Tillbridge Solar Project

EN010142

Volume 6
Environmental Statement

Appendix 17-1 Other Environmental Topics Legislation, Policy and Guidance

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Regulation 5(2)(a)
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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17. Introduction

17.1 Purpose of this Appendix

17.1.1 This Environmental Statement (ES) appendix identifies and describes the legislation, policy and supporting guidance considered relevant to the assessment of the likely significant effects of the Tillbridge Solar Project ('the Scheme') on:

a. Glint and Glare (**Section 17.2**);

b. Ground Conditions (**Section 17.3**);

c. Major Accidents or Disasters (**Section 17.4**);

d. Telecommunications, Television Reception and Utilities (**Section 17.5**);

e. Materials and Waste (**Section 17.6**); and

f. Electric and Electro-Magnetic Fields (**Section 17.7**).

17.1.2 Legislation and policy are considered at national and local levels.

17.1.3 This ES appendix does not assess the Scheme against legislation and policy. Instead, the purpose of considering legislation and policy in the Environmental Impact Assessment (EIA) is twofold:

a. To identify legislation and policy that could influence the sensitivity of receptors (and therefore the significance of effects) and any requirements for mitigation; and

b. To identify legislation and policy that could influence the methodology to be used within ES assessment and/or within the EIA which will be presented in the ES. For example, a policy may require the assessment of a particular impact or the use of a specific methodology.

17.1.4 The legislation and policy compliance relevant to the Scheme are assessed within the **Planning Statement [EN/010142/APP/7.2]**. The following sections identify and describe the legislation, policy and supporting guidance considered specifically relevant to the above-mentioned topics assessment, which has been taken into account in preparing the ES.

17.1.5 The Scheme's proposed energy generating technology (solar photovoltaic generation) is specifically referenced within the following National Policy Statements (NPSs), therefore the EIA takes these NPSs into account:

a. Overarching National Policy Statement for Energy (EN-1) (Ref 1);

b. National Policy Statement for Renewable Energy Infrastructure (EN-3) (Ref 2); and

c. National Policy Statement for Electricity Networks Infrastructure (EN-5) (Ref 3).

17.1.6 The NPSs set out the Government's energy policy, the need for new infrastructure and guidance for determining an application for a Development Consent Order (DCO). The NPSs include specific criteria and issues which

should be covered by applicants' assessments of the effects of their scheme, and how the decision maker should consider these impacts.

17.1.7 As stated in Section 4.2 of EN-1, to support the urgent need for new low carbon infrastructure, all onshore and offshore electricity generation covered in EN-3 that does not involve fossil fuel combustion (that is, renewable generation, including anaerobic digestion and other plants that convert residual waste into energy, including combustion, provided they meet existing definitions of low carbon) are considered to be Critical National Priority (CNP) infrastructure.

17.2 Glint and Glare

National Legislation, Policy and Guidance

Legislation

17.2.1 There is no legislation relevant to the glint and glare assessment.

Policy

17.2.2 The suite of relevant energy NPSs and the National Planning Policy Framework (NPPF) do not expressly mention glint and glare, however reference is made in NPS EN-1 (Ref 1) to safeguarding aviation interests affected by energy developments. For the Scheme this could potentially include the impacts of glint and glare. The relevant NPS requirements associated with this receptor that influence the glint and glare assessment, together with an indication of where in the ES chapter the information is provided to address these requirements, are provided in **Table 1**.

Table 1. Relevant NPS Policy for Glint and Glare

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
National Policy Statement for Renewable Energy EN-3		
2.10.102	Solar panels are specifically designed to absorb, not reflect, irradiation. However, solar panels may reflect the sun's rays at certain angles, causing glint and glare. Glint is defined as a momentary flash of light that may be produced as a direct reflection of the sun in the solar panel. Glare is a continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the panel. The effect occurs when the solar panel is stationed between or at an angle of the sun and the receptor.	N/A
2.10.103	Applicants should map receptors to qualitatively identify potential glint and glare issues and determine if a glint and glare assessment is necessary as part of the application.	All ground-based receptors are mapped out in **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**.
2.10.104	When a quantitative glint and glare assessment is necessary, applicants are expected to consider the geometric possibility of glint and glare affecting nearby receptors and provide an assessment of potential impact and impairment based on the angle and	This information is provided within **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**.

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
	duration of incidence and the intensity of the reflection.	
2.10.105	The extent of reflectivity analysis required to assess potential impacts will depend on the specific project site and design. This may need to account for 'tracking' panels if they are proposed as these may cause differential diurnal and/or seasonal impacts.	Tracking panels have been considered within the assessment presented in the ES. Assessment assumptions are described within **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**.
2.10.106	When a glint and glare assessment is undertaken, the potential for solar PV panels, frames and supports to have a combined reflective quality may need to be assessed, although the glint and glare of the frames and supports is likely to be significantly less than the panels	As set out within **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, where panels are located, the entire footprint has been treated as having no gaps and being as reflective as the panel surface for a worst-case scenario.
2.10.133	Applicants should minimise the use of security lighting. Any lighting should utilise a passive infra-red (PIR) technology and should be designed and installed in a manner which minimises impact.	As set out within **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, permanent security lights with motion detectors will be used for security purposes around the electrical infrastructure, emergency access points to facilities within the Scheme and potentially at other sites of critical infrastructure. No areas are proposed to be permanently lit. During overnight maintenance, personnel will use portable lighting sources.
2.10.134	Applicants should consider using, and in some cases the Secretary of State may	No significant effects with regards to glint and glare have been identified and as

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
	require, solar panels to comprise of (or be covered with) anti-glare/anti-reflective coating with a specified angle of maximum reflection attenuation for the lifetime of the permission.	such, these measures are not considered to be required for the Scheme. Further information is provided within **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**.
2.10.135	Applicants may consider using screening between potentially affected receptors and the reflecting panels to mitigate the effects.	Landscaping is proposed to screen potentially affected receptors from the Scheme. Further information is provided within **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**.
2.10.136	Applicants may consider adjusting the azimuth alignment of or changing the elevation tilt angle of a solar panel, within the economically viable range, to alter the angle of incidence. In practice this is unlikely to remove the potential impact altogether but in marginal cases may contribute to a mitigation strategy	No significant effects with regards to glint and glare have been identified and as such, these measures are not considered to be required for the Scheme. Further information is provided within **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**.
2.10.158	Solar PV panels are designed to absorb, not reflect, irradiation. However, the Secretary of State should assess the potential impact of glint and glare on nearby homes, motorists, public rights of way, and aviation infrastructure (including aircraft departure and arrival flight paths).	These receptors have been considered within the glint and glare assessment. Further information is provided within **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**.
2.10.159	Whilst there is some evidence that glint and glare from solar farms can be experienced by pilots and air traffic	Impacts on aviation interference have been considered within **Appendix 17-2: Glint**

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
	controllers in certain conditions, there is no evidence that glint and glare from solar farms results in significant impairment on aircraft safety. Therefore, unless a significant impairment can be demonstrated, the Secretary of State is unlikely to give any more than limited weight to claims of aviation interference because of glint and glare from solar farms	**and Glare Assessment** of this ES **[EN010142/APP/6.2]**.

National Planning Policy Framework

17.2.3 The NPPF (Ref 4) sets out the Government's planning policies for England and how these are expected to be applied. Paragraph 5 outlines that while the NPPF does not contain specific policies for NSIPs, the NPPF is still relevant when considering the determination of DCOs. Therefore the ES for the Scheme has taken the NPPF into account.

17.2.4 The relevant NPPF paragraphs, together with an indication of where in the ES the information is provided to address these requirements, are provided in **Table 2**.

Table 2. Relevant NPPF requirements for glint and glare assesment

Relevant NPPF paragraph reference	Requirement of the NPPF	Location of information provided to address this
Paragraph 13	‘What are the particular planning considerations that relate to large scale ground-mounted solar photovoltaic Farms? The deployment of large-scale solar farms can have a negative impact on the rural environment, particularly in undulating landscapes. However, the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively. Particular factors a local planning authority will need to consider include: • The proposal’s visual impact, the effect on landscape of glint and glare (see guidance on landscape assessment) and on neighbouring uses and aircraft safety; and • The extent to which there may be additional impacts if solar arrays follow the daily movement of the sun; The approach to assessing cumulative landscape and visual impact of large scale solar farms is likely to be the same as assessing the impact of wind turbines. However, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land	An assessment of effects with regards to glint and glare is provided within **Appendix 17-2: Glint and Glare Assessment** of this ES **[EN010142/APP/6.2]**, with a summary presented in **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**. This includes a consideration of aircraft safety, and assessment of panels following the sun’s daily movement. Landscape and visual effects assessment is presented within **Chapter 12: Landscape and Visual Amenity** of the ES **[EN010142/APP/6.1]**. Cumulative effects assessment is presented within **Chapter 18: Cumulative Effects and Interactions** of the ES **[EN010142/APP/6.1]**.

Relevant NPPF paragraph reference	Requirement of the NPPF	Location of information provided to address this
	topography the area of a zone of visual influence could be zero.'	

Guidance

National Planning Policy Guidance on Renewable and Low Carbon Energy

17.2.5 Paragraph 013 (Reference ID: 5-013-20150327) (Ref 5) sets out planning considerations that relate to large scale ground-mounted solar PV farms. This determines that the deployment of large-scale solar farms can have a negative impact on the rural environment, particularly in undulating landscapes. However, the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively. Considerations to be taken into account by local planning authorities are:

"the proposal's visual impact, the effect on landscape of glint and glare and on neighbouring uses and aircraft safety;

the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun."

17.2.6 The above requirements for glint and glare assessments have been considered within **Appendix 17-2: Glint and Glare Assessment** of the ES **[EN010142/APP/6.2]**.

Planning Guidance for the Development of Large-Scale Ground Mounted Solar PV Systems

17.2.7 As outlined within the BRE document 'Planning Guidance for the Development of Large-Scale Ground Mounted Solar PV Systems' (Ref 6):

"Glint may be produced as a direct reflection of the sun in the surface of the solar PV panel. It may be the source of the visual issues regarding viewer distraction. Glare is a continuous source of brightness, relative to diffused lighting. This is not a direct reflection of the sun, but rather a reflection of the bright sky around the sun. Glare is significantly less intense than glint.

Solar PV panels are designed to absorb, not reflect, irradiation. However, the sensitivities associated with glint and glare, and the landscape/ visual impact and the potential impact on aircraft safety, should be a consideration. In some instances, it may be necessary to seek a glint and glare assessment as part of a planning application. This may be particularly important if 'tracking' panels are proposed as these may cause differential diurnal and/or seasonal impacts.

The potential for solar PV panels, frames and supports to have a combined reflective quality should be assessed. This assessment needs to consider the likely reflective capacity of all of the materials used in the construction of the solar PV farm."

17.2.8 The above requirements for glint and glare assessments have been considered within **Appendix 17-2: Glint and Glare Assessment** of the ES **[EN010142/APP/6.2]**.

Aviation Assessment Guidance

17.2.9 The UK Civil Aviation Authority (CAA) issued interim guidance relating to Solar Photovoltaic Systems (SPV) on 17 December 2010 and was subject to a CAA information alert 2010/53. The formal policy was cancelled on September 7th, 2012 (Ref 7) however the advice is still applicable until a formal policy is developed. The relevant aviation guidance from the CAA is presented in the section below.

17.2.10 CAA Interim Guidance This interim guidance makes the following recommendations (p.2-3):

'It is recommended that, as part of a planning application, the SPV developer provide safety assurance documentation (including risk assessment) regarding the full potential impact of the SPV installation on aviation interests.

Guidance on safeguarding procedures at CAA licensed aerodromes is published within CAP 738 Safeguarding of Aerodromes and advice for unlicensed aerodromes is contained within CAP 793 Safe Operating Practices at Unlicensed Aerodromes.

Where proposed developments in the vicinity of aerodromes require an application for planning permission the relevant LPA normally consults aerodrome operators or NATS when aeronautical interests might be affected. This consultation procedure is a statutory obligation in the case of certain major airports, and may include military establishments and certain air traffic surveillance technical sites. These arrangements are explained in Department for Transport Circular 1/2003 and for Scotland, Scottish Government Circular 2/2003.

In the event of SPV developments proposed under the Electricity Act, the relevant government department should routinely consult with the CAA. There is therefore no requirement for the CAA to be separately consulted for such proposed SPV installations or developments.

If an installation of SPV systems is planned on-aerodrome (i.e. within its licensed boundary) then it is recommended that data on the reflectivity of the solar panel material should be included in any assessment before installation approval can be granted. Although approval for installation is the responsibility of the Aerodrome Licence holder (ALH), as part of a condition of a CAA Aerodrome Licence, the ALH is required to obtain prior consent from CAA Aerodrome Standards Department before any work is begun or approval to the developer or LPA is granted, in accordance with the procedures set out in CAP 791 Procedures for Changes to Aerodrome Infrastructure.

During the installation and associated construction of SPV systems there may also be a need to liaise with nearby aerodromes if cranes are to be used; CAA notification and permission is not required.

The CAA aims to replace this informal guidance with formal policy in due course and reserves the right to cancel, amend or alter the guidance provided in this document at its discretion upon receipt of new information.

Further guidance may be obtained from CAA's Aerodrome Standards Department via aerodromes@caa.co.uk.'

17.2.11 In some instances, an aviation stakeholder can refer to the ANO 2009 with regard to safeguarding. Key points from the document are presented below.

"A person must not recklessly or negligently act in a manner likely to endanger an aircraft, or any person in an aircraft.

A person must not exhibit in the United Kingdom any light which—

(a) by reason of its glare is liable to endanger aircraft taking off from or landing at an aerodrome; or

(b) by reason of its liability to be mistaken for an aeronautical ground light is liable to endanger aircraft.

If any light which appears to the CAA to be a light described in paragraph (1) is exhibited, the CAA may direct the person who is the occupier of the place where the light is exhibited or who has charge of the light, to take such steps within a reasonable time as are specified in the direction—

To extinguish or screen the light; and

To prevent in the future the exhibition of any other light which may similarly endanger aircraft.

The direction may be served either personally or by post, or by affixing it in some conspicuous place near to the light to which it relates.

In the case of a light which is or may be visible from any waters within the area of a general lighthouse authority, the power of the CAA under this article must not be exercised except with the consent of that authority.

A person must not in the United Kingdom direct or shine any light at any aircraft in flight so as to dazzle or distract the pilot of the aircraft.' The document states that no 'light', 'dazzle' or 'glare' should be produced which will create a detrimental impact upon aircraft safety."

17.2.12 The above requirements for glint and glare assessments have been considered within **Appendix 17-2: Glint and Glare Assessment** of the ES **[EN010142/APP/6.2]**.

CAA – CAP738: Safeguarding of Aerodromes 3rd Edition

17.2.13 In 2003, the CAA first introduced the CAP738 document to help provide advice and guidance to ensure aerodrome safeguarding. Subsequently, there have been two updates to this document in 2006 and 2020.

17.2.14 Within the latest edition of CAP738, it outlines that the purpose of the document is to protect an aerodrome and to ensure safe operation. Specifically stating:

"Its purpose is to protect:

Aircraft from the risk of glint and glare e.g. solar panels."

17.2.15 Within the section named as “Appendix C – Solar Photovoltaic Cells”, the following is stated:

“Policy

In 2010 the CAA published interim guidance on Solar Photovoltaic Cells (SPCs). At that time, it was agreed that we would review our policy based on research carried out by the Federal Aviation Authorities (FAA) in the United States, in addition to reviewing guidance issued by other National Aviation Authorities. New information and field experience, particularly with respect to compatibility and glare, has resulted in the FAA reviewing its original document ‘Technical Guidance for Evaluating Selected Solar Technologies on Airports’, which is likely to be subject to change, see link; *https://www.federalregister.gov/documents/2013/10/23/2013-24729/interimpolicy-faa-review-of-solar-energy-system-projects-on-federally-obligated-airports*

In the United Kingdom there has been a further increase in SPV cells, including some located close to aerodrome boundaries; to date the CAA has not received any detrimental comments or issues of glare at these established sites. Whilst this early indication is encouraging, those responsible for safeguarding should remain vigilant to the possibility.”

17.2.16 In summary, the above is stating that to date, there has not been any complications on airfields due to glare originating from solar farms across the UK.

Rail Assessment Guidance

17.2.17 The Guidance on Signal Sighting Assessment Requirements (Ref 9) supersedes the Signal Positioning and Visibility Guidance. The Signal Positioning and Visibility Guidance ceased to be in force as of 4th June 2016.

17.2.18 The RSSB guidance provides an overview of the signal sighting assessment process that is used to confirm compatibility of lineside signalling system, assets with train operations. Reflections and Glare are mentioned in “A.5 Reflection and glare - Appendix A: Compatibility Factors that Prevent Reliable Reading”. Within this section it mentions the following Guidance:

“G A.5.1.2 A5 is present if direct glare or reflected light is directed into the eyes or into the lineside signalling asset that could make the asset appear to show a different aspect or indication to the one presented.

G A.5.1.3 A5 is relevant to any lineside signalling asset that is capable of presenting a lit signal aspect or indication.

G A.5.1.4 The extent to which excessive illumination could make an asset appear to show a different signal aspect or indication to the one being presented can be influenced by the product being used. Requirements for assessing the phantom display performance of signalling products are set out in GKRT0057 section 4.1.

G A.5.1.5 Problems arising from reflection and glare occur when there is a very large range of luminance, that is, where there are some objects that are far brighter than others. The following types of glare are relevant:

a) Disability glare, caused by scattering of light in the eye, can make it difficult to read a lit display.

b) Discomfort glare, which is often associated with disability glare. While being unpleasant, it does not affect the signal reading time directly, but may lead to distraction and fatigue.

G A.5.1.6 Examples of the adverse effect of disability glare include:

a) When a colour light signal presenting a lit yellow aspect is viewed at night but the driver is unable to determine whether the aspect is a single yellow or a double yellow.

b) Where a colour light signal is positioned beneath a platform roof painted white and the light reflecting off the roof can make the signal difficult to read.

G A.5.1.7 Options for militating against A5 include:

a) Using a product that is specified to achieve high light source: phantom ratio values.

b) Alteration to the features causing the glare or reflection.

c) Provision of screening."

17.2.19 A5 is referring to reflections and glare in the above passage.

17.2.20 Additionally, there is some text on the driver's field of vision and how minor distractions can reduce visibility of signals if viewed towards the driver's field of vision. The following is in "F6.6 b) of Appendix F: Guidance on Field of Vision":

"Sensitivity to movement in the peripheral field, even minor distractions can reduce the visibility of the asset if it is viewed towards the peripheral field of vision. The presence of clutter to the sides of the running line can be highly distracting (for example, fence posts, lamp-posts, traffic, or non-signal lights, such as house, compatibility factors or security lights)."

17.2.21 The RSSB guidance refers to the effect of glare and reflections upon train drivers and signals. Predominantly the guidance focusses on the ability of the train driver to see and accurately read the signals. However, there has been reference to phantom lighting, with this only being an issue if the signal is facing in the same direction at which the glare is coming from.

17.2.22 The above requirements for glint and glare assessments have been considered within **Appendix 17-2: Glint and Glare Assessment** of the ES **[EN010142/APP/6.2]**.

Local Policy and Guidance

17.2.23 The following local policy within **Table 3** is relevant to the assessment of the effects of the Scheme on Glint and Glare.

Table 3 Relevant local legislation, policy and guidance with respect to glint and glare

Relevant document	Relevant policies	Location of information provided to address this
Central Lincolnshire Local Plan (Adopted April 2023)	**Policy S14: Renewable Energy** Proposals for renewable energy schemes, including ancillary development, will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. To determine whether it is acceptable, the following tests will have to be met: • The impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety; • The impacts are acceptable on aviation and defence navigation system/communications; and • The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic.	The impacts of glint and glare on residential receptors, highway safety, railway driver glare and aviation are assessed in **Appendix 17-2: Glint and Glare** of this ES **[EN010142/APP/6.2]**, with a summary provided within **Section 17.4** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.
Bassetlaw District Core Strategy Development Management Policies DPD (Adopted December 2011)	**Policy DM10: Renewable and Low Carbon Energy**	The impacts of the Scheme on shadow flicker can be found in **Appendix 17-2:**

Relevant document	Relevant policies	Location of information provided to address this
	Proposals for renewable and low carbon energy infrastructure will also need to demonstrate that they: […] iv. will not result in unacceptable impacts in terms of visual appearance; noise; shadow flicker; watercourse engineering and hydrological impacts; pollution; or traffic generation.	**Glint and Glare** of this ES **[EN010142/APP/6.2]**.
Draft Bassetlaw Local Plan Main Modifications (August 2023)	**Policy 48: Protecting Amenity** Proposals for development should be designed and constructed to avoid and minimise impacts on the amenity of existing and future users, individually and cumulatively, within the development and close to it. As such, proposals will be expected to: a) not have a significant adverse effect on the living conditions of existing and new residents and future occupiers of the proposed development through loss of privacy, excessive overshadowing or overbearing impact; and b) not generate a level of activity, noise, light, air quality, odour, vibration or other pollution which cannot be mitigated to an appropriate standard.	The impacts of the Scheme on shadow flicker can be found in **Appendix 17-2: Glint and Glare** of this ES **[EN010142/APP/6.2]**.

17.3 Ground Conditions

National Legislation, Policy and Guidance

Legislation

17.3.1 Regulation 5(2)(c) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 10) requires that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the likely significant direct and indirect effects of the Scheme on land and soil.

17.3.2 There are six key legislative drivers for dealing with risks to human health and the environment from ground conditions, namely:

a. Part 2A of the Environmental Protection Act (EPA) 1990 (the Contaminated Land Regime) (Ref 11);

b. The Water Resources Act 1991 (Ref 12);

c. Water Act 2003 (Ref 13);

d. Building Act 1984 (Ref 14);

e. The Building Regulations & c (Amendment) Regulations 2015 (Ref 15); and;

f. Planning Act 2008 (Ref 16).

17.3.3 In the UK, Part 2A of the EPA (Ref 11), as introduced by Section 57 of the Environment Act 1995 (Ref 17) provides the legislative framework within which site data is to be assessed. Under Part 2A, sites are identified as 'contaminated land' if they are: causing harm to human health; if there is a significant possibility of causing significant harm to human health; if the site is causing significant harm, or there is a significant possibility that it causes harm to non-human receptors; or there is pollution of controlled waters (i.e. both surface and groundwaters).

17.3.4 The Water Act 2003 (Ref 13) introduced a revision to the wording of the EPA, which requires that if a site is causing or could cause significant pollution of controlled waters it may be determined as contaminated land. Once a site is determined to be "contaminated land" then remediation is required to render significant pollutant linkages insignificant (i.e. the source-pathway-receptor relationships that are associated with significant harm to human health and/or significant pollution of controlled waters), subject to a test of reasonableness.

17.3.5 The Water Resources Act 1991 (Ref 12) provides statutory protection for controlled waters (streams, rivers, canals, marine environment and groundwater) and makes it an offence to discharge to controlled waters without the permission or consent of the regulators of these areas.

17.3.6 The Building Act 1984 (Ref 14) and the Building Regulations & (Amendment) Regulations 2015: Circular 01/2015 (Ref 15) are the two key legislative drivers when considering structural and design aspects of a development in terms of geotechnical properties of the ground. The Building Act 1984

requires that buildings are constructed so that ground movement caused by swelling, shrinkage, freezing, landslip or subsidence of the sub-soils will not impair the stability of any part of the building.

17.3.7 Other legislation of relevance to this topic includes:

a. Environmental Permitting (England and Wales) Regulations 2016 (Ref 18) (as amended);

b. Hazardous Waste (England and Wales) Regulations 2005 (Ref 19);

c. Contaminated Land (England) Regulations 2006 (Ref 20);

d. Environmental Damage (Prevention and Remediation) Regulations 2015 (Ref 21); and

e. Anti-Pollution Works Regulations 1999 (Ref 22).

Policy

17.3.8 The relevant National Policy Statement (NPS) requirements, together with an indication of where in the ES the information provided to address these requirements in relation to ground conditions, are provided in **Table 4.**

Table 4. Relevant NPS requirements for the ground conditions assessment

Relevant document	Relevant policies	Location of information provided to address this
Overarching National Policy Statement for Energy EN-1		
Paragraph 4.12.1	Issues relating to discharges or emissions from a proposed project, and which lead to other direct or indirect impacts on terrestrial, freshwater, marine, onshore, and offshore environments, or which include noise and vibration may be subject to separate regulation under the pollution control framework or other consenting and licensing regimes, for example local planning consent or marine licences (see paragraph 4.5.6 for more information.	Consideration of effects on land quality can be found in **Appendix 17-3: Ground Conditions Principal Site Preliminary Risk Assessment (PRA)** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary provided within **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.
Paragraph 4.12.2	The planning and pollution control systems are separate but complementary. The planning system controls the development and use of land in the public interest. It plays a key role in protecting and improving the natural environment, public health and safety, and amenity, for example by attaching conditions to allow developments which would otherwise not be environmentally acceptable to proceed, and preventing harmful development which cannot be made acceptable even through conditions. Pollution control is concerned with preventing pollution through the use of measures to prohibit or limit the releases of	Consideration of effects on land quality can be found in **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary provided within **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.

Relevant document	Relevant policies	Location of information provided to address this
	substances to the environment from different sources to the lowest practicable level. It also ensures that ambient air and water quality meet standards that guard against impacts to the environment or human health.	
Paragraph 4.12.5	Applicants should consult the Marine Management Organisation (MMO) (or NRW in Wales) on energy NSIP projects which would affect, or would be likely to affect, any relevant marine areas as defined in the Planning Act 2008 (as amended by section 23 of the Marine and Coastal Access Act 2009). Applicants are encouraged to consider the relevant marine plans in advance of consulting the MMO for England or the relevant policy teams at the Welsh government.	Schedule 16 of the **Draft Development Consent Order [EN010142/APP/3.1]** provides details of the Deemed Marine Licence.
Paragraph 4.12.6	Many projects covered by this NPS will be subject to the Environmental Permitting Regulations, which also incorporates operational waste management requirements for certain activities. When an applicant applies for an Environmental Permit, the relevant regulator (usually the EA or NRW but sometimes the local authority) requires that the application demonstrates that processes are in place	The Scheme does not require an Environmental Permit for waste management to operate.

Relevant document	Relevant policies	Location of information provided to address this
	to meet all relevant Environmental Permitting Regulations requirements.	
Paragraph 4.12.7	Applicants should make early contact with relevant regulators, including EA or NRW and the MMO, to discuss their requirements for Environmental Permits and other consents, such as marine licences.	The **Consultation Report** submitted alongside this DCO application [**EN010142/APP/5.1]** sets out what contact has been made with the relevant regulators.
Paragraph 4.12.15	• Working in close cooperation with the EA, or NRW and/or the pollution control authority, and other relevant bodies, such as the MMO, the SNCB, Drainage Boards and water and sewerage undertakers, the Secretary of State should be satisfied, before consenting any potentially polluting developments, that: the relevant pollution control authority is satisfied that potential releases can be adequately regulated under the pollution control framework • The effects of existing sources of pollution in and around the site are not such that the cumulative effects of pollution when the proposed development is added would make that development unacceptable, particularly in relation to statutory environmental quality limits.	Consideration of effects on land quality can be found in **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**. The assessment of effects is summarised in **Section 17.5** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**. Effects on water quality are presented within **Chapter 10: Water Environment** of the ES **[EN010142/APP/6.1]**. Cumulative effects are presented within **Chapter 18: Cumulative Effects and Interactions** of the ES **[EN010142/APP/6.1]**.

Relevant document	Relevant policies	Location of information provided to address this
Paragraph 5.11.8	The ES (see Section 4.3) should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan. The assessment should be proportionate to the scale of the preferred scheme and its likely impacts on such receptors. For developments on previously developed land, the applicant should ensure that they have considered the risk posed by land contamination and how it is proposed to address this.	Baseline ground conditions and assessment of effects are presented in **Section 17.5** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**, **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**.
Paragraph 5.11.17	Applicants should ensure that a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination.	Ground conditions and land instability are considered within **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary presented within **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

Relevant document	Relevant policies	Location of information provided to address this
National Policy Statement for Renewable Energy Infrastructure (EN-3)		
Paragraph 2.10.34	Applicants are encouraged to develop and implement a Soil Resources and Management Plan which could help to use and manage soils sustainably and minimise adverse impacts on soil health and potential land contamination. This should be in line with the ambition set out in the Environmental Improvement Plan to bring at least 40% of England's agricultural soils into sustainable management by 2028 and increase this up to 60% by 2030.	A **Framework Soil Management Plan [EN010142/APP/7.12]** has been prepared and is submitted as part of the application.

National Planning Policy Framework (NPPF) 2023

17.3.9 The NPPF (Ref 4) sets out the Government's planning policies for England and how these should be applied.

17.3.10 The relevant NPPF paragraphs, together with an indication of where in the ES chapter the information is provided to address these requirements, are provided in **Table 5**.

Guidance

17.3.11 The assessment has also considered the following relevant policy, standards and guidance:

a. Environment Agency, (2009); Updated technical Background to the CLEA model; Science Report: SC050021/SR3 (Contaminated land exposure assessment (CLEA) spreadsheet based tool) (Ref 23);

b. Environment Agency Remedial Targets Methodology: Hydrogeological Risk Assessment for Land Contamination (Ref 24);

c. Human Health Toxicological Assessment of Contaminants in Soil, Science Report SC050021/SR2 (Ref 25);

d. Environment Agency, 2020; Land Contamination: Risk Management (Ref 26);

e. Environment Agency, 2010; Guiding Principles for Land Contamination (GPLC) 1, 2 and 3 (Ref 27);

f. Construction Industry Research and Information Association (CIRIA) Guidance C532, 'Control of Water Pollution from Construction Sites' (Ref 28);

g. The Chartered Institute of Environmental Health (CIEH) Local Authority Handbooks (Ref 29);

h. British Standard (BS) 8485:2015 - Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings (Ref 30); and

i. CIRIA Guidance C665, 'Assessing Risks Posed by Hazardous Ground Gases to Buildings' (Ref 31).

Table 5. Relevant NPPF requirements for ground conditions assesment

Relevant NPPF paragraph reference	Requirement of the NPPF	Location of information provided to address this
Paragraph 180	Planning policies and decisions should contribute to and enhance the natural and local environment by: • Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); • Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and • Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.	Effects with regards to ground conditions are considered within **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary presented within **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.
Paragraph 189	Planning policies and decisions should ensure that: • A site is suitable for its proposed use taking account of ground conditions and	Effects with regards to ground conditions are considered within **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and

Relevant NPPF paragraph reference	Requirement of the NPPF	Location of information provided to address this
	any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation); • After remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and • Adequate site investigation information, prepared by a competent person, is available to inform these assessments.	**Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary presented within **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.
Paragraph 190	Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner.	Effects with regards to ground conditions are considered within **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary presented within **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.

Local Policy

17.3.12 The following local policy within **Table 6** is relevant to the assessment of ground conditions effects of the Scheme.

Table 6. Relevant local legislation and policy for ground conditions

Relevant document	Requirement of the policy	Location of information provided to address this
Central Lincolnshire Local Plan (Adopted April 2023)	**Policy S14: Renewable Energy** Proposals for renewable energy schemes, including ancillary development, will be supported where the direct, indirect, individual and cumulative impacts on the following considerations are, or will be made, acceptable. To determine whether it is acceptable, the following tests will have to be met: • The impacts are acceptable having considered the scale, siting and design, and the consequent impacts on landscape character; visual amenity; biodiversity; geodiversity; flood risk; townscape; heritage assets, their settings and the historic landscape; and highway safety and rail safety; and • The impacts are acceptable on the amenity of sensitive neighbouring uses (including local residents) by virtue of matters such as noise, dust, odour, shadow flicker, air quality and traffic.	Effects with regards to ground conditions are considered within **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary presented within **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.
Draft Bassetlaw Local Plan Main Modifications (August 2023)	**Policy 49: Contaminated and Unstable Land** Where development is considered to be on contaminated land and/or unstable land, an appropriate contamination assessment and/or land instability risk assessment should be carried out.	Effects with regards to ground conditions are presented within **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary presented within

Relevant document	Requirement of the policy	Location of information provided to address this
		Chapter 17: Other Environmental Topics of the ES **[EN010142/APP/6.1]**.
Sturton By Stow and Stow Neighbourhood Plan (Adopted July 2022)	**Policy 5: Delivering Good Design** Development proposals will be supported if it is demonstrated that their design solutions: apply principles of good design to ensure that both neighbouring users and occupiers of the proposed development will benefit from reasonable standards of amenity, unimpaired by unacceptable overlooking, loss of privacy, loss of light, pollution (including contaminated land, light pollution or emissions), odour, noise and other forms of disturbance.	Effects with regards to ground conditions are considered within **Appendix 17-3: Ground Conditions Principal Site PRA** of this ES **[EN010142/APP/6.2]** and **Appendix 17-4: Ground Conditions Cable Route Corridor PRA** of this ES **[EN010142/APP/6.2]**, with a summary presented within **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.

17.4 Major Accidents or Disasters

National Legislation, Policy and Guidance

Legislation

17.4.1 Regulation 5(2)(a) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 10) requires that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the likely significant direct and indirect effects of the Scheme on the population and human health. Regulation 5(4) provides that consideration should also be given to the vulnerability of the proposed development to major accidents or disasters.

17.4.2 The EIA Directive and domestic Infrastructure Planning (Environmental Impact Assessment) Regulations (Ref 10) cite two specific directives as examples of risk assessments to be considered within EIA. These are the Directive 2012/18/EU of the European Parliament and of the European Council (which deals with major accident hazard registered sites) (Ref 32) and the Council Directive 2009/71/Euratom (which deals with nuclear sites) (Ref 33). Neither of these Directives are relevant to the Scheme as it would not be a major accident registered hazard site or a nuclear site.

17.4.3 Whilst the Civil Contingencies Act (CCA) 2004 (Contingency Planning) Regulations 2005 (Ref 34) does not make any reference to EIA, it is noted that the Act and regulations establish a statutory framework of roles and responsibilities for those involved in emergency preparation and response at the local level. This includes emergency powers that might be necessary to deal with the effects of serious emergencies. The CCA places a duty on the local responders to have an accurate understanding of the risks they face in light of local circumstances and priorities through a risk assessment and emergency planning process. As such, similarities can be drawn from the requirements of the EIA Regulations and the CCA in assessing and minimising risk for major accidents and disasters. Therefore, the ES considers the Scheme within the context of risks identified on the local risk registers established under the CCA.

17.4.4 Key legislation in force to ensure the protection of workers in the workplace, thus minimising any risk from major accidents or disasters to a reasonable level includes (but is not limited to):

a. Health and Safety at Work etc. Act 1974 (Ref 35);

b. The Management of Health and Safety at Work Regulations 1999 (Ref 36);

c. The Workplace (Health, Safety and Welfare) Regulations 1992 (Ref 37); and

d. Construction (Design and Management) (CDM) 2015 Regulations (Ref 38).

17.4.5 Building regulations, safety standards and guidelines for the construction, operation and maintenance of the BESS within the Scheme are set out

within the **Framework Battery Safety Management Plan [EN010142/APP/7.13]**.

Policy

17.4.6 The relevant NPS requirements, together with an indication of where in the ES the information provided to address these requirements, are provided in **Table 7**.

Table 7. Relevant NPS requirement for Major Accidents and Disasters

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
Overarching National Policy Statement for Energy EN-1		
Paragraph 4.13.5	Applicants should consult with the Health and Safety Executive (HSE) on matters relating to safety.	The Applicant team has consulted with the HSE. A summary of the consultation response received is provided within **Section 17.7** of **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.
Paragraph 4.13.6	Applicants seeking to develop infrastructure subject to the Control of Major Accident Hazards (COMAH) regulations (Ref 39) should make early contact with the Competent Authority.	The Scheme is not subject to the COMAH regulations.
Paragraph 4.13.7	If a safety report is required it is important to discuss with the Competent Authority the type of information that should be provided at the design and development stage, and what form this should take. This will enable the Competent Authority to review as much information as possible before construction begins, in order to assess whether the inherent features of the design are sufficient to prevent, control and mitigate major accidents.	The Scheme is not subject to the COMAH regulations and a COMAH safety report is not required. However, an **Framework Battery Safety Management Plan [EN010142/APP/7.13]** has been prepared and consulted on with the Lincolnshire Fire Rescue Service. Further information is provided within **Section 17.7** of **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**.
Paragraph 4.13.8	The Secretary of State should be satisfied that a safety assessment has been prepared, where required, and that the Competent Authority has raised no safety objections.	The Scheme is not subject to the COMAH regulations and a safety report is not required. However, an **Framework Battery Safety Management Plan [EN010142/APP/7.13]** has been prepared

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
		and consulted on with the Lincolnshire Fire Rescue Service. Further information is provided within **Section 17.7** of **Chapter 17: Other Environmental Topics** of the ES **[EN010142/APP/6.1]**. No safety objections in principle have been received.

National Planning Policy Framework

17.4.7 The NPPF (Ref 4) sets out the Government's planning policies for England and how these should be applied. Paragraph 5 of the NPPF goes on to confirm that the NPPF may be a matter that is both important and relevant for the purposes of assessing DCO applications. The EIA for the Scheme therefore has regard to the relevant policies of the NPPF as part of the overall framework of national policy.

17.4.8 Although not directly relevant to energy developments, the NPPF does refer, at paragraph 97, to the fact that:

"planning policies and decisions should promote public safety and take into account wider security and defence requirements by:

a. anticipating and addressing possible malicious threats and natural hazards, especially in locations where large numbers of people are expected to congregate. Policies for relevant areas (such as town centre and regeneration frameworks), and the layout and design of developments, should be informed by the most up-to-date information available from the police and other agencies about the nature of potential threats and their implications. This includes appropriate and proportionate steps that can be taken to reduce vulnerability, increase resilience and ensure public safety and security; and

b. recognising and supporting development required for operational defence and security purposes and ensuring that operational sites are not affected adversely by the impact of other development proposed in the area."

Guidance

17.4.9 Guidance on the methodology for assessing major accidents and disasters in EIA are provided by the Institute of Environmental Management Assessments (IEMA) in their 'Primer', which is intended to introduce the concept of the topic and to offer an initial appreciation on methodology that could be adopted (Ref 40).

17.4.10 In addition, further guidance on the consideration of major accidents and disasters for DCO projects is provided within Advice Note 11 'Working with public bodies in the infrastructure planning process' Annex G The Health and Safety Executive (Ref 41).

17.4.11 Section 17.7 Major Accidents and Disasters within **Chapter 17: Other Environmental Topics of** this ES **[EN010142/APP/6.1]** has been prepared in line with the above guidance documents.

Local Policy

17.4.12 There is no local planning policy in relation to major accidents and disasters.

17.5 Telecommunications, Television Reception and Utilities

17.5.1 There is no legislation, policy or guidance considered relevant to the assessment of telecommunications, television reception and utilities.

17.6 Materials and Waste

National Legislation, Policy and Guidance

Legislation

17.6.1 Regulation 5(2)(d) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 10) requires that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the likely significant direct and indirect effects of the Scheme on material assets.

Waste Framework Directive

17.6.2 The Waste Framework Directive (Ref 48) establishes the wider regulatory context for waste management across Europe. In addition to defining waste, it also introduces the concept of the waste hierarchy and establishes landfill diversion targets for Member States. The requirements of the Waste Framework Directive are transposed into applicable national law through the Waste (England and Wales) Regulations 2011 (Ref 49) as amended and The Waste (Miscellaneous Amendments) (EU Exit) Regulations 2019 (Ref 50).

The Waste (England and Wales) Regulations 2011

17.6.3 The Waste (England and Wales) Regulations 2011 (Ref 49) transposes the requirements of the Waste Framework Directive in England and Wales and requires the Secretary of State (SoS) to establish waste prevention programmes and waste management plans that apply the waste hierarchy (as defined in the Waste Framework Directive). The waste hierarchy prioritises waste prevention, followed by preparing for reuse, recycling, recovery and finally disposal to the management of waste. The Regulations require businesses to apply the waste hierarchy, as shown below in **Plate 17-1**, when managing waste, and also require that measures are taken to ensure that, by the year 2020, at least 70% by weight of non-hazardous Construction and Demolition (C&D) waste is subjected to material recovery.

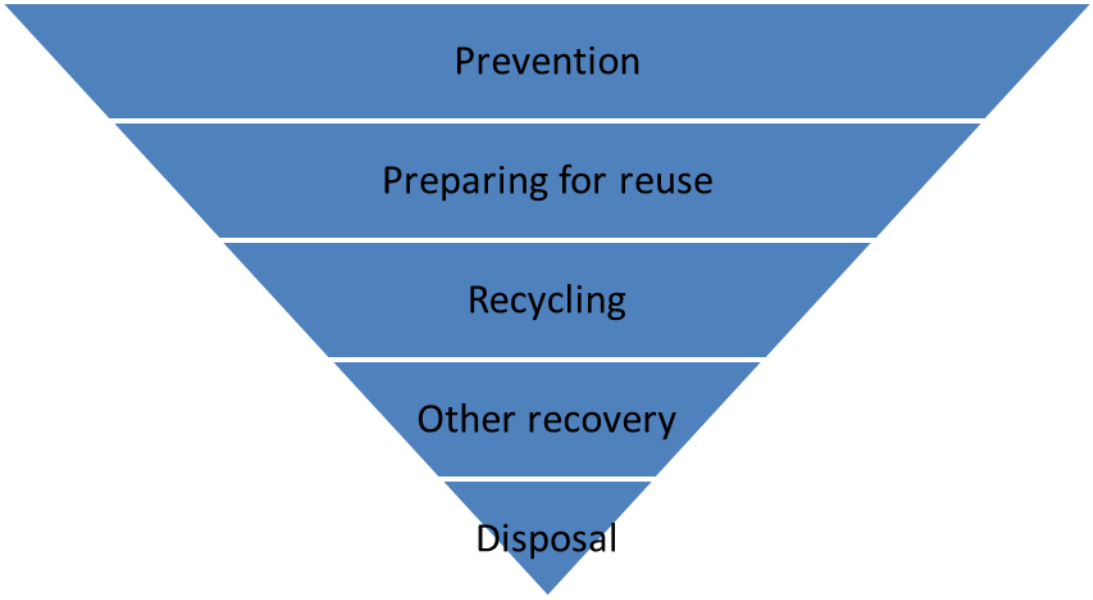

Plate 17-1 The Waste Hierarchy (Ref 51)

The Environment Protection Act 1990

17.6.4 The duty of care for waste management is set out under section 34 of the Environmental Protection Act 1990 (Ref 52) and the Waste (England and Wales) Regulations 2011 (as amended) (Ref 49). It requires anyone who produces, imports, keeps, stores, transports, treats or disposes of waste to take all reasonable steps to ensure that waste is managed properly and places a duty on producers and holders of waste to:

a. Prevent illegal disposal, treatment or storage of waste;

b. Handle their waste safely;

c. Know whether the waste is hazardous or non-hazardous;

d. Store waste securely in a manner that prevents release of the waste;

e. Provide an accurate written description of the waste in order to facilitate the compliance of others with the Duty and avoidance of the offences under Section 33 of the Environmental Protection Act 1990: via a compulsory system of Controlled Waste Transfer Notes (WTNs) which controls the transfer of waste between parties; and

f. Ensure anyone dealing with their waste has the necessary authorisation.

The Environmental Permitting (England and Wales) Regulations 2016

17.6.5 The Environmental Permitting (England and Wales) Regulations 2016 (Ref 53) require sites where waste is processed, treated or disposed of to hold a valid Environmental Permit issued by the Environment Agency (EA). The Regulations also include a schedule of activities that are exempt from the requirements of permitting. However, to comply with the Regulations, an exempt activity must generally be registered with the EA before commencing.

The Hazardous Waste Regulations (England and Wales) 2005

17.6.6 The Hazardous Waste Regulations (England and Wales) 2005 (as amended) (Ref 54) places a requirement on producer of the waste to:

a. Classify the waste;

b. Separate hazardous waste from other general waste streams;

c. Use authorised businesses to collect, recycle or dispose of your waste; and

d. Complete relevant hazardous waste consignment note.

The Environment Act 2021

17.6.7 The Environment Act 2021 (Ref 55) makes provision about targets, plans and policies for improving target areas within the natural environment. Part 3 of the Act outlines the priority for waste reduction and resource efficiency. The Act will deliver:

a. An extension of producer responsibility to make producers pay for 100% of the cost of disposal of products, starting with plastic packaging;

b. A Deposit Return Scheme for single use drinks containers;

c. Charges for single use plastics;

d. Greater consistency in recycling collections in England;

e. Electronic waste tracking to monitor waste movements and tackle fly-tipping;

f. Further tackling of waste crime;

g. The power to introduce new resource efficiency information (labelling on the recyclability and durability of products);

h. The regulation of the shipment of hazardous waste; and

i. A ban or export restriction of waste to non-OECD countries.

Policy

17.6.8 The relevant NPS requirements, together with an indication of where in the ES chapter the information provided to address these requirements, are provided in **Table 8**. NPS EN-3 and EN-5 do not contain specific requirements relevant to the materials and waste assessment for this Scheme. Therefore, **Table 8** only lists relevant NPS requirements from NPS EN-1.

Table 8. Relevant NPS requirements for the Materials and Waste Assessment

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
Overarching National Policy Statement for Energy (EN-1)		
Paragraph 5.11.19	Applicants should safeguard any mineral resources on the proposed site as far as possible, taking into account the long-term potential of the land use after any future decommissioning has taken place.	As set out within the **Planning Statement [EN/010142/APP/7.2]**, the Scheme does not have a significant effect on Mineral Safeguarding Areas (MSAs). The Principal Site does not lie within an MSA. The Cable Route Corridor crosses the sand and gravel MSA adjacent to the River Trent, however, the impact of the crossing is minimal and therefore, is not considered to be significant.
Paragraph 5.11.28	Where a proposed development has an impact upon a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that appropriate mitigation measures have been put in place to safeguard mineral resources.	As set out within the **Planning Statement [EN/010142/APP/7.2],** the Scheme does not have a significant effect on Mineral Safeguarding Areas (MSAs). The Principal Site does not lie within an MSA. The Cable Route Corridor crosses the sand and gravel MSA adjacent to the River Trent, however, the impact of the crossing is minimal and therefore, is not considered to be significant.
Paragraph 5.15.6	Applicants must demonstrate that development proposals are in line with Defra's policy position on the role of energy from waste in treating residual waste.	The waste hierarchy has been implemented for the management of waste from the Scheme. Further information on waste management arrangements is provided within **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.
Paragraph 5.15.8	The applicant should set out the arrangements that are proposed for managing any waste produced and prepare a report that sets out the sustainable management of waste and use of resources throughout any relevant demolition, excavation and construction activities	Waste management arrangements are detailed in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
Paragraph 5.15.9	The arrangements described and a report setting out the sustainable management of waste and use of resources should include information on how re-use and recycling will be maximised in addition to the proposed waste recovery and disposal system for all waste generated by the development. They should also include an assessment of the impact of the waste arising from development on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation	Waste management arrangements for the Scheme and impacts on the local waste management facilities are detailed in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.
Paragraph 5.15.10	The applicant is encouraged to refer to the 'Waste Prevention Programme for England: Maximising Resources Minimising Waste' and 'Towards Zero Waste: Our Waste Strategy for Wales' and should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that this is the best overall environmental outcome.	Waste management arrangements for the Scheme are detailed in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**. 'Waste Prevention Programme for England: Maximising Resources Minimising Waste' has been referred to for the specification of waste management arrangements for the Scheme and in undertaking the assessment, as set out within this appendix.
Paragraph 5.15.12	The UK is committed to moving towards a more 'circular economy'. Where possible, applicants are encouraged to source materials from recycled or reused sources and use low carbon materials, sustainable sources and local suppliers. Construction best practices should be used to ensure that material is reused or recycled onsite where possible	This has been considered throughout the design of the Scheme. Sourcing of materials from recycled or reused sources and use of low carbon materials, sustainable sources and local suppliers has been set out within the **Framework Construction Environmental Management Plan (CEMP) [EN010142/APP/7.8]**.
Paragraph 5.15.13	Applicants are also encouraged to use construction best practices in relation to storing materials in an adequate	Standard, good and best practice recovery rates by material are provided by WRAP. As set out in **Section 17.8** of

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
	and protected place on site to prevent waste, for example, from damage or vandalism. The use of Building Information Management tools (or similar) to record the materials used in construction can help to reduce waste in future decommissioning of facilities, by identifying materials that can be recycled or reused.	**Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]** good and best practice waste recovery (landfill diversion) for the Scheme is likely to be above 90% for the majority of construction wastes. Good practice measures to be implemented during construction are set out within the **Framework CEMP [EN010142/APP/7.8]**.
Paragraph 5.15.14	The Secretary of State should consider the extent to which the applicant has proposed an effective system for managing hazardous and non-hazardous waste arising from the construction, operation and decommissioning of the proposed development.	This is detailed in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.
Paragraph 5.15.15	The Secretary of State should be satisfied that: • any such waste will be properly managed, both on-site and off-site. • the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area. • adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent for recovery or disposal, except where that is the best overall environmental outcome	Waste management arrangements for the Scheme and impacts on the local waste management facilities are detailed in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
Paragraph 5.15.19	The Secretary of State should have regard to any potential impacts on the achievement of resource efficiency and waste reduction targets set under the Environment Act 2021 or wider goals set out in the government's Environmental Improvement Plan 2023.	Impacts are detailed in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

National Planning Policy Framework (NPPF) 2023

17.6.9 The NPPF (Ref 4) does not contain specific waste policies as these are detailed within the National Planning Policy for Waste (Ref 61) and Waste Management Plan for England (Ref 63), however, the overarching policies are relevant to materials and waste.

17.6.10 The relevant National Planning Policy paragraphs, together with an indication of where in the ES) the information is provided to address these requirements, are provided in **Table 9**.

National Planning Policy for Waste

17.6.11 The National Planning Policy for Waste (Ref 56) sets out detailed waste planning policies to be applied in conjunction with the NPPF. It states:

"when determining planning applications for non-waste development, local planning authorities should, to the extent appropriate to their responsibilities, ensure that:

a) The likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities;

b) New, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development, and

c) The handling of waste arising from the construction and operation of development maximises reuse/recovery opportunities, and minimises off-site disposal".

The Waste Management Plan for England 2021

17.6.12 The Waste Management Plan for England 2021 (Ref 57) provides an overview of waste management in England and reiterates the requirement for all waste producers and waste management providers to implement the waste hierarchy. It also highlights the need for waste to be managed using the proximity principle and confirms England's commitment to recovering at least 70% by weight of non-hazardous C&D waste by 2020 (excluding soils and stones). Recovery is assumed in the context of this policy to include reuse, recycling and incineration with energy recovery.

A Green Future: Our 25 Year Plan to Improve the Environment 2018

17.6.13 The Government's 25 Year Plan to Improve the Environment (Ref 58) *"sets out goals for improving the environment within a generation and leaving it in a better state than we found it".* It details how the Government will work with communities and businesses to do this. The following policies are relevant:

a. Make sure that resources are used more efficiently and kept in use for longer to minimise waste and reduce its environmental impacts by promoting reuse, remanufacturing and recycling.

b. Work towards eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2042.

c. Reducing food supply chain emissions and waste.

d. Reducing litter and littering.

e. Improving management of residual waste.

Environmental Improvement Plan 2023

17.6.14 The 25 Year Environment Plan set out the Government's 25-year plan to improve the environment within a generation. It defined 10 goals and provided a framework and vision for how these were to be achieved. The goals included: maximise our resources, minimise our waste. In accordance with the Environment Act 2021 the 25-year plan is to be reviewed and updated every five years; the Environmental Improvement Plan 2023 (Ref 59) is the first of these updates. The Environmental Improvement Plan 2023 reinforces the intent of the 25 Year Environment Plan and sets out the progress made against all 10 goals, the specific targets and commitments made in relation to each goal, and the Government's plan to continue to deliver these targets and the overarching goals. The 25 Year Environment Plan and the Environmental Improvement Plan 2023 highlight the Government's support for the reduction in the UK's carbon footprint; protection and enhancement of the natural environment; and ensuring land is managed with environmental gains.

Our Waste, Our Resources, A Strategy for England 2018

17.6.15 The Strategy (Ref 60) will help the Government to meet the commitments outlined in the 25 Year Plan and "*sets out how we will preserve our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. At the same time, we will minimise the damage caused to our natural environment by reducing and managing waste safely and carefully, and by tackling waste crime."* The strategy combines actions to be taken now and commitments for the coming years. Key targets and milestones and targets, which could be relevant to the Project, include:

a. Roll out of a deposit return scheme – 2025;

b. Legislation for mandatory separate food waste collections – by the end of March 2026;

c. 75% recycling rate for packaging (subject to consultation);

d. 65% recycling rate for municipal solid waste – 2035; and

e. Municipal waste to landfill 10% or less – 2035.

The waste prevention programme for England: Maximising Resources, Minimising Waste 2023

17.6.16 The new programme (Ref 61) builds on and embeds strategic principle 2 from the Our Waste, Our Resources Strategy, to prevent waste from occurring in the first place and manage it better when it does. The goal is for a circular economy approach which retains products and materials in circulation for as long as possible and at their highest value.

Guidance

17.6.17 The assessment has also considered the following guidance.

National Planning Policy Guidance (NPPG) for Waste and Minerals

17.6.18 The NPPG for Waste (Ref 62) and Minerals (Ref 63) published to provide more in-depth guidance to the NPPF. The NPPG aims to make planning guidance more accessible and ensures that the guidance is kept up to date.

IEMA Guide to: Materials and Waste in Environmental Impact Assessment, Guidance for a Proportionate Approach

17.6.19 The document (Ref 64) offers guidance and recommendations for EIA practitioners and stakeholders concerned with the impacts and effects of materials and waste on the environment. The guidance provides considerations for screening, scoping, consultation, assessment and subsequent reporting and monitoring.

Contaminated Land: Applications in Real Environments (CL:AIRE) Definition of Waste: Development Industry Code of Practice (DoW CoP)

17.6.20 The DoW CoP (Ref 65) provides a process which enables the reuse of excavated materials on-site or their movement between sites. Use of the DoW CoP supports the sustainable and cost-effective development of land. It can provide an alternative to Environmental Permits or Waste Exemptions.

Waste and Resources Action Programme (WRAP) Designing Out Waste: A Design Team Guide for Civil Engineering

17.6.21 The guide (Ref 66) outlines the case for taking action to designing out waste, provides a detailed explanation of the key principles that designers can use during the design process and how these principles can be applied to civil engineering and building projects to maximise opportunities to reduce construction waste and use materials more efficiently. It gives examples of technical solutions and how, in practice, designers have helped achieve significant waste reductions.

Waste Duty of Care Code of Practice

17.6.22 The code of practice (Ref 67) sets out practical guidance on how to meet the waste duty of care requirements. It is issued under section 34(7) of the Environmental Protection Act 1990 (the EPA) in relation to the duty of care set out in Section 34(1) of that Act.

17.6.23 This code of practice applies to those that import, produce, carry, keep, treat, dispose of or, as a dealer or broker have control of, certain waste in England or Wales.

17.6.24 Failure to comply with the duty of care is an offence with no upper limit on the courts' power to fine. In some instances a fixed penalty notice may be issued for failure to comply with the duty of care in place of prosecution. The code of practice is admissible as evidence in legal proceedings for Section 34(1) offences and its rules must be taken into account where relevant to questions raised in the case.

Applying the Waste Hierarchy

17.6.25 This guidance (Ref 68) was produced under regulation 15(1) of the Waste (England and Wales) Regulations 2011 and any person subject to the regulation 12 duty must have regard to it. The guidance is for any business or public body which generates, handles or treats waste. It sets out:

a. What the waste hierarchy is;

b. How it works for a range of common materials and products;

c. What businesses and public bodies need to do; and

d. Key questions and ideas for dealing with waste in line with the hierarchy.

Table 9. Relevant NPPF requiremets for the Material and Waste assessment

Relevant NPPF paragraph reference	Requirement of the NPPF	Location of information provided to address this
Paragraph 8c	There is an emphasis to minimise waste, to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.	Waste will be minimised as far as reasonably possible as outlined in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.
Paragraph 216	Facilitating the sustainable use of minerals by taking account of the contribution that substitute or secondary and recycled materials and minerals waste would make to the supply of materials, before considering extraction of primary materials, whilst aiming to source minerals supplies indigenously.	Sustainable use of materials will be specified and waste will be minimised as far as reasonably possible as outlined in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

Local Policy

17.6.26 The following local policy within **Table 10** is relevant to the assessment of materials and waste of the Scheme.

Table 10. Relevant local policy for materials and waste

Relevant document reference	Requirement of the policy	Location of information provided to address this
Central Lincolnshire Local Plan (Adopted April 2023)	**Policy S53: Design and Amenity** • Provide adequate storage, waste, servicing and utilities for the use proposed. • Minimise the need for resources both in construction and operation of buildings and be easily adaptable to avoid unnecessary waste in accordance with Policies S10 and S11. • Use high quality materials which are not only suitable for the context but that are durable and resilient to impacts of climate change in accordance with the requirements of Policy S20; • Use high quality materials which are durable and ensure buildings and spaces are adaptive.	Waste management arrangements for the Scheme are outlined in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**. Good practice measures to be implemented during construction with regards to material use and minimising waste are set out within the **Framework CEMP [EN010142/APP/7.8]**.
Bassetlaw District Core Strategy Development Management Policies DPD (Adopted December 2011)	**Policy DM4: Design and Character** New development should ensure that it allows adequate space for waste and recycling storage and collection.	Waste management arrangements for the Scheme are outlined in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.
Draft Bassetlaw Local Plan Main Modifications (August 2023)	**Policy ST35: Design Quality** All development must have a high quality design that: • Respects the local context and complements the landform, layout, building orientation, scale, height,	Waste management arrangements for the Scheme are outlined in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

Relevant document reference	Requirement of the policy	Location of information provided to address this
	massing, type, materials, details and landscaping of the surrounding areas; • Is sustainable in design and construction, and utilises modern construction methods and durable materials, where practicable; • Provides for external storage including waste disposal.	
Nottinghamshire and Nottingham Replacement Waste Local Plan: Part 1 Waste Core Strategy (Dec 2013)	**Policy WCS2: Waste awareness and re-use** All new development should be designed, constructed and implemented to minimise the creation of waste, maximise the use of recycled materials and assist the collection, separation, sorting, recycling and recovery of waste arising from the development. Policy WCS10: Safeguarding waste management sites The following sites will be safeguarded for waste management facilities: • Existing authorised waste management facilities including potential extensions and sites which have a valid planning permission that has not yet been implemented; or • Sites allocated in the Site Allocations Document.	Waste management arrangements for the Scheme and an assessment of impacts on local waste management infrastructure is provided in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**. .

Relevant document reference	Requirement of the policy	Location of information provided to address this
	Safeguarding will only apply to the above identified sites and any land immediately adjacent to the site where a need to safeguard has been clearly demonstrated.	
Nottinghamshire and Nottingham Joint Draft Waste Local Plan – (August 2023)	**Policy SP1: Waste prevention and re-use** All new development should be designed, constructed, and operated to minimise the creation of waste, maximise the use of recycled materials, and assist with the collection, separation, sorting, recycling and recovery of waste arising from the development during its use. Policy SP8: Safeguarding Waste Management Facilities • Nottinghamshire and Nottingham City will seek to avoid the loss of existing authorised waste management facilities, including potential extensions; sites which have an unimplemented planning permission; and facilities to transport waste, such as rail or water. • Proposals, including both planning applications and allocations in local plans, for non-waste uses near existing or permitted waste management facilities will need to provide suitable mitigation before the development is completed to address significant	Waste management arrangements for the Scheme and an assessment of impacts on local waste management infrastructure is provided in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

Relevant document reference	Requirement of the policy	Location of information provided to address this
	adverse impacts and demonstrate that the waste management uses can operate without unreasonable restrictions being placed upon them. • Where proposed non-waste development would have an unacceptable impact on a waste management facility, the applicant will need to demonstrate that there are wider social and/or economic benefits that outweigh the retention of the site or infrastructure for waste use and either: – The equivalent, suitable and appropriate capacity will be provided elsewhere prior to the non-waste development; or – The waste capacity and/ or safeguarded site is no longer required	
Lincolnshire Minerals and Waste Local Plan (adopted June 2016)	**Policy M11: Safeguarding of Mineral Resources** Applications for non-minerals development in a minerals safeguarding area must be accompanied by a Minerals Assessment. Planning permission will be granted for development within a Minerals Safeguarding Area provided that it would not sterilise mineral resources within the Mineral Safeguarding Areas or prevent	The Scheme does not impact on Mineral Safeguarding Areas. An assessment of impacts on local waste management infrastructure is provided in **Section 17.8** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.

Relevant document reference	Requirement of the policy	Location of information provided to address this
	future minerals extraction on neighbouring land. **Policy M12: Safeguarding of Existing Mineral Sites and Associated Minerals Infrastructure** Mineral sites (excluding dormant sites) and associated infrastructure that supports the supply of minerals in the County will be safeguarded against development that would unnecessarily sterilise the sites and infrastructure or prejudice or jeopardise their use by creating incompatible land uses nearby. **Policy W8: Safeguarding Waste Management Sites** The County Council will seek to safeguard existing and allocated waste management facilities from redevelopment to a non-waste use and/ or the encroachment of incompatible development unless: • Alternative provision in the vicinity can be made in accordance with the Development Plan; or • It can be demonstrated that there is no longer a need for a waste facility at that location.	

17.7 Electric and Electro-Magnetic Fields

National Legislation, Policy and Guidance

Legislation

17.7.1 Regulation 5(2)(a) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (Ref 10) requires that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the likely significant direct and indirect effects of the Scheme on the population and health.

17.7.2 The Control of Electromagnetic Fields at Work Regulations 2016 (Ref 42) sets out the duties of employers in relation to controlling the risks to employees for, Electric and Magnetic Fields (EMF). This includes a requirement to assess employees' potential exposure to EMFs with reference to action levels (ALs) and exposure limit values (ELVs).

Policy

17.7.3 The relevant NPS requirements, together with an indication of where in the ES chapter the information provided to address these requirements, are provided in **Table 11**. As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme and therefore policies in relation to electric and magnetic fields from overhead lines has not been included.

Table 11. Relevant NPS requirements for the assessment of electric and magnetic fields

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
Overarching National Policy Statement for Electricity Network Infrastructure EN-5		
Paragraph 2.10.11	The applicant should consider the following factors: • Height, position, insulation and protection (electrical or mechanical as appropriate) measures subject to ensuring compliance with the Electricity Safety, Quality and Continuity Regulations 2002; • That optimal phasing of high voltage overhead power lines is introduced wherever possible and practicable in accordance with the Code of Practice to minimise EMFs; and • Any new advice emerging from the Department of Health and Social Care relating to government policy for EMF exposure guidelines	The Scheme design will ensure compliance with Electricity Safety, Quality and Continuity Regulations 2002. As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme. Relevant emerging policy has been considered within the assessment in **Section 17.9** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1]**.
Paragraph 2.10.12	Where it can be shown that the line will comply with the current public exposure guidelines and the policy on phasing, no further mitigation should be necessary	As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme. This section is therefore not applicable to the Scheme.

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
Paragraph 2.10.13	Where EMF exposure is within the relevant public exposure guidelines, re-routeing a proposed overhead line purely on the basis of EMF exposure or undergrounding a line solely to further reduce the level of EMF exposure are unlikely to be proportionate mitigation measures	As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme. This section is therefore not applicable to the Scheme.
Paragraph 2.11.9	This NPS does not repeat the detail of the ICNIRP 2020 guidelines on restrictions or reference levels. The government has developed with the electricity industry a Code of Practice, 'Power Lines: Demonstrating compliance with EMF public exposure guidelines – a voluntary Code of Practice', published in February 2011 that specifies the evidence acceptable to show compliance with ICNIRP (2020) guidelines and is also in line with the terms of the 1999 EU Council Recommendation on EMF exposure.	As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme. This section is therefore not applicable to the Scheme.
Paragraph 2.11.10	Before granting consent to an overhead line application, the Secretary of State should be satisfied that the proposal is in accordance with the guidelines, considering the evidence provided by the applicant and any other relevant evidence. It may also need to take expert advice from the Department of Health and Social Care	As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme. This section is therefore not applicable to the Scheme.

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
Paragraph 2.11.11	Industry currently applies optimal phasing to 275kV and 400kV overhead lines voluntarily wherever operationally possible, which helps to minimise the effects of EMF. The government has developed with industry a voluntary Code of Practice, 'Optimum Phasing of high voltage double-circuit Power Lines – A Voluntary Code of Practice'21, published in March 2012, that defines the circumstances where industry can and will optimally phase lines with a voltage of 132kV and above.	As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme. This section is therefore not applicable to the Scheme.
Paragraph 2.11.12	Where the applicant cannot demonstrate that the line will be compliant with the Electricity Safety, Quality and Continuity Regulations 2002, with the exposure guidelines as specified in the Code of Practice on compliance, and with the policy on phasing as specified in the Code of Practice on optimal phasing then the Secretary of State should not grant consent.	As set out in **Chapter 2: Scheme Location [EN010142/APP/6.1]**, it has been confirmed that there will be no overhead electricity cables used or constructed as part of the Scheme. This section is therefore not applicable to the Scheme.
Paragraph 2.11.13	Undergrounding of a line would reduce the level of EMFs experienced, but high magnetic field levels may still occur immediately above the cable. It is the government's policy that power lines should not be undergrounded solely for the purpose of reducing exposure to EMFs.	As set out in **Chapter 3: Scheme Description** of this ES **[EN010142/APP/6.1]**, all cables have been undergrounded to reduce the visual impact at the operational phase. **Section 17.9** of **Chapter 17: Other Environmental Topics** of this ES

Relevant NPS paragraph reference	Requirement of the NPS	Location of information provided to address this
		[EN010142/APP/6.1], provides and assessment of the likely effects of electric and electromagnetic fields from the underground cables.
Paragraph 2.11.14	In order to avoid unacceptable adverse impacts of EMFs from electricity network infrastructure on aviation, the Secretary of State will take account of statutory technical safeguarding zones defined in accordance with Planning Circular 01/0322, or any successor, when considering recommendations for DCO applications. More detail on this issue can be found in Section 5.5 of EN-1.	The likely effects of electric and electromagnetic fields generated by the Scheme on aviation receptors and statutory technical aviation safeguarding zones has been considered in **Section 17.9** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1].**
Paragraph 2.11.15	Where a statutory consultee on the safeguarding of technical facilities identifies a risk that the EMF effect of electricity network infrastructure would compromise the effective and safe operation of such facilities, the potential impact and siting and design alternatives will need to have been fully considered as part of the application	The likely effects of electric and electromagnetic fields generated by the Scheme on aviation receptors and statutory technical aviation safeguarding zones has been considered in **Section 17.9** of **Chapter 17: Other Environmental Topics** of this ES **[EN010142/APP/6.1].** The levels of electric and electromagnetic fields generated by the Scheme and experienced by these receptors is considered to be nil or negligible and therefore there is no risk.

National Planning Policy Framework (NPPF) 2023

17.7.4 There are no relevant NPPF paragraphs for Electric and Electro-Magnetic Fields.

Guidance

17.7.5 The assessment has also considered:

a. DECC (2012) Power Lines: Demonstrating compliance with EMF public exposure guidelines - A voluntary Code of Practice (Ref 43) which sets out guidance on situations where it is necessary to demonstrate compliance with the exposure guidelines that apply to public exposure to power frequency electric and magnetic fields (EMFs) in the UK;

b. National Grid (2015). Undergrounding high voltage electricity transmission lines: The technical issues (Ref 44), which provides information about the technical merits and challenges associated with undergrounding high voltage electricity lines, compared with installing overhead lines;

c. Energy Networks Association (2017). Electric and Magnetic Fields, (Ref 45) which sets out facts and information relating to Electric and Magnetic Fields;

d. International Commission on Non-Ionizing Radiation Protection (ICNIRP) (1998) (Ref 46) Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz) which provide reference levels for exposure to magnetic fields; and

e. Department of Transport (2002). The Town and Country Planning (Safeguarded Aerodromes, Technical Sites and Military Explosives Storage Areas) Direction (updated 2016) (Ref 47).

Local Policy

17.7.6 There is no relevant local policy in relation to the assessment of electric and electro-magnetic fields effects of the Scheme.

17.8 References

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Ref 2 Department for Energy Security & Net Zero (2024). National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: https://assets.publishing.service.gov.uk/media/64252f5f2fa848000cec0f52/NPS_EN-3.pdf [Accessed 17 January 2024]

Ref 3 Department for Energy Security & Net Zero (2024). National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://assets.publishing.service.gov.uk/media/64252f5f2fa848000cec0f52/NPS_EN-3.pdf [Accessed 17 January 2024]

Ref 4 Ministry of Housing, Communities & Local Government (MHCLG) (2023) National Planning Policy Framework. Available at: National Planning Policy Framework (publishing.service.gov.uk) [Accessed 17 January 2024]

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Ref 7 The UK Civil Aviation Authority (2012). 2010/53 Info Alert: Interim CAA Guidance – Solar Photovoltaic Systems. Available at: https://publicapps.caa.co.uk/modalapplication.aspx?catid=1&appid=11&mode=detail&id=4370 [Accessed 17 January 2024]

Ref 8 Civil Aviation Authority (2020). CAP738 – Safeguarding of Aerodromes 3rd Edition. Available at: https://publicapps.caa.co.uk/docs/33/CAP738%20Issue%203.pdf [Accessed 22 January 2024]

Ref 9 Railway Safety and Standards Board (2016). Signal Sighting Assessment Requirements, June 2016. Railway Group Guidance Note. Available at: [redacted] [Accessed 17 January 2024]

Ref 10 H.M. Government (2017). Infrastructure Planning (Environmental Impact Assessment) Regulations. Available at: https://www.legislation.gov.uk/uksi/2017/572/regulation/5/made [Accessed 15 January 2024]

Ref 11 H.M. Government (1990) Environmental Protection Act 1990. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed 15 January 2024]

Ref 12 H.M. Government, (1991); The Water Resources Act 1991. Available at: https://www.legislation.gov.uk/ukpga/1991/57/contents [Accessed 15 January 2024]

Ref 13 H.M. Government, (2003); The Water Act 2003. Available at: https://www.legislation.gov.uk/ukpga/2003/37/contents [Accessed 15 January 2024]

Ref 14 H.M. Government, (1984); The Building Act 1984. Available at: https://www.legislation.gov.uk/ukpga/1984/55 [Accessed 15 January 2024]
Ref 15 H.M. Government, (2015); The Building Regulations & c (Amendment) Regulations 2015. Available at: https://www.gov.uk/government/publications/building-regulation-amendment-regulations-2015-circular-012015 [Accessed 15 January 2024]
Ref 16 H.M. Government, Planning Act (2008). Available at: https://www.legislation.gov.uk/ukpga/2008/29/contents [Accessed 15 January 2024]
Ref 17 H.M. Government (1995). The Environment Act. Available at: https://www.legislation.gov.uk/ukpga/1995/25/contents [Accessed 15 January 2024]
Ref 18 H.M. Government, (2016); Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made [Accessed 15 January 2024]
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Ref 20 H.M. Government (2006). The Contaminated Land (England) Regulations 2006. Available at: https://www.legislation.gov.uk/uksi/2006/1380/made [Accessed 15 January 2024]
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Ref 29 The Chartered Institute of Environmental Health (CIEH) Local Authority Handbooks (various publication dates, 2006 - 2009). Available at: [redacted] [Accessed 16 January 2024]

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Ref 31 CIRIA Guidance C665, 'Assessing Risks Posed by Hazardous Ground Gases to Buildings' (2007) Available at: PUB C665 Assessing risks posed by hazardous ground gases to buildings, CIRIA - Publication Index | NBS (thenbs.com) [Accessed 16 January 2024]

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Ref 33 OJEU (2009) Council Directive 2009/71/EURATOM of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations. Available at: https://www.legislation.gov.uk/eudr/2009/71/data.pdf [Accessed 15 January 2024]

Ref 34 HMSO (2005). Civil Contingencies Act 2004 (Contingency Planning) Regulations 2005. Available at: https://www.legislation.gov.uk/uksi/2005/2042/contents/made [Accessed 22 January 2024]

Ref 35 H.M. Government (1974); Health and Safety at Work etc. Act 1974. Available at: https://www.legislation.gov.uk/ukpga/1974/37/contents [Accessed 15 January 2024

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