module capacity of 0.66kW, weight of 33.6kg and solar PV scheme MW;
 - Assuming that the ratio of 'other waste' to 'PV module waste' for schemes is the average of five schemes for which decommissioning waste estimates are available (Meridian, Lime Down, Tillbridge Solar Project, Gate Burton Energy Park, Longfield Solar Farm, and East Yorkshire Solar Farm) of which 37% of the total waste by mass comprises PV modules, and the remaining 63% is other waste.
- 16.6.101. This approach has been taken across all cumulative developments including this Scheme (i.e. Meridian Solar) (rather than using the estimates provided for individual projects) to enable a clear and consistent approach for the purpose of this assessment.
- 16.6.102. This assessment focuses on decommissioning waste due to the following:
- The peak of waste generation would be during decommissioning, and this is therefore the worst case in terms of waste generation.
 - Operational waste generation is not expected to be concurrent for all schemes, given that their solar PV panels and other components would have different design lives, and it is very unlikely that all schemes would replace their equipment at the same time.
- 16.6.103. For the purposes of this cumulative assessment, it is assumed that all schemes are decommissioned over a single five-year period and that all waste is non-hazardous (although in practice a proportion may be hazardous – this is considered further below). For cumulative developments where no information is available online regarding MW size, it is assumed these have a size of 49.9MW (applications made pre-2026) as a worst-case scenario (i.e., the maximum size for a planning application of a solar development under the Town and Country Planning Act 1990 at the time that these applications were made).

- 16.6.104. For the purposes of this cumulative assessment, planning applications for schemes prior to 2020 have been discounted; this is due to the assumption that all scheme applications between 2020-present will be eventually decommissioned within a similar 5-year period. Solar PV schemes less than 1MW have also been excluded, due to a minimal contribution. The cumulative impact assessment is presented in Table 16-31.
- 16.6.105. The assessment shows that under the realistic worst case and absolute worst case, cumulative impacts would **not be significant**. The threshold of significance for an effect on hazardous landfill capacity is 0.1% of national capacity, equivalent to 9,680m³. If it is assumed that the hazardous fractions of waste solar PV panels are sent to hazardous landfill, then a significant effect would occur if the hazardous fraction represents more than 4% of the mass of solar PV panels. However, the majority of solar panel components would not be considered hazardous waste, as approximately 76-89% is glass, 4-10% is plastic and 6-8% is aluminium frame.⁵⁹

⁵⁹ Vekony, A.T, (2024). Recycling: A Solar Panel's Life after Death. Available at: <https://www.greenmatch.co.uk/blog/2017/10/the-opportunities-of-solar-panel-recycling>. [Accessed 25 September 2025]

Table 16-30: Cumulative developments for waste assessment

Solar PV scheme	NSIP/Local Authority	Planning application reference	Status	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Meridian Solar Farm	NSIP	EN010169	Undecided	>50	38,182	64,095	102,276
Beacon Fen	NSIP	EN010151	Undecided	>50	20,364	34,184	54,547
Little Crow Solar Park	NSIP	EN010101	Approved	>50	10,182	17,092	27,274
Heckington Fen Solar Park	NSIP	EN010123	Approved	>50	25,455	42,730	68,184
Gate Burton - Solar & Energy Storage Park	NSIP	EN010131	Approved	>50	25,455	42,730	68,184
Mallard Pass Solar Farm	NSIP	EN010127	Approved	>50	17,818	29,911	47,729
Cottam Solar Project	NSIP	EN010133	Approved	>50	30,545	51,276	81,821
West Burton Solar Project	NSIP	EN010132	Approved	>50	24,436	41,021	65,457
Tillbridge Solar Farm	NSIP	EN010142	Approved	>50	25,455	42,730	68,184

Solar PV scheme	NSIP/Local Authority	Planning application reference	Status	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Fosse Green Energy	NSIP	EN010154	Undecided	>50	19,600	32,902	52,502
Springwell Solar Farm	NSIP	EN010149	Undecided	>50	40,727	68,368	109,095
One Earth Solar Farm	NSIP	EN010159	Undecided	>50	37,673	63,240	100,913
Leoda Solar Farm	NSIP	EN0110016	Undecided	>50	30,545	51,276	81,821
Little Hale Fen	North Kesteven	23/1021/FUL	Approved	<50	2,545	4,273	6,818
Marsh Farm, Sea Lane	Boston	B/23/0034	Approved	<50	162	259	162
Shed 27, Alexandra Road, South Immingham	North East Lincolnshire	DM/0698/23 /FUL	Approved	<50	92	146	92
Shed 10, Alexandra Road South, Immingham Docks	North East Lincolnshire	DM/0697/23 /FUL	Approved	<50	117	187	117

Solar PV scheme	NSIP/Local Authority	Planning application reference	Status	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Bowman Stores Marsh Road	South Holland	H16-0565-20	Approved	<50	81	137	218
The Old Airfield Solar Photovoltaic Farm	West Lindsey	142117	Approved	<50	2,540	4,264	6,805
Stow Park Farm, Stow Park - Solar Panels	West Lindsey	WL/2024/00395	Undecided	<50	1,782	2,991	4,773
Highgate Lane, Normanby-By-Spital - Solar Photovoltaic Farm	West Lindsey	WL/2024/00415	Approved	<50	560	940	1,500

Solar PV scheme	NSIP/Local Authority	Planning application reference	Status	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Vicarage Drove - Solar farm & Battery storage	Boston	B/21/0444	Approved	<50	2,540	4,264	6,805
Mallows Lane - Solar Farm & Battery Storage	East Lindsey	S/152/01297 /22	Approved	<50	509	855	1,364
Fen Farm - Solar Park	East Lindsey	N/036/00565 /24	Approved	<50	713	1,196	1,909
Belvoir Estate - Solar farm	Melton	22/00537/FUL	Approved	<50	2,540	4,264	6,805
Bradley Road - Solar Farm	North East Lincolnshire	DM/1156/23 /FUL	Approved	<50	2,225	3,735	5,959
Immingham Solar Farm - Solar Farm	North East Lincolnshire	DM/0108/24 /FUL	Approved	<50	2,540	4,264	6,805

Solar PV scheme	NSIP/Local Authority	Planning application reference	Status	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
New Earth Solutions West, High Dike - Solar Panels & Battery Storage	North Kesteven	22/1646/CC C	Approved	<50	101	169	270
Whisby Quarry, Eagle Road - Solar Array	North Kesteven	25/0821/CC C	Approved	<50	850	1,427	2,277
Carr Lane - Solar Farm	North Lincolnshire	PA/2021/1359	Approved	<50	509	855	1,364
Sweet Briar Farm - Solar Farm	North Lincolnshire	PA/2022/443	Approved	<50	1,985	3,333	5,318
Winterton Road, Roxby - Solar Farm	North Lincolnshire	PA/2024/129	Undecided	<50	2,540	4,264	6,805
Land To The South Of Wittering	Peterborough	23/00829/FU L	Approved	<50	199	333	532

Solar PV scheme	NSIP/Local Authority	Planning application reference	Status	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Ford Road Barnack Stamford - Solar Farm							
Cowbridge Road, Bicker Fen - Solar Array	South Holland / Boston Borough	H04-0849-22 / B/22/0356	Approved	<50	2,540	4,264	6,805
Moulton Bulb, Long Lane - Solar Array	South Holland	H13-0190-23	Approved	<50	73	123	196
Pilgrims Pride - Solar Array	South Holland	H16-0871-24	Approved	<50	83	140	224
Side Barn, Church Lane - Solar Farm	South Kesteven	S24/0360	Approved	<50	1,222	2,051	3,273
Welby Solar Farm, Welby - Solar Farm	South Kesteven	S24/1040	Approved	<50	2,342	3,931	6,273
Home Farm - Solar PV Farm	South Kesteven	S24/2100	Approved	<50	1,425	2,393	3,818

Solar PV scheme	NSIP/Local Authority	Planning application reference	Status	Size (MW)	PV panel waste (tonnes)	Other waste (tonnes)	Total waste (tonnes)
Land off Ealand Road, Keadby/Ealand, Scunthorpe, DN17 4DG	North Lincolnshire	PA/2025/444	Undecided	<50	2,540	4,264	6,805
Gunthorpe Road, Marsh - Solar Farm	South Holland	H18-0741-21	Appeal allowed	<50	2,540	4,264	6,805
Washdyke Farm, Folkingham	South Kesteven	S23/0511	Appeal allowed	<50	1,375	2,307	3,682
Limes Farm, Spalding Road, Bourne	South Kesteven	S24/2191	Approved	<50	234	393	627
Green Lane Gonerby Moor Grantham	South Kesteven	S23/1934	Approved	<50	1,171	1,966	3,136
TOTAL:				7,601	386,965	649,586	1,036,551

Table 16-31: Cumulative waste assessment

Cumulative Waste (assuming all schemes decommissioned within 5 yr window)	PV panel waste	Other waste	Total Waste
Total waste from cumulative schemes (tonnes)	77,393	129,917	207,310
Total waste from cumulative schemes (m ³) (assuming density of 0.31 t/m ³ for PV panels and 1.6 t/m ³ for other waste)	249,655	81,198	330,853
Waste to landfill, m ³ (70% landfill diversion rate, realistic worst-case estimate)	74,896	24,359	99,256
Waste to landfill, m ³ (assuming zero recycling/recovery)	249,655	81,198	330,853
Baseline			
Combined sub-regions landfill capacity (m ³)			72,543,000
Comparison Against Baseline			
% of Combined sub-regions landfill capacity required for Scheme (realistic worst-case estimate)	0.1%	0.0%	0.1%
% of Combined sub-regions landfill capacity required for Scheme (assuming zero recycling/recovery)	0.3%	0.1%	0.5%
Assessment			
Receptor Sensitivity			Very High
Realistic Worst Case			
Magnitude of Impact			Negligible

Cumulative Waste (assuming all schemes decommissioned within 5 yr window)	PV panel waste	Other waste	Total Waste
Effect			Slight adverse
Significance			Not significant
Absolute Worst Case			
Magnitude of Impact			Negligible
Effect			Slight adverse
Significance			Not significant

