Lime Down
Solar Park

Environmental Statement

Volume 1, Chapter 19: Ground Conditions

September 2025

Revision 1

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19.1 Introduction

19.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA), focusing on an assessment of the likely significant effects on ground conditions and contamination as a result of the Scheme. For more details about the Scheme, refer to **ES Volume 1, Chapter 3 The Scheme [EN010168/APP/6.1]** of this ES.

19.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects on ground conditions and contamination during the construction, operation and maintenance, and decommissioning phases of the Scheme.

19.1.3 This chapter should be read in conjunction with **ES Volume 1, Chapter 9: Ecology and Biodiversity [EN010168/APP/6.1], ES Volume 1, Chapter 11: Hydrology, Flood Risk and Drainage [EN010168/APP/6.1], ES Volume 1, Chapter 17: Soils and Agriculture [EN010168/APP/6.1]** and **ES Volume 1, Chapter 18: Human Health [EN010168/APP/6.1]**.

19.1.4 This chapter is supported by the following figures in **ES Volume 2 [EN010168/APP/6.2]**:

- **Figure 1-1 Scheme Location**;
- **Figure 1-2 Scheme Area**;
- **Figure 2-1 Elements of the Site**;
- **Figure 3-1 Indicative Site Layout**;
- **Figure 3-1-1 Indicative Site Layout Lime Down A**;
- **Figure 3-1-2 Indicative Site Layout Lime Down B**;
- **Figure 3-1-3 Indicative Site Layout Lime Down C**;
- **Figure 3-1-4 Indicative Site Layout Lime Down D**; and
- **Figure 3-1-5 Indicative Site Layout Lime Down E**.

19.1.5 This chapter is supported by the following appendices in **ES Volume 3 [EN010168/APP/6.3]**:

- **Appendix 19-1 Lime Down A Desk Study**;
- **Appendix 19-2 Lime Down B Desk Study**;
- **Appendix 19-3 Lime Down C Desk Study**;
- **Appendix 19-4 Lime Down D Desk Study**;

- **Appendix 19-5 Lime Down E Desk Study**;
- **Appendix 19-6 Cable Corridor Northwest Desk Study**;
- **Appendix 19-7 Cable Corridor Central Desk Study**;
- **Appendix 19-8 Cable Corridor Southwest Desk Study**;
- **Appendix 19-9 Preliminary Risk Assessment Methodology**;
- **Appendix 19-10 Email from Wiltshire CC RE: private water supplies**; and
- **Appendix 19-11 Mining Risk Assessment**.

19.2 Consultation

19.2.1 A request for an EIA Scoping Opinion was sought from the Secretary of State through the Planning Inspectorate in July 2024. The issues raised in the Scoping Opinion are summarised and responded to within **ES Volume 3, Appendix 1-2: Scoping Opinion Responses [EN010168/APP/6.3],** which demonstrates how the matters raised in the Scoping Opinion are addressed in this ES. Matters where the scope of the assessment has been raised by the Planning Inspectorate are summarised in **Table 19-1** below.

Table 19-1: Planning Inspectorate Scoping Opinion Responses (Ground Conditions Specific)

ID	Summary of Matter	Response
3.6.1	The Scoping Report proposed excluding a detailed assessment of ground conditions and contamination at Lime Down A to E and Melksham Substation, based on Preliminary Risk Assessments (PRAs) and a draft Construction Environmental Management Plan. However, the Inspectorate disagrees, citing unresolved geohazards, concerns raised by the Environment Agency, and the absence of a PRA for the Cable Route Corridor. It also notes inconsistencies in how the Cable Route PRA is proposed to be presented in the ES. As a result, the Inspectorate advises that a full Ground Conditions and Contamination ES Chapter should be included, with the Cable Route PRA appended and any scoped-out matters clearly justified.	A full Ground Conditions and Contamination Chapter is included in this Environmental Statement, in line with the Inspectorate's recommendation. This chapter presents the findings of the Preliminary Risk Assessments (PRAs) for Lime Down A to E, as well as a PRA covering the Cable Route Corridor. The Cable Route PRA is provided within the appendices to this ES chapter. The assessment also responds to the concerns raised by the Environment Agency and addresses the potential for geohazards within the Order limits. An **Outline Construction Environmental Management Plan (CEMP) [EN010168/APP/7.12]** has been submitted as part of the DCO application and includes commitments relating to ground investigation, risk management, and mitigation measures to manage any contamination risk or

ID	Summary of Matter	Response
		unforeseen ground conditions that may be encountered during construction.
3.6.2	The Scoping Report proposes excluding certain matters from further assessment, referencing the rationale in ID 3.6.1. Based on the Preliminary Risk Assessments (PRAs) and proposed mitigation, the Inspectorate agrees that significant effects are unlikely and supports scoping these matters out for all project phases. A PRA for the Cable Route Corridor is acceptable as an appendix to the Environmental Statement (ES). However, if the PRA identifies potential significant contamination risks, these must be assessed in the ES, or a clear justification must be provided if they are ultimately excluded.	Historic sources of contamination are considered in **ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]** and in this ES (see **Section 19.9**). The risk of pollutant linkages related to them have been considered in **Table 19-4** this chapter. Where the cable route may intersect with ground impacted by contamination, that material will be remediated though the Discovery and Inspection Strategy (as secured via the **Outline CEMP [EN010168/APP/7.12])**, reducing the risk of the cable route acting as a preferential pathway for contamination present in the ground
3.6.3, 3.6.4	The Scoping Report aims to exclude mobilisation of existing contamination to controlled waters – construction and decommissioning from further assessment, referencing the rationale in ID 3.6.1. However, due to concerns raised by the Environment Agency (EA) about the baseline data, the Inspectorate finds there is currently insufficient information to support this exclusion. Therefore, the Environmental Statement (ES) must either assess these matters or provide evidence of agreement with relevant consultation bodies confirming no likely significant effects. While the inclusion of a Preliminary Risk Assessment (PRA) for the Cable Route Corridor is acceptable, if it identifies risks such as contamination mobilising to controlled waters, these must be assessed in the ES. If such risks are ultimately scoped out, the ES must still justify the conclusion of no likely significant effects. The Inspectorate agrees that during the operational phase, the risk of contamination mobilisation is unlikely and can be excluded from further assessment.	The PRA has identified controlled waters receptors such as Source Protection Zones, which could potentially be at risk from contaminant sources (see **Table 19-4**). However, no significant risks are anticipated once suitable mitigation is applied (see **Table 19-5**). Construction, Operational and Decommissioning phases impacts to controlled waters will be mitigated through the **Outline CEMP, Outline OEMP and Outline Decommissioning Strategy**, respectively **[EN010168/APP/7.12, 13 and 14]**. Additional detail has been provided to justify addressing residual impacts through the Outline CEMP.
3.6.5	Disagreed with the decision to scope out risks from ground gas posed by the construction and operational phases of the project.	Risks from ground gas posed are considered in **Table 19-4.**

ID	Summary of Matter	Response
3.6.6	The inspectorate stated that no assessment of the significance of impacts was included in the PEIR and that this should be included in the ES	**Table 19-5** and Error! Reference source not found. now include an assessment of the significance of identified impacts
3.6.7	The inspectorate identified inaccuracies and inconsistencies in the description of baseline within the scoping report and perceived key receptors to be missing from the baseline	The baseline has been reviewed and updated as necessary in **ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]** and in **Table 19-4** of this chapter
3.6.8	Concerns with the lack of consideration of the breakout of drilling fluids during the use of Horizontal Directional Drilling (HDD).	This has been considered within the ES and potential impacts mitigated through the **Outline CEMP [EN010168/APP/7.12]**. Location-specific risk assessments will be undertaken prior to commencement of trenchless techniques and BS5930: 2015 Code of Practice for Ground Investigations and BS EN 16228-3 Drilling and foundation equipment – Safety – Part 3: Horizontal directional drilling equipment will be followed as good practice.

19.2.2 In addition, a number of scoping responses were received which relate to information contained within other chapters, but are material to Ground Conditions. These are summarised in **Table 19-2** below:

Table 19-2: Planning Inspectorate Scoping Opinion Responses (Other Disciplines)

ID	Summary of Matter	Response
3.5.11	A Hydrogeological Risk Assessment (HRA) should be undertaken to assess the risk posed to sensitive drinking water resources within the study area.	A high-level assessment of hydrogeological risks has been undertaken as part of the PRA (**ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]**), including consideration of the potential impacts on the Great Oolite aquifer. The findings of this assessment are presented in **ES Volume 3, Appendices 19-8: Cable Corridor Southwest Desk Study [EN010168/APP/6.3]** and summarised in this ES Chapter. A detailed Hydrogeological Risk Assessment has not been prepared as the potential for significant effects is considered to be low. This conclusion reflects the limited intrusive groundworks proposed, the underlying geology, and

ID	Summary of Matter	Response
		the mitigation and control measures set out in the **Outline CEMP [EN010168/APP/7.12]**. In addition, further design specifications have been incorporated to reduce potential risk to groundwater and drinking water resources, including the use of photovoltaic panels that have not involved PFAS in their manufacture and a commitment that fluid-filled cables will not be used within the Scheme.
3.5.13	Risks to private water supplies (PWS) were not considered.	The risks for PWS have been considered in **Section 19.4.**
3.5.11	Concerns related to the use of fluid-insulated cabling within the cable corridors and link sites.	It has been confirmed that this type of cable will not be used so this has not been considered any further in the ES.

19.2.3 Engagement has been undertaken with stakeholders comprising the Environment Agency and Wiltshire Council. The matters raised are summarised in **Table 19-3** below.

Table 19-3: Summary of Engagement Undertaken

Consultee and Date	Issue/Topic	Response
Environment Agency (March 2025)	No site walkover or intrusive ground investigation included.	Walkovers have been carried out and added to the relevant desk study (see **ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]**). The need for intrusive ground investigation is detailed within the **Outline CEMP [EN010168/APP/7.12]**, which is secured via a requirement in Schedule 2 of the **Draft DCO [EN010168/APP/3.1]**.
Environment Agency (March 2025)	Not all potential contamination sources considered, including the railway and thermal implications from cables.	Desk studies have been reviewed to ensure all additional sources highlighted are considered (See **Section 19.9**).

Consultee and Date	Issue/Topic	Response
Environment Agency (March 2025)	Impacts of works at depth not fully considered, including assessment of all underlying geology.	**ES Volume 3, Appendix 19-11 Mining Risk Assessment [EN010168/APP/6.3]** has been prepared to consider geohazards in relevant parts of the scheme.
Environment Agency (March 2025)	Unclear discussion on groundwater flow direction and topographical gradient.	Further consideration of local groundwater flow is provided in desk studies. Topography has been considered and recorded in walkovers (**ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]**).
Environment Agency (March 2025)	Omission of some sensitive receptors, including various SPZ.	Desk studies have been reviewed to ensure all additional receptors highlighted are considered (See **Section 19.9**).
Wiltshire Council (October 2024)	Records of Private Water Supplies.	Wiltshire council provided information on registered private water supplies within their jurisdiction.
Wiltshire Council (March 2025)	Opinions on risks to off-site ecological and controlled waters receptors.	The contaminated land officer for Wiltshire Council confirmed that he has no specific concerns related to contaminated land and the potential for contamination to impact sensitive receptors.
Wiltshire Council (March 2025)	Request for information on records relating to mining and mineral extraction within the scheme area.	Wiltshire were unable to provide information beyond what The Applicant had already obtained in relation to publicly available records and contact details for landowners.

19.2.4 Statutory consultation was held between 29 January 2025 and 19 March 2025. A full list of consultation responses in relation to ground conditions and contamination are presented in the **Consultation Report [EN010168/APP/5.1]** submitted as part of the Application.

19.2.5 A further round of targeted consultation was undertaken between 3 June 2025 and 11 July 2025 following changes to the development boundary area of the

Scheme presented in the PEIR and at Stage Two Statutory Consultation. Further detail regarding the targeted consultation is provided in **ES Volume 1, Chapter 1: Introduction [EN010168/APP/6.1]**.

19.3 Legislation, Planning Policy and Guidance

19.3.1 A summary of applicable legislation, planning policy and other guidance documents relating to ground conditions and contamination pertinent to the Scheme is provided below.

19.3.2 Full details of the legislation, policy, and guidance of relevance to the assessment of ground conditions and contamination is provided in full in **ES Volume 1, Chapter 5: Energy Need Legislative Context and Energy Policy [EN010168/APP/6.1]**.

Legislation

19.3.3 Applicable legislation to inform the Ground Conditions and Contamination assessment includes:

- Part 2A of the Environmental Protection Act 1990;
- Environment Act 2021;
- Environmental Damage (Prevention and Remediation) Regulations 2009;
- Environmental Permitting Regulations 2016;
- Water Resources Act 1991;
- Water Act 2003;
- Control of Asbestos Regulations 2012;
- Construction (Design and Management) Regulations 2015 (CDM)
- The Contaminated Land (England) Regulations 2006; and
- The Private Water Supplies Regulations 2016.

National Planning Policy

19.3.4 The National Policy Statements (NPSs) that are relevant to the Scheme are:

- Overarching National Policy Statement for Energy (EN-1) (January 2024) (Ref 19-1);
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (January 2024) (Ref 19-14); and
- National Policy Statement for Electricity Networks Infrastructure (EN-5) (January 2024) (Ref 19-15).

19.3.5 The NPSs listed above came into effect on 17 January 2024. These NPSs set out the Government's energy policy for the delivery of nationally significant energy infrastructure, the need for new energy infrastructure, and guidance for the determination of an application for a Development Consent Order (DCO).

19.3.6 Revised versions of the NPSs were published as drafts for consultation on 24 April 2025. None of the proposed changes represent material changes to the assessment of impacts from ground conditions.

19.3.7 The relevant NPS requirements, together of an indication of where in the ES the information is provided to address these requirements, are provided in **Volume 3, Appendix 5-1: NPS Requirements [EN010168/APP/6.3].**

19.3.8 The National Planning Policy Framework (NPPF) (December 2024) (Ref 19-16) sets out the Government's planning policies for England and how these are expected to be applied.

19.3.9 The NPPF contains several sections relating to land affected by contamination.

19.3.10 Paragraph 180 states that *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*

(e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

(f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

19.3.11 Paragraphs 189 to 190 also state: *"189. Planning policies and decisions should ensure that: (a) a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);*

(b) after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and

(c) adequate site investigation information, prepared by a competent person, is available to inform these assessments.

190. Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner."

Local Planning Policy

19.3.12 Local planning policies that are relevant to the Scheme and ground conditions and contamination is the Wiltshire Core Strategy.

19.3.13 The Wilshire Core Strategy document was adopted in 2015 and acts as the Local Plan for planned development in the Wiltshire Council area. It contains a series of "Core Policies" and those relevant to ground conditions and contamination will be discussed in the following paragraphs.

19.3.14 The Strategy contains a series of Area Strategies, with those for Chippenham (Core Policy 9 and 10), Malmesbury (Core Policy 13) and Melksham (Core Policy 15 and 16) being relevant to the area covered by this project.

19.3.15 The document then features a series of technical core policies, divided into broader strategic objectives. The following core policies are related to ground conditions and contamination:

Core Policy 42: Standalone Renewable Energy Installations

19.3.16 This core policy seeks to encourage investment in renewable energy within Wiltshire, including ground mounted solar photovoltaic arrays. The policy does not make specific reference to ground conditions, but states that schemes should be informed by key environmental issues including impacts on sensitive landscapes and ecological receptors and residential amenity which should include "safety".

Core Policy 56: Contaminated Land

19.3.17 Contaminated land can be addressed proactively through Local Authority inspection or reactively through the planning regime. With regards to development, the policy states that *"Core Policy 56 requires that all development, which either because of its nature or location, may be on or adjacent to land or water affected by historic contamination overcomes this barrier to development by demonstrating the measures that will be taken to help mitigate these impacts. The nature and extent of the mitigation measures necessary will be site specific and the council's requirements will be proportionate and reasonable."* As such, identification and assessment of potential contaminated land hazards is required by the Core Strategy, with Wiltshire Council required to ensure that their requirements and conditions for development are proportionate to the magnitude of identified risk.

Core Policy 68: Water Resources

19.3.18 The policy highlights that groundwater is an important drinking water resource in the county and should be protected. The policy advocates the application of the guidance set out in the Environment Agency document 'Groundwater Protection: Policy and Practice'. Note that this document was withdrawn in 2017 and replaced with the web-based resource 'Groundwater Protection'. For the

purposes of the assessments, it will be assumed that the more recent guidance must be used. The strategy states that development proposals within a *"Source Protection Area (SPA), Safeguard Zone (SZ) or Water Protection Zone (WPZ) must assess any risk to groundwater resources and groundwater quality and demonstrate that these would be protected throughout the construction and operational phases of development."*

Core Policy 69: Protection of the River Avon SAC

19.3.19 This policy is concerned with protecting the important habitats within the River Avon SAC, an important chalk river resource. *"Development will need to incorporate measures during construction and operation to avoid and prevent pollution and mitigate potential disturbance effects; appropriate measures may include consideration of suitable buffer zones along watercourses, habitat enhancements and river access management measures. All development within 20 m of the river banks should submit a construction management plan to the local planning authority to ensure measures proposed during construction are satisfactory."* In relation to ground conditions and contamination, this means that consideration must be given to the River Avon (and downstream protection areas) with regards impacts from historical or development-specific soil and groundwater impacts which may adversely affect the SAC.

Other Guidance

19.3.20 Other guidance documents relevant to the assessment of the impacts of the Scheme on ground conditions and contamination include:

- UK Government guidance Land Contamination: Risk Management (2019);
- BS:EN 1997 Eurocode 7 – Geotechnical Design (BSI);
- BS 10175:2011 (as amended) Investigation of Potentially Contaminated Sites – Code of Practice (BSI); and
- Groundwater Protection (www.gov.uk, 2017).

19.4 Assessment Assumptions and Limitations

19.4.1 This ES is subject to the following technical, design and assumptions and limitations based on good practice in the assessment of ground conditions and contamination:

- The information sources used in this assessment are limited to those referenced in the individual Desk Study reports (**Volume 3, Appendix 19-1 to 19-8 [EN010168/APP/6.3]**).
- Confirmation of the location of Private Water Supplies (PWS) within 100 m of the Scheme has been provided by Wiltshire Council and it is assumed that no unregistered/unidentified PWS exist within the vicinity of the

scheme. Protection of water supplies within the vicinity of the Scheme is considered in the Outline CEMP;

- The sensitivity of receptors may change in the future. For example, changes to potable groundwater abstraction regimes, new private water supplies or designations to ecological receptors could change in the future and this may affect the risk assessment in respect of those receptors.

19.5 Study Area

19.5.1 The Study Area for the assessment comprises all areas within the Order Limits, including the Solar PV Sites, the Cable Route Corridor, and Highway Improvement Areas, as well as a 500 m buffer beyond the Order Limit boundary. The Study Areas for this ES are outlined in **Section 1.2 of ES Volume 3 Appendix 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]**.

19.5.2 Notable features such as shallow geology, sensitive ecological sites and historic potentially contaminative use within these boundaries will be noted and considered for their potential to impact and be impacted by the Scheme.

19.5.3 Where pathways such as watercourses extend outside the Study Area, the potential for such features to serve as both a receptor for pollution and pathways for its transport will be considered. However, downstream receptors will only be considered in the specific context of pollutants that could use such a pathway and are not regarded as being within the Study Area.

19.6 Assessment Methodology

Impact Assessment Methodology

19.6.1 Environmental liabilities can arise through provisions contained within statutory legislation including Part 2A of the Environmental Protection Act 1990, the Environmental Damage (Prevention and Remediation) Regulations 2015, the Water Resources Act 1991, the Environmental Permitting Regulations 2016 and the Water Act 2003.

19.6.2 Current good practice recommends that the determination of health hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Statutory Guidance to Part 2A (2012) and Land Contamination: Risk Management (LCRM).

19.6.3 The “suitable for use” approach is adopted for the assessment of contaminated land where remedial measures are undertaken for any unacceptable risks to human health or the environment, considering the use (or proposed use) of the land in question and the environmental setting.

19.6.4 The risk assessment process for environmental contaminants is based on a source-pathway-receptor analysis. These terms can be defined as follows:

- **Source:** hazardous substance that has the potential to cause adverse impacts;
- **Pathway:** route whereby a hazardous substance may come into contact with the receptor: examples include ingestion of contaminated soil and leaching of contaminants from soil into watercourses; and
- **Receptor:** target that may be affected by contamination: examples include human occupants/ users of site, water resources (surface waters or groundwater), or structures.

19.6.5 For a risk to be present, there must be a viable contaminant linkage i.e. a mechanism whereby a source impacts on a sensitive receptor via a pathway.

19.6.6 The following sections details the initial conceptual site model (CSM) which has been developed for the Site with a view to assessing the potential risks/ liabilities and constraints associated with the Site in its current condition prior to any proposed redevelopment. Risks associated with the proposed redevelopment have also been assessed based on an appropriate future land use scenario, including any potential sources of contamination, potential receptors and potential contaminant pathways identified during this desk-based assessment.

Assessment of Significance

19.6.7 The value, magnitude and significance of the identified pollutant linkages are based on the procedure for assessing impacts described in the Design Manual for Roads and Bridges (DMRB), Volume 11, Part 10, HD 45/09 Road Drainage and the Water Environment (Highways Agency 2009).

19.6.8 Additional detail on the approach to assessing significance is presented in **ES Volume 3 Appendix 19-9: Preliminary Risk Assessment Approach & Methodology [EN010168/APP/6.3].**

Risk Assessment Principles

19.6.9 Current good practice recommends that the determination of hazards due to contaminated land is based on the principle of risk assessment, as outlined in the Environment Agency guidance on LCRM.

19.6.10 Assessments of risks associated with each of these contaminant linkages are discussed in the following sections.

19.6.11 Using criteria broadly based on those presented in the Construction Industry Research and Information Association publication Research and Development (RandD 66) (National House Building Council (NHBC)/Environment Agency/Chartered Institute of Environmental Health (CIEH), 2008), the magnitude of the risk associated with potential contamination at the Site has been assessed. To do this an estimate is made of:

- The magnitude of the potential consequence (i.e. severity); and
- The magnitude of probability (i.e. likelihood).

19.6.12 A detailed description of the risk assessment methodology used for this ES is described in **ES Volume 3 Appendix 19-9: Preliminary Risk Assessment Approach & Methodology [EN010168/APP/6.3]**.

19.7 Baseline Conditions – PV Sites

19.7.1 For each of the five Solar PV Sites, a preliminary risk assessment table has been produced, which identifies the potential source – pathway – receptor (SPR) linkages that have been identified for the Scheme for each of the Solar PV Sites. The risk assessments for each desk study can be reviewed in **ES Volume 3 Appendix 19-1 to 19-5: Desk Studies (Lime Down A to E) [EN010168/APP/6.3].** The following sections will summarise the baseline conditions identified in those risk assessments.

Lime Down A

Contaminated Land

19.7.2 Within Lime Down A (see **ES Volume 2, Figure 2-3-1: Environmental and Planning Constraints [EN010168/APP/6.2]**), there is potential for ponds to have been backfilled or made ground associated with farming activities to be encountered. Away from Lime Down A, a vehicle repair garage is immediately adjacent to the south. One registered pollution incident was recorded 170 m to the east in September 2005, from vehicle waste with no impact on water, minor impact on land, and significant impact on air. No landfills, petrol stations or any other past or present contaminative uses have been recorded on or in the vicinity of Lime Down A. No current discharge consents are present within the vicinity of Lime Down A. Nearby quarries have been identified with three historical opencast clay and shale quarries to the north and west of Lime Down A.

Hydrogeology

19.7.3 Shallow groundwater may be encountered, perched on the low permeability cohesive soils anticipated beneath Lime Down A. The Forest Marble Formation is designated as a Secondary A aquifer with high vulnerability and within a Source Protection Zone 2, outer catchment zone. There are no licensed groundwater abstractions recorded in the vicinity of Lime Down A. Flooding from groundwater has been recorded as unlikely.

Geology

19.7.4 The ground conditions are anticipated to comprise topsoil and subsoil comprising lime-rich loamy and clayey soils with impeded drainage, overlying

the Forest Marble Formation comprising mudstone with limestone beds. No superficial deposits are anticipated. The Forest Marble Formation is anticipated to be completely weathered to a clay near surface. The depth to engineering strength rock is unknown, however, it is likely that engineering rockhead is shallow across Lime Down A. Localised areas of made ground may be encountered, associated with the barn, farmyard and potentially backfilled ponds.

Geohazards

19.7.5 Negligible to low risk geohazard risk has been typically identified at Lime Down A. A moderate risk has been identified for shrink-swell potential of shallow clays (weathered mudstone). Lime Down A is not in a mining area or mineral safeguarding area, however, historical quarries have been recorded nearby.

Lime Down B

Contaminated Land

19.7.6 On Lime Down B (see **ES Volume 2, Figure 2-3-2: Environmental and Planning Constraints [EN010168/APP/6.2]**there is a historic quarry in the south and historic barns which are no longer present. In addition, made ground associated with farming activities may be encountered. Nearby, there is one contemporary trade directory entry recorded for a vehicle repair garage 185 m topographically downgradient to the southwest. No landfills or petrol stations have been recorded on, or in the vicinity of Lime Down B. There are currently seven active discharge consents for sewage, four consents pertaining to discharging into streams/rivers, and three pertaining to discharging to land/soakaway.

Hydrogeology

19.7.7 Shallow groundwater may be encountered, perched on the low permeability cohesive soils anticipated beneath Lime Down B. The Forest Marble Formation is designated as a Secondary A aquifer with high vulnerability and within Source Protection Zone 1, inner catchment zone, and Source Protection Zone 2, outer catchment zone. There are no licensed groundwater abstractions recorded in the vicinity of Lime Down B. Flooding from groundwater has been recorded as unlikely.

Geology

19.7.8 The ground conditions are anticipated to comprise topsoil and subsoil comprising freely draining, lime-rich loamy soil, overlying the Forest Marble Formation comprising mudstone with limestone beds. Some superficial deposits in the form of Alluvium are anticipated near the stream in the central part of Lime Down B, near the southern boundary. The depth to engineering strength

rock is unknown, however, it is likely that engineering rockhead is shallow across Lime Down B. Localised areas of Made ground may be encountered, associated with the farmland, gate entrances, and the old quarry in the south of Lime Down B.

Geohazards

19.7.9 Negligible to low geohazard risk has been identified at Lime Down B. A moderate risk has been identified for shrinking or swelling clay of the Forest Marble Formation and compressible ground risks associated with the Alluvium. Lime Down B is not recorded to be in a mining area or mineral safeguarding area. An inactive opencast shale and clay quarry has been identified in the south of Lime Down B. Air shafts recorded approximately 70 m to the southeast suggest historic mining, however, little information is available.

Lime Down C

Contaminated Land

19.7.10 Within Lime Down C (see **ES Volume 2, Figure 2-3-3: Environmental and Planning Constraints [EN010168/APP/6.2]**a number of farm buildings have been present including Low Barn, a larger farming compound. These buildings often had associated ponds which may now contain unknown fill material. One current farm building is noted in the northeast of Lime Down C. Nearby, three former quarries are noted within 250 m, two adjacent and one noted off Pig Lane approximately 60 m from Site. In addition, a vehicle service centre is noted 158 m to the northeast and a slurry pit 51 m to the east near Farleaze Farm. No landfills, petrol stations or any other past or present contaminative uses have been recorded on or in the vicinity of Lime Down C. One unconfirmed current discharge consent is present onsite associated with Middle Green Farm for ‘sewage discharge’ to ‘soakaway’ in the southwestern end of Lime Down C. One lapsed consent is noted 95 m north for Lordswood Barn, associated with a ‘Sewage Discharges Final/Treated Effluent’ to a ‘ditch tributary of Norton Brook’, revoked in 1996.

Hydrogeology

19.7.11 Shallow groundwater may be encountered, perched on the low permeability cohesive soils anticipated beneath Lime Down C. The superficial Head deposits are identified as an undifferentiated aquifer, and the underlying bedrock of the Forest Marble Formation is designated as a Secondary A aquifer for the Mudstones which make up nearly the entirety of Lime Down C, and a Principal aquifer for the Ooidal Limestone which is noted only in a small area in the west end of Lime Down C with the rail cutting offsite. It lies within a Source Protection Zone 3 (SPZ) (total catchment) and an SPZ 2c (outer catchment – confined aquifer). There are no licensed groundwater abstractions recorded in the vicinity of Lime Down C. A number of historic wells are noted onsite associated with the

former farm buildings, the current nature of the wells is not known, and a number of wells are noted nearby. Flooding from groundwater has been recorded to be a negligible risk outside of the rivers which are noted as 'moderate' to 'high', with the northern river being more predominantly 'high'.

Geology

19.7.12 The ground conditions are anticipated to comprise Topsoil and subsoil of lime-rich soils and lime-rich loamy clayey soils with impeded drainage, overlying the Forest Marble Formation comprising mudstone with limestone beds. Localised Head deposits described as clays, silts, sands and gravels, are noted along the stream in the south of Lime Down C. The depth to engineering strength rock is unknown, however, it is likely that engineering rockhead is shallow across Lime Down C. Localised areas of made ground may be encountered, associated with the former farm buildings, tracks, services and potentially backfilled ponds.

Geohazards

19.7.13 Negligible to low risk geohazard risk has been typically identified at Lime Down C. A very low to moderate risk has been identified for landslide potential adjacent to the rail line. The Site is not in a mining area or mineral safeguarding area however, historical quarries have been recorded nearby.

Lime Down D

Contaminated Land

19.7.14 Within Lime Down D (see **ES Volume 2, Figure 2-3-4: Environmental and Planning Constraints [EN010168/APP/6.2]**), there is potential for ponds to have been backfilled or made ground associated with farming activities to be encountered. Nearby, one registered pollution incident was recorded to the south of the Site in September 2001, from storm sewage, with no impact on land and air and only minor impact on water. No landfills or petrol stations have been recorded on or in the vicinity of Lime Down D, however, there are two current potentially contaminative industrial sites within 250 m, including a water pumping station and a dairy farm.

Hydrogeology

19.7.15 Shallow groundwater may be encountered, perched on the low permeability cohesive soils notably beneath the eastern end of Lime Down D. The underlying geological formations are designated either unproductive in the east or Secondary A aquifers in the west, with high vulnerability. Lime Down D lies partially within a Source Protection Zone 3 'total catchment zone' and a confined aquifer SPZ in the east, Zone 1c 'inner catchment zone', and SPZ 2c to the west, 'outer catchment zone'. There is one licensed groundwater abstraction recorded 233 m west, used for general farming and domestic

purposes. Flooding from groundwater has been recorded for most of Lime Down D as a negligible risk with the western end at low risk. Small pockets however, to the east and southeast, are noted as high risk and moderate-high risk associated with Gauze Brook.

Geology

19.7.16 The ground conditions are anticipated to comprise soil comprising lime-rich loamy and clayey soils with impeded drainage in the north, freely draining in the east, and naturally wet in the south. Lime Down D overlies the Kellaways Formation (Kellaway Clay Member - Mudstone) and Kellaway Sand Member (Siltstone and Sandstone), Cornbrash Formation (Limestone, Packstone, and Wackestone), and Forest Marble Formation (beds of Mudstone and Limestone). Some superficial Alluvium deposits are noted to the east broadly along Gauze Brook. The depth to engineering strength rock is unknown, however, it is likely that engineering rockhead is shallow across Lime Down D. Localised areas of Made ground may be encountered, associated with farming activity and potentially backfilled ponds.

Geohazards

19.7.17 Negligible to low geohazard risk has been typically identified at Lime Down D. A moderate risk has been identified for shrink-swell potential of shallow clays associated with the Kellaways Formation, and for compressible ground associated with superficial Alluvium. Lime Down D is not in a mining area or mineral safeguarding area.

Lime Down E

Contaminated Land

19.7.18 Within Lime Down E (see **ES Volume 2, Figure 2-3-5: Environmental and Planning Constraints [EN010168/APP/6.2]**), there is potential for ponds to have been backfilled or Made ground associated with an historic quarry or farming activities to be encountered. Nearby, a former sewage works is noted adjacent to the southwest. No landfills, petrol stations or any other past or present contaminative uses have been recorded on or in the vicinity of Lime Down E. No current discharge consents are present. However, one active consent is located within 250 m of Lime Down E, associated with sewage discharges.

Hydrogeology

19.7.19 Shallow groundwater may be encountered, perched on the low permeability cohesive soils anticipated beneath Lime Down E. The Kellaways Sand Member, Forest Marble Formation and Cornbrash Formation are designated as Secondary A aquifers with high vulnerability. Lime Down E lies within a Source

Protection Zone 1c, inner protection zone. There are no licensed groundwater abstractions recorded in the vicinity. There is no indication of private abstractions being associated with Lime Down E. Flooding from groundwater has been recorded as 'possible'.

Geology

19.7.20 The ground conditions are anticipated to comprise topsoil and subsoil of loamy and clayey soils with impeded drainage and loamy lime-rich soils with free drainage, likely to have been worked over due to the agricultural nature of Lime Down E. Superficial strata are only noted along the Gabriel's Well river comprising alluvial deposits of clays, silts, sands and gravels. The depth to engineering strength rock is unknown. However, it is likely that engineering rockhead is shallow across Lime Down E. The bedrock strata are noted in BGS mapping to be largely level with the variation largely coming from superficial topography, notably the channel cut by Gabriel's Well river. The Kellaways Clays and Sands dominate Lime Down E, with the cut of the river exposing the underlying Cornbrash Formation (limestone), and in turn the Forest Marble Formation (mudstone).

19.7.21 Localised areas of Made ground may be encountered, associated with the farm buildings, current and former, tracks and services, and potentially backfilled ponds and the old quarry.

Geohazards

19.7.22 'No hazard' to 'low risk' geohazard risk has been typically identified at Lime Down E. A no hazard to moderate risk has been identified for shrink-swell potential of shallow clays and compressible ground. Lime Down E is not in a mining area or mineral safeguarding area. However, there is a small 'old quarry' noted on historical mapping.

Future Baseline

19.7.23 This section considers those changes to the baseline conditions, as described above, that might occur in the absence of the Scheme and during the time period over which the Scheme would be in place. The future baseline scenarios are set out **in ES Volume 1, Chapter 6: EIA Methodology [EN010168/APP/6.1]**.

19.7.24 In the absence of the scheme, it is not anticipated that there would be significant changes to the baseline conditions in relation to ground conditions. There are no identified processes or features of the PV areas that are likely to result in significant long term change to the area covered by the Scheme.

19.8 Baseline Conditions – Cable Route Corridor

19.8.1 For each of the sections of the Cable Route Corridor, a preliminary risk assessment has been produced, which identifies the potential source – pathway – receptor (SPR) linkages that have been identified for the Scheme for each of the sites. The risk assessments for each desk study can be reviewed in **ES Volume 3 Appendices 19-6 to 19-8: Desk Studies [EN010168/APP/6.3]**. The following sections will summarise the baseline conditions identified in those risk assessments.

19.8.2 The cable route has been divided to allow for a more concise assessment of the potential conditions. The division of the cable route was undertaken at PEIR stage with the division reflecting the route options still available at that time. As the cable route has been refined, only the relevant assessments have been retained and refined.

Cable Route North West (West of Hullavington to East of Grittleton)

Contaminated Land

19.8.3 There are no current industrial land uses on site, and 2 recent contemporary trade directory entries within 250 m of Cable Route Northwest (see **ES Volume 2, Figure 2-3-6: Environmental and Planning Constraints [EN010168/APP/6.2]**) – a tank at Newlands Farm and Sewage works in the southwest. With respect to historical land uses, there are 5 recorded nearby which relate to quarrying and the sewage works. It is understood many of the quarries listed within Groundsure are duplications. Historical land use within 250 m includes a sewage works, old quarries, and a disused pit. There are no active or historical landfills or waste Sites within 250 m of Cable Route Northwest . However, numerous waste exemption records have been identified at Newlands Farm, located 285 m to the east, relating to using and disposing of waste. There have been no pollution incidents identified.

Hydrogeology

19.8.4 There are no BGS borehole records on Site. The nearest borehole is 300 m away and identifies groundwater at 33.5 m BGL. Shallow groundwater is anticipated to be perched above cohesive mudstone or clay layers found beneath the Site. The Forest Marble Formation is designated as a Secondary A aquifer with high vulnerability. The Site lies within a ‘Source Protection Zone 3 (SPZ)– Total Catchment’ and ‘Zone 2c – Outer Catchment’. There is one active groundwater abstraction point within 2000 m of the Site, 1700m northeast and operated by Wessex Water Services Ltd which extracts 27,500 m3 of water a day. No private abstraction information is currently available. With respect to groundwater flooding, some areas of high risk are present associated with Gauze Brook and unnamed water courses in the south.

Geology

19.8.5 The ground conditions at Cable Route Northwest are anticipated to be stony lime-rich topsoil with impeded drainage in high clayey areas. The majority of Site is absent of Superficial deposits apart from areas of Alluvium associated with the Gauze Brook. The solid geology underlying Cable Route Northwest is the Forest Marble Formation, a mudstone with limestone beds and lenses. There are no BGS boreholes present, with the nearest boreholes are 300 m away and record a depth to bedrock between 0.6 m BGL to 3.3 m BGL. There are no faults identified within 100 m of the Cable Route Northwest boundary.

Geohazards

19.8.6 A moderate risk has been identified for compressible ground and natural ground subsidence. The south and southwest of Cable Route Northwest are identified as areas of soluble rock risk. Four historical surface workings are present at the Site and multiple backfilled ponds, the size and nature of backfill presents a geohazard. An unspecified linear limestone feature is present in the centre of Cable Route Northwest, but this should not interact with shallow open trenches within the cable route.

Cable Route Central (West of Chippenham and East of Yatton Keynall)

Contaminated Land

19.8.7 Within Cable Route Central (see **ES Volume 2, Figure 2-3-7: Environmental and Planning Constraints [EN010168/APP/6.2]**) there are no recent contemporary trade directories entries. However, there are electricity pylons nearby to the south, and an unspecified tank was recorded on the 1977 OS map. There is 1 waste exemption close to Cable Route Central , relating to farming and agricultural waste including the storage of waste. There are no recorded pollution incidents within Cable Route Central , and the only incident within 250 m is an incident in 2002 involving slurry, manure, and other agricultural waste, with minor impact on water, land, and air. Other potential sources of Made ground may be associated with farmland, quarry, potential backfilled ponds and the M4 embankments.

Hydrogeology

19.8.8 Shallow groundwater may be encountered, perched on the low permeability cohesive soils anticipated beneath portions Cable Route Central. The Kellaways Formation, Cornbrash Formation and Forest Marble Formation are designated as a Secondary A aquifers with high vulnerability and Cable Route Central is within a Source Protection Zone 2 and 3. There is one licensed groundwater abstraction recorded in the vicinity of the Site located over 400 m to the northwest for Brooms Farm. Flooding from groundwater has been

recorded as low with moderate to high risk recorded nearby at Sevington, Fowlswick and Bath Road (A4).

Geology

19.8.9 The ground conditions are anticipated to comprise Topsoil comprising lime-rich loamy soils and clayey soils with impeded drainage, overlying the Kellaways Formation (Kellaways Clay Member mudstone), Cornbrash Formation (limestone) and Forest Marble Formation (mudstone with limestone beds). Alluvium superficial deposits are anticipated in localised pockets adjacent to streams in the north and very south. The depth to engineering strength rock is unknown, however, it is likely that engineering rockhead is shallow across Cable Route Central. Localised areas of Made ground may be encountered, associated with a backfilled pond south of the M4.

Geohazards

19.8.10 A moderate risk has been identified for compressible ground at locations of Alluvium, shrink-swell potential of shallow clays (Kellaways Clay Member) and a moderate risk of landslides and ground dissolution at Fagot Heath. Cable Route Central is not in a mining area or mineral safeguarding area. Nearby limestone quarries have been identified.

Cable Route South West (Easton to Whitley)

Contaminated Land

19.8.11 There are 38 recent contemporary trade directory entries within 250 m of Cable Route Southwest (see **ES Volume 2, Figure 2-3-8: Environmental and Planning Constraints [EN010168/APP/6.2]**), with two relating to a single mine entry and a pylon. Active land use surrounding Cable Route Southwest includes a garage, electricity substation, sewage works, dairy farm, pump, tanks, quarries, and underground mining. Historical land use in the area included sewage works, saw pit, garages and quarries. There is an active landfill around 400 m northeast and a legacy landfill in the west at a former quarry and underground mine. There are no waste exemptions associated with Cable Route Southwest and there are active discharge consents within 250 m for sewage waste at Corsham Sewage Works. The Water Recycling Centre has recorded 2 pollution incidents with significant impact to water.

Hydrogeology

19.8.12 Shallow groundwater may be encountered, perched on the low permeability cohesive soils anticipated beneath portions of Cable Route Southwest. There are no BGS borehole records present, but boreholes ST86NE23 is within 250 m and records rested groundwater levels at 4.5 m BGL and 7 m BGL. There are no superficial aquifers noted within Cable Route Southwest. The Forest Marble

Formation - Mudstone is a Secondary A aquifer, and the Forest Marble Formation - Limestone a designated Principal aquifer, the aquifers are recorded to have high vulnerability. Cable Route Southwest lies within a SPZ 1 and 2, and two potable groundwater abstraction wells are located approximately 650 m to the east of Site, both extracting 2500 m^3 of groundwater daily by Wessex Water Services Ltd.

Geology

19.8.13 The ground conditions at Cable Route Southwest are anticipated to be undulating with sandy clayey loam. There are no artificial deposits recorded. However, Made ground associated with farming activities, backfilled ponds and mine shafts are noted. The majority Cable Route Southwest is absent of natural superficial deposits apart from localised areas of Alluvium. Cable Route Southwest lies on the Lacock Fault belt and the underlying bedrock is the Great Oolite Formation comprising the Kellaways Formation, Cornbrash Formation and Forest Marble Formation with the Bath Oolite Member at depth. Bedrock is shallow, either at surface or from approximately 5.8 m BGL however the depth is anticipated to be variable.

Geohazards

19.8.14 A moderate risk has been identified for landslides at the rail cuttings and a small area at the central northern area Cable Route Southwest. Legacy underground limestone mining beneath the centre and southern areas of Cable Route Southwest is present and is associated with four separate mines. There is a potential risk of surface instability associated with the collapse of mine workings and void migration to the surface. Depending on the groundwater levels and groundwater rebound, underground erosion of the roof rock can propagate void migration and surface subsidence. This has been reviewed and is assessed in the Mining Risk Assessment presented in **ES Volume 3, Appendix 19-11: Mining Risk Assessment [EN010168/APP/6.3]**. Two shafts are recorded within Cable Route Southwest boundary and an associated pump which may also be linked to a shaft. It is possible unrecorded workings and mine entries are present beneath and within influencing distance of Cable Route Southwest and therefore will impact the cable route. Surface workings are present in the form of quarries, ponds and unspecified pits which can cause engineering constraints such as differential settlement.

19.8.15 Mitigation in relation to identified or potential geohazards is discussed in **Section 19.10** and **Section 19.12** of this Chapter.

Private Water Supplies

19.8.16 Wiltshire Council were consulted on the 14 October 2024 regarding any records of private water supplies they might hold within 100 m of the Scheme boundary. They responded on 16 October 2024 to state that they held no records of

private water supplies within the scheme boundary but that they had records of 3 private water supplies within 100 m of the Scheme. Coordinates were provided for these supplies and they have been incorporated into the relevant desk studies and subsequent impact assessment. The 3 supplies are located at:

- Pig Lane, Hullavington, Wiltshire, England, SN16 0LB (Eastings 387185, Northing 183558). To the north of Lime Down C;
- Pig Lane, Hullavington, Wiltshire, England, SN16 0LB, United Kingdom (Eastings 386797, Northing 386797). To the north of Lime Down C; and
- Ladyswood Farm, Fosse Way, Ladyswood Stud, Sherston, Wiltshire, England, SN16 0LA, United Kingdom (Eastings 387053, Northing 184622) To the east of Lime Down A.

19.8.17 Correspondence from Wiltshire Council on this matter is presented in **Volume 3, Appendix 19-10: Private Water Supply Correspondence with Wiltshire Council [EN010168/APP/6.3]**.

Mining Risk Assessment

19.8.18 Following consultation feedback from the Environment Agency and local stakeholders as part of statutory consultation, a Mining Risk Assessment has been produced for the cable route (see **ES Volume 3, Appendix 19-11: Mining Risk Assessment [EN010168/APP/6.3]**). This concentrates on the southern and central sections of the cable route, where there are extensive mine workings relating to Monks Park Mine. Mine workings in this area are within 20 m of the surface and represent a potential geohazard; primarily if present in areas where Trenchless Techniques are required.

19.8.19 Areas of high, medium and low risk with regards ground instability from mining have been identified and compared to the Avoidance Areas where trenchless technologies rather than open cut trenches are the preferred technique. There is no overlap between the Avoidance Areas and the high or medium risk areas with regards ground instability from mining. There are a number of former mine shafts located within or close to the current cable route alignment and care has been taken to avoid them as part of the route design.

Future Baseline

19.8.20 In the absence of the scheme, it is not anticipated that there would be significant changes to the baseline conditions in relation to ground conditions.

19.8.21 Ground conditions related to historic mining activity in Cable Route Southwest may deteriorate as a result of dissolution processes, subsidence, etc. This is considered in **ES Volume 3, Appendix 19-11: Mining Risk Assessment [EN010168/APP/6.3].**

19.9 Potential Impacts

19.9.1 Embedded mitigation measures incorporated into the design and construction of the proposed Scheme are set out in Section 19.10 below. Prior to the implementation of any mitigation (embedded or additional), the proposed Scheme has the potential to affect ground conditions and contamination (positively or negatively), during construction, operation and decommissioning, in the following ways:

- Soils impacted by historic contamination could be mobilised by construction activity and migrate to impact adjacent receptors;
- Soils impacted by historic contamination displaced and stockpiled by construction activity could be mobilised and migrate to impact receptors;
- Decommissioning activities could release contaminants within building fabrics or trapped within foundations that could migrate to impact receptors;
- Release of hydrocarbon fuels and/or lubricants from construction vehicles or other plant and machinery;
- Source Protection Zones exist around private and public groundwater abstractions and works associated with the construction, operation and decommissioning of the scheme could impact the quality and safety of those supplies. This includes the potential for impacts on the Great Oolite aquifer, including the Rodbourne abstraction point;
- The use of chemicals such as herbicides and pesticides in maintenance activities;
- Escape of fire flighting fluids and foams (potentially containing PFAS) in case of fire at the BESS Area or substation installations. The BESS facility will be designed in consideration of the National Fire Chiefs Council guidance on "*Grid Scale Battery Energy Storage System planning*";
- Creation of new or increase of existing pathways through the excavation for, installation of and removal of concrete foundations for Solar PV panels;
- The creation of preferential pathways through the use of piled foundations which extend into underlying bedrock in the construction of 132 kV and 400 kV substations;
- Uncontrolled releases of drilling fluids during the use of Trenchless Techniques;
- UXO risk has been assessed as Low across the Study Area (see **ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]**);
- Mine Workings in the Southwest Cable Route Corridor have residual features which may create ground instability along the Cable Route

Corridor. Unregistered mine workings may exist along a wider section of the Cable Route Corridor;

- Ground gas generated in mine workings, Made Ground and other fill may accumulate in excavations or cable corridors or use them as preferential pathways in migration; and
- Similarly, there are isolated areas of instability associated with potential ground dissolution and land slips which may impact cable routing choices.

19.9.2 Based on the PRA methodology outlined in Table 3 of **ES Volume 3, Appendix 19-9: Preliminary Risk Assessment Approach & Methodology [EN010168/APP/6.3],** the following general contaminant linkages may exist across all phases of development for the Scheme: and

Table 19-4: Assessment of Risk from Identified Pollutant Linkages (RandD66 Methodology)

Receptor	Description of impact	Severity	Likelihood	Risk
Site users (Public Rights of Way)	Direct contact/ingestion and inhalation of soils, vapours and asbestos fibres	Medium	Unlikely	Low
Adjacent site residents	Direct contact/ingestion and inhalation of soils, vapours and asbestos fibres	Severe	Unlikely	Moderate/ Low
Construction and Maintenance Workers	Direct contact/ingestion and inhalation of soils, vapours and asbestos fibres	Medium	Low	Moderate/ Low
Construction and Maintenance Workers (Cable Route Corridor Only)	Direct contact/ingestion of impacted groundwater	Medium	Unlikely	Low
Construction and Maintenance Workers, Future Site Users	Inhalation of ground gas	Medium	Unlikely	Low
Construction and Maintenance Workers, Future Site Users	Unexploded Ordnance	Severe	Low	Moderate
Controlled waters	Mobilisation of historic contaminants to impact surface and groundwater (including SPZ, PWS, etc)	Medium	Unlikely	Low
Controlled waters	Release of pollutants associated with site operation and	Medium	Low	Moderate/ Low

Receptor	Description of impact	Severity	Likelihood	Risk
	maintenance (including SPZ, PWS, etc)			
Property	Accumulation of ground gas	Medium	Unlikely	Low
Property	Geohazards, i.e. landslip, dissolution, subsidence, etc	Severe	Low	Moderate

19.10 Embedded Mitigation

19.10.1 The Scheme has been designed, as far as practicable, to avoid and reduce impacts and effects on ground conditions and contamination through the process embedding measures into the design. In addition, how the Scheme is constructed, operated and maintained, and decommissioned would be controlled in order to manage and minimise potential environmental effects (required as a result of legislative requirements and/or standard sectoral practices).

Construction

19.10.2 An **Outline CEMP [EN010168/APP/7.12]**, **Outline SWMP [EN010168/APP/7.16]** and **Outline SRMP [EN010168/APP/7.15]** have been included as part of the DCO application submission, and will be secured through requirements within Schedule 2 of the **Draft DCO [EN010168/APP/3.1]**. These plans will effectively manage the hazards associated with the construction phase of the development. This will include the following measures:

- Construction and management of roadways and access to the construction sites to minimise issues like dust, sedimentation of waterways, degradation of soil quality, loss of topsoil and surface run off;
- Management of excavated and imported soils and aggregates to be used in all aspects of the construction to avoid fugitive emissions of dust and run off to water courses;
- Management of any wastes generated by the construction process to make sure of no adverse impacts on receptors;
- The high-level review of hydrogeological risk presented in the PRAs (**ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]**) concludes that significant impacts to groundwater are not anticipated;
- Where demolition or disturbance of existing structures is required, asbestos surveys will first be obtained and where necessary, removal of asbestos containing materials (ACMs) will be undertaken in line with Health and Safety Executive guidelines and the Control of Asbestos Regulations;

- Intrusive ground investigation will be undertaken prior to commencement of construction in areas impacted by identified geohazards and in locations where permanent structures, i.e. substations and BESS Area, are to be deployed. The requirements for pre-construction ground investigation is set out in the Outline CEMP and is secured via Schedule 2 of the Draft DCO. Data collected will inform foundation design choices and cable routing options. The risks posed by Geohazards has been assessed in **ES Volume 3, Appendix 19-11: Mining Risk Assessment [EN010168/APP/6.3]**, with potential mitigation measures outlined in Section 19.10;
- The requirement for a discovery and inspection strategy has been included in the **Outline CEMP [EN010168/APP/7.12]** which details the requirements and procedures for encountering land contamination, should contaminated land be encountered;
- Any confined space entry, i.e. entry to open trenches or excavations, will be preceded by checks using appropriate instrumentation to detect the presence of methane, carbon dioxide or hydrogen sulphide, or low oxygen conditions;
- Construction compounds and laydown areas will be appropriately located, designed and managed to make sure that there is minimal risk of fugitive emissions from stored aggregates, materials and liquids such as stored fuel;
- Foundations associated with structures will be designed to minimise impact on soils and groundwater. The mounting structure foundations are anticipated to be metal driven beams or screw piles up to a maximum depth of 3.5-4 m bgl. The required foundation depth will depend on the encountered ground conditions and anticipated uplift pressures. Specialist foundation options may be required if archaeological protection is required;
- Where piled foundations are required, i.e. for 132 kV and 400 kV substations, the activity will be subject to appropriate design and risk assessment, in line with a piling risk assessment in line with the CL:AIRE guidance document *Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention* (CL:AIRE, 2025, originally published by the Environment Agency, 2001). The presence of historic contamination, the piling methods required and the sensitivity of underlying groundwater will be considered in pile design. The requirement to undertake piling risk assessment prior to construction is secured in the **Outline CEMP [EN010168/APP/7.12]**;
- Where it is identified that disturbance of soils is not permissible, i.e. for protection of archaeological sites, concrete footings at surface will be used. This is not anticipated to have any impact on ground conditions or contamination;

- Excavations are anticipated for services. Excavations will be supported or graded to a stable angle which may vary depending on ground conditions. Groundwater and the requirement for dewatering will be considered;
- Where Trenchless techniques will be employed and have the potential to impact groundwater or take place in land affected by contamination, appropriate mitigation, such as measures to be included in a drilling fluid breakout plan will be secured in the **Outline CEMP [EN010168/APP/7.12]**. All Trenchless excavation activity will be carried out in line with the guidance contained in BS5930: 2015 Code of Practice for Ground Investigations and BS EN 16228-3 Drilling and foundation equipment – Safety – Part 3: Horizontal directional drilling equipment (HDD);
- Good practice guidance including Management of spillage risk will be included in an Emergency Response Plan;
- Driven screw pile or post foundations are strongly preferred in the final design, which will minimise soil displacement, waste and general impact on soils and groundwater. In areas where archaeological protection is required, concrete feet or other non-ground penetrative techniques would be used; and
- All photovoltaic arrays/ panels will be certified as PFAS free, meaning there is no risk of mobilisation of PFAS coatings on the panels being leached or otherwise mobilised and entering ground or surface water.

Operation and Maintenance

19.10.3 All embedded mitigation measures set out below will be secured by DCO requirement, including through the **Outline Operational Environmental Management Plan (OEMP) [EN010168/APP/7.13] and the Outline Battery Safety Management Plan [EN010168/APP/7.21].**

- Where the use of pesticides or herbicides is necessary for the maintenance of the operational site, all substances used will be used in accordance with guidelines on application rate and safe use and in full consideration of the hazards outlined on the Material Safety Data Sheet (MSDS) issued by the manufacturer;
- Where foundations are required, appropriate drainage will be designed into the building, using sustainable drainage principles where appropriate. This drainage design will consider the existence of preferential pathways such as piled foundations;
- For BESS Area and substation sites featuring potential fire risk, installations will be bunded to retain firefighting substances used to control fire. All such designs will as a minimum be in line with current good practice on the construction of the BESS Area;

- There is no intention for fluid-filled cables to be utilised so there is no risk of the uncontrolled release of insulating fluids;
- Mitigations for replacement activities, i.e. where equipment must be replaced, mitigation has been included in the **Outline OEMP [EN010168/APP/7.13]** and will reflect the mitigation required in the Construction Phase; and
- The detailed OEMP will also specify the management of any chemical substances, i.e. herbicides, pesticides, lubricants, used on site and the precautions in place to avoid uncontrolled discharge.

Decommissioning

19.10.4 Relevant mitigations identified in the construction and operation and maintenance phase will be applied to the decommissioning phase, considering good practice at the point of decommissioning. Mitigations for decommissioning will be secured by DCO requirement through the **Outline Decommissioning Strategy (DS) [EN010168/APP/7.14]**.

19.11 Assessment of Likely Impacts and Effects

19.11.1 This section considers the potential impacts outlined in Section 19.7.23 and, taking into account the mitigation measures as detailed in Section 19.10, assesses the potential for the Scheme to generate effects using the methodology as detailed in **ES Volume 3, Appendix 19-9: Preliminary Risk Assessment Approach & Methodology [EN010168/APP/6.3]**.

19.11.2 The classifications of severity and likelihood, and the risk rating based on the comparison of severity and likelihood, are presented in the Phase 1 PRA reports (**ES Volume 3, Appendix 19-1** to **19-8: Desk Studies [EN010168/APP/6.3]**).

19.11.3 The key findings of the risk assessment are detailed below. Full details outlining all the source-pathway-receptor linkages for all of the sources, pathways and receptors detailed above are provided in the Phase 1 PRA Reports (**ES Volume 3, Appendix 19-1** to **19-8: Desk Studies [EN010168/APP/6.3]**).

Construction

19.11.4 During construction there is likely to be displacement and exposure of soils through the construction of access roads and the limited foundations (to a maximum of 4 m depth, as per **Table 3-1** of **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**) required for BESS Area and substation facilities. Screw piles (to a maximum of 1.5m to 4m depth, as per **Table 3-1 of ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**) are not expected to result in displacement of soils. This could result in the mobilisation of contaminants within soils. These displaced and exposed soils will be carefully

managed through the implementation of CEMP and SMP, which will consider how soils be appropriately excavated, stockpiled and if necessary, disposed of to avoid the mobilisation of any historic contaminants contained within. A similar plan will be developed for the management of waste generated by the construction works.

19.11.5 While no significant sources of contamination are expected, they cannot be discounted even if detailed ground investigation is undertaken. Therefore, a discovery and inspection strategy will be employed to ensure that where unexpected contamination is identified, it can be quickly dealt with without risk to receptors. The requirement for a discovery and inspection strategy has been included in the **Outline CEMP [EN010168/APP/7.12].**

19.11.6 Consideration of potential risks to sensitive groundwater receptors, including the Great Oolite aquifer and licensed abstraction points such as Rodbourne, has been undertaken within this chapter, informed by a high-level review of hydrogeological risk presented in the Preliminary Risk Assessments (PRAs) provided in **ES Volume 3, Appendices 19-1 to 19-8: Desk Studies [EN010168/APP/6.3]**. The PRAs conclude that no significant impacts to groundwater are anticipated from the construction, operation, or decommissioning of the Scheme. This conclusion includes assessment of potential pollutant pathways from Scheme infrastructure (e.g. solar panels, buried cables and support structures) to the Great Oolite aquifer and surrounding abstractions, including private water supplies and the Rodbourne source.

19.11.7 The potential for piled foundations at substations has also been included and consideration has been given to the possibility of piled foundations creating preferential pathways to underlying aquifers has been included in the PRAs. Piled foundations may extend up to 12 m, but appropriate risk assessment will be undertaken prior to the construction of foundations and appropriate pile design will be undertaken, considering both the foundation requirements and the sensitivity of any receptors which may interact with those foundations.

19.11.8 A Pre-Desk Study Assessment for UXO was undertaken for the Study Area. The Pre-Desk Study Assessment for UXO confirmed that UXO risk across the Study Area is considered to be low and therefor a detailed desk survey is not essential and therefore is not included in this DCO application. The Pre-Desk Study Assessment for UXO is included as **ES Volume 3, Appendix 19-1 – 19-8: Desk Studies [EN010168/APP/6.3]**.

19.11.9 While trenchless technique Avoidance Areas do not overlap with areas designated as High or Medium Risk of mining instability, there is the potential for abandoned mine workings to create obstacles to shallow trenching. These features have been identified and the application of trenchless techniques in these areas have been avoided in the final Cable Route. It should also be noted that there may be unregistered mine workings on other parts of the route and

where evidence of instability is encountered during works, work will stop and the presence of mine workings investigated.

Table 19-5: Identified Impacts Following the Application of Embedded Mitigation - Construction

Receptor	Value	Description of impact	Likelihood following embedded mitigation	Significance
Sensitive surface water features	High	Mobilisation of contaminant impacted soils through construction processes, i.e. access roads.	Low	Minor Adverse – Not significant
Private water supplies Sensitive Surface water features Groundwater resources, i.e. SPZ1/2	High	Mobilisation of contaminants (including via preferential pathways, i.e. piled foundations) present in the shallow soils to impact groundwater resources and, if migration pathways exist, nearby surface water features.	Low	Minor Adverse – Not significant
Soil Quality Human Health Groundwater resources, i.e. SPZ1/2	High	Removal of unexpected contaminant-impacted soils encountered during the site works.	Low	Moderate beneficial - Significant
Construction and Maintenance Workers	Very High	Explosion of historic UXO encountered during excavation.	Low	Minor Adverse – Not significant
Construction and Maintenance Workers	Very High	Interaction with mine workings and unstable ground.	Moderate	Moderate Adverse - Significant

Operation and Maintenance

19.11.10 The potential for chemicals used during the operation and maintenance of the Solar PV Sites to impact soils and groundwater has been assessed. No PFAS-based coatings will be applied to the Solar PV Panels themselves and the

Scheme will not include any fluid filled cables. Therefore, no impacts are anticipated in relation to these aspects.

19.11.11 In the unlikely event of a fire within the BESS Area, firefighting foams - which are expected to be PFAS free at the time the Scheme will be operating - may be deployed. While run off from such activities could have an adverse effect on soil and groundwater, the BESS Area will be contained within an impermeable bund with controlled drainage outfall. This containment is expected to effectively manager and mitigate and potential runoff impacts.

19.11.12 Maintenance and replacement activities (as described in **ES Volume 1, Chapter 3: The Scheme [EN010168/APP/6.1]**) during the operation and maintenance phase will be undertaken in accordance with a CEMP, which will be prepared in line with good practice at the time of the activity. This requirement is secured through the **Outline OEMP [EN010168/APP/7.13]**. Any contaminated soils encountered during construction would have been remediated as per the Discovery and Inspection Strategy that is set out within the Outline CEMP **[EN010168/APP/7.12]**, and therefore would not present a risk during the Operational and Maintenance phase.

19.11.13 Following the implementation of embedded mitigation measures, no significant effects are anticipated during the Operational and Maintenance phase.

Decommissioning

19.11.14 Potential impacts from the decommissioning of the Solar PV Site are similar but of less intensity in nature to those during construction. Although ground works would be required to remove infrastructure installed there will be fewer intrusive works. Where piled foundations have been installed, the piles will need to be appropriately decommissioned in line with best practice. A separate assessment of decommissioning effects is therefore not provided. An **Outline Decommissioning Strategy [EN010168/APP/7.14]** has been included with the DCO Application. This sets out the general principles to be followed in the decommissioning phase of the Scheme.

19.11.15 The mode of cable decommissioning for the Grid Connection and On-Site Cables will be dependent upon government policy and good practice at that time. Currently, the most environmentally acceptable option is considered to leave the cables in situ, as this avoids disturbance to overlying land and habitats and to neighbouring communities. Alternatively, the cables can be removed by opening up the ground at regular intervals and pulling the cable through to the extraction point, avoiding the need to open up the entire length of the cable route Corridor.

19.11.16 Excavations will be sensitively located so as not to impact watercourses. Given that all cables will be a minimum of 1.5 m below the bed of watercourses, this is not anticipated to prevent natural geomorphic evolution or potential future

restoration of affected areas. As a result, it is considered the decommissioning impacts and effects would be no greater than those of the construction phase and no additional impacts are anticipated.

19.12 Additional Mitigation

19.12.1 Where embedded mitigation is not sufficient to address the identified effects, additional mitigation will be required. Additional mitigation will include the following:

Construction

19.12.2 Where unexpected contamination is encountered, consideration will be given to the impacts of its disturbance on sensitive receptors; particularly water supplies and surface water features. If necessary, material would be removed in line with the Discovery and Inspection Strategy, the requirement for which is secured via the **Outline CEMP [EN010168/APP/7.12]**.

19.12.3 Additional ground investigation will be deployed to confirm the presence of any unrecorded mine workings, shafts, etc which are within the cable alignment in Cable Route Corridor Southwest. This information may indicate that additional precautions need to be made in terms of the selection of techniques such as Trenchless Techniques to advance cables and plant used in trenching, i.e. long-reach excavators.

19.12.4 Ground investigation will also be conducted in the vicinity of the 132Kv and 400Kv substations, in order to inform the Piling Risk Assessment required for foundation design. This ground investigation should be undertaken for design purposes and to ensure the protection of groundwater receptors, regardless of the possible presence of historic contamination or geohazards.

19.12.5 Following the application of additional mitigation, there are no significant residual effects.

Operation and Maintenance

19.12.6 No additional mitigation measures have been identified for the Operation and Maintenance Phase.

Decommissioning

19.12.7 Relevant mitigations identified in the construction and operation and maintenance phase will be applied to the decommissioning phase, considering good practice at the point of decommissioning. Mitigation measures for decommissioning are outlined in the **Outline Decommissioning Strategy [EN010168/APP/7.14]**.

Monitoring

19.12.8 As no potential significant effects have been identified for Ground Conditions, no monitoring of significant effects is proposed.

19.13 Residual Effects and Conclusions

19.13.1 This section summarises the residual significant effects of the Scheme on Ground Conditions and Contamination following the implementation of embedded and additional mitigation.

19.13.2 With the embedded and additional mitigation by design measures described above and those within the **Outline CEMP [EN010168/APP/7.12]**, all identified likely significant effects have been assessed as being not significant.

19.13.3 See **ES Volume 1, Chapter 22: Summary of Residual Effects [EN010168/APP/6.1]** for a summary of significant effects.

Table 19-6: Summary of Significant Residual Effects (Construction)

Receptor	Description of impact	Description of Additional Mitigation	Likelihood following embedded mitigation	Residual effect after mitigation
Construction and Maintenance Workers	Interaction with mine workings and unstable ground	Ground investigation should be employed to positively identify mine workings, shafts, etc. Where present, detailed assessments of risk should be undertaken and alternative techniques such as Trenchless Techniques or long-reach excavators should be deployed	Low	Minor Adverse - Not significant

19.14 Cumulative Effects Assessment

Inter-Project Cumulative Effects

19.14.1 This section presents an assessment of cumulative effects between the Scheme and other proposed and committed plans and projects.

19.14.2 There is potential for overlap between construction of adjacent schemes and construction of this Scheme. Thus, there is the potential for short term, temporary construction related pollutants generated from both the Scheme and adjacent developments to impact on ground conditions in the Site. However, provided that standard and good practice mitigation is implemented on the construction sites through their respective CEMP and as per the conditions of the relevant planning permission, environmental permits and licences, as is being proposed for this Scheme, the cumulative risk can be effectively managed and there would not be a significant increase in the risks to ground conditions. As such, there would not be any significant cumulative effects anticipated during construction on the basis of the above assessment.

In-Combination Cumulative Effects

19.14.3 In-combination cumulative effects are those where impacts from two or more environmental disciplines are considered likely to result in a new or different likely significant effect, or an effect of greater significance, than any one of the impacts on their own. The identified in-combination effects are set out within **ES Volume 1, Chapter 21 Cumulative and In-Combination Effects [EN010168/APP/6.1]**.

19.14.4 No in-combination effects alongside ground conditions have been identified as a result of the Scheme.

19.15 References

Ref 19-1 Part 2A of the Environmental Protection Act 1990; Available at https://www.legislation.gov.uk/ukpga/1990/43/part/IIA [Accessed 07 August 2025]

Ref 19-2 Environment Act 2021; Available at https://www.legislation.gov.uk/ukpga/2021/30/contents [Accessed 07 August 2025]

Ref 19-3 Environmental Damage (Prevention and Remediation) Regulations 2015; Available at https://www.legislation.gov.uk/uksi/2015/810/contents [Accessed 07 August 2025]

Ref 19-4 Environmental Permitting Regulations 2016; Available at https://www.legislation.gov.uk/uksi/2016/1154/contents [Accessed 07 August 2025]

Ref 19-5 Water Resources Act 1991; Available at https://www.legislation.gov.uk/ukpga/1991/57/contents [Accessed 07 August 2025]

Ref 19-6 Water Act 2003; Available at https://www.legislation.gov.uk/ukpga/2003/37/contents [Accessed 07 August 2025]

Ref 19-7 Control of Asbestos Regulations 2012; Available at https://www.legislation.gov.uk/uksi/2012/632/contents [Accessed 07 August 2025]

Ref 19-8 Construction (Design and Management) Regulations 2015 (CDM); Available at https://www.legislation.gov.uk/uksi/2015/51/contents [Accessed 07 August 2025]

Ref 19-9 The Contaminated Land (England) Regulations 2006; Available at https://www.legislation.gov.uk/uksi/2006/1380/contents [Accessed 07 August 2025]

Ref 19-10 The Private Water Supplies Regulations 2016; Available at https://www.legislation.gov.uk/uksi/2016/618/contents [Accessed 07 August 2025]

Ref 19-11 Part 2 A Statutory Guidance; Available at https://assets.publishing.service.gov.uk/media/5a757dfa40f0b6360e47489d/pb13735cont-land-guidance.pdf [Accessed 07 August 2025]

Ref 19-12 Land Contamination: Risk Management; Available at https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm [Accessed 07 August 2025]

Ref 19-13 Department for Energy Security and Net Zero (2023) Overarching National Policy Statement for energy (EN-1). Available at: https://assets.publishing.service.gov.uk/media/65bbfbdc709fe1000f637052/overarching-nps-for-energy-en1.pdf [Accessed 07 August 2025]

Ref 19-14 Department for Energy Security and Net Zero (2023) National Policy Statement for Renewable Energy Infrastructure (EN-3). Available at: https://assets.publishing.service.gov.uk/media/65a7889996a5ec000d731aba/nps-renewable-energy-infrastructure-en3.pdf [Accessed 07 August 2025]

Ref 19-15 Department for Energy Security and Net Zero (2023) National Policy Statement for Electricity Networks Infrastructure (EN-5). Available at: https://assets.publishing.service.gov.uk/media/65a78a5496a5ec000d731abb/nps-electricity-networks-infrastructure-en5.pdf [Accessed 07 August 2025]

Ref 19-16 Ministry of Housing, Communities and Local Government (2024) National Planning Policy Framework (NPPF). Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed 07 August 2025]

Ref 19-17 CL:AIRE (2025) Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention. Available at https://claire.co.uk/home/news/2083-piling-and-penetrative-ground-improvement-methods-on-land-affected-by-contamination-guidance-on-pollution-prevention [Accessed 16 September 2025]