Peartree Hill Solar Farm

Environmental Statement

Volume 2

Chapter 10: Land, Soil and Groundwater

Revision 2

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Planning Act 2008

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Prepared by RSK on behalf of RWE Renewables UK Solar and Storage LTD

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10 Land, Soil and Groundwater

10.1 Introduction

10.1.1 This chapter presents an assessment of likely significant effects arising from the construction, operation (including maintenance) and decommissioning of the Proposed Development upon land, soil and groundwater. The full description of the Proposed Development is provided within **ES Volume 1, Chapter 3: Proposed Development Description [EN010157/APP/6.1]**.

10.1.2 This chapter is supported by the following figures presented in **ES Volume 3 [EN010157/APP/6.3]**:

- **Figure 10.1: Study Areas and Key Features for Land, Soil and Groundwater**; and
- **Figure 10.2: ALC Blocks overlaid Land Areas**.

10.1.3 This chapter is supported by the following appendices presented in **ES Volume 4 [EN010157/APP/6.4]**:

- **Appendix 5.5: Water Framework Directive Screening and Scoping Report**;
- **Appendix 10.1: Preliminary Risk Assessment**; and
- **Appendix 10.2: Agricultural Land Classification Report**.

10.2 Legislative framework, planning policy and guidance

10.2.1 This assessment has been undertaken in accordance with the following legislation and with regard to planning policy and guidance.

10.2.2 It should be noted that this chapter does not assess the compliance of the Proposed Development against relevant planning policy. Such an assessment is presented in the **Planning Statement [EN010157/APP/5.5]**.

Legislation

- Part IIA of the Environmental Protection Act 1990 provides a statutory regime for identifying and remediating contaminated land **[Ref. 10-1]**;
- The Water Resources Act 1991 covers the management and protection of water resources. It includes requirements to ensure sustainable use

of water, prevent pollution and regulate activities that could affect availability or quality of water **[Ref. 10-2]**;

- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 establishes a framework for action relating to water policy in England and Wales **[Ref. 10-3]**;
- The Groundwater (Water Framework Directive) (England) Direction 2016 sets out obligations to protect groundwater **[Ref. 10-4]**;
- Directive 2013/39/EC regarding priority substances in the field of water policy, and provides information on environmental quality standards for water **[Ref. 10-5]**; and
- The Environmental Permitting (England and Wales) Regulations 2016, provide a structure for overseeing activities which have the potential to harm human health or the environment **[Ref. 10-6]**.

National planning policy

- Overarching National Policy Statement for Energy (NPS EN-1) (2023) (designated in January 2024) – Section 5.11 relates to land use and includes details of planning policy relating to land contamination, soil and agricultural land **[Ref. 10-7]**;
- National Policy Statement for Renewable Energy Infrastructure (NPS EN-3) (2023) (designated in January 2024) – Section 2.10 considers issues relating to soil quality for solar development, including the consideration of land types on which schemes could be developed **[Ref. 10-8]**;
- National Policy Statement for Electricity Networks Infrastructure (NPS EN-5) (2023) (designated in January 2024) - details issues relating to underground cables, in connection with soil and contamination, although predominantly dealing with overhead cables **[Ref. 10-9]**; and
- National Planning Policy Framework (NPPF) (2024) with reference to Section 15 'Conserving and enhancing the natural environment' **[Ref. 10-10]**.

Local planning policy

- East Riding Local Plan 2012 – 2029 (adopted April 2016) – specifically Policy ENV4: Conserving and enhancing biodiversity and geodiversity **[Ref. 10-11]**;
- East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan 2016-2033 (adopted November 2019) **[Ref. 10-12]**, including

Policy EC6: Protecting mineral resources and Policy DM4: Best and most versatile agricultural land; and.

- East Riding of Yorkshire and Kingston upon Hull Joint Waste Local Plan, adopted November 2004 **[Ref. 10-13]**.

Guidance

- Land Contamination Risk Management (Environment Agency, 2023) **[Ref. 10-14]**;
- Ministry of Agriculture, Fisheries and Food (1988). Agricultural Land Classification for England and Wales: Revised Guidelines and Criteria for Grading the Quality of Agricultural Land **[Ref. 10-15]**;
- Likelihood of Best and Most Versatile Agricultural Land strategic scale maps (Natural England, 2017) **[Ref. 10.16]**:
- Institute of Environmental Management and Assessment (IEMA) Guide: A New perspective on Land and Soil in Environmental Impact Assessment (2022) **[Ref. 10-17]**;
- Technical Information Note TIN049: Agricultural Land Classification: protecting the best and most versatile agricultural land, 2nd edition (2012) **[Ref. 10-18]**;
- Department for Food, Environment and Rural Affairs (Defra) Local Lands, Soils and Groundwater Management Technical Guidance (TG22) **[Ref. 10-19]**;
- Design Manual for Roads and Bridges LA 113: Road Drainage and the Water Environment, Revision 1 (2020) **[Ref. 10-20]**;
- Design Manual for Roads and Bridges LA 104: Environmental Assessment and Monitoring, Revision 1 (2020) **[Ref. 10-21]**;
- A Green Future: Our 25 Year Plan to Improve the Environment **[Ref. 10.22]**;
- The Environment Agency's approach to groundwater protection, Version 1.2 (2018) **[Ref. 10-23]**; and
- The Environment Agency, protect groundwater and prevent groundwater pollution (August 2024 update) **[Ref. 10-24]**.

10.3 Stakeholder engagement

10.3.1 **Table 10-1** provides a summary of the stakeholder engagement activities undertaken by the Applicant in relation to land, soil, and groundwater separately from the Environmental Impact Assessment (EIA) scoping, non-statutory

consultation, statutory consultation and targeted consultation process in support of the preparation of this assessment, as well as detailing the matters raised, how such matters have been addressed, and where they have been addressed within the DCO Application documentation.

10.3.2 **ES Volume 4, Appendix 5.3: Scoping Opinion Response Matrix [EN010157/APP/6.4]** presents the responses received via the Scoping Opinion and the Applicant's response to each matter raised.

10.3.3 The **Consultation Report Appendices [EN010157/APP/5.2]**, which is submitted in support of the DCO Application, sets out the feedback received during non-statutory, statutory and targeted consultation and how the Applicant has had regard to the matters raised by consultees.

Table 10-1: Summary of stakeholder engagement

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
East Riding of Yorkshire Council	25/07/2024	Terrestrial Sustainable Development officer recommends that Natural England is consulted with regards to the Agricultural Land Classification survey and soil management.	**ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010157/APP/6.4]** shared with Natural England on 30/07/2024 (see below).	N/A
East Riding of Yorkshire Council	26/07/2024	Response to consultation regarding land contamination (and air quality). East Riding of Yorkshire Council Environmental Control Principal Officer suggests that a precautionary approach should be adopted and have a mechanism in place for construction staff to report any suspected contamination encountered during the development and where soil, aggregates or fill material needs to be brought on to Site for various reasons, it must be	The following points have been included within the **Outline Site Waste Management Plan (Outline SWMP) [EN010157/APP/7.10]** • A mechanism shall be put in place for construction staff to report any suspected contamination encountered during the development and where soil, aggregates or fill material needs to be brought on to Site for various reasons; • It will be ensured that material is from a certified clean source and is suitable for use;	**Section 10.8** of **ES Volume 2, Chapter 10: Land, Soil and Groundwater [EN010157/APP/6.2]**. **Outline SWMP [EN010157/APP/7.10]**.

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
		ensured that it is from a certified clean source and is suitable for use. Any material removed from Site for disposal should be documented by appropriate waste transfer notes. Written verification may be required by the local planning authority, and any records should be retained.	• Any material removed from Site for disposal will be documented by appropriate waste transfer notes; and • Where written verification is required by the local planning authority, any records will be retained.	
East Riding of Yorkshire Council	09/08/2024	Request by the Applicant for information held by East Riding of Yorkshire Council relating to contaminated land sites, if present.	Response from East Riding of Yorkshire Council (received 09/08/2024) indicated that the dataset that they hold is identical to that provided within the Envirocheck report (presented within **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**).	The findings of the Envirocheck report are summarised in **Section 10.4** of **ES Volume 2, Chapter 10: Land, Soil and Groundwater [EN010157/APP/6.2]**.
East Riding of Yorkshire Council	06/09/2024	Consultation relating to mineral extraction, mineral safeguarding and soil.	Email sent to East Riding of Yorkshire Council and Landscope (advisors to East Riding of Yorkshire Council on soils and minerals matters), providing information relating to this issue	A **Minerals Safeguarding Assessment** has been undertaken and can be found at Appendix 4 to the **Planning Statement [EN010157/APP/5.5]**.

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
			and requesting their response, with any further information requests. Response received from East Riding of Yorkshire Council (29/10/2024) confirming approval of the approach of appending the Mineral Safeguarding Assessment to the Planning Statement, and that mineral extraction and mineral safeguarding can be scoped out of the assessment presented in the ES.	
East Riding of Yorkshire Council	30/10/2024	The Applicant requested up-to-date details of private water supply locations within the Order Limits plus a 250m buffer	Response received from East Riding of Yorkshire Council (10/12/2024). This provided a list of private water supplies, which was reviewed alongside the dataset already held by the Applicant, and incorporated into the baseline information provided.	**ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]** and **Section 10.5.13** to **Section 10.5.14** of **ES Volume 2, Chapter 10: Land, Soil and Groundwater [EN010157/APP/6.2]**
East Riding of Yorkshire Council	12/11/2024	Consultation relating to geological hazards	Email sent to East Riding of Yorkshire Council and Landscope (advisors to East Riding of Yorkshire Council on soils and	**ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]** and

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
			minerals matters) outlining the proposed method for addressing risks relating to geological hazards, in order to reach agreement that this issue can be scoped out of the assessment. Follow up emails were sent on 25 November 2024, 5 December 2024, 11 December 2024 and 21 January 2025. No response on this matter has been received from Landscope to date.	**Table 10-3** of **ES Volume 2, Chapter 10: Land, Soil and Groundwater [EN010157/APP/6.2]**.
Natural England	30/07/2024	**ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010157/APP/6.4]** shared with Natural England on 30/07/2024.	N/A	N/A
Natural England	05/08/2024	Query from Natural England relating to total area of Best and Most Versatile agricultural land to be affected.	Response from the Applicant sent by email on 05/08/2024, indicating that there would be no permanent loss of Best and Most Versatile agricultural land (the two on-site substation locations will involve permanent land take, but these are to be situated on land that is not	N/A

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
			categorised as Best and Most Versatile agricultural land).	
Natural England	11/09/2024	A detailed Agricultural Land Classification survey should be undertaken across the full Study Area. Comments covered the potential impacts of installation of underground cables, and temporary haul roads/construction compounds, and requested that these issues be covered by the ES (and associated soil resource and management plan), alongside degradation or permanent loss of Best and Most Versatile agricultural land.	An Agricultural Land Classification Survey has been undertaken within Land Areas B to F (**ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010157/APP/6.4]**). Whilst a detailed Agricultural Land Classification and soil survey has not been undertaken of the grid connection cable route, an **Outline Soil Management Plan (Outline SMP) [EN010157/APP/7.8]** has been produced which covers the full Order Limits, including the grid connection cable route. As set out in the **Outline SMP [EN010157/APP/7.8]**, it is proposed that detailed soil/land quality surveys of the grid connection cable route will be undertaken pre-construction, once the design and land needed for excavation is confirmed, thus avoiding unnecessarily surveying	Impacts on Best and Most Versatile agricultural land, and impacts relating to cable installation and temporary haul road construction are addressed in **Sections 10.7 and 10.9** of **ES Volume 2, Chapter 10: Land, Soil and Groundwater [EN010157/APP/6.2]**. **ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010157/APP/6.4]**. **Outline SMP [EN010157/APP/7.8]**.

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
			the entire width of the proposed grid connection cable route corridor. The **Outline SMP [EN010157/APP/7.8]** describes the survey work that will be carried out prior to drafting the Soil Management Plan, and the consultation process that will be in-built prior to finalising the Soil Management Plan before works commence. Potential impacts to agricultural land from installation of cables, construction of temporary roads and construction compounds have been assessed for land that will be used both temporarily and permanently. This includes consideration of impacts on Best and Most Versatile agricultural land.	
Environment Agency	23/07/2024 - ongoing	The Environment Agency indicated that potential risks from piling to groundwater/ source protection zones need to be referred to, along with	These points have been included within the **Outline CEMP [EN010157/APP/7.2]**, which includes reference to the Environment Agency's Approach to	**ES Volume 2, Chapter 10: Land, Soil and Groundwater [EN010157/APP/6.2]**.

Consultee	Date of engagement	Summary of matters raised	How this matter has been addressed	Location where this matter is addressed
		appropriate Environment Agency guidance.	Groundwater Protection (version 1.2, February 2018 **[Ref 10-23]**) and the Environment Agency's Protect Groundwater and Prevent Groundwater Pollution (1 August 2024 **[Ref 10-24]**). A Water Framework Directive Screening Report is submitted in support of the DCO Application. The preparation of this report s has involved meetings and email communication with the Environment Agency, including on elements relating to groundwater.	**ES Volume 4, Appendix 5.5: Water Framework Directive Screening Report [EN010157/APP/6.4]**. **Outline CEMP [EN010157/APP/7.2]**.

10.4 Approach to the assessment

Scope of the assessment

10.4.1 The scope of this assessment has been established throughout the EIA process and design of the Proposed Development. Further information can be found in **ES Volume 1, Chapter 5: Approach to the EIA [EN010157/APP/6.1]**.

10.4.2 This section provides an update to the scope of the assessment from that presented in the EIA Scoping Report which is located in **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]** and re-iterates/updates the evidence base for scoping matters in or out following further iterative assessment.

Receptors/matters scoped into the assessment

10.4.3 **Table 10-2** presents the receptors/matters that are scoped into the assessment reported within this ES, together with appropriate justification.

Table 10-2: Receptors/matters scoped into the assessment

Receptor/matter	Phase	Justification
Land (potential contamination)	Construction	Historical landfill sites have been identified within the Order Limits. Further assessment of these features has been completed as part of **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**. This matter is scoped into the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]** and confirmed within **ES Volume 4, Appendix 5.2: Scoping Opinion [EN010157/APP/6.4]**.
Land (agricultural land)	Construction, operation (including maintenance) and decommissioning	There is also the potential for the Proposed Development to impact this resource by restricting access to the soils for agricultural usage. Best and Most Versatile agricultural land, which accounts for approximately 35.1% of Land Areas B to F (approximately 249.9 hectares).

Receptor/matter	Phase	Justification
		The construction of the Proposed Development may result in impacts on the availability of Best and Most Versatile agricultural land, topsoil quality and changes to the hydrogeological regime and has the potential to damage agricultural field drains. The Proposed Development will be partly located on Best and Most Versatile agricultural land, and will therefore impact the availability of Best and Most Versatile agricultural land during operation. During decommissioning, solar panels and associated infrastructure will be removed. There is the potential that Best and Most Versatile agricultural land could be affected if the works are not carried out correctly. Therefore, this receptor is scoped into the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]** and confirmed within **ES Volume 4, Appendix 5.2: Scoping Opinion [EN010157/APP/6.4]**.
Land (soil)	Construction, operation (including maintenance) and decommissioning	Soils are a key resource within the Site and require appropriate handling in order to prevent physical damage to the resource. There is also the potential for the Proposed Development to impact this resource by potential damage to soil resources through compaction and other proposed activities. Therefore, this receptor is scoped into the assessment.
Groundwater	Construction, operation (including maintenance) and decommissioning	Groundwater source protection zones are present within the Order Limits: The western area of Land Area B (Fields B1 and B7) is within a total catchment Source Protection Zone

Receptor/matter	Phase	Justification
		(Zone 3). All fields within Land Areas D, E and F are within the same Zone 3. There is a groundwater Source Protection Zone 2 area (outer protection zone) in the south western corner of Field E16. The boundary of a total catchment Source Protection Zone (Zone 3) is very close to the western edge of Fields B2, B3, B4 and B8, and the western edge of Land Area C. Some of the land that forms the cable route is also within Source Protection Zone 1. This receptor was proposed to be scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]**. However, as set out in **ES Volume 4, Appendix 5.2: Scoping Opinion [EN010157/APP/6.4]**, the Planning Inspectorate advocated its inclusion and therefore this receptor is scoped into the assessment.

Receptors/matters scoped out of the assessment

10.4.4 **Table 10-3** presents the receptors/matters that are scoped out of the assessment that are therefore not considered as part of this ES, together with appropriate justification.

Table 10-3: Receptors/matters scoped out of the assessment

Receptor/matter	Phase	Justification
Land (geological units)	Construction, operation (including maintenance) and decommissioning	There are no sensitive geological units identified within the Order Limits or within 250m of the Order Limits. Geology comprises bedrock units of chalk with superficial units including alluvium, till, sand and gravel, and tidal flat deposits. Therefore, this receptor is scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping**

Receptor/matter	Phase	Justification
		Report [EN010157/APP/6.4] and confirmed within **ES Volume 4, Appendix 5.2: Scoping Opinion [EN010157/APP/6.4]**.
Land (geological conservation review sites)	Construction, operation (including maintenance) and decommissioning	There are no sites of scientific interest due to geological issues within the Order Limits or within 250m of the Order Limits. Therefore, this receptor is scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]** and confirmed within **ES Volume 4, Appendix 5.2: Scoping Opinion [EN010157/APP/6.4]**.
Land (mineral safeguarding)	Construction, operation (including maintenance) and decommissioning	There are historical mineral extraction sites and mineral safeguarding areas within the Order Limits and within 250m of the Order Limits. This matter was proposed to be scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]**, instead being considered within the Planning Statement. However, as set out in **ES Volume 4, Appendix 5.2: Scoping Opinion [EN010157/APP/6.4]**, the Planning Inspectorate advocated its inclusion, unless evidence could be provided demonstrating agreement on this approach with the relevant consultation bodies (East Riding of Yorkshire Council and Hull City Council, as the Mineral Planning Authorities) and the absence of a likely significant effect. It should be noted that at the EIA Scoping stage, Hull City Council was a relevant consultee regarding this matter. However, the Order Limits no longer extend into the Hull City Council region, as such Hull City Council is no longer the relevant Mineral Planning Authority and the Applicant has consulted only with East Riding of Yorkshire Council. East Riding of

Receptor/matter	Phase	Justification
		Yorkshire Council has confirmed (email received 29 October 2024 – see **Table 10-1** above) approval of the approach of appending the Mineral Safeguarding Assessment to the **Planning Statement [EN010157/APP/5.5]**, and that mineral extraction and mineral safeguarding can be scoped out of the assessment. As detailed in **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**, an assessment of relevant data relating to mineral extraction indicates that there has been historical extraction of sand and gravel in seven recorded locations within the study area (three within the Order Limits, four within 250m of the Order Limits), The pits are no longer operational, and would be expected to have been infilled. With respect to mineral safeguarding areas, several are present within the Order Limits, along with areas of search for minerals, as identified in the Joint Minerals Local Plan **[Ref. 10-12]**. These areas are shown on **ES Volume 3, Figure 10.1: Study Areas and Key Features for Land, Soil and Groundwater [EN010157/APP/6.3]**. A **Minerals Safeguarding Assessment** has been undertaken and can be found at Appendix 4 to the **Planning Statement [EN010157/APP/5.5]**. As approved by East Riding of Yorkshire Council (see **Table 10-1** above), this receptor is scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]**.
Land (geological hazards)	Construction, operation (including maintenance) and decommissioning	This matter was proposed to be scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]**. However, as set out in **ES Volume 4, Appendix 5.2:**

Receptor/matter	Phase	Justification
		Scoping Opinion [EN010157/APP/6.4], the Planning Inspectorate advocated its inclusion, as the potential for low to moderate risks from geological hazards within some sections of the Site was reported. **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]** has determined that a potential risk from geological hazards may be present within some parts of the Order Limits and within 250m of the Order Limits. Hazards from compressible ground were indicated as potentially being moderate in some sections. Hazards from running sand were indicated as being mainly low to very low, but with an area of moderate risk around Kingswood and Dunsmoor. Typically, these categorisations will be connected to specific ground conditions relating to the superficial geological units. The presence of geological hazards within the Order Limits will be determined during pre-construction site investigations and will provide the necessary geotechnical information for designing infrastructure foundations. The presence of limited areas that are at a moderate risk from compressible ground or running sand would not be expected to have significant effects on the Proposed Development, due to the fact that the information collected by the pre-construction site investigations will ensure that all foundation designs are appropriate to avoid any structural concerns during the lifetime of the Proposed Development. This matter is therefore scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]**.

Receptor/matter	Phase	Justification
Land (potential contamination)	Operation (including maintenance) and decommissioning	This matter was proposed to be scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]**. However, as set out in **ES Volume 4, Appendix 5.2: Scoping Opinion [EN010157/APP/6.4]**, the Planning Inspectorate advocated its inclusion, unless it could be explained how potential impacts would be managed, with measures clearly described within the appropriate anticipated management plans i.e. the outline operational environmental management plan and the outline decommissioning environmental management plan. Measures should include protection for groundwater receptors and a remediation strategy in the event of accidental leaks or spills, as requested by the Environment Agency during consultation. Measures to control any issues relating to contamination resulting from operation (including maintenance) and decommissioning activities are detailed in the **Outline Operational Environmental Management Plan (Outline OEMP) [EN010157/APP/7.3]** and the **Outline Decommissioning Environmental Management Plan (Outline DEMP) [EN010157/APP/7.4]** respectively (e.g., issues relating to storage and use of fuels). These documents also address the potential for the Proposed Development to affect existing contamination. This matter is therefore scoped out of the assessment, as detailed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]**.

Study area

10.4.5 The study area for land and soil is the area within the Order Limits and up to 250m from the Order Limits. For issues relating to groundwater, a larger study area incorporating the Order Limits and a buffer of 500m from the Order Limits has been used. The study areas are shown on **ES Volume 3, Figure 10.1: Study Areas and Key Features for Land, Soil and Groundwater [EN010157/APP/6.3]**.

10.4.6 The size of the respective study areas is based on professional judgement and has been drawn to identify receptors that may be impacted by the construction, operation (including maintenance) and decommissioning phases, as well as those matters that may impact the Proposed Development. The larger study area for groundwater issues allows for consideration of features that could require assessment if mobile groundwater conditions are evident.

Establishing baseline conditions

Agricultural classification

10.4.7 The Agricultural Land Classification system (Ministry of Agricultural Food and Fisheries, 1988) **[Ref. 10-15]** classifies land into five grades numbered 1 to 5, with grade 3 divided into two subgrades (3a and 3b). The Agricultural Land Classification system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on agricultural use for food production. The limitations can operate in one or more of four principal ways; they may affect the range of crops which can be grown, the level of crop yield, the consistency of crop yield, and the cost of obtaining a crop. The classification system gives considerable weight to flexibility of cropping, whether actual or potential. However, the ability of some land to produce consistently high yields of a narrower range of crops is also considered.

Soil

10.4.8 There is significant variation of soil types across the site with soils with high sand fractions to clays. The field capacity days across the site are 144 days therefore soils with high sand fractions will have high resilience to soil damage and medium and heavy textured soils will have medium resilience to soil damage.

Land contamination

10.4.9 In order to assess the potential for land contamination, a Preliminary Risk Assessment has been undertaken in accordance with Land Contamination Risk Management guidance **[Ref. 10-14]**. The assessment comprised a desk-based review of information published online, the purchase of an environmental data base report, and a Site reconnaissance survey. The Preliminary Risk Assessment

is provided in **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**.

Data sources to inform the EIA baseline characterisation

10.4.10 The following data sources have been used to understand the existing lands, soil and groundwater baseline conditions:

- Geological maps (bedrock and superficial geology) **[Ref. 10-25]**;
- Hydrogeological and groundwater vulnerability maps **[Ref. 10-26]**;
- Soil survey maps **[Ref. 10-27]**;
- Mineral safeguarding information **[Ref. 10-12]**;
- Geological conservation review sites **[Ref. 10-26]**;
- Publicly available historical mapping **[Ref. 10-28]**; and
- Site-specific environmental database report, including Environment Agency, local authority and British Geological Survey data on the location of waste sites, pollution incidents and potentially contaminated sites, abstraction and discharge records relating to groundwater, plus aquifer designation and source protection zones (Envirocheck reports referenced 333101673-1-1 and 333102955-1-1, dated 29 January 2024 and appended to **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**).

Site visits/surveys

10.4.11 The following site visits/surveys have been undertaken to understand the existing land, soil and groundwater baseline conditions:

- A walkover survey of the Land Areas and surrounding area has been undertaken, with the findings detailed in **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**.
- An Agricultural Land Classification has been undertaken in April 2024, the findings of which are presented in **ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010157/APP/6.4]**. The survey incorporated the Land Areas for placement of solar panels and other infrastructure, but did not cover the proposed cable route sections.

10.4.12 A detailed Agricultural Land Classification and soil survey has not been undertaken of the grid connection cable route at this stage. However, an **Outline SMP [EN010157/APP/7.8]** has been produced which covers the full Order Limits, including the grid connection cable route. As set out in the **Outline SMP**

[EN010157/APP/7.8], it is proposed that detailed soil/land quality surveys of the grid connection cable route will be undertaken pre-construction, once the design and land needed for excavation is confirmed, thus avoiding unnecessarily surveying the entire width of the proposed grid connection cable route corridor. The **Outline SMP [EN010157/APP/7.8]** describes the survey work that will be carried out prior to drafting the Soil Management Plan, and the consultation process that will be in-built prior to finalising the Soil Management Plan before works commence.

Approach to design flexibility

10.4.13 The design parameters, as outlined in **ES Volume 1, Chapter 3: Proposed Development Description [EN010157/APP/6.1]** and **Design Parameters Document [EN010157/APP/5.8]**, set out the reasonable 'worst-case' parameters for the Proposed Development.

10.4.14 **ES Volume 1, Chapter 5: Approach to the EIA [EN010157/APP/6.1]** sets out those elements of the Proposed Development for which optionality is present within the design.

Assessment assumptions

10.4.15 No specific assumptions relating to land, soil or groundwater are applicable to this assessment.

Assessment methodology and criteria

10.4.16 The assessment criteria for land, soil and groundwater adopted for this assessment are detailed below. It should be noted that these criteria differ from the criteria proposed within **ES Volume 4, Appendix 5.1: Scoping Report [EN010157/APP/6.4]** (see Appendix D) and the criteria used in the Preliminary Environmental Information Report, with an updated approach that provides additional robustness in terms of assessing the potential effects relating to land, soil and groundwater.

Preliminary Risk Assessment

10.4.17 For **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**, a desk-based assessment was completed in accordance with relevant British Standards and authoritative technical guidance. The assessment of the contamination status of land within the Order Limits is in line with the technical approach presented in Land Contamination Risk Management **[Ref. 10.14]**. The scope of works included:

- Review of the history of development on the Site and surroundings;

- Assessment of local geology, hydrogeology and hydrology;
- Review of relevant information held by appropriate statutory authorities;
- Review of any previous site investigation reports made available;
- Completion of a reconnaissance survey (29 and 30 November 2023) to assess the visual condition of the Site;
- Development of an initial Conceptual Site Model;
- Preliminary consideration of geotechnical constraints and hazards; and
- Identification of the need for further action, e.g. intrusive investigations.

10.4.18 The assessment of contaminated land is based on the development of a Conceptual Site Model. This approach identifies sources, pathways and receptors at a site and assesses the potential for a link to exist between a source of contamination and a receptor which may then constitute a risk:

- Source: this is the identification of a specific source of contamination that is located on- or off-site.
- Pathway: this is the means by which the contaminant could migrate through the environment to reach a receptor.
- Receptor: can be property, humans, and the environment (e.g., controlled waters/ecology) which could be affected by contamination.

Receptor sensitivity for land and soil

10.4.19 Sensitivity criteria for land and soil, derived from the IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment **[Ref. 10-17]**, are defined in **Table 10-4** and **Table 10-5**.

Table 10-4: Receptor sensitivity relating to agricultural land quality

Sensitivity (in-situ soil)	Soil resource and soil functions
Very High	**Biomass production:** Agricultural Land Classification Grades 1 & 2. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting protected features within a European site (e.g., Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar); Peat soils; Soils supporting a National Park, or Ancient Woodland. **Soil carbon:** Peat soils. Soils with potential for ecological/landscape restoration. **Soil hydrology:** Very important catchment pathway* for water flows and flood risk management.

Sensitivity (in-situ soil)	Soil resource and soil functions
	Archaeology, cultural heritage, community benefits and geodiversity: Scheduled Monuments and adjacent areas; World Heritage and European designated sites; Soils with known archaeological interest; Soils supporting community/recreational/educational access to land covered by National Park designation. **Source of materials:** Important surface mineral reserves that would be sterilised (i.e., without future access).
High	**Biomass production:** Agricultural Land Classification Grade 3a. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting protected features within a UK designated site (e.g., UNESCO Geoparks, Site of Special Scientific Interest (SSSI) or Areas of Outstanding Natural Beauty (now Protected Landscapes), Special Landscape Area, and Geological Conservation Review sites); Native Forest and woodland soils; Unaltered soils supporting semi-natural vegetation (including UKBAP priority habitats). **Soil carbon:** Organo-mineral soils (e.g., peaty soils). **Soil hydrology:** Important catchment pathway* for water flows and flood risk management. **Archaeology, cultural heritage, community benefits and geodiversity:** Soils with probable but as yet unproven (prior to being revealed by construction) archaeological interest; Historic parks and gardens; Regionally Important Geological and Geomorphological Sites; Soils supporting community/recreational/educational access to Regionally Important Geological and Geomorphological Sites and Areas of Outstanding Natural Beauty (now Protected Landscapes). **Source of materials:** Surface mineral reserves that would be sterilised (i.e. without future access).
Medium	**Biomass production:** Agricultural Land Classification Grade 3b. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting protected or valued features within non-statutory designated sites (e.g., Local Nature Reserves (LNRs), Local Geological Sites (LGSs), Sites of Nature Conservation Importance (SNCIs), Special Landscape Areas; Non-Native Forest and woodland soils. **Soil carbon:** Mineral soils. **Soil hydrology:** Important minor catchment pathway* for water flows and flood risk management. **Archaeology, Cultural heritage, community benefits and geodiversity:** Soils with possible but as yet unproven (prior to

Sensitivity (in-situ soil)	Soil resource and soil functions
	being revealed by construction) archaeological interest; Soils supporting community/recreational/educational access to land. **Source of materials:** surface mineral reserves that would remain accessible for extraction.
Low	**Biomass production:** Agricultural Land Classification Grades 4 & 5. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting valued features within non-designated notable or priority habitats/landscapes. Agricultural soils. **Soil carbon:** Mineral soils. **Soil hydrology:** Pathway* for local water flows and flood risk management. **Archaeology, cultural heritage, community benefits and geodiversity:** Soils supporting no notable cultural heritage, geodiversity nor community benefits; Soils supporting limited community/recreational/educational access to land. **Source of materials:** Surface mineral reserves that would remain accessible for extraction.
Negligible	As for low sensitivity, but with only indirect, tenuous, and unproven links between sources of impact and soil functions.
** As defined by the site and catchment characteristics according to the professional judgement of a catchment hydrologist.*	

Table 10-5: Receptor sensitivity relating to soil ecosystems

Sensitivity of topsoil and subsoil	Soil texture, field capacity days (FCD) and wetness class
High (low resilience to structural damage)	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the FCD are 150 or greater; Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater; and All soils in wetness class 5 and 6 (WCV and WCVI).
Medium (medium resilience to structural damage)	Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150;

Sensitivity of topsoil and subsoil	Soil texture, field capacity days (FCD) and wetness class
	Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225; and Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in wetness classes 3 and 4 (WCIII and WCIV).
Low (high resilience to structural damage)	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in wetness classes 1 and 2 (WCI and WCII).

Receptor importance for groundwater

10.4.1 The importance criteria presented in **Table 10-6** are derived from Design Manual for Roads and Bridges LA 113: Road Drainage and the Water Environment **[Ref. 10-20]**.

Table 10-6: Receptor importance for groundwater

Importance	Typical criteria	Typical examples
Very High	Nationally significant attribute of high importance	Principal aquifer providing a regionally important resource, and/or supporting a site protected under EC and UK legislation; Groundwater that locally supports a Groundwater dependent terrestrial ecosystem; Source Protection Zone 1
High	Locally significant attribute of high importance	Principal aquifer providing locally important resource or supporting a river ecosystem; Groundwater that supports a Groundwater dependent terrestrial ecosystem; Source Protection Zone 2.
Medium	Of moderate quality and rarity	Aquifer providing water for agriculture or industrial use with limited connection to surface water; Source Protection Zone 3.
Low	Lower quality	Unproductive strata

Magnitude of impact (change) for land and soil

10.4.2 The magnitude of impact (change) is classified using the criteria presented in **Table 10-7**, which are derived from the IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment **[Ref. 10-17]**.

Table 10-7: Magnitude of impact (change) criteria for land and soil

Magnitude of impact (change)	Description of impacts restricting proposed land use
Major[#]	Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20 hectares or loss of soil-related features (as set out in Table 2 of the IEMA Guide), as advised by other factor specialists in the EIA team (including effects from 'temporary developments'*). *or* Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20 hectares, or gain in soil-related features (as set out in Table 2 of the IEMA Guide), as advised by other factor specialists in the EIA team (including effects from 'temporary developments'*).
Moderate	Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 hectares and 20 hectares or loss of soil-related features (as set out in Table 2 of the IEMA Guide), as advised by other factor specialists in the EIA team (including effects from 'temporary developments'*). *or* Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5 hectares and 20 hectares, or gain in soil-related features (as set out in Table 2 of the IEMA Guide), as advised by other factor specialists in EIA team.
Minor	Permanent, irreversible loss over less than 5 hectares or a temporary, reversible loss of one or more soil functions or soil volumes, or temporary, reversible loss of soil-related features (as set out in Table 2 of the IEMA Guide), as advised by other factor specialists in EIA team. *or* Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5 hectares or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement, or temporary gain in soil-related features

Magnitude of impact (change)	Description of impacts restricting proposed land use
	(as set out in Table 2 of the IEMA Guide), as advised by other factor specialists in EIA team.
Negligible	No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use.
# The IEMA Guide has what is assumed to be an error in this cell, but reference to Table 5 of the IEMA Guide confirms that the magnitude should be shown as Major, which is presented here, instead of reproducing the perceived IEMA error ** Temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils.*	

Magnitude of impact for groundwater

10.4.3 The magnitude of impact has been classified using the criteria presented in **Table 10-8** below, which are adapted from Design Manual for Roads and Bridges LA 113: Road Drainage and the Water Environment **[Ref. 10-20]**.

Table 10-8: Magnitude of impact criteria for groundwater

Magnitude of impact	Criteria	Typical example
Major adverse	Results in loss of attribute and/or quality and integrity of the attribute.	Loss of, or extensive change to, an aquifer. Loss of regionally important water supply. Potential high risk of pollution to groundwater from routine runoff. Loss of, or extensive change to groundwater dependent terrestrial ecosystem or baseflow contribution to protected surface water bodies. Reduction in water body Water Framework Directive classification. Loss or significant damage to major structures through subsidence or similar effects.
Moderate adverse	Results in effect on integrity of attribute, or loss of part of attribute	Partial loss or change to an aquifer. Degradation of regionally important public water supply or loss of significant commercial/ industrial/ agricultural supplies.

Magnitude of impact	Criteria	Typical example
		Potential medium risk of pollution to groundwater from routine runoff. Partial loss of the integrity of groundwater dependent terrestrial ecosystem. Contribution to reduction in water body Water Framework Directive classification. Damage to major structures through subsidence or similar effects or loss of minor structures.
Minor adverse	Results in some measurable change in attributes, quality or vulnerability	Potential low risk of pollution to groundwater from routine runoff. Minor effects on an aquifer, groundwater dependent terrestrial ecosystems, abstractions and structures.
Negligible	Results in effect on attribute, but of insufficient magnitude to affect the use or integrity	No measurable impact upon an aquifer and/or groundwater receptors.
Minor beneficial	Results in some beneficial effect on attribute or a reduced risk of negative effect occurring	Reduction of groundwater hazards to existing structures. Reductions in waterlogging and groundwater flooding.
Moderate beneficial	Results in moderate improvement of attribute quality	Contribution to improvement in water body Water Framework Directive classification. Improvement in water body catchment abstraction management Strategy (or equivalent) classification. Support to significant improvements in damaged groundwater dependent terrestrial ecosystem.
Major beneficial	Results in major improvement of attribute quality	Removal of existing polluting discharge to an aquifer or removing the likelihood of polluting discharges occurring.

Magnitude of impact	Criteria	Typical example
		Recharge of an aquifer. Improvement in water body Water Framework Directive classification.
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

Significance of effect for land and soil

10.4.4 The significance of effect for land and soil is based on the sensitivity of the receptor and the magnitude of impact (change), as outlined in **Table 10-9** and derived from the IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment **[Ref. 10-17]**. The significance of effect can be adverse or beneficial.

10.4.5 The significance of an effect is reported as either 'significant' or 'not significant'. Any effects determined as 'moderate' or above are considered to be significant. Any effects determined as 'slight' or below are considered not significant.

10.4.6 Where the significance matrix indicates a range for the effect significance (e.g. 'slight or moderate'), professional judgement can be applied to select one option (which would be justified by evidence, as appropriate), or an effect significance range can be applied. Where a range for the effect of significance means that the effect could be either significant or not significant, professional judgement has been applied to define the significance (for example with the range 'slight to moderate', where slight would be not significant, but moderate would be significant). Where both categories within the range fall within either 'significant' or 'not significant', the range has not been adjusted to a single descriptor (for example if the range is 'neutral or slight', as both effects are considered to be not significant; or if the range is 'large or very large', as both effects are considered to be significant).

10.4.7 With reference to **Table 10-5** above, it should be noted that for soil ecosystems, only the sensitivity categories of 'high', 'medium' and 'low' apply within **Table 10-9**. The sensitivity categories of 'very high' and 'negligible' do not apply.

Table 10-9: Significance of effect criteria for land and soil

Sensitivity	Magnitude of impact (change)				
	No Change	Negligible	Minor	Moderate	Major
Negligible	Neutral	Neutral or Slight*	Neutral or Slight	Neutral or Slight	Slight

Sensitivity	Magnitude of impact (change)				
	No Change	**Negligible**	**Minor**	**Moderate**	**Major**
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Very high	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
** This cell is listed as 'Slight' in the IEMA Guide, but has been adjusted to 'Neutral or Slight' to be consistent with the ranking scheme (the significance of effect should be equal to or lower than the adjacent cell to the right, not higher)*					

Significance of effect for groundwater

10.4.8 The significance of effect for groundwater relating to potential contamination is based on the importance of the receptor and the magnitude of impact, as outlined in **Table 10-10** below and adapted from Design Manual for Roads and Bridges LA 104: Environmental Assessment and Monitoring **[Ref. 10-21]**. The significance of effect can be adverse or beneficial.

10.4.9 The significance of an effect is reported as either 'significant' or 'not significant'. Any effects determined as 'moderate' or above are considered to be significant. Any effects determined as 'slight' or below are considered not significant.

10.4.10 Where the significance matrix indicates a range for the effect significance (e.g. 'slight or moderate'), professional judgement can be applied to select one option (which would be justified by evidence, as appropriate), or an effect significance range can be applied. Where a range for the effect of significance means that the effect could be either significant or not significant, professional judgement has been applied to define the significance (for example with the range 'slight to moderate', where slight would be not significant, but moderate would be significant). Where both categories within the range fall within either 'significant' or 'not significant', the range has not been adjusted to a single descriptor (for example if the range is 'neutral or slight', as both effects are considered to be not significant; or if the range is 'large or very large', as both effects are considered to be significant).

Table 10-10: Significance of effect criteria for groundwater

Importance	Magnitude of impact				
	No change	**Negligible**	**Minor**	**Moderate**	**Major**
Very high	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate

10.5 Environmental baseline

Existing baseline

10.5.1 Land, soil and groundwater features are shown on **ES Volume 3, Figure 2.1: Environmental Features Plan [EN010157/APP/6.3]**.

Discharge consents

10.5.2 There are nine discharge consents within the Order Limits, two of which are trade discharges and seven are sewage discharges. There are 27 off-site discharge consents within 250m of the Order Limits, which are also related to trade and sewage discharges. The majority of these discharge to freshwater streams or rivers (including Leven Town Drain, Weel Town Drain, Cross Drain and Leven North Carr Drain), with a minority draining to ground (i.e. via soakaways), and one to Leven Park Lake (reservoir).

Historical site usage

10.5.3 Since earliest publicly available historical mapping (1850s), the Site has undergone little significant change. The watercourses and main drains were all already present at that time, with numerous field boundaries and plantations that remain on-site. The area is predominantly agricultural in nature from those map editions, with many of the farms and villages also shown. The main exception to this is the residential area of Cottingham, which gradually developed and extended around the original village over the last century.

Landfill sites and waste transfer sites

10.5.4 No licensed active waste management facilities or landfill sites are recorded within the Order Limits. There are no historical landfill sites within the Order Limits. There are three historical landfill sites that are off-site, but within 250m of the Order Limits, two of which accepted inert and industrial waste, and the third accepted construction, demolition and dredgings waste.

Land contamination

10.5.5 The Site history indicates that land use has been predominantly agricultural. Contamination may be present associated with agriculture, and in the locations of the recorded landfill sites (as described above), but there is no information suggesting other potential contaminative site uses have occurred based on

historical mapping. Made ground may be present in limited locations within mineral extraction sites, along tracks and close to farm buildings located within the Site. There is the potential for asbestos-containing materials to be present if made ground deposits are identified.

10.5.6 No significant pollutions incidents within or close to the Site have been recorded in the last 20 years, based on the information provided in the Envirocheck report for the Order Limits (see **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**).

Summary of risks determined at Preliminary Risk Assessment stage

10.5.7 In summary, the overall risks determined at the Preliminary Risk Assessment stage risk assessment are as follows:

- Moderate to low risk in relation to groundwater in principal aquifer/source protection zones being affected by contamination from potential contamination from agricultural land use, contamination in made ground, accidental release of fuel, oil or chemicals or contamination in historical landfill sites. Pathways could include leaching, percolation to the aquifer, lateral migration and run-off/drainage, migration pathways created via piling into bedrock.
- Moderate to low risk to Site users due to build up of ground gases generated by waste in historical landfill sites, potentially resulting in asphyxiation or explosion.
- Moderate to low risk to Site buildings or infrastructure due to build up of ground gases generated by historical landfill sites, potentially resulting in explosion.

10.5.8 **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]** recommends that these potential contaminant linkages be assessed further through appropriate pre-construction site investigation to target the identified sources of potential contamination and assess the feasibility of identified pathways.

Groundwater

10.5.9 A summary of the groundwater regime within the study area is provided in this section. Further details are provided in **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN/010157/APP/6.4]**.

10.5.10 The superficial geological units within the study area are classified as secondary A aquifers and secondary undifferentiated aquifers. The bedrock geological units are classified as a principal aquifer.

10.5.11 Details of the current groundwater regime are unknown; however, local British Geological Survey borehole records indicate a shallow groundwater table, where recorded. The low-lying and level nature of the topography, along with the extensive systems of drainage ditches present around field boundaries, would also tie in with an expectation of shallow groundwater. Groundwater flow directions are likely to be connected to the flow within the drains and ditches, which are generally in a westerly or southerly direction towards the River Hull.

10.5.12 There are no historical features evident that would suggest a complex hydrogeological regime is likely to be present at the Site. Geological faulting is not indicated on the geological maps.

10.5.13 With respect to groundwater abstractions, the data is separated into licensed locations (i.e. those locations that are licensed by the Environment Agency) and unlicensed locations. Unlicensed water abstraction data was provided by East Riding of Yorkshire Council.

10.5.14 There are no licensed groundwater abstractions within the Order Limits. There are 14 locations where active licensed groundwater abstractions are recorded that are off-site and within 500m of the Order Limits. Seven of these are used for general farming and domestic use and seven are used for spray irrigation.

10.5.15 There are no unlicensed groundwater abstractions within the Order Limits. There are three unlicensed groundwater abstractions that are recorded to be present off-site and within 500m of the Order Limits. One of these is for commercial use (23m from the Order Limits) and two are for domestic use (10m and 35m from the Order Limits).

10.5.16 Groundwater source protection zones are defined to protect groundwater sources. Fields B2 to B6 and B8 and Land Area C are not within any source protection zones, although the boundary of a total catchment source protection zones (Zone 3) is very close to the western edge of Fields B2, B3, B4 and B8, and the western edge of Land Area C.

10.5.17 The western area of Land Area B (Fields B1 and B7) is within a total catchment source protection zones (Zone 3). All fields within Land Areas D, E and F are within the same Zone 3. The groundwater Source Protection Zone 2 area (outer protection zone) very slightly encroaches into the south western corner of Field E16.

10.5.18 The grid connection cable route passes through areas of groundwater Source Protection Zone 1, Zone 2 and Zone 3.

10.5.19 In addition to the groundwater source protection zones, a drinking water safeguard zone (groundwater) is present across all areas of the Order Limits that are to the west of Holderness Drain and Monk Dike. This area has been categorised as being at potential risk from impacts to groundwater quality due to the use of nitrates in agricultural land use.

Soil

10.5.20 **ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010147/APP/6.4]** provides details of the soil type and Agricultural Land Classification of soil within Land Areas B to F, as summarised below. It should be noted that **ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010147/APP/6.4]** shows four distinct blocks of land numbered 1-4, which were surveyed prior to the formation of the Land Areas presented within the ES. **Table 10-11** below illustrates, by percentage, how the blocks of land (1-4) presented in **ES Volume 4, Appendix 10.2: Agricultural Land Classification Report [EN010147/APP/6.4]** are distributed across the Land Areas (B-F). This is also illustrated in **ES Volume 3, Figure 10.2: ALC Blocks overlaid Land Areas [EN010157/APP/6.3]**.

Table 10-11: Percentage distribution of the land blocks presented in the Agricultural Land Classification Report across the Land Areas

	Land Area				
ALC Report land block	**B**	**C**	**D**	**E**	**F**
1	100%				
2	40.53%	56.57%	2.9%		
3			63.19%	36.81%	
4				25.58%	74.42%

Land Area B

10.5.21 In the main area of Land Area B (Fields B1 to B4, B7 and B8), there is significant variation in soil characteristics, often over very small distances. A small area within the north of Land Area B comprises very dark grey/brown clay, organic clay, heavy clay loam, organic heavy clay loam or organic sandy clay loam topsoil over poorly structured dark grey, or grey clay, organic clay or clay loam upper and lower subsoils. Occasionally a grey lower subsoil is present, with a loamy sand subsoil.

10.5.22 The soil in Fields B5 and B6 is characterised by dark greyish brown sandy clay loam or heavy clay loam topsoil with dark grey, greyish brown or brown poorly structured clay or clay loam upper subsoil with poorly structured grey clay lower subsoil.

10.5.23 The area through the centre of Land Area B varies significantly, with small areas of organic clay soils and larger areas of brown loamy medium sand or medium sandy loam topsoil dark brown, brown, or grey moderately structured loamy sand or sandy loam upper subsoil. There is often a lower subsoil which varies in texture from sand to clay and back again.

Land Area C

10.5.24 In Land Area C, there is also significant variation in soil types over small distances. The southern part of Field C1, and the fields to the south of that comprise very dark grey, or very dark greyish brown clay, organic clay, heavy clay loam, organic heavy clay loam or organic sandy clay loam topsoil over poorly structured dark grey, or grey clay, organic clay or clay loam upper and lower subsoils. Occasionally there is a lower subsoil that is still grey in colour but with a loamy sand subsoil.

10.5.25 As in Land Area B, there is often a lower subsoil which varies in texture from sand to clay often between 100m sample points and back again.

Land Area D

10.5.26 The fields to the north of Land Area D (Fields D1 to D6) are a very dark grey sandy clay loam topsoil over brown, or dark greyish brown poorly structured upper subsoil and greyish brown poorly structured sandy clay lower subsoil. The rest of Land Area D comprises soils that are generally similar to the soils found in Land Areas B and C.

Land Area E

10.5.27 The eastern section of Land Area E (Fields E1 to E12) is predominantly similar to the soils found in Land Areas B and C.

10.5.28 The fields to the east of Weel (referenced Fields E13 to E17) are relatively consistent, with the soil type being categorised as a very dark greyish brown medium clay loam over a brown poorly structured clay loam subsoil. In some locations there is a dark greyish brown, moderately structured upper subsoil over the poorly structured brown lower subsoil.

Land Area F

10.5.29 The land in the north-west of Land Area F (Fields F1 to F7) is either organic clay topsoil over poorly structured clay subsoil, as found in Fields B5 and B6 and Land Areas D and E or is the same organic clay topsoil as in Fields F1 to F7, over black peaty loam subsoil. In other parts of Land Area F (Fields F11 to F17), the topsoil is dark greyish brown heavy clay loam over brown poorly structured clay subsoil.

Agricultural land classifications

10.5.30 The percentages of soil types recorded within Land Areas B to F are presented in **Table 10-12**.

Table 10-12: Agricultural land classification grades in Land Areas B to F

Land Area and Agricultural Land Classification grades present	Hectares	% of Order Limits land area	% of specified land area
Land Area B	**126.8**	**17.8**	**100.0**
Grade 1	0.0	0.0	0.0
Grade 2	44.3	6.2	34.9
Grade 3a	15.2	2.1	12.0
Grade 3b	48.5	6.8	38.2
Grade 4	18.4	2.6	14.5
Non-agricultural	0.5	0.1	0.4
Land Area C	**146.7**	**20.6**	**100.0**
Grade 1	8.8	1.2	6.0
Grade 2	4.1	0.6	2.8
Grade 3a	13.5	1.9	9.2
Grade 3b	58.1	8.1	39.6
Grade 4	60.9	8.5	41.5
Non-agricultural	1.4	0.2	1.0
Land Area D	**199.7**	**28.0**	**100.0**
Grade 1	0.0	0.0	0.0
Grade 2	35.6	5.0	17.8
Grade 3a	74.1	10.4	37.1
Grade 3b	84.5	11.8	42.3
Grade 4	1.6	0.2	0.8
Non-agricultural	3.9	0.6	2.0
Land Area E	**144.3**	**20.2**	**100.0**
Grade 1	0.0	0.0	0.0
Grade 2	11.3	1.6	7.9

Land Area and Agricultural Land Classification grades present	Hectares	% of Order Limits land area	% of specified land area
Grade 3a	23.9	3.4	16.6
Grade 3b	74.0	10.4	51.3
Grade 4	33.8	4.7	23.5
Non-agricultural	1.2	0.2	0.8
Land Area F	**95.8**	**13.3**	**100.0**
Grade 1	0.0	0.0	0.0
Grade 2	1.0	0.2	1.1
Grade 3a	18.1	2.5	18.8
Grade 3b	66.4	9.3	69.3
Grade 4	10.4	1.45	10.8
Non-agricultural	0.0	0.0	0.0
Total	**713.4**	**100.0**	-
N.B. All values rounded to 1 decimal place, so totals may not match values			

10.5.31 The percentages of soil types recorded across the Order Limits are summarised below:

- Grade 1 (excellent quality agricultural land) 1.2% (8.8 hectares, within Land Area C only)
- Grade 2 (very good quality) 13.6% (96.3 hectares, across all Land Areas)
- Grade 3a (good quality) 20.3% (144.8 hectares, across all Land Areas)
- Grade 3b (moderate quality) 46.4% (331.5 hectares, across all Land Areas)
- Grade 4 (poor quality) 17.5% (125.1 hectares, across all Land Areas)
- Non-agricultural land 1.1% (7.0 hectares, within Land Areas B, C, D and E).

10.5.32 Land that is classified as Grade 1, Grade 2 or Grade 3a is considered to be Best and Most Versatile agricultural land. Best and Most Versatile agricultural land accounts for approximately 35.1% of Land Areas B to F.

10.5.33 On land with soils of the type found within Land Areas B to F, the principal limitations to agriculture are soil wetness (as relates to a combination of the climatic regime, soil water regime and texture of the top 25cm of the soil on the majority of the Site), and the propensity to drought in areas where soils are sandy.

Future baseline in the absence of the Proposed Development

10.5.34 If the Proposed Development is not progressed, the future baseline with respect to land, soil and groundwater is not expected to change significantly. It would be anticipated that agricultural use of the land within the Site would continue, so there may be some minor associated degradation in soil quality. The geological and hydrogeological units would not be expected to change significantly, and no significant changes to mineral resources are expected to occur.

10.6 Mitigation embedded into the design

10.6.1 This assessment has been based on the principle that measures have been 'embedded' into the design of the Proposed Development to remove potential significant effects as far as practicable, for example by the considered placement of infrastructure. The **Design Approach Document [EN010157/APP/5.7]** identifies the project design principles and design mitigation that has been embedded into the design of the Proposed Development.

10.6.2 The potential use of Best and Most Versatile agricultural land has been a key consideration in the development of the design, particularly in the initial site selection process, as discussed in **ES Volume 1, Chapter 4: Alternatives and Design Iteration [EN010157/APP/6.1]** and in the **Site Selection Assessment** at Appendix 2 of the **Planning Statement [EN010157/APP/5.5]**. As part of this process, large areas of Best and Most Valuable agricultural land were ruled out.

10.6.3 In addition, the Applicant sought to work with the landowners within the Order Limits to understand relative productivity (including accessibility) of the land to focus on areas of land with poorer yield and to determine if fields that were discounted for development would be suitable for continued agricultural use.

10.6.4 The embedded mitigation relevant to this assessment is detailed in **Table 10-13** below.

Table 10-13: Embedded mitigation relevant to land, soil and groundwater

Embedded mitigation measure relevant to land, soil and groundwater	Function	Securing mechanism
Cable ploughing will be utilised where ground conditions and other site factors allow. Where this is not possible, other methods such as open cut trenching or Horizontal Directional Drilling will be used.	To reduce disturbance to soils.	**Outline CEMP [EN010157/APP/7.2]**

Embedded mitigation measure relevant to land, soil and groundwater	Function	Securing mechanism
Where not used for solar PV development, the use of non-BMV (best and most versatile) land has been prioritised for the areas of environmental mitigation and enhancement, where reasonably practicable.	To reduce the impact upon and enhance the high-quality Best and Most Versatile agricultural land, where reasonably practicable, and ensure the retention and best use of available resources where availability allows.	**Works Plans [EN010157/APP/2.2]**
Where reasonably practicable, existing hedgerows, woodland, ditches and field margins will be retained. Any breaks or crossings (associated new tracks, security fencing and/or cable routes) will be designed to use existing agricultural tracks between fields, where reasonably practicable, and the width of any breaches will be kept to a minimum.	Reduce the impact on the identified receptors (mainly soil quality and availability of agricultural land) and the environment as far as reasonably practicable.	**Works Plans [EN010157/APP/2.2]**

10.7 Assessment of likely effects (without additional mitigation)

Construction

Groundwater

10.7.1 In terms of likely effects on groundwater, construction activities (including Horizontal Directional Drilling works, piling activities, earthworks, access tracks formation and excavation) could lead to minor damage to field drains, which may affect the localised drainage of the agricultural land and the groundwater quality of the underlying aquifer and source protection zones. Spillages or leaks of fuels, oils and chemicals during construction works may lead to effects on groundwater, which could result in potential pollution to any underlying aquifers. This may also arise from runoff associated with construction activities (e.g., silt run-off during earthworks and accidental spills and leaks from construction plant). Where piling may take place, there may be the potential for preferential pathways to the underlying aquifer/source protection zones, particularly where spills or leaks have occurred as noted above.

Land and soil

10.7.2 With respect to likely effects on land contamination, construction activities could lead to localised contamination of soils from potential spills from the operation of construction plant or refuelling activities. If contaminated soils associated with past developments are identified, these could form a minor localised source of contamination if they are not managed correctly.

10.7.3 Likely effects on soil and agricultural land during construction could include compaction and deterioration of soil and agricultural land. Installation of cables and construction of temporary haul roads and construction compounds could result in soil displacement, affecting land quality, and potentially resulting in permanent changes to land quality if not appropriately managed. Access tracks and steep slopes within the Site are likely to be most susceptible to deterioration through erosion. There would be limited handling and moving of soils during construction and handling is expected to be avoided, where reasonably practicable. Some soils are, however, more susceptible to structural damage from the use of machinery and vehicular activity, depending upon soil type, climate and wetness class.

Operation (including maintenance)

Groundwater

10.7.4 With respect to groundwater, maintenance works (including cleaning of the solar PV modules and vehicle tracking) could result in spillages and leaks of fuels, oils and chemicals, which could lead to effects on groundwater resulting in potential pollution to any underlying aquifers. The presence of piled foundations and increase in impermeable areas due to the presence of the Battery Energy Storage System (BESS) and substations may locally affect the groundwater infiltration rates across the Site. In the instance of a BESS fire, there is a potential for fire-fighting water used in cooling to infiltrate the soil or geological units, which could result in potential pollution to the groundwater and any underlying aquifers, if cross-contamination from any fire-fighting chemicals occurs.

Land and soil

10.7.5 With respect to land contamination, large numbers of vehicle movements are not anticipated within the Site during the operation (including maintenance) phase. Maintenance works could result in spillages and leaks of fuels, oils and chemicals, which could affect the near-surface soil and shallow geological units.

10.7.6 With respect to soil and agricultural land, there is anticipated to be limited ground disturbance or trafficking over the soils, apart from periodic maintenance

requirements, including replacement of damaged parts or cleaning and maintenance of the solar PV modules, as described in **ES Volume 1, Chapter 3: Proposed Development Description [EN010157/APP/6.1]**. The Proposed Development would lead to temporary impacts to soil and agricultural land for the duration of the operation (including maintenance) phase (40 years), in particular the areas in which the BESS, substations and operational access tracks would be located. The area of land underneath the solar PV modules and within the field margins are proposed to be used for ecological mitigation and enhancements, which could include planting (including establishment of grassland and wildflowers), which would help to reduce soil degradation and erosion during the operation (including maintenance) phase, which could lead to potential benefits. It is anticipated that the operation (including maintenance) phase of the Proposed Development would lead to a temporary and reversable change of land use of approximately 712.1 hectares of land, of which approximately 35.1% is classified as Best and Most Versatile agricultural land.

10.7.7 In the East Riding of Yorkshire area, there is estimated to be approximately 172,403.6 hectares of Best and Most Versatile agricultural land (approximately 73.4% of the total land used for agriculture) **[Ref 10-29]**. The Proposed Development will temporarily impact 712.1 hectares of land (of which 249.9 hectares are Best and Most Versatile agricultural land); with 1.3 hectares of land being permanently lost (none of which is categorised as Best and Most Versatile agricultural land). To demonstrate the context on a regional scale, the amount of Best and Most Versatile agricultural land affected by the Proposed Development that is in the East Riding of Yorkshire area equates to 0.1% of the total Best and Most Versatile agricultural land within the region.

Decommissioning

Groundwater

10.7.8 During decommissioning works, activities could result in effects on groundwater in the form of minor localised contamination related to potential spills and leaks of fuels, oils and chemicals.

10.7.9 Decommissioning activities (including earthworks and excavation) could lead to minor damage to field drains, which may affect the localised drainage of the agricultural land and the groundwater quality of the underlying aquifer and source protection zones. As a result of the decommissioning works, spillages and leaks of fuels, oils and chemicals may lead to effects on groundwater, which could result in potential pollution to any underlying aquifers. This may arise from runoff associated with activities (e.g., silt run-off during earthworks and accidental spills and leaks from machinery).

10.7.10 In the event of fire associated with the BESS, water used in cooling infrastructure in proximity to the fire will be present, which could result in potential pollution to the groundwater and any underlying aquifers, if cross-contamination from any fire-fighting chemicals occurs. Although the BESS will be one of the elements that is to be decommissioned, there may be a period of the decommissioning phase during which it is still operational, when this issue will remain a potential effect.

Land and soil

10.7.11 During decommissioning works, activities could result in effects on land in the form of minor localised contamination related to potential spills and leaks of fuels, oils and chemicals.

10.7.12 With respect to soil and agricultural land, the decommissioning phase will involve the dismantling and removal of infrastructure in accordance with the **Outline DEMP [EN010157/APP/7.4]**. It is anticipated that the majority of the Site will be capable of being used for agricultural purposes following decommissioning. All concrete, impermeable mat areas, hardstanding areas, foundations for the infrastructure will be removed to a depth of up to 1m. All the below ground cables will be left in-situ as these are likely to be located at a depth greater than 1m, therefore limiting the disturbance and impact to the soil quality. The two on-site substations will remain in-situ. The locations of the BESS and access tracks are anticipated to be restored using soil retained on-site, which could have been retained in managed bunds, or with new topsoil that will be brought to the Site.

10.7.13 The trafficking of soils when conditions are unsuitable (e.g., when soils are wet) could damage soil structure necessitating remedial activity to restore quality. With respect to soil, there is potential for erosion associated with works conducted on steep slopes within the Order Limits. The number of vehicle movements is anticipated to be less than during the construction phase, therefore limiting the potential for compaction of soils to occur. Decommissioning works are also less likely than construction works to adversely impact on agricultural field drains as there would be no requirement for piling, so this phase is less likely to result in deterioration of soil quality.

10.8 Additional mitigation

Construction

Groundwater

10.8.1 Measures to manage and mitigate against effects relating to groundwater, together with emergency procedures to allow appropriate management of accidental spillages and leaks and contaminated land risks, are detailed in and

secured by the **Outline CEMP [EN010157/APP/7.2]**. This includes reference to the Environment Agency guidance documents relating to protection of groundwater **[Ref. 10-23** and **Ref. 10-24]**.

10.8.2 A summary of mitigation measures included within the **Outline CEMP [EN010157/APP/7.2]** is provided below:

- An Emergency Response Plan will be developed to provide a framework for responding to environmental incidents and emergencies;
- Good housekeeping and site maintenance will be required, including management of materials and waste;
- Best practice measures will be adhered to in order to reduce pollution; and
- Records will be maintained relating to routine inspections, investigations, corrective actions and action schedules.

Land and soil

10.8.3 Measures to manage and mitigate against erosion and contaminated land, together with emergency procedures to allow appropriate management of accidental spillages and leaks and contaminated land risks, will protect land and soil receptors. These are detailed in and secured by the **Outline CEMP [EN010157/APP/7.2]**.

10.8.4 A summary of mitigation measures included within the **Outline CEMP [EN010157/APP/7.2]** is provided below:

- An Emergency Response Plan will be developed to provide a framework for responding to environmental incidents and emergencies;
- Good housekeeping and site maintenance will be required, including management of materials and waste;
- Best practice measures will be adhered to in order to reduce pollution; and
- Records will be maintained relating to routine inspections, investigations, corrective actions and action schedules.

10.8.5 Measures to manage any potential impacts to soil (and agricultural land) during and on completion of the construction phase are detailed in and secured by the **Outline SMP [EN010157/APP/7.8]**. The **Outline SMP [EN010157/APP/7.8]** also identifies those areas within the Site which may be more susceptible to damage, for example, where installation of cables is to be undertaken, the locations of temporary access tracks, areas of piling activities, construction compounds and steep slopes; and sets out details of when soil handling should be avoided (for example, when it is wet or after periods of heavy rainfall or high winds) and

advises on when soils are suitable for being handled or trafficked. The **Outline SMP [EN010157/APP/7.8]** also includes requirements to avoid working in unsuitable conditions (as defined by the Plan), to utilise low ground pressure vehicles (tracked vehicles or vehicles fitted with tyres designed to operate at low inflation pressures) wherever possible and to install gravel access tracks early on to avoid unnecessary trafficking on agricultural soils, or use track matting where needed in the early stages of construction. The **Outline SMP [EN010157/APP/7.8]** also sets out measures for soil management and follows the principles of best practice to maintain the physical properties of the soil.

10.8.6 It is proposed that push piling techniques will be used for elements of the substation infrastructure. A piling risk assessment (secured by the **Outline CEMP [EN010157/APP/7.2]**) may be required for this aspect of construction works.

Operation (including maintenance)

Groundwater

10.8.7 Water for firefighting purposes would be sourced from the nearest available supply; however, this water would be used only to cool areas adjacent to a BESS container to prevent fire spread, rather than being used to attempt to directly fight a fire within a BESS container. The water would therefore not contain any fire-fighting chemicals or compounds after use.

10.8.8 The **Outline Battery Safety Management Plan [EN010157/APP/7.6]** outlines the regulatory guidance reviewed and the measures proposed to ensure that all safety concerns around the BESS elements of the Proposed Development are addressed in so far as is reasonably practicable.

Land and soil

10.8.9 Based on the findings of **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**, measures to prevent damage to the land during operation (including maintenance), together with measures for pollution prevention and emergency procedures to manage accidental spillages and leaks, are detailed in and secured by the **Outline OEMP [EN010157/APP/7.3]**. The **Outline Battery Safety Management Plan [EN010157/APP/7.6]** outlines procedures for managing fires, including that the Applicant intends to use a clean agent (aerosol), rather than a water-based system. An automated fire suppression system is triggered if a fire occurs within a container.

10.8.10 The **Outline SMP [EN010157/APP/7.8]** includes the following measures:

- Identification of those areas within the Site which may be more susceptible to damage, for example, steep slopes;

- Definition of standard parameters to identify when soil conditions are suitable for handling or trafficking (qualities of the soil, for example when it is wet or after periods of heavy rainfall or high winds); and
- Outline measures and principles for soil management and best practice to maintain the physical properties of the soil, with the aim of maintaining the condition of the land until the end of the lifetime of the Proposed Development.

10.8.11 The principles of how the land within the Site would be managed during the operation (including maintenance) phase, such as the requirements for the management and remediation of vegetation to ensure the planting is sustained, are detailed in and secured by the **Outline LEMP [EN010157/APP/7.5]**.

Decommissioning

Groundwater

10.8.12 Measures to mitigate likely effects relating to groundwater, such as best practice procedures relating to protection of groundwater and emergency procedures to manage accidental spillages and leaks, are detailed in and secured by the **Outline DEMP [EN010157/APP/7.4]**.

Land and soil

10.8.13 Measures to mitigate likely effects relating to land contamination, soils and agricultural land, such as best practice procedures to mitigate against erosion and contaminated land and emergency procedures to manage accidental spillages and leaks, are detailed in and secured by the **Outline DEMP [EN010157/APP/7.4]**.

10.8.14 Measures to protect soil and agricultural land during the decommissioning phase are detailed in and secured by the **Outline SMP [EN010157/APP/7.8]**.

10.8.15 The **Outline SMP [EN010157/APP/7.8]** includes the following measures that will be relevant during decommissioning:

- Methods for determining acceptable timings for working the soils (including by visual assessment and consistency tests);
- Methods to ensure that soil profiles are reinstated in the same order as they were excavated; and
- Information to avoid compaction of soils.

10.9 Assessment of residual effects (with additional mitigation)

Construction

Groundwater

10.9.1 In areas of the Site where the bedrock is classified as a principal aquifer, but the land is not within a groundwater Source Protection Zone 1, the receptor importance is categorised as being **high**, due to the presence of a locally significant attribute of high importance. The magnitude of impact from leaks and spills of fuel or chemicals during construction works would be considered to be **negligible**, with the implementation of additional mitigation measures. This means that although there may be effects on the receptor, they would be of insufficient magnitude to affect the use or integrity of the groundwater resource. The **Outline CEMP [EN010157/APP/7.2]** includes methods for ensuring the safe storage and use of fuels or chemicals, which could be damaging to the groundwater environment if released, and details response plans for addressing leaks and spills to localise any impacts and limit their duration. This would result in the significance of effect being **slight adverse**. Therefore, the residual effect on **high** importance groundwater during construction is considered to be **not significant**.

10.9.2 In areas of the Site where there is a principal aquifer in conjunction with a groundwater Source Protection Zone 1 or drinking water safeguard zone (groundwater), the receptor importance is **very high**. With the implementation of additional mitigation measures, the potential for leaks and spills will be minimised, and in the event of spillage events, the impacts would be localised and limited in duration. This results in the magnitude of impact being categorised as **negligible**. The significance of effect would therefore be **slight adverse**. Therefore, the residual effect on **very high** importance groundwater during construction is considered to be **not significant**.

10.9.3 In relation to the impact on groundwater from Horizontal Directional Drilling, piling activities and earthworks, the groundwater is deemed to have a **very high** importance in relation to the areas where groundwater Source Protection Zone 1 and drinking water safeguard zones are present. After consideration of the additional mitigation (including a piling risk assessment, which is secured as part of the **Outline CEMP [EN010157/APP/7.2]**), the magnitude of any impact from piling or earthworks during construction would be **negligible**, and therefore the significance of effect is **slight adverse**. Therefore, the residual effect on **very high** importance groundwater from Horizontal Directional Drilling works, piling or earthworks is considered to be **not significant**.

10.9.4 Where groundwater receptors are of **high** importance (where a principal aquifer is present, but no groundwater Source Protection Zone 1 or drinking water safeguard zone), the magnitude of impact from Horizontal Directional Drilling works, piling or earthworks is assessed as being **negligible**. This results in a significance of effect of **slight adverse**. Therefore, the residual effect on **medium** importance groundwater is considered to be **not significant**.

Land and soil

10.9.5 Land-based receptors relating to contamination are considered to have **low** sensitivity, based on the findings of **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**. Following the implementation of additional mitigation measures, the magnitude of impact (change) is considered to be **negligible** and the significance of the effect is therefore **neutral or slight adverse**. Therefore, the residual effect on land-based receptors is considered to be **not significant**.

10.9.6 With respect to soil and agricultural land, adverse effects could potentially occur during construction as a result of activities such as topsoil stripping, earthworks, piling, stockpiling of material and larger vehicle movements occurring during this phase.

10.9.7 In terms of adverse impacts to the Agricultural Land Classification grade of the soil and soil resistance, it should be noted that construction works would not have sufficiently great impacts on the soil to result in a downgrade to the Agricultural Land Classification grade. Correct soil management techniques will ensure that soil compaction is minimised, and any impacts could be reversed by techniques that are common in normal agricultural land management. Given that the additional mitigation for the Proposed Development includes an **Outline CEMP [EN010157/APP/7.2]** and **Outline SMP [EN010157/APP/7.8]** which will protect soil in terms of physical and chemical characteristics, it is considered that a change to existing Agricultural Land Classification grades as a result of the construction of the Proposed Development is highly unlikely to occur.

10.9.8 Most machinery that is used in the construction process will be of similar size, or smaller/lighter, than plant used in standard agricultural processes. Therefore, the construction works will not result in additional loads on the soil compared to the current agricultural use in many parts of the Site.

10.9.9 Damage to soils and agricultural quality during construction will be limited, and there is the potential to restore soils if accidental damage did occur.

10.9.10 The approach outlined for the construction works for the Proposed Development has been approved in principle for other recent large solar developments, including Little Crow Solar Development [EN010101] where the Secretary of

State agreed in the Decision Letter (at paragraph 4.50) with the Examining Authority's approach to this issue:

The ExA agreed the proposed Development's impact on agricultural land would be:

"…short term, reversible, local in extent and of negligible significance during the construction and decommissioning phases, and medium term, reversible, local in extent and of negligible significance during the operational (including maintenance) phase, with a moderate beneficial effect for the quality of soils within the Order Limits, because intensive cropping would be replaced by grassland species."

10.9.11 It has therefore been assessed that changes to the land used for the Solar PV modules and other temporary facilities would be reversible, and the soil will be managed and reinstated to the pre-existing soil quality and Agricultural Land Classification grade.

10.9.12 During construction, all the land across the Site will not be available for agricultural use; therefore, there is a potential loss of Best and Most Versatile land (described as Agricultural Land Classification Grades 1, 2 and 3a). With respect to agricultural land, the Land Areas are considered to have sensitivity that varies from **very high** to **low**, as outlined below:

- 14.8% **very high** sensitivity soil (Agricultural Land Classification of Grade 1 (1.2%) and Grade 2 (13.6%))
- 20.3% **high** sensitivity soil (Agricultural Land Classification of Grade 3a)
- 46.4% **medium** sensitivity soil (Agricultural Land Classification of Grade 3b)
- 18.6% **low** sensitivity soil (Agricultural Land Classification of Grade 4 (17.5%) and non-agricultural land (1.1%)).

10.9.13 Following the implementation of the **Outline SMP [EN010157/APP/7.8]** and adherence to the **Outline CEMP [EN010157/APP/7.2]**, damage to the soil resource within the Land Areas will be minimised, resulting in the magnitude of impact (change) being considered to be **minor**. Therefore, the significance of effect is considered to be as listed below for the respective Agricultural Land Classification grades:

- For **very high** sensitivity soil (Grades 1 and 2 - 14.8% of the Order Limits), the significance of effect is **moderate adverse or large adverse (significant)**

- For **high** sensitivity soil (Grade 3a – 20.3%), the significance of effect is **slight adverse or moderate adverse** (see **paragraph 10.9.14** below)
- For **medium** sensitivity soil (Grade 3b – 46.4%), the significance of effect is **slight adverse (not significant)**
- For **low** sensitivity soil (Grade 4 - 18.6%), the significance of effect is **neutral or slight adverse (not significant)**.

10.9.14 For **high** sensitivity soil (Grade 3a), there is a split significance range which means the effect could be significant or not significant. Given that the Agricultural Land Classification grade will not be changed by the Proposed Development and any impact to the quality of soil would be temporary and reversible (with works all being completed in accordance with the **Outline SMP [EN010157/APP/7.8]** and **Outline CEMP [EN010157/APP/7.2]**), it is considered appropriate to adjust the significance of effect to **slight adverse**. The residual effect on **high** sensitivity soil (Grade 3a) due to construction of the Proposed Development is therefore assessed as being **not significant**.

10.9.15 There is a large range of soil types identified across the site. Soils range from light textured (loamy sands) to heavily textured (clays), the field capacity days across the site are all 144 days therefore below 150 days. Therefore, light textured soils with high sand fractions are identified as low sensitivity with high resilience and medium and heavy textured soils have a medium resilience to damage during handling and are therefore of **medium** sensitivity. The magnitude of impact for soil will also be **minor**. Therefore, the significance of the residual effect on soil will be **slight adverse** and **not significant** for medium and heavy textured soils and slight to neutral adverse for light textured soils. As the soils are being handled and stored during construction professional judgement has been used to determine the effects on light textured soils will be **slight adverse** and **not significant.**

Operation (including maintenance)

Groundwater

10.9.16 In areas of the Site where the groundwater importance is **high** (where the bedrock is classified as a principal aquifer, but the land is not within a groundwater Source Protection Zone 1 or drinking water safeguard zone), the magnitude of impact from leaks and spills of fuel or chemicals during operation (including maintenance) would be considered to be **negligible** with the implementation of additional mitigation measures. The **Operational Environmental Management Plan** will include methods for ensuring the safe storage and use of fuels or chemicals, which could be damaging to the groundwater environment if released, and details response plans for addressing

leaks and spills to localise any impacts and limit their duration. This would result in the significance of effect being **slight adverse**. Therefore, the residual effect on **high** importance groundwater during operation (including maintenance) is considered to be **not significant**.

10.9.17 In areas of the Site where there is a principal aquifer in conjunction with a groundwater source protection zone 1 or a drinking water safeguard zone, the receptor importance is **very high**. With the implementation of additional mitigation measures, the potential for leaks and spills during operation (including maintenance) will be minimised, and in the event of spillage events, the impacts would be localised and limited in duration. This results in the magnitude of impact being categorised as **negligible**. The significance of effect would therefore be **slight adverse**. Therefore, the residual effect on **very high** importance groundwater during operation (including maintenance) is considered to be **not significant**.

Land and soil

10.9.18 Land-based receptors relating to contamination are considered to have **low** sensitivity, based on the findings of **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**. The magnitude of impact (change) during operation (including maintenance) is considered to be **negligible** and the significance of the effect is therefore **neutral or slight adverse**. Therefore, the residual effect on land-based receptors is considered to be **not significant**.

10.9.19 Maintenance or repair works required which would result in disturbance to soils during the operation (including maintenance) of the Proposed Development would be undertaken in accordance with good practice soil handling methods outlined in the **Outline SMP [EN010157/APP/7.8]**. It is unlikely any significant effects on agricultural land during operational, maintenance, or repair activities will occur as the activities are likely to be limited in scale and temporary.

10.9.20 As noted above (see **paragraph 10.9.5**), the sensitivity with respect to soil and agricultural land is summarised as:

- 14.8% **very high** sensitivity soil (Agricultural Land Classification of Grade 1 (1.2%) and Grade 2 (13.6%))
- 20.3% **high** sensitivity soil (Agricultural Land Classification of Grade 3a)
- 46.4% **medium** sensitivity soil (Agricultural Land Classification of Grade 3b)
- 18.6% **low** sensitivity soil (Agricultural Land Classification of Grade 4 (17.5%) and non-agricultural land (1.1%)).

10.9.21 Due to the less intrusive nature of works to be undertaken during operation (including maintenance), along with implementation of the **Outline SMP [EN010157/APP/7.8]** and adherence to the **Outline OEMP [EN010157/APP/7.3]**, damage to the soil resource will be minimised, resulting in the magnitude of impact (change) being considered to be **negligible**. Therefore, the significance of effect is considered to be as listed below for the respective Agricultural Land Classification grades:

- For **very high** sensitivity soil (Grades 1 and 2 - 14.8% of the Order Limits), the significance of effect is **slight adverse (not significant)**
- For **high** sensitivity soil (Grade 3a – 20.3%), the significance of effect is **slight adverse (not significant)**
- For **medium** sensitivity soil (Grade 3b – 46.4%), the significance of effect is **neutral or slight adverse (not significant)**
- For **low** sensitivity soil (Grade 4 - 18.6%), the significance of effect is **neutral or slight adverse (not significant)**.

10.9.22 Soil remains as **medium** for heavy and medium soils and **low** for light textured soils for the duration of the operation (including maintenance) phase due to the texture and field capacity days across the Site. During operation (including maintenance), the soil will be available for grazing and remain out of agricultural production. Due to the reduced disturbance from farming activities and nutrient input from grazing, there is a **minor** benefit to soil during operation (including maintenance), resulting in an effect of **slight beneficial** significance that is **not significant** for medium and heavy textured soils and slight to neutral benefit for light textured soils. As an increase in organic matter and reduced agricultural pressure will improve soil structure professional judgement has been used to determine the effects on light textured soils will be **slight benefit** and **not significant.**

Decommissioning

Groundwater

10.9.23 In areas of the Site where the groundwater importance is **high** (where the bedrock is classified as a principal aquifer, but the land is not within a groundwater source protection zone 1 or drinking water safeguard zone), the magnitude of impact from leaks and spills of fuel or chemicals during decommissioning works would be considered to be **negligible** with the implementation of additional mitigation measures. The **Outline DEMP [EN010157/APP/7.4]** includes methods for ensuring the safe storage and use of fuels or chemicals, which could be damaging to the groundwater environment if released, and details response plans for addressing leaks and spills to localise any impacts and limit their duration. This would result in the significance of effect

being **slight adverse**. Therefore, the residual effect on **high** importance groundwater during decommissioning is considered to be **not significant**.

10.9.24 In areas of the Site where there is a principal aquifer in conjunction with a groundwater source protection zone 1 or drinking water safeguard zone), the receptor importance is **very high**. With the implementation of additional mitigation measures, the potential for leaks and spills will be minimised, and in the event of spillage events, the impacts would be localised and limited in duration. This results in the magnitude of impact being categorised as **negligible**. The significance of effect would therefore be **slight adverse**. Therefore, the residual effect on very **high** importance groundwater during decommissioning is considered to be **not significant**.

Land and soil

10.9.25 Land-based receptors relating to contamination are considered to have **low** sensitivity, based on the findings of **ES Volume 4, Appendix 10.1: Preliminary Risk Assessment [EN010157/APP/6.4]**. The magnitude of impact (change) during decommissioning is considered to be **negligible** and the significance of the effect is therefore **neutral or slight adverse**. Therefore, the residual effect on land-based receptors is considered to be **not significant**.

10.9.26 As in the earlier phases, where vehicle movements are required over soils for decommissioning activities, these will be managed by the **Outline SMP [EN010157/APP/7.8]** to prevent damage to soil structure, as well as potential damage to field drains (and subsequent effects on drainage of agricultural land). This will control the timing of works and take into account soil saturation. Although the decommissioning phase will not adversely affect soils if the **Outline SMP [EN010157/APP/7.8]** is followed, as above, it is worth noting that a reduction in soil quality can be reversed, preventing medium or long-term effects.

10.9.27 As for the construction phase, machinery that is used in the decommissioning phase is expected to be of similar size, or smaller/lighter, than plant used in standard agricultural processes, so the works will not result in additional loads on the soil compared to the prior agricultural use. Damage to soils during decommissioning will be limited, and there is the potential to restore soils if accidental damage did occur.

10.9.28 Changes to the land used for the Solar PV modules and other temporary facilities would be reversible, and the soil will be managed and reinstated to retain the soil quality and existing Agricultural Land Classification grade. Decommissioning work to remove the Proposed Development will ensure that the agricultural land will be returned to its previous quality prior to the commencement of the Proposed Development.

10.9.29 Soil and agricultural land on the Site are considered to be of **very high** to **low** sensitivity (as listed above). Overall, the magnitude of impact (change) to agricultural land during the decommissioning phase is likely to be **negligible** as soils are expected to be managed to prevent damage to the soil resource, so far as practicably possible, and would be returned to agricultural use. The **Outline SMP [EN010157/APP/7.8]** and the **Outline DEMP [EN010157/APP/7.4]** will apply to works undertaken during this phase, and will protect soil from damage. Therefore, it is considered that the significance of effect would be **slight adverse** (for **very high** (Grades 1 and 2) and **high** (Grade 3a) sensitivity soil) and **neutral or slight adverse** (for **medium** (Grade 3b) and **low** (Grade 4) sensitivity soil) and **not significant**.

10.9.30 Soil remains as **medium** for medium and heavy textured soils and **low** for light textured soils the duration of decommissioning due to the texture and field capacity days across the Site. During decommissioning, there is a potential for soil damage due to vehicle movement; however, the magnitude of impact is **minor** with the implementation of the **Outline SMP [EN010157/APP/7.8]**. Therefore, the significance of the residual effect on soil is **slight adverse**, which is **not significant** for medium and heavy textured soils and slight to neutral adverse for light textured soils. As the soils are being handled and stored during decommissioning professional judgement has been used to determine the effects on light textured soils will be **slight adverse** and **not significant.**

10.10 Opportunities for enhancement

10.10.1 A reinstatement and habitat creation programme would commence following the construction phase, which will enhance soil quality. This would include landscaping, habitat management and biodiversity enhancement. Areas under the solar PV modules and the landscape buffers would be planted with native grassland, wildflower mixes, scrub and hedgerows. Woodland blocks and belts would be planted strategically to provide visual screening and ecological habitats to achieve a biodiversity net gain. The reinstatement and creation of the landscape and habitat will be undertaken in accordance with the **Outline LEMP [EN010157/APP/7.5]**.

10.10.2 The cessation of agricultural activity on some parts of the Site during construction and operation could lead to the stabilisation of soil and may reduce soil-laden runoff into non-designated watercourses on Site. A reduction in the application of herbicides, pesticides or fertilizers as a result of changes in land management from agricultural producer to solar farm will result in a reduction of surface water runoff from the Site polluted with herbicides, pesticides or fertilizers.

10.10.3 Furthermore, there is potential that soil health could be enhanced over the assumed 40-year period of operation of the Proposed Development due to the

implementation of the **Outline SMP [EN010157/APP/7.8]** and due to the permanent cover of grassland which would reduce the impact of soil erosion.

10.11 Monitoring requirements

10.11.1 No monitoring is expected to be required, unless any mitigation measures or remediation works are determined to be necessary once an assessment of site investigation results has been completed. If any monitoring relating to contaminated land or groundwater is necessary, the requirements for these will be agreed in discussions with East Riding of Yorkshire Council and will be detailed in the Construction Environmental Management Plan, in accordance with the **Outline CEMP [EN010157/APP/7.2]**.

10.12 Difficulties and uncertainties

10.12.1 The following difficulties and uncertainties have been encountered in undertaking the land, soil and groundwater assessment:

- Data on Site history have been obtained from publicly available historical maps. On some occasions, historical information may not be available due to gaps between historical Ordnance Survey maps and there may be developments that occurred between map editions that are not evident. However, for the Site, there are few changes to field boundaries between the subsequent map editions, and it is considered unlikely that significant features have been missed;
- Due to the large area of the Order Limits, the site walkover provided an overview of Land Areas B to F, rather than a detailed assessment. The cable route options were not accessed as part of the walkover survey;
- A detailed Agricultural Land Classification and soil survey has not been undertaken of the grid connection cable route at this stage. However, an **Outline SMP [EN010157/APP/7.8]** has been produced which covers the full Order Limits, including the grid connection cable route. As set out in the **Outline SMP [EN010157/APP/7.8]**, it is proposed that detailed soil/land quality surveys of the grid connection cable route will be undertaken pre-construction, once the design and land needed for excavation is confirmed, thus avoiding unnecessarily surveying the entire width of the proposed grid connection cable route corridor. The **Outline SMP [EN010157/APP/7.8]** describes the survey work that will be carried out prior to drafting the Soil Management Plan, and the consultation process that will be in-built prior to finalising the Soil Management Plan before works commence;

- There are no previous investigations available for the Site; therefore, there is no specific information on concentrations of potential contaminants in soil and groundwater. It would be standard for this information to be collected during later stages of the project, when site investigations can be appropriately designed for the Proposed Development based on the available desk-based information and detailed design. Such investigations are detailed in the **Outline SMP [EN010157/APP/7.8]**; and
- Details of groundwater depth and flow direction are unknown. Although this means that the exact details of the groundwater regime are unknown, the assessment has been completed in a robust manner based on assumptions made from the available data. If necessary, relevant information could be obtained during the afore-mentioned site investigation work.

10.13 Summary

10.13.1 A summary of this assessment is presented in **Table 10-14**. The sensitivity of each receptor is identified alongside any relevant embedded mitigation and the potential effects that could arise on those receptors. Any proposed additional mitigation measures are stated, and the magnitude of impact (change) and residual effects then assessed.

Table 10-14: Assessment summary

Receptor/ matter	Phase	Sensitivity/importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact (change)	Residual effect (with additional mitigation)
Key: + = positive, - = negative, D = direct, I = indirect, ST = short term, MT = medium term, LT = long term, P = permanent, T = temporary							
Groundwater	Construction	High	None	Leaks and spills of fuel or chemicals during construction works affecting groundwater	Adhere to **Outline CEMP [EN010157/APP/7.2]**.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Groundwater	Construction	Very high	None	Leaks and spills of fuel or chemicals during construction works affecting groundwater.	Adhere to **Outline CEMP [EN010157/APP/7.2]**.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Groundwater	Construction	High	None	Effect on groundwater quality due to Horizontal Directional Drilling works, piling or earthworks.	Piling risk assessment to be used if required. Adhere to Construction Environmental Management Plan	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Groundwater	Construction	Very high	None	Effect on groundwater quality due to Horizontal Directional Drilling works, piling or earthworks.	Piling risk assessment to be used if required. Adhere to Construction Environmental Management Plan	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (potential contamination)	Construction	Low	None	Construction activities could lead to localised contamination of soils if not managed properly.	A procedure will be included within the Construction Environmental Management Plan to manage previously unidentified contaminated material that is encountered during the works.	Negligible	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Construction	Very high	Use of non-Best and Most Versatile agricultural land has been prioritised for the areas of environmental mitigation	Compaction and deterioration of soil and agricultural land, loss of Best and Most Versatile agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Minor	**Moderate adverse or Large adverse** **(-) (D, I) (MT) (T)** **Significant**
Land (agricultural land)	Construction	High	Use of non-Best and Most	Compaction and deterioration of soil and agricultural land, loss of	**Outline SMP [EN010157/APP/7.8]** to be	Minor	**Slight adverse**

Receptor/ matter	Phase	Sensitivity/importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact (change)	Residual effect (with additional mitigation)
			Versatile agricultural land has been prioritised for the areas of environmental mitigation	Best and Most Versatile agricultural land.	used to manage potential impacts to soil and agricultural land. Adhere to **Outline CEMP [EN010157/APP/7.2]**.		**(-) (D, I) (MT) (T)** **Not significant**
Land (soil)	Construction	Medium	None	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Minor	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Construction	Low	None	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Minor	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (soil)	Construction	Medium	None	Temporary loss or damage to soil quality	**Outline CEMP [EN010157/APP/7.2]** and **Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Minor	**Slight adverse** **(-) (D) (ST) or (MT) (T)** **Not significant**
Land (soil)	Construction	Low	None	Temporary loss or damage to soil quality	**Outline CEMP [EN010157/APP/7.2]** and **Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Minor	**Slight adverse** **(-) (D) (ST) or (MT) (T)** **Not significant**
Groundwater	Operation (including maintenance)	High	None	Leaks and spills of fuel or chemicals during operation (including maintenance) affecting groundwater	Adhere to Operational Environmental Management Plan.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Groundwater	Operation (including maintenance)	Very high	None	Leaks and spills of fuel or chemicals during operation (including maintenance) affecting groundwater.	Adhere to Construction Environmental Management Plan.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**

Receptor/ matter	Phase	Sensitivity/importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact (change)	Residual effect (with additional mitigation)
Land (potential contamination)	Operation (including maintenance)	Low	None	Operation activities could lead to localised contamination of soils if not managed properly.	A procedure will be included within the Construction Environmental Management Plan to manage spillages/leaks.	Negligible	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Operation (including maintenance)	Very high	Use of non-Best and Most Versatile agricultural land has been prioritised for the areas of environmental mitigation.	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Operation (including maintenance)	High	Use of non-Best and Most Versatile agricultural land has been prioritised for the areas of environmental mitigation.	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Operation (including maintenance)	Medium	None	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Negligible	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Operation (including maintenance)	Low	None	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land.	Negligible	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (soil)	Operation (including maintenance)	Medium	None	Soil is left undisturbed without significant agricultural pressures, as well as grazing adding nutrient input into the soil.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land. Adhere to the **Outline OEMP [EN010157/APP/7.3]**.	Minor	**Slight beneficial** **(+) (D) or (I) (ST) or (MT) (T)** **Not significant**

Receptor/ matter	Phase	Sensitivity/importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact (change)	Residual effect (with additional mitigation)
Land (soil)	Operation (including maintenance)	Low	None	Soil is left undisturbed without significant agricultural pressures, as well as grazing adding nutrient input into the soil.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land. Adhere to the **Outline OEMP [EN010157/APP/7.3]**.	Minor	**Slight beneficial** **(+) (D) or (I) (ST) or (MT) (T)** **Not significant**
Groundwater	Decommissioning	High	None	Leaks and spills of fuel or chemicals during decommissioning works affecting groundwater.	Adhere to **Outline DEMP [EN010157/APP/7.4]**.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Groundwater	Decommissioning	Very high	None	Leaks and spills of fuel or chemicals during decommissioning. works effecting groundwater	Adhere to **Outline DEMP [EN010157/APP/7.4]**.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (potential contamination)	Decommissioning	Low	None	Decommissioning activities could lead to localised contamination of soils if not managed properly.	A procedure is included within the **Outline DEMP [EN010157/APP/7.4]** to manage spillages/leaks.	Negligible	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Decommissioning	Very high	Use of non-Best and Most Versatile agricultural land has been prioritised for the areas of environmental mitigation.	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land. Adhere to **Outline DEMP [EN010157/APP/7.4]**.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Decommissioning	High	Use of non-Best and Most Versatile agricultural land has been prioritised for the areas of environmental mitigation.	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land. Adhere to **Outline DEMP [EN010157/APP/7.4]**.	Negligible	**Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (agricultural land)	Decommissioning	Medium	None	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential	Negligible	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)**

Receptor/ matter	Phase	Sensitivity/importance of the receptor	Embedded mitigation	Potential effects (without additional mitigation)	Additional mitigation	Magnitude of impact (change)	Residual effect (with additional mitigation)
					impacts to soil and agricultural land. Adhere to **Outline DEMP [EN010157/APP/7.4]**.		**Not significant**
Land (agricultural land)	Decommissioning	Low	None	Compaction and deterioration of soil and agricultural land.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land. Adhere to **Outline DEMP [EN010157/APP/7.4]**.	Negligible	**Neutral or Slight adverse** **(-) (D, I) (MT) (T)** **Not significant**
Land (soil)	Decommissioning	Medium	None	Temporary loss or damage to soil quality.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land. Adhere to **Outline DEMP [EN010157/APP/7.4]**.	Minor	**Slight adverse** **(-) (D) or (I) (ST) or (MT) (T)** **Not significant**
Land (soil)	Decommissioning	Low	None	Temporary loss or damage to soil quality.	**Outline SMP [EN010157/APP/7.8]** to be used to manage potential impacts to soil and agricultural land. Adhere to **Outline DEMP [EN010157/APP/7.4]**.	Minor	**Slight adverse** **(-) (D) or (I) (ST) or (MT) (T)** **Not significant**

10.14 References

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RWE Renewables UK Limited

Windmill Hill Business Park,
Whitehill Way,
Swindon,
Wiltshire,
England,
SN5 6PB
www.rwe.com