East Pye Solar

Environmental Statement

Volume 1: Chapter 16 – Ground Conditions

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16 Ground Conditions

16.1 Introduction

16.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) of effects on the environment with respect to ground conditions as a result of the Scheme.

16.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects on the environment with respect to ground conditions during the construction, operation and maintenance, and decommissioning phases.

16.1.3 The information presented within this chapter has been informed by the Scheme information and description provided in **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**.

16.1.4 The following aspects will be considered within the Ground Conditions assessment process:

- An assessment of potential effects upon human health exposure (via inhalation, ingestion[1] and dermal contact pathways) to existing contamination in the ground[2], through ground disturbance during the construction, operation and maintenance, and decommissioning phases.
- Mobilisation of existing contamination impacting surface water and groundwater quality during the construction, operation and maintenance, and decommissioning phases.
- Sterilisation / loss of safeguarded minerals during the construction, operation and maintenance, and decommissioning phases.
- Loss of peat soils during the construction phase only:
  - Scoped out of the operation and maintenance phase as the only area of peat soils (as mapped by the British Geological Survey (BGS)) is within Cable Route Corridor 7 (CRC7). Effects to peat soils will not occur during the operation and maintenance phase, as the Scheme in the area of the identified peat soils comprises a cable which will be installed using trenchless methods beneath the peat (see the **Outline CEMP [EN0110014/APP/7.1]**).
  - Scoped out of the decommissioning phase as decommissioning of the trenchless crossing beneath the peat would comprise either pulling of the cable only but leaving the ducting in place (i.e., no excavation works undertaken within the trenchless crossing), or not undertaking any decommissioning of the trenchless crossing as doing

[1] Including via drinking water in private water supplies.

[2] Including Unexploded Ordnance and naturally occurring hazards such as radon.

so could cause adverse environmental effects compared to leaving the cable in place (see the **Outline CEMP [EN0110014/APP/7.1]**).

16.1.5 This Chapter has been prepared by appropriately qualified experts. For further details, refer to **ES: Appendix 1.2 Statement of Expertise [EN0110014/APP/6.3.1.2]**.

16.1.6 A glossary of abbreviations can be found in **ES: Chapter 0 Contents, Glossary and Abbreviations [EN0110014/APP/6.1.0].**

16.2 Consultation

16.2.1 A request for an EIA Scoping Opinion was sought from the Secretary of State (SoS) through the Planning Inspectorate (PINS) in November 2024. PINS subsequently issued the Scoping Opinion in February 2025 **[EN0110014/APP/6.3.2.2]**.

16.2.2 The issues raised in the Scoping Opinion relating to Ground Conditions are summarised and responded to in **Table 16.1.**

Table 16.1: Relevant Scoping Opinion Comments from Statutory Bodies relating to Ground Conditions

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
The Planning Inspectorate, Scoping Opinion, December 2024	3.8.1 – Minerals *'The Scoping Report proposes to scope out an assessment of Minerals on the basis that, whilst the Proposed Development will sterilise sand and gravel mineral resources, extraction of these resources is not economically viable due to nearby constraints. The Inspectorate disagrees that the sterilisation of these minerals would not be significant.* *Furthermore, there is no evidence that this has been discussed with the relevant mineral planning authority. The ES should include an assessment of the potential impact of loss of access to mineral resources during the development's lifetime and assess significant effects where they are likely to occur. This should be informed by consultation with the relevant mineral planning authority'*.	Minerals have now been scoped into the ES and have been assessed within this Chapter. Consultation with NCC (the mineral planning authority) has been undertaken (see **Table 16.2**). NCC has agreed that the Scheme will not permanently sterilise the underlying safeguarded minerals. This Chapter is supported by a Minerals Resource Assessment Desk Study, presented as **ES: Appendix 16.2 [EN0110014/APP/6.3.16.2]**	Information relating to, and assessment of minerals resources is presented throughout this Chapter. **Table 16.2** – Responses to the PEIR Relating to Ground Conditions **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]**
The Planning Inspectorate, Scoping Opinion, December 2024	'*The Scoping Report proposes to scope out ground conditions from the ES on the basis that the potential for land contamination on the site is generally very low, further targeted intrusive ground investigations are proposed and good practice measures relating to ground conditions are to be included within the oCEMP.* *The Inspectorate notes that historic ground workings are not considered within the Scoping*	Ground conditions have now been scoped into the ES. Only matters relating to existing contamination within the ground are included within this Chapter. The Phase 1 Ground Conditions Assessment (GCA) Report (**ES: Appendix 16.1 [EN0110014/APP/6.3.16.1]**) which provides the technical background and baseline conditions for the Scheme identifies 4No. areas[3] of	**ES: Chapter 16 Ground Conditions Table 16.2** - Responses to the PEIR Relating to Ground Conditions. **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**

[3] Landfill – 'Off West side of Shelton Airfield Disused'. Indicated to have been operated between 1968 and 1975 and received inert, commercial and liquid sludge wastes.
Landfill – 'Off B1135'. Indicated to have been operated between 1982 and 1990 and received domestic and commercial wastes. The landfill is indicated to benefit from landfill gas control measures.

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	Report. Historic ground workings may lead to a risk of ground water contamination on site. *Furthermore, the Phase 1 Ground Condition Assessment states that data is only available for a small proportion of the site, leaving an unknown risk for the majority of the site. As such, the Inspectorate considers that there is insufficient information to rule out significant effects.* *The ES should provide a standalone assessment of ground conditions across all phases of the Proposed Development*'.	historically worked ground/artificial ground as sources of potential contamination. The Phase 1 GCA recognises that the available (i.e. within approximately 100m of the Order Limits) ground investigation data related only to a small proportion of the Order Limits. Further engagement with the EA has been undertaken in this regard (see **Table 16.2**). This Chapter presents an assessment of likely significant ground conditions effects during the construction, operational and maintenance and decommissioning phases of the Scheme.	
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL2 Relates to: 2.5 – Site Description (of the scoping report) Issue: No mention of the historic use of this area of the site as RAF Seething (United States Air Force Station 146) regarding potential land quality impacts, although this is briefly mentioned in Section 5.14.13 and shown as a potentially contaminative land use in Figure 5.1. Impact: Potential for contaminants to be present associated with historic land use which have not been adequately considered with respect to risk posed to groundwater. Recommendation: The Scoping Report should consider risks posed to groundwater associated with historic RAF Seething/USAF Station 146.	The risks associated with historical contamination at the former airfields (RAF Hardwick and RAF Seething) are assessed in **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** Assessment of the likely significant effects associated with these historical airfields is provided in this Chapter.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**

Former Refuse Tip. Mapping dated 1883 shows a gravel pit extending approximately 30m into Sub-Site 4B, with a further extension by the mid-1940s. Mapping dated 1976 records the pit as a refuse tip.

Former 'Market Lane Pit' - a small (approximately 30m x 10m) working present within Sub-Site 8B, identified within the British Geological Survey's (BGS) 'Mines and Quarries' dataset

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL4 Relates to: 2.5 – Site Description (of the scoping report) Issue: The summary of superficial and bedrock geology by Site generally matches our records, however we have noted some errors and lack of detail compared with the Phase 1 LQA. Examples include inconsistent description of Lowestoft Formation lithology type (e.g. 2.3.18 and 2.4.19), and Sections 2.5.17 and 2.5.18 incorrectly transpose the bedrock and superficial geology. Impact: Potential for the conceptual site model underpinning the Scoping Report to be flawed. Recommendation: We suggest that the anticipated ground conditions should be checked for accuracy.	Phase 1 GCA (**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**) provides the Conceptual Site Model (CSM) and this Chapter provides generalised descriptions of the superficial and bedrock strata present in each of Sub-Sites and CRCs.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL5 Relates to: 3.17.1 – Decommissioning (of the Scoping Report) Issue: The applicant states that an outline Decommissioning Environmental Management Plan (ODEMP) will be submitted as part of the DCO application however little information is provided as to its proposed content. Impact: Potential for the ODEMP to exclude mitigation measures necessary for the protection of groundwater quality and quantity. Recommendation: The ODEMP should incorporate measures to prevent contamination and cross-contamination of soils, surface water and groundwater should any source of pollution be identified during decommissioning. We suggest that a Discovery Protocol should be	The Outline Decommissioning Environmental Management Plan (Outline DEMP) provides a framework for the future decommissioning of the Scheme and restoration of the land. Prior to the commencement of decommissioning, a DEMP will be submitted to and approved by the relevant planning authority. This will be secured by a DCO Requirement. In respect of existing contamination in the ground, the construction of the Scheme will manage certain unknowns, e.g. the potential for unexpected contamination which, if encountered during construction, will be managed and remediated appropriately such that hazards present during construction are	**Outline DEMP [EN0110014/APP/7.3]**.

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	embedded in the ODEMP, similar to the OCEMP.	unlikely to be present during decommissioning. Nonetheless, a commitment to the Contractor preparing a protocol for the management of unexpected contamination will be included in the Outline DEMP.	
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL6 Relates to: 5.14.10 – Baseline (of the Scoping Report) Issue: No reference is made in the Scoping Report to the presence of a historic landfill, 'Off West Side of Shelton Airfield Disused', which extends into CRC 5 and is described in the supporting Phase 1 GCA (Volume III Part 2 Appendix 5.2). This is however shown in Figure 5.1. Impact: Source of potential contamination potentially not taken into consideration in scoping. Recommendation: Ensure all identified potential sources of contamination are considered as part of the scoping process, including authorised and historic landfill sites and potential areas of infilled ground / tipping.	A land contamination Preliminary Risk Assessment is provided within the Phase 1 GCA and informs the preliminary assessments in this Chapter. The Phase 1 GCA identifies potential sources of contamination, including the 'Off West Side of Shelton Airfield Disused' landfill, alongside other areas of worked / potentially infilled land. A summary of the sources of potential contamination is included in this Chapter in **Table 16.14**.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Table 16.10 –** Sources of Potential Contamination
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL7 Relates to: 5.3.7 – Water Environment (Hydrology & Hydrogeology) Issue: The applicant provides a summary of Drinking Water Protected Areas (surface water) and Drinking Water Safeguard Zones surface water) but does not provide detail on the pressures which inform these designations or consider drinking Water Safeguard Zones for groundwater.	The Phase 1 GCA (**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**) includes discussion of the areas within the Order Limits that are located within groundwater and surface water Drinking Water Safeguard Zones (DWSZ). As detailed within Section 3.4 of the Phase 1 GCA. No part of the Order Limits is located within a groundwater DWSZ. As detailed within Section 3.5 of the Phase 1 GCA, parts of the land within the Order Limits	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	Impact: Potential for groundwater drinking water protection designations to have been omitted from assessment, pressures on drinking water resources which may be exacerbated by the development are not considered, and it is unclear which parts of the Scheme fall within Drinking Water Safeguard Zones for surface water. Recommendation: The applicant should confirm and consider which parts of the Scheme fall within Drinking Water Safeguard Zones for surface water, Drinking Water Safeguard Zones for groundwater, and the pressures which inform any such designated zones.	are located within Drinking Water Safeguard Zone ref: SWSGZ1020. The Action Plan for DWSZ ref: SWSGZ1020 shows that this DWSZ is 'at risk' from pesticides (metaldehyde, clopyralid, propyzamide, carbetamide) and nitrate. The Action Plan states that the source of metaldehyde is slug pellets applied to protect winter cereal crops susceptible to slug damage. Carbetamide and propyzamide are stated to be herbicides used for grass control for winter oil-seed rape and winter bean crops. Clopyralid is stated to be a herbicide used for thistle and mayweed control for sugarbeet, brassica, strawberry, onion and maize crops. The source of nitrates is stated to be '*mostly via runoff carrying fertilizers, manures and livestock effluent*'. The 'at risk' substances all relate to agricultural uses and are therefore not relevant to the proposed electrical infrastructure end-use of the Sub-Sites and CRCs.	
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL9 Relates to: 5.14 – Ground Conditions Issue: The Scoping Report does not discuss historic ground workings, which may be infilled, in the context of being potential sources of contamination. Impact: Risk to groundwater quality may be underestimated as potential sources of contamination may have been overlooked. Recommendation: Include consideration of potential areas of infilled ground and	The Phase 1 GCA identifies potential sources of contamination, including the 'Off West Side of Shelton Airfield Disused' landfill, alongside other areas of worked / potentially infilled land. A land contamination Preliminary Risk Assessment is provided within the Phase 1 GCA and informs the preliminary assessment in this Chapter. A summary of the sources of potential contamination is included in this Chapter in **Table 16.14**.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Table 16.10 –** Sources of Potential Contamination

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	incorporate measures to manage any contamination which may be present within OCEMP.		
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL10 Relates to: 5.14.2 – Overview Issue: An incomplete list of information sources used for establishing the environmental setting is provided, omitting several information sources cited in the Phase 1 GCA. Impact: It is unclear whether all information relating to ground conditions and environmental setting considered in the Phase 1 GCA have been taken into account for the Scoping Report. Recommendation: The list of information sources presented in Scoping Report should be updated to include all relevant sources of information used, or the applicant confirms that all information collated and reviewed for the Phase 1 GCA has been considered in the assessment.	The list of information sources used to inform the Phase 1 GCA and this Chapter is provided in **Section 16.5**.	**Section 16.5** – Assessment Methodology
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL11 Relates to: 5.14.14 and 5.14.15 – Consultation Issue: The applicant has made requests for information to the Local Planning Authority and Environment Agency in support of the development. It is not indicated whether Anglian Water has been contacted with respect to their assets and abstractions in the Study Area. Impact: Possibility that sensitive potable water abstractions and/or infrastructure have not been Identified.	Consultation with Anglian Water has been undertaken at Scoping and PEIR stages, as outlined in the Anglian Water responses below.	**Table 16.1** – Relevant Scoping Opinion Comments from Statutory Bodies relating to Ground Conditions **Table 16.2** - Responses to the PEIR Relating to Ground Conditions

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	Recommendation: Anglian Water should be contacted for details of assets and abstractions within the Study Area.		
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL15 Relates to: 5.1.1 – Overview, and Table 5.10 - Potential Ground Conditions effects and justification for scoping out ground conditions Issue: Applicant proposes to Scope Out ground conditions from assessment. As described elsewhere in this response, we do not consider the applicant has adequately demonstrated understanding of the hydrogeological setting of the Scheme and in particular the relationship between groundwater and surface water bodies. Critical to addressing this is suitable characterisation of ground conditions, which we consider to be inadequate at this stage, largely informed by a limited set of historic exploratory hole records. Impact: Insufficient understanding of ground conditions leading to inadequate assessment of groundwater baseline. Recommendation: Ground Conditions should be Scoped In for further assessment.	At a meeting with the EA on 27 March 2025, it was discussed that a further desk-based analysis of the ground conditions in the vicinity of the Order Limits was being undertaken. In particular, this relates to the thickness of Diamicton present both close to the Order Limits and across the wider area. The Phase 1 GCA has been updated to support the ES and to include further consideration of the likely geological and hydrogeological regime. It was also confirmed at the meeting with the EA that a ground investigation will not be necessary to support the ES on the basis that the Outline Construction Environmental Management Plan (Outline CEMP) will include a requirement for ground investigation to be undertaken post-consent.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Outline CEMP [EN0110014/APP/7.1].**
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL17 Relates to: 5.14.28 – Summary Issue: Best practice measures listed to be included in the OCEMP do not include a Foundation Works Risk Assessment or Piling Risk Assessment for structures involving deep / piled foundations. There is insufficient evidence	The Outline CEMP includes a requirement for a Foundation Works Risk Assessment(s) (FWRA) to be undertaken for the BESS and any other structures requiring deep foundations and/or piling such as the Project Substations. As agreed with the EA on 27 March 2025, the FWRA will be undertaken post-consent and will	**Outline CEMP [EN0110014/APP/7.1].**

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	and design detail at this stage to discount this risk. Impact: Potential for creation of contaminant migration pathways into deeper groundwater units. via piling or deep foundation works Recommendation: FWRA / Piling Risk Assessments for BESS, Substation and any other structures requiring deep foundations / piling should be included in the OCEMP.	be informed by the results of a ground investigation.	
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL18 Relates to: 5.14.28 – Summary Issue: It is not stated in the Scoping Report that a hydrogeological risk assessment would be carried out for proposed HDD crossings. Impact: HDD or other trenchless installation methods could locally introduce drilling fluids or mobilise contamination into controlled waters if not suitably managed. Recommendation: Carry out a Hydrogeological Risk Assessment where HDD or other trenchless drilling methods are required and may interact with Principal or Secondary A aquifers or pass beneath surface watercourses or sensitive ecological receptors.	**Section 16.7** – Embedded Mitigation states '*where trenchless crossings interact with Principal or Secondary A aquifers or pass beneath surface watercourses or sensitive ecological receptors., a Hydrogeological Risk Assessment will be undertaken, if required, post-consent to assess the specific risks to groundwater and groundwater receptors (including the risk of breakout of drilling fluids, where appropriate) and identify any additional mitigation or remediation that may be required. The nature and scope of any mitigation or remediation will be agreed with the EA and other stakeholders, as appropriate*'.	**Section 16.7** – Embedded Mitigation **Outline CEMP [EN0110014/APP/7.1]**.
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL20 Relates to: Phase 1 GCA Issue: The report shows 35 No. private water supplies within 250m of the Site, for which accurate location data and abstraction stratum information was unavailable. Approximate locations of the abstractions are shown as Annex 4 of the Phase 1 GCA report. Assuming a worst-case scenario that all private	The Phase 1 GCA has been updated to include water supplies (both permitted and non-permitted) as identified in the study area within the dataset of private water supplies provided by the LPA, within the BGS' water wells dataset, and within the EA's dataset of permitted abstractions. Risks to private water supplies (in respect of chemical quality) have been assessed within	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	abstractions are for potable use, they would each require default 50m Source Protection Zone 1 buffers. Without accurate locations it is difficult to ascertain what parts of the site overlie these designated buffers. Impact: Unknown risk to private water supplies. Recommendation: Determine the locations (and where possible abstracted strata) of, and assess potential impacts to, private water abstractions and their applicable SPZ1 buffers, within potential influencing distance of the site. In the absence of further information assume a reasonable worst case in terms of spatial influence.	this Chapter and the supporting **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**	
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL21 Relates to: Phase 1 GCA Issue: Apparent error identified in summary data– Lowestoft Formation – Diamicton is indicated to range in thickness from 19.5 to 31.6m according to a review of six named BGS borehole records. We note that one of the cited records, TM18NE11, lists 'blue clay' extending to 58' (~17.7m depth) directly underlain by 'sharp sand', contradicting Table 3.3. Impact: Potential for other inaccuracies in the dataset used to inform the site conceptual model, potentially resulting in failure to identify significant contaminant migration pathways. Recommendation: The applicant should check and confirm that the summary information used to characterise anticipated ground conditions are accurate.	As discussed at a meeting with the EA on 27 March 2025 further desk-based analysis of the ground conditions in the vicinity of the Order Limits has been undertaken. In particular, this relates to the thickness of Diamicton present both close to the Order Limits and across the wider area. The **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** has been updated with the findings of this additional work, which is reflected within this chapter.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL22 Relates to: Phase 1 GCA Issue: There is uncertainty regarding ground conditions across the majority of the site. The ground condition summary is based on available British Geological Survey (BGS) logs, with significant data gaps across the site. This creates a risk to the high value and sensitive underlying Principal aquifer. Impact: Risk of pollution pathways to deep groundwater resources (Principal Aquifer, SPZ 3 and private and public water abstractions) due to inadequate ground condition information. Recommendation: Scope In impacts to groundwater as the potential for contaminant mobilisation into the bedrock Principal aquifer cannot be discounted at this time. Undertake intrusive site investigations to adequately characterise ground conditions and inform updates to the Preliminary Risk Assessment.	As discussed at a meeting with the EA on 27 March 2025 further desk-based analysis of the ground conditions in the vicinity of the Order Limits has been undertaken. In particular, this relates to the thickness of Diamicton present both close to the Order Limits and across the wider area. The **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** has been updated with the findings of this additional work, which is reflected within this chapter. As discussed at a meeting with the EA on 27 March 2025 it was agreed with the EA that a ground investigation will not be necessary to support the ES on the basis that the Outline CEMP will include a requirement for ground investigation to be undertaken post-consent.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Outline CEMP [EN0110014/APP/7.1]**.
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL23 Relates to: Phase 1 GCA Issue: The stated 250m search buffer is insufficient for the proposed Substation in Site 5. Impact: Until design parameters are determined there remains the risk that HDD and/ or foundation construction could impact the bedrock aquifer / Secondary A aquifers. Should be 1km to be consistent with BESS & other substations Recommendation: Increase the search buffer for identification of groundwater abstractions	The **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** has been updated to identify additional private water supplies. The study area for identification of groundwater abstractions, private water supplies and groundwater source protection zones has been set at 1km from the BESS, National Grid Substation, and Project Substations. For all areas where deep piled foundations will not be utilised, e.g., PV arrays and cable trenching, a 250m study area has been used for identification of groundwater abstractions, private water supplies and groundwater source protection zones.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	and source protection zones to 1km around all substations and BESS.		
Environment Agency, consultation response to Scoping Report, 12th February 2025	Comment GWCL24 Relates to: Phase 1 GCA Issue: The historic airbase sites are discussed as potential sources of contamination, but the potential for localised sources of contamination from post-war on-site disposal of aircraft is not considered. The Unexploded Ordnance (UXO) Desk Study (Annex 6 of the Phase 1 GCA) identified that the former RAF Hardwick bomb storage area was located adjacent to the north-western boundary of Sub-Site 3A and within the central part of Sub-Site 3B. Impact: Potential for the presence of contamination including radium impacted ash from authorised or ad- hoc aircraft and/or ordnance / materials disposal, particularly at margins of historic RAF sites. Recommendation: The potential for authorised or unauthorised ad-hoc disposal of ordnance, aircraft or other materials should be accounted for in the assessment.	Phase 1 GCA has been updated to include consideration of the limited and localised potential for radiological and other contamination hazards associated with ad-hoc disposal of aircraft at the parts of the former airfields within the Order Limits. UXO hazards are considered to be an acute hazard managed via the adoption of the controls recommended in the Zetica UXO constraints study (and any future UXO assessment). In addition to the above, construction of the Scheme also falls under the Construction (Design and Management) Regulations 2015 (CDM Regulations). These regulations place specific duties on clients, designers and contractors so that health and safety is considered throughout the life of a project, from its inception to its subsequent final demolition and removal. Under the CDM Regulations, designers are required to avoid foreseeable risks (including UXOs/UXBs) so far as reasonably practicable, by eliminating hazards from the construction, maintenance, and proposed use and demolition of a structure, reducing risks from any remaining hazard, and giving collective safety measures priority over individual measures.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Table 16.10 –** Sources of Potential Contamination
Alburgh Parish Council - Consultation	*'Contamination/damage to soil should be scoped in. As this is agricultural land, it should be guaranteed that the land should be returned*	Agricultural land quality and soils as a resource are not considered within this chapter.	**ES: Chapter 15 Soils and Agricultural Land. [EN0110014/APP/6.1.15]**.

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
response to Scoping Report (undated)	*as agricultural land of the same or better quality at decommissioning'.*		
Anglian Water - Consultation response to Scoping Report, 7th February 2025	*'Whilst the Scoping Report (5.14.13) identifies the sewage treatment works – Hempnall Fritton Road Water Recycling Centre (WRC) - as a potential location for contamination within the Project area, it should also acknowledge that other sources of contamination (in relation to utility strikes during construction for example) include our sewer network such as the rising mains/pressurised sewers that take flows to the WRC'.*	The rising mains that cross CRC7 are not considered as SPCs as these are assumed to be suitably maintained by Anglian Water such that leaks of sewage onto / into the land do not occur. There are also no recorded pollution incidents within the EA's dataset associated with these mains. There is potential for contamination to occur as a result of a strike to these mains during construction. Introduction of new contamination during the construction, operational and decommissioning phase is outside of the scope of the ground conditions chapter.	n/a
Anglian Water - Consultation response to Scoping Report 7th February 2025	*'We would agree that the risk of contamination could be avoided through routing the cable around Hempnall-Fritton Road WRC and to demonstrate that further mitigation of contamination risks through the inclusion of Protective Provisions for AWS and measures in the OCEMP that address any relevant interfaces with our underground sewer infrastructure. Our water main infrastructure can also cause a pollution risk to freshwater environments, and therefore similar measures will be required for all underground apparatus within the Project area (5.14.25)'.*	This comment relates to an earlier version of the Draft Order Limits (DOL) in which Hempnall Fritton Road Water Recycling Centre (WRC) was within the (DOL). The WRC has subsequently been removed from the DOL and is therefore avoided by the development. As described in Chapter 18 – Other Environmental Matters, '*Precautionary measures will be included as part of the embedded mitigation for the Scheme, which includes developing the detailed design of the Scheme having regard to utilities protection zones, the use of ground penetrating radar before excavation to identify any unknown utilities and the inclusion of protective provisions for third parties in the DCO which ensure appropriate protections are in place. These measures would reduce the*	**ES: Chapter 18 Other Environmental Matters [EN0110014/APP/6.1.18]**. **Outline CEMP** [**EN0110014/APP/7.1]**.

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		*likelihood of effects on utilities during construction and are detailed in the **Outline Construction Environmental Management Plan (CEMP) [EN0110014/APP/7.1]**.'* However, it is noted that the avoidance of below ground services will be managed by contractors through appropriate RAMS, surveys etc. Potable water supply mains are not considered as SPCs as potable water is not itself considered to be a contaminant. The water mains are assumed to be suitably maintained by Anglian Water such that significant leaks of clean, potable water onto / into the land do not occur. There are also no recorded pollution incidents within the EA's dataset associated with these mains that list potable water as a pollutant.	
Anglian Water - Consultation response to Scoping Report 7th February 2025	*'Anglian Water is supportive of the measures to be included in the OCEMP to address ground conditions within the Project area (5.14.27) and consider that some of these are also appropriate in terms of managing the scheme's interfaces with our underground assets, which we would seek to discuss with the Project Team further in terms of the additional measures to be included in the OCEMP'.*	Noted.	n/a
Aslacton Parish Council - Consultation response to Scoping Report 11th February 2025	*'We at Aslacton Parish council support Hempnall parish Council's response which incorporates a copy of Block Estate Pye Solar ('BEPS') response against the development'.*	Noted – see response to Hempnall Parish Council (et. al) below.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Table 16.10 –** Sources of Potential Contamination

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
Brooke Parish Council, BEPS – Residents Action Group, Shelton and Hardwick Parish Council, Hempnall Parish Council - Consultation response to Scoping Report February 2025	*'Given the highly likely existence of unexploded ordnance on both sites 3a and 3b (3b was the former heavy bomb dump for RAF Hardwick) and site 10, and the acknowledged contamination risks of all three former RAF airbase sites, ground conditions should be scoped in'.*	Ground Conditions are scoped into the ES as discussed within this chapter and airfields are considered as potential sources of contamination, both in terms of historical land use, and unexploded ordnance. Of the three former airfields identified (RAF Hardwick, RAF Seething and RAF Tibenham), only RAF Hardwick and RAF Seething are considered within this Chapter. RAF Tibenham has not been considered within this Chapter as it is approximately 1.4km off-site to the west.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Table 16.10 –** Sources of Potential Contamination
Brooke Parish Council, BEPS – Residents Action Group, Shelton and Hardwick Parish Council, Hempnall Parish Council - Consultation response to Scoping Report February 2025	*'It has recently come to light that there is significant PFAS contamination associated with the soils and ground water of former RAF bases, with residents who have been using private water supplies associated with those sites requiring blood-letting to reduce the PFAS concentrations in their blood. The PFAS contamination is associated with firefighting foams, which were used at Airforce bases'.*	Noted – the ground investigation, which will be undertaken post-consent and secured through a DCO Requirement, will include consideration of Poly- and Per-Fluoroalkyl Substances (PFAS). PFAS-containing aqueous film forming foams (AFFF) firefighting foams (termed fluorosurfactants) have been used for the extinguishment of flammable liquid fires since 1962 (Ref 16-1). As described in the Phase 1 GCA and the UXO Desk Study (Annex 6 of **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**) *'By 1946, RAF Seething had closed. The majority of the airfield reverted to agricultural use' and 'In 1962, RAF Hardwick closed, and the main airfield buildings and hangars were demolished. Some of the smaller buildings remain extant and are used by commercial businesses'.* Whilst PFAS hazards associated with the historical airfields have not been eliminated, given that the airfields were either no longer in use, or were demolished before the introduction of PFAS-containing AFFFs, PFAS hazards	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Table 16.10 –** Sources of Potential Contamination

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		associated with the airfields are considered unlikely.	
Brooke Parish Council, BEPS – Residents Action Group, Shelton and Hardwick Parish Council, Hempnall Parish Council - Consultation response to Scoping Report February 2025	*'Since the East Pye Solar Scheme adjoins three former RAF bases at Seething, Hardwick and Tibenham, it is important to fully assess the baseline levels of ground and water contamination from PFAS in these areas. It is also important to assess the likelihood of releasing any kind of historic contaminants into the soil by pile driving 4m below the plough line. The implications for underlying aquifers also need to be assessed'.*	RAF Tibenham has not been considered within this Chapter as it is approximately 1.4km off-site to the west. See commentary above regarding PFAS. The Phase 1 GCA includes consideration of the potential contaminated land risks associated with installation of Solar PV Arrays at the former RAF Hardwick and former RAF Seething. The detailed design of the Scheme will be informed by a ground investigation and subsequent assessment (to be undertaken post-consent). Non-penetrative foundation solutions for Solar PV Arrays are available, should the ground conditions be found to be such that these would be required.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Table 16.10 –** Sources of Potential Contamination
Brooke Parish Council, BEPS – Residents Action Group, Shelton and Hardwick Parish Council, Hempnall Parish Council - Consultation response to Scoping Report February 2025	*'The project is proposed to be in an area of numerous sensitive private groundwater water supplies, on areas protected for drinking water quality. All private drinking water supplies within 1km of the site should be identified, and all impacts of the development to them scoped in'.*	The Phase 1 GCA has been updated to identify additional private water supplies. The study area for identification private water supplies has been set at 1km from any structure which could require deep piled foundations (i.e., the BESS and the Project Substations). For all areas where deep piled foundations will not be utilised, e.g., PV arrays and cable trenching, a 250m study area has been used for identification of private water supplies.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions
Brooke Parish Council, BEPS – Residents Action Group, Shelton and Hardwick Parish Council, Hempnall Parish Council - Consultation	*'Quantity, locations and contamination impact of cement/concrete on soil should be provided'.*	The Solar PV Arrays will be constructed on metal frameworks and with either metal pile foundations or metal screw foundations. Concrete and cement are not anticipated to be used in these elements, apart from a potential option to use concrete blocks as ballast for Solar PV mounting structures in an archaeologically sensitive areas (i.e., where it is	**ES: Chapter 4 Scheme Description [EN0110014/APP/6.1.4]**. **Outline CEMP** [**EN0110014/APP/7.1]**.

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
response to Scoping Report February 2025		desirable to not penetrate the ground) if present. These would be cured concrete blocks, not cast in-situ. Concrete and cement may be used to form the piled foundations (if these are found to be required) for the BESS, National Grid Substation, and Project Substations. The Outline CEMP will include a requirement for FWRA to be undertaken for any structures requiring deep foundations/piling. If piled foundations are found to be required, the FWRA(s) will be undertaken post-consent and will be informed by the results of the ground investigation. Concrete and cement may also be used at the trenchless crossings.	
Brooke Parish Council, BEPS – Residents Action Group, Shelton and Hardwick Parish Council, Hempnall Parish Council - Consultation response to Scoping Report, February 2025	*'Modelling of soil contaminants from site, specifically lead and PFAS, on future crop growth on those sites, and also surrounding agricultural land should be assessed'.*	A Phase 2 Ground Conditions Assessment will be undertaken post-consent, informed by the results of the ground investigation. Should concentrations of contaminants of potential concern be identified above the adopted threshold criteria for protection of flora and fauna, and also above the regional background concentrations (to be determined by sampling of soils from surrounding fields), then the requirement for further work to assess risk to Property (Animal and Crop) will be discussed with the EA.	n/a
Great Moulton Parish Council - Consultation response to Scoping Report, Undated	*'Water and Flooding - Continuous monitoring of potential contamination of drinking water would need to be carried out as it is potentially a significant public health issue'.*	The Phase 1 GCA has been updated to identify additional private water supplies. The study area for identification private water supplies has been set at 1km from any structure which could require deep piled foundations (i.e., the BESS, National Grid Substation, and the Project Substations).	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Section 16.8** – Assessment of Likely Effects

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		For all areas where deep piled foundations will not be utilised, e.g., PV arrays and cable trenching, a 250m study area has been used for identification of private water supplies.	
Morningthorpe and Fritton Parish Council - Consultation response to Scoping Report, January 2025	*'Scoping out key and significant categories is not acceptable as they will have impact on the community, environment and general wellbeing of the identified areas and beyond. We would request that these areas are included and not allowed to be scoped out by East Pye Solar.* *Areas East Pye Solar have requested to scope out: … Ground Conditions'.*	Ground conditions have now been scoped into the ES.	**ES: Chapter 16 Ground Conditions [EN0110014/APP/6.1.16]**. **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**
Natural England - Consultation response to Scoping Report, 10th February 2025	*'The ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geo-conservation group or other local group and protected under the NPPF (paragraph 187 a). The ES should set out proposals for mitigation of any impacts and if appropriate'.*	Ground conditions have now been scoped into the ES. Section 3.7 of the Phase 1 GCA presents an identification of geodiversity[4] receptors within 250m of the Order Limits. A review of the NCC geodiversity sites dataset (Ref 16-2) has been undertaken and no such receptors have been identified within 1km of the Order Limits. Geodiversity sites are therefore not identified as a receptor and therefore potential effects on these sites are scoped out.	**ES: Chapter 16 Ground Conditions [EN0110014/APP/6.1.16]**. **ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]**
Natural England - Consultation response to Scoping Report, 10th February 2025	*'The ES should thoroughly assess the potential for the proposal to affect internationally designated sites of nature conservation importance / European sites, including marine sites where relevant. This includes Special Protection Areas (SPA), Special Areas of*	Section 3.6 of the Phase 1 GCA presents an identification of nationally and internationally designated terrestrial ecology receptors (including candidate SPA and SAC) within 1km of the Order Limits.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **ES: Chapter 8 Ecology and Biodiversity**. **[EN0110014/APP/6.1.8]**.

[4] Geodiversity can be defined as '*The natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landforms, topography, physical processes), soil and hydrological features. It includes their assemblages, structures, systems and contributions to landscapes*' (Gray, M., 2013, Geodiversity: Valuing and Conserving Abiotic Nature). These protected sites include geological sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Geology sites.

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
	Conservation (SAC), listed Ramsar sites, candidate SAC and proposed SPA'.	Potential effects upon the internationally or nationally designated sites is considered in **ES Chapter 8** - Ecology and Biodiversity.	
Natural England - Consultation response to Scoping Report, 10th February 2025	'*Natural England note the EIA Scoping Report has scoped out impacts from water quality from contamination and included measures to mitigate risk (paragraph 5.3.35) … Consideration should be given to any possible effects of the cable works upon watercourses … (e.g. methodology used for watercourse crossings)'.* *'Natural England advise that construction methods used in watercourse crossings are assessed for their impact on water quality'.*	The design of the Scheme (including the trenchless crossings) will be informed by a ground investigation, to be undertaken post-consent. Subsequent assessment will be undertaken post-consent and will include a Phase 2 Ground Conditions Assessment which will provide a Tier 2 Generic Quantitative Risk Assessment of the risks presented by existing contamination to the identified surface water receptors. As described in **Section 16.7** - Embedded Mitigation, Hydrogeological Risk Assessments will be undertaken for trenchless crossings beneath watercourses. This will be undertaken at the detailed design stage, informed by the results of a post-consent ground investigation.	**Section 16.7** – Embedded Mitigation **Outline CEMP [EN0110014/APP/7.1]**.
Natural England - Consultation response to Scoping Report, 10th February 2025	*'The ES should include a full assessment of the direct and indirect effects of the development on the features of special interest within any nearby SSSI's and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects'.*	Geologically designated Sites of Special Scientific Interest (SSSI) have not been identified within 1km of the Order Limits and are therefore scoped out. The ES will identify where likely significant effects to water quality may occur. Effects upon the internationally or nationally designated sites is considered in **ES Chapter 8 Ecology and Biodiversity [EN0110014/APP/6.1.8]**.	**Section 16.6** – Baseline Conditions **ES: Chapter 8 Ecology and Biodiversity. [EN0110014/APP/6.1.8]**.
Norfolk County Council - Consultation response to Scoping Report, 7th February 2025	*'Minerals and Waste – these matters should be scoped into the ES given the site coverage and potential to sterilise large swathes of land; and the waste implications associated with decommissioning and / or replacement of solar arrays or supporting infrastructure during the lifetime of the project. These matters need to be thoroughly addressed in the ES'.*	Minerals resources are scoped into this Chapter and considered in the Minerals Resources Assessment Desk Study. Noted below in relation to sterilisation. Waste associated with decommissioning and replacement is considered within **Chapter 18**	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]**

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		Other Environmental Matters [EN0110014/APP/6.1.18].	**Section 16.6** – Baseline Conditions **ES: Chapter 18 Other Environmental Matters [EN0110014/APP/6.1.18]**
Norfolk County Council - Consultation response to Scoping Report, 7th February 2025	*'The East Pye Solar Project is stated to have a limited lifespan of 60 years (appendix 5.1, section 3.3.1), followed by decommissioning. Therefore, it is not considered to permanently sterilise the underlying mineral resources'.*	Noted	n/a
Norfolk County Council - Consultation response to Scoping Report, 7th February 2025	*'There will still be areas underlain by mineral where intrusive groundworks may take place. Therefore, the application will need to contain analysis of potential effects and mitigation, including the methods for panel installation and reuse of excavated mineral during construction. In order to carry out this analysis, intrusive site investigations, sample assessment (including particle size distribution testing and classification using the material class types), and then consideration of the potential for reuse of suitable mineral in the Construction Phases will be required. These issues should be considered within the environmental statement supporting the application'.*	Meeting held with NCC Senior Planner (Minerals and Waste Policy) on 28 March 2025 discussed that the Scheme is not a permanent development (with the exception of the National Grid Substation and Grid Connection Infrastructure). NCC does not require the ES to be supported by a ground investigation specifically to assess minerals. The ground investigation that will be undertaken post-consent to inform the design of the Scheme (as secured by the Outline CEMP) will provide information that can inform the assessment of potential reuse of materials that arise during construction. Any underground cables that are not removed during the decommissioning phase would no longer be live, and would not present a constraint to future mineral extraction.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]** **Section 16.6** – Baseline Conditions **Outline CEMP** [**EN0110014/APP/7.1**].
Shotesham Parish Council - Consultation response to Scoping Report, 11th February 2025	*'The Parish Council is concerned about … the potential for increased pollution of watercourses, in an area where at least 13 households are understood to rely on boreholes for their water supply. The risks to human health from increased pollution of water courses, for those without access to mains supply, goes without saying'.*	The Phase 1 GCA has been updated to identify additional private water supplies. The study area for identification of private water supplies has been set at 1km from any structure which could require deep piled foundations (i.e., the BESS, National Grid Substation, and the Project Substations).	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Section 16.8** – Assessment of Likely Effects

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		For all areas where deep piled foundations will not be utilised, e.g., PV arrays and cable trenching, a 250m study area has been used for identification of private water supplies.	
Shotesham Parish Council - Consultation response to Scoping Report, 11th February 2025	*'We particularly highlight the risks from PFAS contamination'*	Noted. The ground investigation to be undertaken post-consent will include consideration of PFAS where appropriate and where a relevant potential PFAS source has been identified either within the Order Limits or the Study Area. PFAS-containing AFFF firefighting foams (termed fluorosurfactants) have been used for the extinguishment of flammable liquid fires since 1962. As described in the Phase 1 GCA and the UXO Desk Study, by 1946, RAF Seething had closed. The majority of the airfield reverted to agricultural use and in 1962, RAF Hardwick closed, and the main airfield buildings and hangars were demolished. Some of the smaller buildings remain extant and are used by commercial businesses. Whilst PFAS hazards associated with the historical airfields have not been eliminated, given that the airfields were either no longer in use, or were demolished before the introduction of PFAS-containing AFFFs, PFAS hazards associated with the airfields are considered unlikely.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions
NCC Senior Planner (Minerals and Waste Policy) - Telephone Call with follow-up email to confirm points discussed,	*'There will still be areas underlain by mineral where intrusive groundworks may take place. Therefore, the application will need to contain analysis of potential effects and mitigation, including the methods for panel installation and reuse of excavated mineral during construction. In order to carry out this analysis, intrusive site*	Following refinement of the Scheme design, and as described in Table 3.1 of **Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]** safeguarded sand and gravel mineral deposits are located only beneath:	**ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]** **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4]**

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
28/03/2025.ttPre-Application Engagement	*investigations, sample assessment (including particle size distribution testing and classification using the material class types), and then consideration of the potential for reuse of suitable mineral in the Construction Phases will be required. These issues should be considered within the environmental statement supporting the application'.*	• Limited areas of Sub-Sites 4A and 4B, 5A, 5B, 7A, 7B, 7C and 8A. • North-western and central parts of CRC6, approximately half of CRC7, the south-western end of CRC8. The only construction to be undertaken within these limited areas of safeguarded mineral deposits are solar PV arrays within the Sub-Sites, and the cable within the CRCs. Details of the foundations for the PV Arrays, and details of the cable route are provided within **ES: Chapter 4 The Scheme [EN0110014/APP/6.1.4].** On the basis that the Project Substations and BESS will not be constructed within areas of safeguarded mineral deposits, these features are not considered further in this ES Chapter. The PV Arrays will be constructed on piled or screw foundations. These will be driven or screwed from the surface without any excavation required. On this basis there will be negligible mineral arisings to be generated where PV Arrays are constructed within areas of safeguarded mineral deposits, and therefore incidental re-use of minerals within the Sub-Sites will not be considered further in this ES Chapter. Section 3.4 of **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]**	**Outline CEMP** [**EN0110014/APP/7.1]**.

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		provides detail on the assessment and re-use of incidentally excavated mineral arisings from the cable trenching within the CRCs underlain by safeguarded mineral deposits. As the Scheme is not a permanent development (with the exception of the National Grid Substation and Grid Connection Infrastructure) NCC does not require the ES to be supported by aground investigation specifically to assess minerals. The ground investigation that will be undertaken post-consent to inform the design of the Scheme (as secured by the OCEMP) will provide information that can inform the assessment of potential reuse of materials that arise during construction.	
Environment Agency, pre-application engagement Microsoft Teams meeting, 27th March 2025	See EA comments raised in consultation response to Scoping Report, 12th February 2025.	This Chapter will consider existing contamination in the ground only. Potential 'physical effects' e.g. changes to groundwater or surface water flow paths would be addressed elsewhere in the ES. Further work to enhance the understanding of the thickness of the (anticipated to be functionally impermeable) Diamicton that underlies the majority of the Order Limits has been undertaken principally through the use of information provided within the BGS archive of historical exploratory holes. This is discussed in the Baseline Conditions section. An Outline CEMP is submitted with the DCO Application. This includes (post-consent) undertaking of a ground investigation, which will inform subsequent assessments, such as a FWRA. A ground investigation post-consent has been agreed with the EA.	**ES: Appendix 16.1 Phase 1 GCA [EN0110014/APP/6.3.16.1]** **Section 16.6** – Baseline Conditions **Section 16.8** – Assessment of Likely Effects **Outline CEMP** [**EN0110014/APP/7.1**].

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		The Phase 1 GCA has been updated to identify additional private water supplies. The study area for identification private water supplies has been set at 1km from any structure which could require deep piled foundations (i.e., the BESS , National Grid Substation, and the Project Substations). For all areas where deep piled foundations will not be utilised, e.g., PV arrays and cable trenching, a 250m study area has been used for identification of private water supplies. The criteria that will be used in the assessment to assign receptor sensitivity value and the magnitude of potential impact has been shared with the EA for agreement. It was requested by the EA that separate sensitivity criteria should be provided for groundwater Source Protection Zones (SPZs), groundwater abstractions and aquifer classifications. The majority of the amendments requested by the EA have been adopted, with the exception of the amendments relating to groundwater travel times around private water supplies. It is recognised that a SPZ1 is a 50m point, or a groundwater travel time of 50 days. Likewise, a SPZ2 is (partly) defined by a groundwater travel time of up to 400 days. The vast majority of the private water supplies identified in the assessment are stated to, or are otherwise interpreted to, abstract water from the chalk bedrock at depth beneath the Diamicton. As described in CIRIA C574 (Engineering In Chalk) the hydraulic conductivity of fissured chalk can be between 10^{-5} and 10^{-3} m/s (i.e., 0.86 to 86 m per day). Whilst a 50-day travel time at the lower end of this range would be approximately equivalent to	

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		the 50 m travel time zone for a SPZ1, use of the upper value of 86 m/day would result in a 50-day travel time zone of 4.3km and a 400-day travel time zone of approximately 34km. The mid-range hydraulic conductivity value of 10^{-4}m/s or 8.64m per day would give a 50-day travel time zone of approximately 430m and a 400-day travel time zone of approximately 3.4km. The use of such large zones to define the sensitivity of what are likely to be small-scale abstractions is considered to be highly conservative, especially given that the majority of the land within the Order Limits comprises greenfield land, with only occasional on-Site sources of potential contamination, and given that the chalk is overlain by a significant thickness of low permeability Diamicton. On the basis of the assessment undertaken, using the information provided by the EA, BGS and LPA, credible risks to Private Water Supplies (PWS) have not been identified. The Conceptual Site Model is such that there are no credible contaminant linkages between the PWS and permitted abstractions either within the Order Limits or the Study Area. It is considered that allowing the presence of a PWS (and any associated indicative SPZ) to which credible risks have not been identified, to control the sensitivity of the receptor, would be over-conservative. The sensitivity of hydrogeological receptors will therefore be principally defined by the aquifer classification and / or the presence of a groundwater SPZ. The EA identified a further area of potentially infilled land (Market Lane Pit) within Sub-Site 8B. This working is identified within the BGS'	

Consultee and Date	Comment and Scoping Opinion ID No.	How has the comment been addressed in the ES chapter	Location of response in ES Chapter
		Mines and Quarries dataset and has been included within the Phase 1 GCA. It is noted that there are no solar PV arrays or associated infrastructure proposed in the field in which Market Lane Pit is located. Peat deposits are considered in this Chapter. It was noted that these deposits are present only within CRC7, adjacent to the Hempnall Beck, within a County Wildlife Site that is also a designated area of irreplaceable fenland habitat. Whilst the ecological constraints in this area alone would prevent the use of shallow trenching, the practical considerations of CRC7 mean that a trenchless crossing, beneath the peat deposits (if present) will in any event be considered to be used in this area. The design of the Scheme will therefore provide mitigation against damage to peat deposits.	

Statutory Consultation and Preliminary Environmental Information Report (PEIR)

16.2.3 Statutory consultation was held between 18th June 2025, and 6th August 2025. Relevant responses to the PEIR relating to ground conditions and how these have been addressed through the ES are set out within **Consultation Report Appendix 10 Section 47 Applicant Response Table [EN0110041.5.11]** and **Consultation Report Appendix 11 Section 42 Applicant Response Table [EN0110041.5.12].**

Targeted Consultation

16.2.4 A further round of targeted consultation was undertaken between 22 October 2025 and 26 November 2025 following changes to the development boundary area of the Scheme presented in the PEIR and during Stage Two Statutory Consultation. All the changes are documented in full in the **Consultation Report [EN0110014/APP/5.1]**. These changes did not give rise to any materially new or different likely significant environmental effects compared to those reported in the PEIR. How these have been addressed through the ES are set out within **Consultation Report Appendix 10 Section 47 Applicant Response Table [EN011004/APP/5.11]** and **Consultation Report Appendix 11 Section 42 Applicant Response Table [EN0110041/APP/5.12]**.

16.3 Legislation, Policy and Guidance

16.3.1 A summary of applicable legislation, planning policy and other guidance documents against which the Scheme will be considered relating to Ground Conditions is set out in **ES: Appendix 2.3 Legislation, Planning Policy and Guidance [EN0110014/APP/6.3.2.3]**.

16.3.2 An overview of the legislation, planning policy and guidance against which the Scheme has been considered for the assessment of Ground Conditions is set out below.

Legislation and Regulations

- **Environmental Protection Act (1990)** (Ref 16-3). The Statutory Guidance (Ref 16-4) accompanies the legislation.
- **Water Resources Act (1991)** (Ref 16-7).
- **The Contaminated Land (England) Regulations 2006 (as amended by the Contaminated Land (England) (Amendment) Regulations 2012)** (Ref 16-48).

- **The Groundwater (England and Wales) Regulations (2009)** (Ref 16-9).
- **Environmental Damage (Prevention and Remediation) Regulations (2015)** (Ref 16-5)
- **Environmental Permitting (England and Wales) Regulations (2016)** (Ref 16-6).
- **The Water Environment (Water Framework Directive) Regulations (2017)** (Ref 16-8).
- **The Environment Act 2021** (Ref 16-49).

Planning Policy

National Planning Policy

16.3.3 National Policy Statements – National Policy Statements (NPS) set out the primary policy tests against which the application for a Development Consent Order (DCO) for the Scheme has been considered pursuant to section 104 of the Planning Act 2008. Listed below are the details of the elements of NPS considered relevant to the assessment of Ground Conditions.

- Overarching NPS EN-1 (Ref 16-10), notably paragraphs 5.4.10, 5.11.5, 5.11.8, 5.1.17, 5.11.18, 5.11.19, and 5.16.7.
- NPS EN-3 (Ref 16-11), notably paragraphs 2.10.84 and 2.10.148.
- NPS EN-5 (Ref 16-12), notably paragraphs 2.210 and 2.9.26.

16.3.4 National Planning Policy Framework - The National Planning Policy Framework (NPPF) as revised in December 2024 sets out national planning policies that reflect priorities of the Government for operation of the planning system and the economic, social, and environmental aspects of the development and use of land. The NPPF has a strong emphasis on sustainable development, with a presumption in favour of such development. The NPPF has the potential to be considered important and relevant to the Secretary of State's (SoS) consideration of the Scheme. NPPF paragraphs 187, 192, 196, and 223 are of relevance to this chapter.

Planning Guidance

- **National Planning Practice Guidance**. The National Planning Policy Framework (NPPF) (Ref 16-55) is supported by Planning Practice Guidance (PPG), which includes guidance on Land Affected by Contamination, Minerals, and Land Stability.

- Environment Agency Groundwater Protection Position Statements (2018) (Ref 16-13).
- The Environment Agency's approach to groundwater protection (general principles)' (Ref 16-14).
- The England Peat Action Plan (Ref 16-15).

Local Planning Policy

16.3.5 The Scheme is located within the administrative area of South Norfolk and Broadlands District Council, and Norfolk County Council who are the host authorities. Local planning plan policies which are relevant to the assessment of Ground Conditions and have informed the Ground Conditions assessment are summarised below.

- **South Norfolk Local Plan**. (Ref 16-56), notably Policy DM 3.14 (Pollution, Health and Safety)
- **Greater Norwich Local Plan**.(Ref 16-57) Notably Policies 2.7 and 2.10.

16.4 Assessment Assumptions and Limitations

16.4.1 This Chapter considers existing contamination in the ground only, and 'physical effects' to the environment e.g. surface water flow paths are addressed in **ES**: **Chapter 9 Water Environment [EN0110014/APP/6.1.9]**.

16.4.2 Historical maps and aerial photographs provide a 'snapshot' in time of conditions or activities within the Order Limits and cannot be relied upon as indicators of any events or activities that may have taken place at other times. It is possible for developments to have occurred between surveys that are not shown or for the map record to have been censored for military security.

16.4.3 There is a commitment to Avoidance Areas of certain environmental receptors, whereby open cut trenches and launch and reception pits associated with trenchless techniques, such as Horizontal Directional Drilling (HDD) will be located outside of the Avoidance Areas to minimise impacts. Avoidance Areas are locations where trenchless technologies rather than open cut trenches will be used to avoid certain environmental receptors within the CRC. The open cut trench Avoidance Areas are secured within the **Outline CEMP [EN0110014/APP/7.1].**

16.4.4 The trenching for cables will generate arisings which will subsequently be used to backfill. Any earthworks required may also generate excess arisings. Any excess arisings will be dealt with in line with standard best practice and current legislation that will be outlined in the **Outline SRMP [EN0110014/APP/7.9]**.

16.4.5 The following effects are not considered within this assessment:

- Loss of peat soils during the operational and maintenance phase, as the only area of peat soils (as mapped by the BGS) is a very limited area within CRC7. Effects to peat soils will not occur during the operational phase, as the Scheme in the area of the identified peat soils comprises a cable which will be installed using trenchless methods beneath the peat.

- Loss of peat soils during the decommissioning phase. As described in the **Outline DEMP [EN0110014/APP/7.1]** decommissioning of the trenchless crossing beneath the peat would comprise either pulling of the cable only but leaving the ducting in place (i.e., no excavation works would be undertaken within the trenchless crossing), or not undertaking any decommissioning of the trenchless crossing.

- Effects to property (buildings and archaeology) receptors. As identified in the **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**, the potential for the land within the Order Limits to present a hazard to property, including buildings and statutorily designated archaeological receptors is limited to migration of existing contamination from Sources of Potential Contamination (SPCs) within the Order Limits only. Other pathways for potential harm to be caused to property (buildings and archaeology) receptors, such as damage due to ground borne vibrations or groundwater level change during or as a result of construction are outside the scope of this Chapter. Of the SPCs identified within the Order Limits, only the former refuse tip within Sub-Site 4B is considered to have a credible potential for contamination which could migrate. There are no existing properties or statutory designated archaeological receptors within the 250m Study Area (as defined in sections 16.5.3 to 16.5.14). The design of the Scheme will be informed by ground investigation, meaning that appropriate contamination-resistant materials will be utilised, should contamination be found to be present.

- Damage to / destruction of the Scheme due to natural geological hazards, e.g., landslides, dissolution, shrink-swell behaviour etc., or anthropogenic hazards e.g., historical mining during the construction and decommissioning phases as the receptor (the Scheme) are not considered to be present.

- Damage to / destruction of the Scheme due to natural geological hazards during the operational phase as a ground investigation and assessment will be undertaken prior to construction, which will inform appropriate geotechnical design (in accordance with the relevant best practice and design standards) in relation to the specific ground conditions including ground instability, aggressive ground conditions and other associated natural or anthropogenic land stability hazards.

- Damage to / loss of identified geodiversity receptors during all phases, as such features have not been identified within the 250m Study Area. It is not considered that mobilisation of potential existing contamination in the

ground has the potential to affect geodiversity receptors at greater distances.

- Impacts upon any receptors relating to new contamination introduced by the Scheme during all phases, as this chapter considers existing contamination in the ground only. Consideration of such effects are considered as appropriate in **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]**.

- Physical changes to hydrogeology and hydrology, e.g. changes to surface water flow paths, during all phases. Consideration of such effects are considered as appropriate in **ES: Chapter 9 Water Environment [EN0110014/APP/6.1.9]**.

- Impacts upon nationally or internationally designated terrestrial ecology receptors (including Groundwater Dependent Terrestrial Ecosystems (GWDTE)) during all Phases, due to utilisation of contaminated water or resulting from physical changes to the groundwater or surface water regime. This chapter will identify where contamination of water may occur, however the effects of any such contamination being utilised by a designated terrestrial ecology receptor are outside of the scope of this Chapter and are considered as appropriate in **ES**: **Chapter 8 Ecology and Biodiversity [EN0110014/APP/6.1.9]**.

16.5 Assessment Methodology

16.5.1 This section sets out the scope and methodology for the assessment of Ground Conditions.

Sources of Information

16.5.2 This Chapter is principally informed by **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**, prepared in 2024 and updated in 2025 following the preparation of the PEIR. The following sources of information were used to inform **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** and this chapter:

- A walkover survey on 20th June 2024 to observe existing conditions both within the Order Limits and Study Area;

- Historical mapping, geological information and information relating to ground conditions stability hazards (Ref 16-16), (Ref 16-17); and environmental data searches (Ref 16-50) (Ref 16-51) provided within Groundsure Reports[5].

[5] Extracts of multiple Groundsure Reports are presented in Annex 2, reflecting data procured at various stages of the assessment process. The environmental data searches are presented within (Ref 16-50) (Ref 16-51), these searches were procured in February 2026 and use the Order Limits (plus search buffers) as the search area. This

- Review of the Stantec Natural Cavity and Artificial non-coal (underground) mining cavity databases;
- Review of borehole, water well, mines and quarries records held (Ref 16-18) by the British Geological Society (BGS) accessed via their GeoIndex Viewer;
- Review of geological mapping held by the BGS (Ref 16-19);
- Review of DEFRA's MAGIC (Multi-Agency Geographic Information for the Countryside) website (Ref 16-20) which provides authoritative geographic information about the natural environment from across government;
- A review of SNC Planning Portal (Ref 16-21);
- A contaminated land enquiry to South Norfolk and Broadland District Council, including information relating to private water supplies;
- A Freedom of Information request to the EA for any environmental information relevant to the Scheme;
- A request for information relating to any known animal burial sites pursuant to the provisions of the Animal Health Act 1981 and the Animals (Miscellaneous Provisions) Order 1927 was made to the Animal and Plant Health Agency;
- A review of the Public Health England Radon Atlas and Interactive Radon Map (Ref 16-22); and

information was re-procured in February 2026, replacing the earlier searches used to support the PEIR to ensure that the ES is supported by up-to-date information.

Historical mapping, geological information and information relating to ground conditions stability hazards, soil geochemistry and radon is presented within the extracts of Groundsure Reports (Ref 16-16), (Ref 16-17) – both procured in 2024 during the preparation of the ES Scoping Assessment. On the basis that this type of information will not have changed (i.e., the ground conditions recorded in 2024 are the same as the ground conditions in 2026) this information has not been updated.

It is noted that site boundary used presented within the 2024 Groundsure Report reflects an earlier version of the boundary and differs slightly from the Order Limits. This information has been interpreted in relation to the Order Limits.

- A review of risk map records for Norfolk held by Zetica UXO (Ref 16-23) as well as a UXO Desk Study and Constraints Assessment for the land within the Order Limits, produced by Zetica, presented as Annex 6 to **ES**: **Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**.

Study Area

Overview

16.5.3 The Study Area is the buffer extending from the Order Limits but excluding the land area within the Order Limits. The extent of the Study Area is variable depending on the likely zone of influence for each feature/receptor.

16.5.4 The Study Areas used in this assessment, as summarised below, are based on professional judgement, knowledge of similar projects and the Design Manual for Roads and Bridges (DMRB) LA 109 (Ref 16-24) - Geology and Soils and LA 113 (Ref 16-25) – Road Drainage and the Water Environment. Although not directly relevant to the Scheme, the Study Areas generally accord with the study areas recommended in Guidance for the Safe Development of Housing on Land Affected by Contamination (Ref 16-26).

16.5.5 **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** provides further information in relation to the relevant features identified within the Study Area.

Potentially Contaminative Land Uses

16.5.6 The Study Area for land-use activities with the potential to generate contamination is based on a review of historical mapping, contemporary mapping and aerial imagery and a reconnaissance walkover and comprises a buffer of up to 250m from the Order Limits. Given the scale and nature of the Scheme, this is generally considered a robust yet proportionate approach. The Study Area is also based on professional judgement, knowledge of similar projects and the DMRB LA 109 (Ref 16-24) and DMRB LA 113 (Ref 16-25). Although not directly relevant to the Scheme, the Study Area accords with the Study Area recommended in Guidance for the Safe Development of Housing on Land Affected by Contamination (Ref 16-26).

Human Health Receptors

16.5.7 For the identification of human health receptors a Study Area of 250m from the Order Limits has been used. This has been selected on the same basis as the Study Area for potentially contaminative land uses.

Hydrogeological Receptors

16.5.8 The Scheme principally comprises:

- Solar PV Arrays, most likely to be constructed on pile-driven or screw-mounted foundations (to a maximum depth of approximately 4m) subject to further environmental assessment to ascertain other sensitivities, such are archaeology);
- Cables constructed in shallow trenches (typically to a depth of 2m)[6];
- The BESS; and
- National Grid Substation, Project Substations, and associated infrastructure.

16.5.9 It is considered that the likelihood of the Solar PV Arrays and Cables impacting private water supplies and permitted abstractions (in relation to chemical quality) is highly limited. On this basis a search buffer of 250m has been selected for the identification of groundwater abstractions (including private water supplies) and groundwater SPZs for areas of the Order Limits to be used either as Solar PV Arrays or for the cable route.

16.5.10 The BESS, National Grid Substation, and the Project Substations may include structures with piled foundations[7]. Whilst potentially contaminative current and historical land uses have not been identified within these areas, there remains the potential for any piled foundations to impact groundwater quality, e.g. via increased turbidity during installation, or via migration of concrete bleed waters. To provide a suitably conservative and reasonable worst-case assessment, a Study Area of 1km from the BESS and any Project Substation has been used for the identification of groundwater abstractions (including private water supplies) and groundwater SPZs.

Hydrological Receptors

16.5.11 As described above, it is considered that the likelihood of the Scheme impacting upon abstractions (in terms of chemical quality) is highly limited. On this basis a Study Area of 250m has been selected for the identification of hydrological receptors.

Peat Soils

16.5.12 The potential for the Scheme to impact upon peat soils is limited to:

- Loss of function due to excavation or compaction;

[6] With limited areas of the cable route to be constructed at deeper depth via HDD.

[7] Standalone Conversion Units will be required within the solar PV arrays, subject to further design, these are anticipated to be small-scale in construction and founded upon shallow foundations, e.g., ground-bearing slab.

- Drying due to loss of groundwater; and/or
- Wetting due to runoff from Solar PV Arrays.

16.5.13 On this basis, the potential for presence of peat soils has been reviewed within 500m of the BESS, National Grid Substation, Project Substations, and within any Sub-Site or CRC where works that could require excavation or cause compaction of peat could occur. This excludes locations where the proposed structures will have only small, shallow foundations and which are therefore unlikely to impact groundwater flow if any such flow is present.

Minerals Resources

16.5.14 The Study Area for the assessment of potential safeguarded existing mineral extraction or infrastructure sites, MSA, MCA or minerals areas comprises 250m from the Order Limits. This Study Area has been selected to align with the 250m MCA extending from any MSA, as described in the Norfolk Minerals and Waste Local Plan (MWLP) (Ref 16-37).

Potential Impacts

16.5.15 Embedded mitigation measures being incorporated into the design and construction of the Scheme are set out in **Section 16.7** below. Prior to the implementation of any mitigation (embedded or additional), the Scheme has the potential to effect (beneficially or adversely), during the construction, operation and maintenance and decommissioning phases in the following ways:

- Ground disturbance during all phases resulting in existing contamination in the ground (if present) being mobilised. The effect of which is human health receptors being exposed (via inhalation, ingestion[8] and dermal contact pathways) to existing contamination[9].
- Ground disturbance during all phases resulting in existing contamination (if present) in the ground being mobilised. The effect of which is controlled waters receptors (i.e., surface water and groundwater) being exposed to contamination.
- Ground disturbance during the construction phase and the presence of the Scheme during the operation and maitnenance phase. The effect of which is sterilisation of safeguarded minerals if present.
- Ground disturbance during the construction phase. The effect of which is loss of peat soils if present.

[8] Including via drinking water in private water supplies.

[9] Including Unexploded Ordnance and naturally occurring hazards such as radon.

Impact Assessment Methodology

16.5.16 The assessment of Ground Conditions follows the general approach to undertaking EIA, explained in **ES: Chapter 2 EIA Methodology [EN0110014/APP/6.1.2]**. Albeit it has been modified to align with the receptor value / importance / sensitivity criteria, the criteria for classifying magnitude of effect and the matrix for assigning significance of effect that have been agreed with statutory consultees.

16.5.17 The methodology for attributing sensitivity of receptors, magnitude of effects and the significance of effects in relation to Ground Conditions is described further below in this chapter of the ES.

Sensitivity of Receptor

16.5.18 The sensitivity of likely impacted receptors, defined depending on the vulnerability, recoverability and value/importance of the receptor, to potential effects arising from the Scheme is assessed in line with the below, as detailed in **Table 16.2** Receptor Value / Importance / Sensitivity Criteria.

Table 16.2 Receptor Value / Importance / Sensitivity Criteria

Value / Importance / Sensitivity	General Criteria
Very High Very high importance and rarity. International scale and limited potential for substitution. Peat soils with low resilience to structural damage.	**Contamination**: 1) Human health. Very high sensitivity land use such as residential or allotments. 2) Hydrology. A watercourse having a Water Framework Directive (WFD) ecological classification of High. Surface Water Drinking Water Protection Area. The hydrological receptor is designated as having international importance, such as Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar Sites. 3) Hydrogeology. Either of the following apply: • Principal aquifer providing a regionally important resource, e.g. public water supply, industrial supply and/or supporting a site protected under EC and UK Legislation LA 108. • Groundwater quality associated with SPZ 1 (including an indicative 50m SPZ 1 around any private water supply). • Nearest abstraction (including private water supplies) is within 50m of the Order Limits. **Minerals**: Existing mineral sites and infrastructure.
High High importance and rarity. National scale and limited potential for substitution. Peat soils with low resilience to structural damage.	**Contamination**: 1) Human health. High sensitivity land use such as public open space, and construction workers. 2) Hydrology. Watercourse having a WFD ecological classification of Good. The hydrological receptor is designated as having national importance, such as SSSIs. 3) Hydrogeology. Either of the following apply: • Principal aquifer providing a locally important resource, e.g. public water supply, spray irrigation, top up water etc, or supporting a river ecosystem. • Groundwater quality associated with SPZ 2.

Value / Importance / Sensitivity	General Criteria
	• Nearest active abstraction (including private water supplies) from the stratum in question is between 50m and 250m from the Order Limits. **Minerals**: Mineral Preferred Areas (MPA) identified in the relevant minerals local plan.
Medium Medium importance and rarity. Regional scale, limited potential for substitution.	**Contamination**: 1) Human health. Medium sensitivity land use such as commercial or industrial. 2) Hydrology. A watercourse having a WFD ecological classification of Moderate. Site protected at a local level. 3) Hydrogeology. Any of the following apply: • Secondary A Aquifer. • Groundwater quality associated with SPZ 3. • Nearest active abstraction (including private water supplies) from the stratum in question is between 250m to 500m from the Order Limits. **Minerals**: Mineral Safeguarded Areas (MSA) and/or Mineral Consultation Area (MCA).
Low Low importance and rarity. Local scale.	**Contamination**: 1) Human health. Low sensitivity land use such as highways and rail. 2) Hydrology. A watercourse having a Water Framework Directive (WFD) ecological classification of Poor or Bad. Site protected at local level or not protected. 3) Hydrogeology. All of the following apply: • Secondary B or Secondary Undifferentiated Aquifer. • Site is not located within an SPZ. • Nearest active abstraction (including private water supplies) from the stratum in question is between 500m to 1km from the Order Limits. **Minerals**: A mineral resource that is safeguarded elsewhere within the county present but outside of any MSA/MCA.
Negligible Very low importance and rarity. Local scale.	**Contamination**: 1) Human health. Undeveloped surplus land/no sensitive land use proposed. 2) Hydrology. No receptor identified within Study Area. 3) Hydrogeology. All of the following apply: • Unproductive Stratum (i.e., a non-aquifer). • Site is not located within an SPZ. • Abstractions (including private water supplies) not identified within 1km. **Minerals**: No mineral resource identified.

Magnitude of Impact

16.5.19 The criteria used to determine the magnitude of change/impact for ground conditions are set out in **Table 16.3**.

Table 16.3: Proposed Criteria for Classifying Magnitude of Impact

Magnitude	General Criteria
Large	**Contamination Adverse**: The historical and current land uses within the Order Limits (and where relevant migration pathways are present, within the Study Area) are considered to be such that there is potential for concentrations of contamination substantially in excess of the threshold criteria for the protection of human health[10] and the environment[11] to be widespread, and (in absence of any mitigation or remediation) that mobilisation or exposure during construction, operation or decommissioning could result in significant harm[12] or significant pollution[13] arising to a designated receptor. Remediation is likely to be required in the short term to prevent harm occurring. **Contamination Beneficial**: Substantial betterment of ground or groundwater quality/contamination conditions through remediation and/or mitigation which lowers the quantum of contamination present in the ground / groundwater / surface water relative to the baseline condition, or removal of existing or potential polluting discharge to groundwater, such that there is unlikely to be potential for concentrations of contamination substantially in excess of the threshold criteria for the protection of human health and the environment to be widespread, and (in absence of any mitigation or remediation) that mobilisation of contamination or exposure to contamination during construction, operation or decommissioning is unlikely to result in significant harm[12] or significant pollution[13] arising to a designated receptor.
	Minerals Resource/Peat Adverse: Loss of resource and/or quality and integrity of resource. Severe damage to key characteristics, features or elements. **Minerals Resource/Peat Beneficial**: Large scale or major improvement of resource quality, extensive restoration, major improvement of attribute quality.
Medium	**Contamination Adverse**: The historical and current land uses within the Order Limits (and where relevant migration pathways are present, within the Study Area) are considered to be such that there is potential for concentrations of contamination slightly in excess of the threshold criteria for the protection of human health and the environment to be widespread, and locally for substantially elevated concentrations to be present. In the absence of any mitigation or remediation, mobilisation or exposure to contamination during construction, operation or decommissioning could result in harm arising to a designated receptor. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild. Remediation of soil and/or groundwater is unlikely to be required, however control or mitigation measures may be required e.g. pathway breaks, excavation of hotspots etc. to reduce risks to human health or controlled waters, or to make the land suitable for its intended use. **Contamination Beneficial:** Moderate betterment of ground or groundwater quality/contamination conditions through remediation and/or mitigation such that there is unlikely to be potential for concentrations of contamination slightly in excess of the threshold criteria for the protection of human health and the environment to be widespread, and locally for substantially elevated concentrations to be present. Following

[10] E.g., for human health the Category 4 Screening Levels (C4SLs) (Ref 16-52) and Suitable 4 Use Levels (Ref 16-53).

[11] E.g., the Environmental Quality Standards, for the protection of aquatic ecology (Ref 16-54).

[12] Significant harm includes death, disease, serious injury, genetic mutation, birth defects or impairment of reproductive function. Other health effects may also constitute significant harm such as physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. Whether or not these would constitute significant harm would depend on the seriousness of harm including impact on health, quality of life and scale of impact.

[13] Significant pollution includes a) pollution equivalent to 'environmental damage' to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations, b) inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use, c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway or d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminant (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC).

Magnitude	General Criteria
	betterment, it is unlikely that in the absence of any mitigation or remediation, mobilisation of contamination or exposure to contamination during construction, operation or decommissioning could result in harm arising to a designated receptor.
	Minerals Resource/Peat Adverse: Loss of resource but not adversely affecting the integrity. Partial loss of or damage to key characteristics, features or elements. **Minerals Resource/Peat Beneficial**: Benefit to, or addition of, key characteristics, features or elements. Improvement of attribute quality.
Small	**Contamination Adverse**: The historical and current land uses within the Order Limits (and where relevant migration pathways are present, within the Study Area) are considered to be such that there is potential for concentrations of contamination in excess of the threshold criteria for the protection of human health and the environment to be locally present. In absence of any mitigation or remediation, mobilisation or exposure to contamination during construction, operation or decommissioning could result in harm arising to a designated receptor but it is likely that this harm, if realised, would at worst normally be mild. Remediation of soils and/or groundwater is unlikely to be required, and mitigation is likely to be provided by best-practice measures. **Contamination Beneficial**: Slight betterment of ground or groundwater quality/contamination conditions through remediation and/or mitigation which lowers the quantum of contamination present in the ground / groundwater / surface water relative to the baseline condition such that there is unlikely to be potential for concentrations of contamination in excess of the threshold criteria for the protection of human health and the environment to be locally present. Following betterment it is unlikely that, in absence of any mitigation or remediation, mobilisation of contamination or exposure to contamination during construction, operation or decommissioning could result in harm arising to a designated receptor.
	Minerals Resource/Peat Adverse: Some measurable change in attributes, quality or vulnerability. Minor loss of, or alteration to key characteristics, features or elements. **Minerals Resource/Peat Beneficial**: Minor benefit to or addition of key characteristics, features or elements. Some beneficial impact on attribute or reduced risk of negative impact occurring.
Very Small	**Contamination**: Contamination levels substantially below human health and environment assessment criteria and remediation is not required. No requirement for control measures to reduce risks to human health or to make land suitable for intended use. The historical and current land uses within the Order Limits (and where relevant migration pathways are present, within the Study Area) are considered to be such that there is only limited potential for concentrations of contamination slightly in excess of the threshold criteria for the protection of human health and the environment to be locally present. In absence of any mitigation or remediation, mobilisation or exposure to contamination during construction, operation or decommissioning is unlikely to result in harm arising to a designated receptor. If such harm were to arise it is unlikely to be severe. There is unlikely to be a requirement for control measures to reduce risks to human health and controlled waters, or to make the land suitable for intended use.
	Minerals Resource/Peat Adverse: Very minor loss or detrimental alteration to characteristics, features or elements. **Minerals Resource/Peat Beneficial**: Very minor benefit to or positive addition of characteristics, features or elements.
Negligible	No discernible change from baseline conditions. No discernible loss, alteration of characteristics, features or elements. No observable impact, neither positive nor negative.

Categorising Scale of Effect

16.5.20 The scale of effect that the Scheme may have on an impacted receptor will be influenced by a combination of the sensitivity of the identified receptor and the magnitude of impact.

16.5.21 The significance of effects are determined using the matrix in **Table 16.4** Proposed Matrix for Categorising Scale of Effect. This is supplemented by professional judgement, which where applicable is explained to give the rationale behind the values assigned.

Table 16.4: Proposed Matrix for Categorising Scale of Effect

Importance / Value / Sensitivity	Magnitude of Impact				
	Large	Medium	Small	Very Small	Negligible
Very High	Major	Major	Moderate	Minor	Minor / Negligible
High	Major	Moderate	Minor	Minor / Negligible	Negligible
Medium	Moderate	Minor	Minor / Negligible	Negligible	Negligible
Low	Minor	Minor/ Negligible	Negligible	Negligible	Negligible
Very Low	Minor/ Negligible	Negligible	Negligible	Negligible	Negligible

16.5.22 The nature of effects are defined as either: beneficial or adverse.

16.5.23 Effects of Major and Moderate significance are considered significant in EIA terms. Effects of Minor or Negligible significance are considered not significant in EIA terms.

16.6 Baseline Conditions

The Order Limits

16.6.1 The Scheme is located within the administrative areas of Norfolk County Council (NCC) and South Norfolk Council (SNC) who are the host authorities. A full description of the Order limits is provided in **ES: Chapter 3 The Order Limits [EN0110014/APP/6.1.3]**.

Existing Baseline

16.6.2 Baseline conditions have been gathered from the desk-based information presented in the **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** and **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]**. Additional information is presented on **ES: Figure 16.4 Diamicton Thickness [EN0110014/APP/6.2.16.4]**, which presents the thickness of the Diamicton in the vicinity of Order Limits, as evidenced by BGS archive exploratory holes.

16.6.3 **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** has been prepared following the guidance given in Land Contamination Risk Management (LCRM) (Ref 16-27) and presents the following:

- A preliminary investigation comprising a desk-based study of published and readily-available public information including historical OS maps and aerial photographs;
- A preliminary ground stability appraisal and initial identification of potential ground condition constraints; and
- A Preliminary Risk Assessment (Tier 1 PRA) which is a qualitative assessment of data to develop a CSM including the identification of potentially contaminative current and historical activities on-site (i.e., within the Order Limits) and off-site (i.e., within the Study Area) and source-pathway-receptor pollutant linkages.

Sources of Information

16.6.4 This Chapter is principally informed by the Phase 1 GCA, which was itself informed by the sources of information described in Section 16.5.2.

Geology

Published Geology – Superficial Deposits

16.6.5 The superficial deposits that are anticipated to be present within the Order Limits are shown on **ES: Figure 16.1 Superficial Geology [EN0110014/APP/6.2.16.1]** and summarised below. Further information on the anticipated superficial geology within the Order Limits and the Study Area is contained within **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**.

Table 16.5: Superficial Geology, as Recorded by the BGS

Stratum	Description	Present Within Sub-Sites / CRCs
Lowestoft Formation – Diamicton / Undifferentiated Happisburgh Glacigenic Formation (Clay and Silt)	The Lowestoft Formation of the Anglian stage glaciation includes a variable sequence of granular deposits (the Sand and Gravel) and cohesive material (the Diamicton, which is a pebbly chalky clay). In its unweathered state the cohesive material comprises typically bluish grey, variably sandy and silty clay, with abundant flint and chalk gravel. At surface the material may be decalcified, weathering to yellowish brown or brownish grey with a noticeable absence of chalk. The whole is generally stiff although it may contain or overlie other glacial materials which can be very much softer. Bands of sand and gravel may be found within or above the general sequence and can often be water bearing.	BESS, 1A, 1B, 1C, 1D, 2A, 2B, 2C, 3B, 4A, 4B, 5A, 5B, 6, 7A, 7C, 7D, 7E, 7F, 7G, 7H, 7I, 7J, JK, 7L, 8A, 8B, 9, 10A, 10B, 10C, 10D, 10E CRCs 1 to 14
Lowestoft Formation – Sand and Gravel	More substantial granular deposits are also present in the Lowestoft Formation. Although such materials are commonly associated with the Diamicton, they can be found separately as a result of deposition by glacial meltwater. Consequently, the sand and gravel may vary in grading according to the previous depositional setting. The materials derived from glacial deposits may have travelled long distances and therefore contain exotic material, however, the bulk has been found to comprise predominantly flint.	4A
Leet Hill Sand and Gravel Member	The BGS describe this stratum as *'stratified and channelled proximal glaciofluvial outwash deposits. Lithologically, the gravels are rich in flint and quartzose clasts, and contain erratics of northern provenance including Old Red Sandstone, basaltic porphyry, dolerite and Carboniferous limestone'*.	4A, 4B, 5A, 5B, 7B, 7C CRC6, CRC7, CRC8
Head	The BGS describe this stratum as 'gravel, sand and clay depending on upslope source and distance from source. Locally with lenses of silt, clay or peat and organic material'.	5A CRC4, CRC6, CRC8
Alluvium	The BGS describe this stratum as *'normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel'*.	7A CRC6, CRC7
Peat	The BGS describe this stratum as *'a partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps'*.	CRC7
River Terrace Deposits	The BGS describe this stratum as *'sand and gravel, locally with lenses of silt, clay or peat'*.	CRC6

16.6.6 The predominant superficial deposit within the Order Limits is the Lowestoft Formation – Diamicton, being encountered at the surface in all Sub-Sites except Sub-Site 7B where it is likely to be present but overlain by the Leet Hill Sand and Gravel Member.

16.6.7 **ES: Figure 16.4: Diamicton Thickness [EN0110014/APP/6.2.16.4]** presents the thicknesses of Diamicton recorded following a wider review of historical exploratory holes within the BGS archive. It does not include all exploratory holes within the BGS archive within the area shown on the plan,

but shows those where Diamicton can be credibly identified, and the full thickness confidently determined.

16.6.8 The Diamicton is typically thickest in the far south (BESS Site, Sub-Sites 1A, 1B, 1C, 1D 2A, 2B, 2C, CRCS 1, 2 and 3) and further north (Sub-Sites 8A, 8B, 9, CRC13) where thicknesses in excess of 20m and often in excess of 25m are recorded.

16.6.9 The thinnest Diamicton is recorded in the approximate centre of the Order Limits in the vicinity of the valley within which Hempnall Beck flows, where the thickness of Diamicton reduces (where present on BGS archive exploratory hole logs) to less than 10m (minimum identified thickness of 6m to the east of CRC7). The reduction in thickness in this part of the Order Limits is unsurprising given the presence of the valley. The Diamicton reduces in thickness towards the central valley, from the south and from the north.

Published Geology – Bedrock

16.6.10 The bedrock geology that is anticipated to be present within the Order Limits is shown on **ES: Figure 16.2: Bedrock Geology [EN0110014/APP/6.2.16.2]** and summarised in **Table 16.6** Bedrock Geology, as Recorded by the BGS.

Table 16.6: Bedrock Geology, as Recorded by the BGS

Stratum	Description
Crag Group – Sand and Gravel	The BGS describe the Crag Group as '*sands, gravels, silts and clays. The sands are characteristically dark green from glauconite but weather bright orange with haematite 'iron pans''*.
Norwich Crag Formation	The Norwich Crag Formation is a localised member of the Crag Group and is described by the BGS as '*a widespread sheet of well sorted, fine- to medium-grained micaceous, glauconitic, locally shelly sands*'.
Undifferentiated chalk deposits of the Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation	The White Chalk Subgroup is a carbonate rock made up from the debris of microfossil skeletal material laid down during the Cretaceous Period. It contains beds of flint nodules, which developed during early diagenesis. It is also very susceptible to freeze-thaw action and its upper levels may show the evidence of severe disruption and fracturing as a result of the climatic changes in the geological past. Besides an increase in the frequency of fracturing this disruption also allowed an increase in the moisture content producing a softer material, generally referred to as 'putty chalk'. In the disrupted state the chalk was subject to remoulding and transport by hillslope processes and may have produced a mantle of material very different to the underlying intact material. Weathering effects can manifest in the form of dissolution features where the flow of water has historically been concentrated in certain areas, for example, along joints. Such features are not uncommon in East Anglia and are often present as distinct solution pipes partially or wholly infilled with the unconsolidated superficial deposits. Where only partially infilled, meta-stable cavities may be present. The hydrogeological behaviour of the Chalk is strongly influenced by weathering, which may extend to depths of several metres.

16.6.11 The Chalk deposits are present immediately beneath the superficial deposits in Sub-Sites 1A (all except south-eastern corner), 1B (northern half only), 1D, 2B, 2C, 4A, 4B, 7A, 7C (western quarter only) and CRCs 2 (north-

eastern third only), 3 (northern half only), 4 (majority of CRC except south-eastern and north-eastern corners) and 11. Across the remainder of Order Limits, the Crag Group is present immediately beneath the Superficial Deposits. The Crag Group overlies the Chalk and therefore the Chalk is present at depth in areas where the Crag Group is present.

16.6.12 Details relating to the geological context within individual Sub-Sites and CRC (where this can be evidenced from records within the BGSs archive of exploratory hole records) are presented within Section 3 of **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**.

Geodiversity

16.6.13 Geodiversity can be defined as '*The natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landforms, topography, physical processes), soil and hydrological features. It includes their assemblages, structures, systems and contributions to landscapes*' (Ref 16-28). These protected sites include geological SSSIs, National Nature Reserves (NNRs) and Local Geology sites.

16.6.14 Geodiversity covers SSSIs that are designated for geological purposes, which are statutory designated sites. Geo-conservation also covers non-statutory designated sites such as Local Geological Sites (LGS), Regionally Important Geological Sites (RIGS) and County Geodiversity Sites (CGS).

16.6.15 The Order Limits are not located within 250m of any geologically designated SSSI.

16.6.16 The locations of CGS (equivalent in Norfolk to RIGS) were obtained from Norfolk County Council (Ref 16-2) on 11th November 2025. A review of this information indicates that the Order Limits are not located within 1km of a CGS.

Hydrogeology

Aquifer Designations

16.6.17 The aquifer designations, as classified by the EA for the various strata underlying the Order Limits are provided in **Table 16.7** Summary of Aquifer Designations. These are consistent across the whole Order Limits wherever these strata are present.

Table 16.7: Summary of Aquifer Designations

Stratum	Description	Present Within Sub-Sites / CRC
Superficial Deposits		
Lowestoft Formation – Diamicton	Secondary Undifferentiated Aquifer.	BESS, 1A, 1B, 1C, 1D, 2A, 2B, 2C, 3B, 4A, 4B, 5A, 6, 7A,

Stratum	Description	Present Within Sub-Sites / CRC
including undifferentiated deposits of the Happisburgh Glacigenic Formation	This category is assigned by the EA where it is '*not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type. These have only a minor value'.*	7C, 7D, 7E, 7F, 7G, 7H. 7I, 7J, JK, 7L, 8A, 8B, 9, 10A, 10B, 10C, 10D, 10E. CRCs 1 to 14.
Lowestoft Formation – Sand and Gravel	Secondary A Aquifer. Defined by the EA as '*Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers*'.	4A.
Leet Hill Sand and Gravel Member	Secondary A Aquifer.	4B, 5A, 5B, 7B, 7C. CRC6, CRC7, CRC8.
Head	Secondary Undifferentiated Aquifer.	5A. CRC4, CRC6, CRC8
Alluvium	Secondary A Aquifer.	7A. CRC6, CRC7.
Peat	Unproductive Stratum (non-aquifer). Defined by the EA as 'largely unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them'.	CRC7.
River Terrace Deposits	Secondary A Aquifer.	CRC6.
Bedrock Geology		
Crag Group – Sand and Gravel	Secondary Undifferentiated Aquifer. This category is assigned by the EA where it is 'not possible to attribute either category A or B to a rock type. In general, these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type. These have only a minor value'.	All
Norwich Crag Formation		
Chalk		

Groundwater Abstractions

16.6.18 A detailed assessment of the PWS either within the Order Limits or the Study Area is presented in Section 3.4 of **ES**: **Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. Information relating to groundwater abstractions and private water supplies has been sourced from:

- An information request to South Norfolk and Broadland District Council, with a spreadsheet of PWS data provided by the Council in April 2025. During further consultation with SNC in November 2025 SNC confirmed that the data provided in April 2025 was unchanged.
- The BGS' 'Water Wells' dataset, as presented on the BGS' GeoIndex viewer.

- A review of BGS archive borehole logs (as presented on the BGS' GeoIndex viewer) for potential water wells.

- EA data relating to permitted abstractions.

16.6.19 It is noted that there is possible duplication between datasets, with the locations of private water supplies provided by SNC often being close to the locations of water wells within the BGS dataset. Where potential duplication occurs both points have been taken forwards for assessment. If only one of the potentially duplicated points has information such as well depth or aquifer from which water is abstracted, then this is assumed to apply to both points.

16.6.20 A figure showing the potential water wells, permitted and private water supplies located within the search buffers is presented as **ES: Figure 16.5 Locations of Private Water Supplies [EN0110014/APP/6.2.16.5]**. The details of these supplies are presented in Tables 3.10 and 3.11 of **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**.

16.6.21 The assessment presented within the Phase 1 GCA identifies:

- The known[14] potentially active PWS or permitted groundwater abstractions and identifies the likely groundwater source stratum.

- If any of the potentially active PWS or permitted groundwater abstractions are located within either 1km (for a PWS within 1km of the BESS, National Grid Substation, and Project Substations) or 250m (for a PWS within 250m of any part of the Order Limits that will be used for PV arrays or cable route) of the Order Limits.

- If there are any credible pathways (at baseline, or in any of the phases) via which contamination (from a SPC, were it to be present) could migrate to the source strata.

- If there are any credible risks identified to any of the PWS.

16.6.22 The findings of this assessment are:

- For the known PWS or permitted abstractions within the 1km Study Area around the BESS, National Grid Substation, and Project Substations:

  - 29No. PWS or permitted abstractions have been identified. Of these, all appear to (or on the basis of the available geological evidence are assumed to) draw water from the chalk at depth beneath the overlying Diamicton.

[14] As recorded either in the BGS' Water Wells dataset, the EA's database of permitted abstractions, or within the data received from the LPA in relation to PWS.

- Of these, 19No. are potentially still active. None of these are located within 1km of a SPC within the Order Limits from which contamination could be mobilised by the construction of the Scheme.

- Risks to the PWS within 1km of the BESS, National Grid Substation, or Project Substations from mobilisation of existing contamination during construction or decommissioning have not been identified.

- For the known PWS or permitted abstractions within the 250m Study Area for land to be used for PV arrays or for the cable route:

  - 53No. PWS or permitted abstractions have been identified, of which 44No. are potentially still active.

  - The majority of the PWS are not located within 250m of a SPC within the Order Limits. In absence of a credible source of contamination, risks to these supplies from mobilisation of existing contamination have not been identified.

  - Risks to the PWS within the 250m Study Area from mobilisation of existing contamination during construction or decommissioning have not been identified.

16.6.23 On the basis of the assessment undertaken, using the information provided by the EA, BGS and LPA, credible risks to PWS have not been identified.

Groundwater Source Protection Zones and Drinking Water Safeguard Zones (Groundwater)

16.6.24 The majority of the Order Limits are located within a groundwater SPZ 3, with the exception of the northern half of Sub-Sites 1B and 2B, Sub-Sites 1D, 2C, 4A, 4B, 5A, 5B, 7A, the western half of Sub-Sites 7B and 10E, the majority of CRC4, limited parts of CRC6, CRC11 and the northern half of CRC14.

16.6.25 A groundwater SPZ 2 is located approximately 1.0km south-west of the National Grid Substation, 1.2km southwest of the Project Substation in Sub-Site 1B, and approximately 740m west of the Project Substation in the BESS Site. This SPZ appears to relate to a groundwater abstraction at Simpsons Malthouses, some 660m to the southwest of the Order Limits.

16.6.26 A groundwater SPZ 3 is located approximately 880m north-east of the Project Substation in Sub-Site 5A. The Project Substations in Sub-Sites 7F and 10C are both located within this SPZ 3. This SPZ extends over a large area (including large areas of the Order Limits to the north-east of Site 5) and appears to relate to multiple groundwater abstractions, noting that the nearest SPZ 2 is approximately 5.1 km to the north of the Project Substation in Sub-Site 7F (the nearest of the substations to the SPZ 2).

16.6.27 The Order Limits are not located within a groundwater Drinking Water Safeguard Zone.

Hydrology

BESS and Project Substations

16.6.28 There are no statutory Main Rivers located within 250m of the BESS, National Grid Substation, and the Project Substations. Contemporary OS mapping records a series of field drains and occasional small ponds within 100m of the National Grid Substation and the Project Substation in Sub-Site 1B, and along the southern and eastern boundaries of the BESS Site. These ditches appear to connect to a further series of ditches that discharge to the Starston Brook approximately 1.0km to the south of the BESS. The EA's Catchment Data Explorer indicates that the National Grid Substation and the Project Substations in the BESS Site and Sub-Site 1B are located within the catchment of the 'Starston Brook Water Body' (Ref 16-29). During the 2019 assessment cycle this water body received a WFD classification of Moderate for ecological quality and Fail for chemical quality. During the 2022 assessment cycle the Moderate ecological quality classification was maintained and the chemical quality '*does not require assessment*'.

16.6.29 Contemporary OS mapping records a ditch/stream approximately 220m west of the Project Substation in Sub-Site 5A and a ditch/stream within Sub-Site 4B. Flow within these ditches is likely to be to the north towards Hempnall Beck (a statutory Main River), approximately 720m to the north of the Project Substation in Sub-Site 5A and approximately 700m north of the Project substation in Sub-Site 4B. The EA's Catchment Data Explorer indicates that both of these substations are located within the catchment of the 'Hempnall Beck Water Body' (Ref 16-30). During the 2019 assessment cycle this water body received a WFD classification of Poor for ecological quality and Fail for chemical quality. During the 2022 assessment cycle the Poor ecological quality classification was maintained and the chemical quality '*does not require assessment*'.

16.6.30 Contemporary OS mapping records only occasional small ponds within 100m of the Project Substation in Sub-Site 7F. The EA's Catchment Data Explorer indicates that the Project Substation in Sub-Site 7F 2 is located within the catchment of the "Tas (Tasburgh to R. Yare) Water Body" (Ref 16-32). During the 2019 assessment cycle this water body received a WFD classification of Moderate for ecological quality and Fail for chemical quality. During the 2022 assessment cycle the Moderate ecological quality classification was maintained and the chemical quality '*does not require assessment*'.

16.6.31 Contemporary OS mapping records a series of field drains and occasional small ponds within 100m of the Project Substation in Sub-Site 10C. These ditches are assumed to convey water towards the Broome Beck approximately 1.5km to the south. The EA's Catchment Data Explorer

indicates that the Project Substation in Sub-Site 10C is located within the catchment of the "Broome Beck Water Body (Ref 16-33). During the 2019 assessment cycle this water body received a WFD classification of Moderate for ecological quality and Fail for chemical quality. During the 2022 assessment cycle the Moderate ecological quality classification was maintained and the chemical quality '*does not require assessment*'.

16.6.32 There are no recorded permitted surface water abstractions within 1km of the BESS, National Grid Substation, or any of the Project Substations.

16.6.33 DEFRA's MAGIC viewer indicates that the BESS and the Project Substations within the BESS Site and Sub-Site 1B and 10C are located within a surface water Drinking Water Safeguard Zone (DWSZ) – ref: SWSGZ1020 for substances Nitrate, Clopyralid, Metaldehyde and Propyzamide (the last three are pesticides). These substances are related to farming uses and are therefore not relevant to the proposed electrical infrastructure end-use of these areas. The remaining Project Substations are shown to be not located within a surface water DWSZ.

PV Arrays and Cable Route

16.6.34 None of the Sub-Sites are located within 250m of a statutory Main River with the exception of:

- The northern tip of Sub-Site 4A, the northern-most end of Sub-Site 5A, the southern-most end of Sub-Site 7A, all of Sub-Site 7B, the southern extent of Sub-Site 7C, and CRC7, in the centre of the Order Limits which are in close proximity to / crossed by Hempnall Beck.

- Sub-sites 8A and 8B which are located adjacent to a tributary of the River Tas.

16.6.35 Multiple field drains and streams are recorded within 100m of the Sub-Sites and CRCs across the Order Limits.

16.6.36 Other smaller ordinary watercourses/field boundary ditches are present within or within the Study Area of several of the Sub-Sites, see Section 3.5 of **Appendix 16.1: Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** for further details.

16.6.37 There are no recorded licenced surface water abstractions located within 250m of Sub-Sites to be used for PV arrays or cable route.

16.6.38 Sub-Sites 1A, 1B, 1C, 1D, 2A, 2B, 2C, the southern edges of Sub-Sites 7J, K and L, 10A, 10B, 10C, 10D, CRC2, CRC3, the southern half of CRC4, the eastern half of CRC8 and CRC9 are located within a surface water Drinking Water Safeguard Zone – ref: SWSGZ1020 for substances Nitrate, Clopyralid, Metaldehyde and Propyzamide (pesticides). These substances are related to farming uses and are therefore not relevant to the proposed electrical infrastructure end-use of the Sub-Sites and CRCs.

16.6.39 The Sub-Sites and CRC cross several catchments, as detailed in **Table 16.8** Summary of Surface Water Body Information – Sub-Sites and CRC.

Table 16.8: Summary of Surface Water Body Information – Sub-Sites and CRC

Water Body Name / Reference	Description
Starston Brook (Ref 16-29) (Sub-Sites 1A, 1B, 1C, 1D, 2A, 2B, 2C, CRCs 1, 2 and 3, southern quarter of CRC4)	2019 WFD classification of Moderate for Ecological quality and Fail for Chemical quality (due to the presence of priority hazardous substance Polybrominated Diphenyl Ethers). 2022 WFD classification of Moderate for ecological quality and 'Does not require assessment' for chemical quality.
Tas (Head to Tasburgh) (Ref 16-31) (Northern edges of Sub-Sites 1B and 1D, Western edge of Sub-Site 4A, one quarter of CRC4)	
Tas (Tasburgh to R. Yare) (Ref 16-32) (northern half of Sub-Site 7C, 7D, 7E, 7F, northern edges of 7G and I, majority of 7J, K and L, 8A, 8B, half of CRC10, CRC12 and CRC13)	
Broome Beck (Ref 16-33) (Sub-Sites 10A, 10B, 10C, 10D, southern edges of 7K and 7L, eastern half of CRC8, CRC9)	
Hempnall Beck (Ref 16-30) (Remainder of Sub-Site 4A, Sub-Sites 3B, 4B, 5A, 5B, 6, 7A, 7B, southern half of 7C, 7G, 7H, majority of Sub-Site 7I, southern edge of Sub-Site 7J, remainder of CRC4, CRC6, CRC7, western half of CRC8, CRC11)	2019 WFD classification of Poor for Ecological quality and Fail for Chemical quality (due to the presence of priority hazardous substance Polybrominated Diphenyl Ethers). 2022 WFD classification of Poor for ecological quality and 'Does not require assessment' for chemical quality.
Chet (Ref 16-34) (Sub-Sites 9, 10E and majority of CRC14)	

Potential Ground Conditions Hazards

Potentially Contaminative Land Uses

16.6.40 The majority of the Order Limits and Study Area are indicated to have remained as 'undeveloped' agricultural land since the earliest historical mapping reviewed, dating from the 1880s. Occasional farm buildings are present in the surrounding area. In these areas it is considered that there is a very low risk of potential sources of significant existing contamination and therefore they are not considered further in this assessment.

16.6.41 There are discrete areas within the Study Area that have a history of potentially contaminative land use or where the current land use is potentially contaminative, i.e., are a Source of Potential Contamination (SPC). These SPCs are described in the table below.

Table 16.9: Sources of Potential Contamination

SPC Reference	Description	Location	Potential Contaminants of Concern (COC)
SPCs Within the Order Limits			
1	Former RAF Hardwick - A WW2-era airfield. Elements of the airfield within Sub-Site 3B included runways, aircraft hardstands, ammunition and bomb stores and the airfield perimeter road. By the 1970s the airfield structures were demolished and the land was returned to agricultural use.[1]	3B	Petroleum hydrocarbons, de-icers (e.g., phenols and glycols), metals, asbestos, PFAS[3]
2	Former RAF Seething - A WW2-era airfield. Elements of the airfield within these Sub-Sites included runways, aircraft hardstands, ammunition and bomb stores and the airfield perimeter road. By the 1970s the airfield structures were demolished and the land was returned to agricultural use.[1]	10A, 10B, 10C, 10D, 10E, CRC14	Petroleum hydrocarbons, de-icers (e.g., phenols and glycols), metals, asbestos, PFAS[3]
3	Market Lane Pit. Former pit / quarry (area of approximately 0.04ha) in the north-western corner of Sub-Site 8B. First recorded on mapping dated 1881 and is last recorded in the 1970s. Contemporary LIDAR imagery indicates only a small depression in the area of the former pit. Not recorded by the EA as a landfill. Any limited infill is now >50 years old.	8B	Landfill gases (methane, carbon dioxide, hydrogen sulphide), metals and metalloids, petroleum hydrocarbons, Polycyclic Aromatic Hydrocarbons (PAHs), asbestos, inorganic compounds e.g. cyanides, sulphates, chloride etc.
4	Refuse Tip. Mapping dated 1883 shows a gravel pit extending approximately 30m into Sub-Site 4B, with a further extension by the mid-1940s. Mapping dated 1976 records the pit as a refuse tip.	4B	Landfill gases (methane, carbon dioxide, hydrogen sulphide), metals and metalloids, petroleum hydrocarbons, Polycyclic Aromatic Hydrocarbons (PAHs), asbestos, inorganic compounds e.g. cyanides, sulphates, chloride etc.
SPCs Within the Study Area			
1	Former RAF Hardwick - A WW2-era airfield. WW2. Elements of the airfield within the Order Limits included runways, aircraft hardstands and the airfield perimeter road. By the 1970s the airfield structures within the Order Limits were demolished and the land was returned to agricultural use.[1]	Immediately south of Sub-Site 3B	Petroleum hydrocarbons, de-icers (e.g., phenols and glycols), metals, asbestos, PFAS[3]
2	Former RAF Seething - A WW2-era airfield. Elements of the airfield within the Order Limits included runways, aircraft hardstands and the airfield perimeter road. By the 1970s the airfield	Immediately east of Sub-Sites 10B, 10C, 10D and 10E, and CRC14	Petroleum hydrocarbons, de-icers (e.g., phenols and glycols), metals, asbestos, PFAS[3]

SPC Reference	Description	Location	Potential Contaminants of Concern (COC)
	structures were demolished and the land was returned to agricultural use.[1]		
5	Landfill – 'Off West side of Shelton Airfield Disused'. Indicated to have been operated between 1968 and 1975 and received inert, commercial and liquid sludge wastes.	Approximately 160m south of Sub-Site 3B	Landfill gases (methane, carbon dioxide, hydrogen sulphide)
6	Sewage Works - Mapping dated 1951 records two tanks. By 1959 further tanks, filter beds, drying beds and a pump house are shown immediately east of CRC7, with this area labelled on historical mapping as 'sewage works'. Contemporary historical aerial imagery shows the sewage works to still be present. A pollution incident involving the release of firefighting run-off appears to have occurred at the sewage works in 2002.	Approximately 180m east of CRC7	Metals and metalloids, petroleum hydrocarbons, asbestos, inorganic compounds, pathogens, PFAS, gases from organic matter degradation
7	Landfill - 'Off B1135'. Indicated to have been operated between 1982 and 1990 and received domestic and commercial wastes. The landfill is indicated to benefit from landfill gas control measures.	Approximately 100m north-west of Sub-Site 5A	Landfill gases (methane, carbon dioxide, hydrogen sulphide)
8	Vehicle Servicing and Repair Garage – ES Motorsport.[2]	Immediately north of Sub-Site 5A	Petroleum hydrocarbons, PAHs, VOCs and SVOCs

Notes:

1. Any contamination associated with the historical airfield use is considered likely to be 1) limited, given that the airfield infrastructure within the Order Limits was limited to areas of runway, perimeter road and hardstands, with the technical site, hangars, fuel stores at considerable distance from the Order Limits, and 2) likely to be dispersed following at least fifty years of agricultural use.
2. This area is underlain by the very low permeability Diamicton of the Lowestoft Formation. This hazard is therefore limited to localised spills and losses of fuels which may have flowed at surface into the Order Limits.
3. It is recognised that PFAS contamination is commonly associated with airfields due to firefighting (use and training). PFAS-containing aqueous film forming foams (AFFF) firefighting foams (termed fluorosurfactants) have been used for the extinguishment of flammable liquid fires since 1962 . By 1946, RAF Seething had closed and the majority of the airfield reverted to agricultural use. In 1962, RAF Hardwick closed, and the main airfield buildings and hangars were demolished. Some of the smaller buildings remain extant and are used by commercial businesses'. Whilst PFAS hazards associated with the historical airfields have not been eliminated, given that the airfields were either no longer in use, or were demolished before the introduction of PFAS-containing AFFFs, PFAS hazards associated with the airfields are considered unlikely.

Unexploded Ordnance (UXO)

16.6.42 A UXO Desk Study and Constraints Assessment (Ref 16-35) is included within **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. UXO may be present within the Order Limits both because of the use and storage e.g., within the former military airfields,

and as a result of military activity during the First and Second World Wars. In the case of the latter, UXO presence may not be limited to only the former airfields but could be present in other areas of the Order Limits, e.g., as a result of wartime bombing or aircraft crashes.

16.6.43 A plan showing zoned areas of UXO hazard constraint level within the Order Limits is provided alongside the UXO Desk Study and Constraints Assessment.

16.6.44 Moderate hazard constraint levels are shown to be present in Sub-Sites 7G and 7H and CRC8. These areas are indicated to be associated with a bombing decoy.

16.6.45 High hazard constraint levels are shown in CRC14, Sub-Site 3B and Sub-Sites 10B to 10E. These areas are indicated to be associated with the former airfields RAF Seething and RAF Hardwick.

Radon

16.6.46 Recommendations regarding radon protection measures would apply only to occupied buildings and therefore the assessment of potential radon hazards is focussed on the BESS, National Grid Substation, and the Project Substations.

16.6.47 At the locations of the BESS, National Grid Substation, and the Project Substations, and in the areas surrounding these parts of the Order Limits, less than 1% of homes exceed the UK Health Security Agency (UKHSA) radon action level (Ref 16-36) of 200 Bq/m^3. Radon is not identified as a potential hazard requiring mitigation.

Minerals

16.6.48 Information relating to minerals resources is provided within **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]** and summarised below.

16.6.49 The Order Limits lies within the area covered by the Norfolk MWLP (Ref 16-37). The MWLP was informed by a BGS report (Ref 16-38), which includes the Mineral Resource Map for Norfolk.

16.6.50 With regard to safeguarding of minerals the MWLP (in Section MP1.22) states that '*Clay and chalk are also extracted in Norfolk. However, the resource for these minerals is considered to be abundant in Norfolk relative to the demand*' and (Section MP1.23) '*there is no national policy requirement to maintain a landbank for clay or chalk and therefore it is considered that there is no need to allocate additional sites for these minerals over the plan period*'. In relation to peat, the MWLP (Section MP1.24) '*the NPPF states that Local Plans should not identify new sites or extensions to existing sites*

for peat extraction'[15]. Therefore (and as per Section MP1.1 of the WMLP) only sand and gravel, silica sand and carstone resources are safeguarded.

16.6.51 The Leziate Member and the Carstone Formation occur only in the west of Norfolk, far from the Order Limits, and are therefore not considered further in this assessment.

16.6.52 The Norfolk Mineral Resources Map identifies that the Order Limits are underlain by potential sand and gravel resources associated with the following superficial strata:

- Alluvium;
- River Terrace Deposits;
- Leet Hill Sand and Gravel Member; and
- Lowestoft Formation – Sand and Gravel.

16.6.53 The Norfolk Mineral Resources Map indicates that the Leet Hill Sand and Gravel Member has historically been extracted in the vicinity of the Order Limits. **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]** shows the locations of these now closed quarries. Historical aerial imagery presented within Google Earth shows these quarries to be inactive and either flooded to form lakes or restored to agricultural or other uses before the earliest image date of 1999.

16.6.54 The Policies Maps of the MWLP (Ref 16-39) show the following:

- The Mineral Safeguarding Areas for sand and gravel within the Order Limits and the surrounding area coincide exactly with the mapped locations of the four geological strata identified above.
- There are no Safeguarded Existing Mineral Extraction or Existing Mineral Infrastructure sites, or consultation areas for these in or within 250m of the Order Limits.
- There are no Mineral Site Allocations or consultation areas or Areas of Search for these in or within 250m of the Order Limits.

16.6.55 The viability of the four formations of potential sand and gravel mineral deposits (Lowestoft Sand and Gravel, Leet Hill Sand and Gravel, Sub-alluvial Gravels and River Terrace Deposits) present on or near the Order Limits are as follows:

[15] Mirrored in NPPF Paragraph 223, part a) which states '*Planning policies should… provide for the extraction of mineral resources of local and national importance, but not identify new sites or extensions to existing sites for peat extraction*'.

- River Terrace Deposits. This is mapped as present over a very small portion of CRC6 only and as such are considered to be not economically viable to extract;

- Sub-alluvial Gravels. The Alluvium is mapped as being present only in narrow strips in valley bottom associated with watercourses in CRC6 and CRC7 only. The gravels present at the base of the Alluvium are not considered to be economically viable or practical to extract because:

  - Mineral extraction from the Alluvium would be constrained by the presence of the watercourses which would either need costly diversion (for which permission would be very unlikely to obtain) or buffers around them;

  - There is unlikely to be sufficient mineral present given the small surface area of Alluvium present;

  - The likely presence of clay and silt overburden over the mineral;

  - Working the mineral would have to be done in the wet which is unfavourable.

- Lowestoft Sand and Gravel. The deposit is mapped as present at the north-western end of Sub-Site 4A only and extraction of the mineral would be constrained by the presence of the road that borders this Sub-Site for which a typically 50m buffer would be needed. This deposit is therefore considered unlikely to be economically viable or practical to extract; and

- Leet Hill Sand and Gravel. This deposit is present more widely within the approximate centre-region of the Order Limits, but it is considered unlikely to be economically viable or practical to extract. This is because it is present over small areas of individual parcels and extraction would be constrained over each of the land parcels where it is present by the presence of roads and land boundaries, for which a 50m buffer would typically be needed, and residential properties for which typically a 100m buffer would be needed.

16.6.56 The presence of the Solar PV modules and CRC will sterilise minerals within parts of the Order Limits, noting that the sterilisation is temporary in nature. Furthermore, the minerals within the Order Limits are not considered to be economically viable or practical to extract due to a combination of the mineral resource being limited or constrained by the presence of nearby roads, watercourses and residential properties.

Future Baseline

16.6.57 This section considers changes to the baseline conditions, described above, as far as can be established, that might occur in the absence of the Scheme

coming forward during the time period over which the Scheme would be in place. The future baseline scenarios are set out in **ES: Chapter 2 EIA Methodology [EN0110014/APP/6.1.2]**.

16.6.58 In the absence of the Scheme, the future baseline will be expected to remain consistent with that described in the baseline section, assuming that no new sources of contamination are introduced within the Order Limits.

Receptor Sensitivity

16.6.59 Based on the criteria set out in **Table 16.3**, the sensitivities of identified receptors are described below.

Human Health

16.6.60 The identified human health receptors are set out in **Table 16.10** Summary of Human Health Receptors.

Table 16.10: Summary of Human Health Receptors

Receptor	Comment	Assigned Sensitivity
Human Health – Within the Order Limits (i.e., 'on-Site')	Construction and Decommissioning – Ground workers constructing or decommissioning the Scheme. Short-term and transient use of public footpaths by members of the public. Operation – Workers / maintenance staff at Project Substations National Grid Substation, and BESS, short-term and transient use of public footpaths by members of the public.	High
Human Health – Within the Study Area (i.e., 'off-Site')	As above for construction and operation. Residents of adjacent properties.	Very High

Hydrology

16.6.61 As described within **ES**: **Chapter 9 Water Environment [EN0110014/APP/6.1.9]**, the receptors within the Study Area that could be affected by the construction, operation and maintenance and decommissioning of the Scheme in relation to water quality are provided in **Table 16.11**.

Table 16.11: Summary of Hydrology Receptors and Assigned Sensitivity

Water Body	Assigned Sensitivity
Starston Brook	Medium
River Tas (Tarburgh to River Yare, and Head to Tasburgh)	Medium
Broome Beck	Medium
Hempnall Beck	Low
Chet	Low

Water Body	Assigned Sensitivity
Ordinary watercourses/field boundary ditches	Very Low

Hydrogeology

16.6.62 The assessment of hydrogeology (i.e., groundwater) receptors relates in part to the aquifer classification, the presence of groundwater SPZs, and the presence of abstractions including Private Water Supplies (PWS).

A Note on Private Water Supplies

16.6.63 A detailed assessment of the PWS either within the Order Limits or the Study Area is presented in Section 3.4 of **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. This is discussed further in **Section 16.6** (Baseline Conditions) of this chapter.

16.6.64 On the basis of the assessment undertaken, using the information provided by the EA, BGS and LPA, credible risks to PWS have not been identified. The Conceptual Site Model is such that there are no credible contaminant linkages between the PWS and permitted abstractions either within the Order Limits or the Study Area.

16.6.65 The identified hydrogeology receptors and their sensitivity are set out in **Table 16.12**.

Table 16.12: Summary of Hydrogeology Receptors and Assigned Sensitivity

Stratum	Aquifer Classification	SPZ Present	Assigned Sensitivity
Superficial Deposits			
Lowestoft Formation – Diamicton, including the Happisburgh Glacigenic Formation and Lowestoft Formation (Undifferentiated – Clay and Silt)	Secondary Undifferentiated Aquifer	No[16]	Low
Lowestoft Formation – Sand and Gravel	Secondary A Aquifer	No	Medium
Leet Hill Sand and Gravel Member	Secondary A Aquifer	Yes – SPZ3	Medium
Head	Secondary Undifferentiated Aquifer	No[16]	Low
Alluvium	Secondary A Aquifer	Yes – SPZ3	Medium
Peat	Unproductive Stratum (non-aquifer)	No[17]	Low
River Terrace Deposits	Secondary A Aquifer	Yes – SPZ3	Medium
Bedrock Geology			

[16] It is recognised that there is a SPZ3 in areas underlain at the surface by Diamicton, however it is considered that this would not apply to the predominantly cohesive Diamicton or Head.

[17] Whilst the very limited deposits of Peat within CRC7 are located on the fringe of a SPZ3, it is considered that the limited volume and permeability of these deposits would be incapable of providing a groundwater supply and as such the SPZ is not considered relevant to the Peat.

Stratum	Aquifer Classification	SPZ Present	Assigned Sensitivity
Crag Group – Sand and Gravel / Norwich Crag Formation	Principal Aquifer	Yes – SPZ3	Very High
Chalk	Principal Aquifer	Yes – SPZ3	Very High

Minerals Resources

16.6.66 The identified minerals resources are limited to the safeguarded sand and gravel mineral resources of the Lowestoft Formation – Sand and Gravel, Leet Hill Sand and Gravel Member, Alluvium and River Terrace Deposits within the Order Limits, as shown on the Policy Map that accompanies the Norfolk Minerals and Waste Local Plan (MWLP) (Ref 16-40). These receptors are assigned a sensitivity of Medium.

Peat Soils

16.6.67 Only a very limited area of peat soils has been identified within the Order Limits, within CRC7. The area of peat deposits is coincident with the area of the Fritton Grange Meadows County Wildlife Site. The peat soils within the Order Limits are therefore assigned a sensitivity classification of Very High.

16.7 Embedded Mitigation

16.7.1 Likely environmental effects have been or will be avoided, minimised, mitigated or reduced through design measures and/or management of the Scheme, as outlined in this section.

Embedded Construction Phase Mitigation

16.7.2 The following embedded mitigation measures have been incorporated into the Scheme's design for the construction phase:

- Layout optimisation of the Scheme to avoid sensitive features or receptors, as far as is practicable, such as historical landfill sites and other identified sources of potential contamination (detailed design informed by ground investigation);
- Layout optimisation of the Scheme to locate structures away from areas of potential land instability hazards, as far as is practicable (detailed design informed by ground investigation);
- The **Outline CEMP [EN0110014/APP/7.1]** outlines how the construction of the Scheme will avoid, minimise or mitigate effects on the environment and surrounding area. It will include measures such as:
  - Intrusive ground investigations and assessment will be undertaken prior to construction. The results of the ground investigation will be used to inform the detailed design of the Scheme.

- The inclusion of the UXO mitigation measures recommended by the UXO Desk Study and Constraints Assessment in **ES: Appendix 16.1 - Phase 1 Ground Conditions Assessment [EN0110014/ APP/6.3.16.1**]. These comprise a detailed UXO desk study (to be procured post-consent prior to construction) to confirm the UXO hazard level. Where a potential UXO hazard is identified by the detailed UXO desk study, the detailed study will include further recommended mitigation measures (e.g., non-intrusive surveys to further delineate potential UXO hazards, and investigation and removal of targets identified by the non-intrusive survey) for the intended types of development and anticipated working practices and could also include non-intrusive surveys;

- A Foundation Works Risk Assessment (FWRA) will be undertaken post-consent for any structures requiring deep foundations and/or piling. The FWRA(s) will be undertaken post-consent and will be informed by the ground investigation; and

- Where trenchless crossings interact with Principal or Secondary A aquifers or pass beneath surface watercourses or sensitive ecological receptors, a Hydrogeological Risk Assessment will be undertaken, if required, post-consent to assess the specific risks to groundwater and groundwater receptors (including the risk of breakout of drilling fluids, where appropriate) and identify any additional mitigation or remediation that may be required. The nature and scope of any mitigation or remediation will be agreed with the EA and other stakeholders, as appropriate.

- The Construction (Design and Management) Regulations 2015 (Ref 16-41) (CDM) regulate the health, safety and welfare of construction projects and will apply to the Scheme. A Principal Designer and a Principal Contractor (PC) will be appointed to plan, manage, monitor, and coordinate health and safety during the pre-construction and construction phases, respectively. The PC will have responsibility for ensuring legislative compliance and obtaining all permits/licenses as required. The CDM Regulations require a pre-construction information pack (PCIP) to be provided by the Applicant (the ‘Client’ under CDM) or by the Principal Designer if the Client delegates this duty. The PCIP contains all information that is held or is readily available and will be used by the PC to prepare construction and decommissioning phase risk assessments and method statements. The risk assessments will be informed by the findings of ground investigations undertaken within the Order Limits;

- Occupational health and safety measures e.g. Personal Protective Equipment (PPE), and statutory health and safety compliance (e.g. compliance with the Confined Spaces Regulations, 1997, in relation to ground gas from working in confined spaces or trenches) will minimise the risks associated with potential contamination;

- Appropriate training of construction and maintenance workers in the handling and use of potentially hazardous substances and the associated risks;

- The control of earthworks or materials movement (including any re-use of materials) will only be undertaken in accordance with appropriate Environmental Permits, exemptions, or the CL:AIRE The definition of Waste: The development industry Code of Practice (Ref 16-42);

- Any temporary dewatering activities during construction will be undertaken in accordance with EA guidance (Ref 16-43; Ref 16-44; Ref 16-45) and will include appropriate assessment undertaken as required by the guidance (Ref 16-46). If required, an Abstraction Licence and Environmental Permit will be obtained for the discharge. Such works will be limited to the depth and time required to facilitate construction activities;

- An awareness briefing regarding ground conditions and appropriate methods of working to limit disturbance of potentially contaminated soil or water, where practicable;

- Measures to minimise exposure to contaminated soils e.g. by controlling dust generation and the adoption of good hygiene standards will prevent prolonged skin contact, inhalation, and ingestion of soils during construction;

- Measures to minimise and control runoff and/or leaching to controlled waters;

- The **Outline SRMP [EN0110014/APP/7.9]** sets out good practice to soil management, handling, stockpiling and reinstatement to minimise potential effects on soils, as far as practicable. Excavated soils will be managed and stored in accordance with the **Outline SRMP [EN0110014/APP/7.9];**

- Vegetation disturbance will be minimised and any bare ground resulting from construction will be re-seeded in accordance with the relevant measures set out in the **Outline LEMP [EN0110014/APP/7.4]**;

- Prevention measures including maintenance of construction vehicles, bunded storage, designated wheel washing areas, settling basins, screening stockpiles of materials, and dampening exposed soils as appropriate;

- A protocol for dealing within any unexpected contamination will be developed by the PC and will include:

a) Details of a watching brief and tool box talks to be implemented throughout the construction phase;

b) Details regarding how any affected area will be delineated, protected, investigated and assessed;

c) The qualifications and competencies of the person appointed to oversee the works;

d) The preparation of a method statement for how the contamination will be dealt with or remediated (as appropriate);

e) An escalation policy describing when and how any notifications and approvals will be agreed with the relevant planning authority; and

f) Details of verification procedures for any mitigation or remediation works.

- Mitigation against loss of peat soils will be principally via design. BGS mapping indicates that these deposits are present only within CRC7, adjacent to the Hempnall Beck, within a County Wildlife Site that is also an area of irreplaceable fenland habitat. The ecological constraints in this area prevent the use of shallow trenching and the practical considerations of CRC7 also mean that a trenchless crossing will in any event be used in this area. The design of the Scheme therefore provides mitigation against potential damage to peat deposits;

- The area of peat soils (as mapped by the BGS) is located adjacent to the Hempnall Beck. The peat is considered likely to be in hydraulic continuity with the peat and the underlying Alluvium and Leet Hill Sand and Gravel Member. A trenchless crossing would be of limited diameter and would not form a cut-off to groundwater flow or remove water supply to the overlying peat. Drying out of the peat is further considered to be highly unlikely, as the moisture content of the peat will be maintained by the Hempnall Beck.

Embedded Operation and Maintenance Phase Mitigation

16.7.3 Embedded measures included at the construction phase will continue to provide mitigation during the operational phase, e.g., avoidance of a potential hazard as part of the design of the Scheme means that the hazard will not be encountered during operation.

Embedded Decommissioning Phase Mitigation

16.7.4 As set out in the **Outline DEMP [EN0110014/APP/7.3]**, in respect of existing ground contamination, the potential for unexpected contamination, will be

managed and remediated appropriately such that hazards present during construction are unlikely to be present during decommissioning.

16.7.5 Embedded measures included at the construction phase would apply during the decommissioning Phase in principle, considering good practice at the point of decommissioning.

16.8 Assessment of Likely Effects

16.8.1 This section identifies and characterises potential impacts arising during the construction, operation and maintenance and decommissioning phases of the Scheme.

16.8.2 Taking into account the embedded mitigation measures as detailed in **Section 16.7**, the potential for the likely effects of the Scheme on the identified receptors has been assessed using the methodology as detailed in **Section 16.5** of this chapter. In the sections below, effects during the construction, operation and decommissioning phases of the Scheme are assessed for the receptors scoped into the ES chapter.

16.8.3 Any additional mitigation required to reduce these effects is set out in **Section 16.9** below. Thereafter, an assessment is made of the significance of any residual effects after all mitigation measures have been accounted for.

Construction Phase

Exposure to Existing Potential Contamination Through Ground Disturbance

16.8.4 Where a significant source of potential existing contamination is identified there is the potential for exposure of human health, groundwater and surface receptors if potential contamination is disturbed (e.g. by excavations).

Human Health

16.8.5 A preliminary contamination risk assessment (PRA) has been undertaken in accordance with the process of land contamination risk assessment defined within LCRM (Ref 16-27) and is presented within **ES**: **Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. In areas where SPCs have not been identified the PRA has identified a generally very low risk to human health (both within the Order Limits and within the Study Area) associated with exposure to existing contamination during the construction phase. In the limited areas where SPCs have been identified, the construction phase risks to human health (both within the Order Limits and within the Study Area) are assessed to be Very Low to Low.

16.8.6 With the inclusion of the embedded mitigation measures described above, the potential construction phase effects on the identified human health

receptors (High to Very High sensitivity) from exposure to any pre-existing contamination through ground disturbance, are considered to be of a Very Small magnitude of impact and are assessed as **Minor** in the vicinity of the identified SPCs within the Order Limits, and **Negligible** across the remainder of the Order Limits. These effects are **Not Significant** and **Temporary**.

Hydrology

16.8.7 A PRA has been undertaken in accordance with the process of land contamination risk assessment defined within LCRM (Ref 16-27) and is presented within **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. In areas where SPCs have not been identified the PRA has identified a generally very low risk to the identified hydrology receptors associated with exposure to existing contamination during the construction phase. The construction phase risks to hydrology associated with the SPCs within the Order Limits are assessed to be Low for SPCs 1 to 3 (former RAF Hardwick, Former RAF Seething and former Market Lane Pit) and Moderate for SPC4 – Former refuse tip.

16.8.8 With the inclusion of the embedded mitigation measures described above (including the delineation and avoidance of SPC4, such that there is no anticipated change from the baseline condition), the potential construction phase effects on the identified hydrology receptors (Very Low to Medium sensitivity) from exposure to any pre-existing contamination through ground disturbance, are considered to be of a Very Small magnitude of impact and are assessed as **Negligible**. These effects are **Not Significant** and **Temporary**.

Hydrogeology

16.8.9 A PRA has been undertaken in accordance with the process of land contamination risk assessment defined within LCRM (Ref 16-27) and is presented within **ES**: **Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. In areas where SPCs have not been identified the PRA has identified a generally very low risk to the identified hydrogeology receptors associated with exposure to existing contamination during the construction phase. The construction phase risks to hydrogeology associated with the SPCs within the Order Limits are assessed to be Low for SPCs 1 to 3 (former RAF Hardwick, Former RAF Seething and former Market Lane Pit) and Moderate for SPC4 – Former refuse tip.

16.8.10 With the inclusion of the embedded mitigation measures described above (including the delineation and avoidance of SPC4, such that there is no anticipated change from the baseline condition) the potential construction phase effects on the identified hydrogeology receptors (Very High sensitivity) from exposure to any pre-existing contamination through ground disturbance, are considered to be of a Very Small magnitude of impact and are assessed as **Minor**. These effects are **Not Significant** and **Temporary**.

Sterilisation of Safeguarded Minerals Due to Ground Disturbance During the Construction Phase

16.8.11 **ES: Appendix 16.2 Minerals Resource Assessment Desk Study [EN0110014/APP/6.3.16.2]** has identified the presence of limited areas of safeguarded sand and gravel deposits within the Order Limits. These limited areas are considered highly unlikely to be viable for extraction as:

- The presence of constraints such as the designated County Wildlife Site in CRC7, or nearby residential properties or infrastructure meaning extraction would be highly unlikely to be consented.
- Mineral extraction would be constrained by the presence of the watercourses which would either need costly diversion (for which permission would be very unlikely to be obtained) or buffers around them.
- There is unlikely to be sufficient mineral present given the limited extent of the deposit surface area making extraction unlikely to be economically viable.
- The likely presence of significant thicknesses of overburden over the mineral or a requirement to have to remove mineral from the saturated zone would make extraction unfavourable.

16.8.12 The elements of the Scheme to be constructed within the areas of safeguarded mineral deposits are principally the PV Arrays, with limited areas of cable route in CRCs 6, 7 and 8. The piled foundations for the PV arrays are not anticipated to disturb the mineral (such that it would become non-viable following decommissioning of the Scheme) as the shallow piles will be driven from the surface without excavation. The excavation of the trenches for the cable will disturb the mineral, however it is anticipated that the trench arisings will be placed back into the excavation following placement of the cable, and as such there will be only a negligible net-change in the condition of the deposits.

16.8.13 With the inclusion of the embedded mitigation measures described above, the potential construction phase effects on the identified minerals resources receptors (Medium sensitivity) from ground disturbance during construction are considered to be of a Very Small magnitude of impact and are assessed as **Negligible**. These effects are **Not Significant**, and **Permanent** within the footprint of the National Grid Substation and **Temporary** (**Long Term**)[18] and **Reversible** across the remainder of the Scheme.

[18] Minerals sterilisation occurs as a result of the construction and operation of the Scheme. Decommissioning of the scheme will 'release' the mineral deposits. This sterilisation is therefore temporary (long term) and reversible.

Loss of Peat Soils Due to Ground Disturbance During the Construction Phase

16.8.14 Peat soils have been identified only within CRC7, adjacent to the Hempnall Beck, within a County Wildlife Site that is also an area of irreplaceable fenland habitat. The ecological constraints in this area prevent the use of shallow trenching and the practical considerations of CRC7 also mean that a trenchless crossing will be used in this area.

16.8.15 The design of the Scheme will therefore avoid disturbance of peat deposits resulting in a **Negligible** magnitude of impact. The potential effect on peat soils (**Very High** sensitivity) due to ground disturbance due to the construction phase is assessed as **Negligible**. This effect is **Not Significant** and **Permanent**.

Operation and Maintenance Phase

Exposure to Existing Potential Contamination Through Ground Disturbance

Human Health

16.8.16 A PRA has been undertaken in accordance with the process of land contamination risk assessment defined within LCRM (Ref 16-27) and is presented within **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. In areas where SPCs have not been identified the PRA has identified a generally very low risk to human health (both within the Order Limits and Within the Study Area) associated with exposure to existing contamination during the operational[19] phase. In the limited areas where SPCs have been identified, the construction phase risks to human health (both within the Order Limits and within the Study Area) are also assessed to be Very Low.

16.8.17 With the inclusion of the embedded mitigation measures described above, the potential operational phase effects on the identified human health receptors (High to Very High sensitivity) from exposure to any pre-existing contamination through ground disturbance, are considered to a Very Small magnitude of impact are assessed as **Minor**. These effects are **Not Significant** and **Temporary**.

Hydrology

16.8.18 A PRA has been undertaken in accordance with the process of land contamination risk assessment defined within LCRM (Ref 16-27) and is presented within **ES: Appendix 16.1 Phase 1 Ground Conditions**

[19] Whilst the replacement activities described in Chapter 4 of the ES do not include any in-ground works, the operational phase risk to human health assessed within the Phase 1 GCA does assume that some in-ground works would be undertaken, e.g., the repair or replacement of cables etc.). The assessment of operational phase likely significant effects discussed above is therefore a 'worst-case'.

Assessment [EN0110014/APP/6.3.16.1]. In areas where SPCs have not been identified the PRA has identified a generally very low risk to the identified hydrology receptors associated with exposure to existing contamination during the operational phase. The operational phase risks to hydrology associated with the SPCs within the Order Limits are assessed to be Low for SPCs 1 to 3 (former RAF Hardwick, Former RAF Seething and former Market Lane Pit) and Moderate for SPC4 – Former refuse tip.

16.8.19 With the inclusion of the embedded mitigation measures described above (including the delineation and avoidance of SPC4, such that there is no anticipated change from the baseline condition) the potential operational phase effects on the identified hydrology receptors (**V**ery Low to Medium sensitivity) from exposure to existing contamination due to ground disturbance are considered to be of a Very Small magnitude of impact and are assessed as **Negligible**. These effects are **Not Significant** and **Temporary**.

Hydrogeology

16.8.20 A PRA has been undertaken in accordance with the process of land contamination risk assessment defined within LCRM (Ref 16-27) and is presented within **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**. In areas where SPCs have not been identified the PRA has identified a generally very low risk to the identified hydrogeology receptors associated with exposure to existing contamination during the construction phase. The construction phase risks to hydrogeology associated with the SPCs within the Order Limits are assessed to be Low for SPCs 1 to 3 (former RAF Hardwick, Former RAF Seething and former Market Lane Pit) and Moderate for SPC4 – Former refuse tip.

16.8.21 With the inclusion of the embedded mitigation measures described above (including the delineation and avoidance of SPC4, such that there is no anticipated change from the baseline condition) the potential operational phase effects on the identified hydrogeology receptors (Very High sensitivity) from any pre-existing contamination are considered to be of a Very Small magnitude of impact and are assessed as **Minor**. These effects are **Not Significant** and **Temporary**.

Sterilisation of Safeguarded Minerals Due to the Presence of the Scheme During the Operational Phase

16.8.22 During the operational phase, any minerals resources (Medium sensitivity) in areas occupied by the Scheme will be inaccessible for extraction. NCC has agreed in post-scoping consultation that the Scheme will not permanently sterilise the underlying safeguarded minerals. The magnitude of impact is therefore considered to be Negligible, resulting in a **Negligible** effect that is **Not Significant** and **Permanent** within the National Grid Substation, and **Temporary** across the remainder of the Order Limits.

Decommissioning Phase

16.8.23 The activities to be undertaken during the decommissioning phase will comprise the removal, recycling or disposal of all Solar PV Arrays and all related built infrastructure, ancillary infrastructure, Project Substations and BESS. The National Grid Substation and the pylons and overhead lines would, however, remain permanently in situ as these will form part of National Grid's electricity transmission network.

16.8.24 Foundations and other below ground infrastructure will be cut to 1.2m below the surface to enable future ploughing. Any PV array piles would be removed.

16.8.25 The underground cable, cable ducts and joint bays will be decommissioned in accordance with the applicable guidance and regulations at the time. Currently, the most environmentally acceptable option is considered to be leaving the cables in situ, as this avoids disturbance to overlying land, habitats and to communities. Alternatively, the cables can be removed by opening up the ground at regular interval and pulling the cable through to the extraction point, leaving the ducting and jointing bays in place, avoiding the need to open up the entire length of the cable route.

16.8.26 On the basis of the above, the decommissioning phase activities are likely to be similar to, but of a lower intensity than the construction phase. The estimated risks associated with these activities, as presented in **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**, are the same as those assessed as at the construction phase.

16.8.27 The receptors present during the decommissioning phase will be the same as those present at the construction phase and will be of the same sensitivity as that assessed at the construction phase.

16.8.28 On the basis that the receptors present, the sensitivity of those receptors and the estimated risks to those receptors are the same as at the construction phase, and with the inclusion of the embedded mitigation measures described above, the assessed effects at the decommissioning phase are the same as those assessed at the construction phase.

16.9 Additional Mitigation Measures

16.9.1 As no significant effects have been identified above for receptors during any phase of the Scheme once embedded mitigation is taken into account, no additional mitigation measures for the Scheme are required.

16.10 Residual Effects

16.10.1 As there are no significant effects identified, the effects will remain unchanged as those reported above in the assessment of likely significant effects.

16.11 Cumulative Effects Assessment

16.11.1 This section presents an assessment of cumulative effects between the Scheme and other existing and/or approved developments.

16.11.2 As set out in **ES: Chapter 2 EIA Methodology [EN0110014/APP/6.1.2]**, a Cumulative Effects Assessment (CEA) has been undertaken as part of the EIA in accordance with PINS Advice on Cumulative Effects Assessment (September 2024) and has considered two types of cumulative effects.

- In combination effects: the combined effect generated by individual effects on a particular receptor; and
- Cumulative effects: effects generated by the Scheme and other planned or approved developments on the same receptor.

Cumulative Effects

16.11.3 Cumulative effects may arise as a result of effects associated with the Scheme combining with effects associated with other developments. The list of developments has been narrowed down to focus on those developments which are most likely to give rise to cumulative effects. A long-list was generated which was then refined following consultation with relevant local planning authorities. The shortlist of cumulative developments/allocations can be found in **ES: Appendix 2.4 Cumulative Schemes [EN0110014/APP/6.3.2.4].**

Relevant Developments

16.11.4 Those developments which have the potential to result in cumulative Ground Conditions effects are set out in **Table 16.13**. The remaining schemes are considered unlikely to generate cumulative effects.

Table 16.13: Short List Developments / Allocations Relevant to Ground Conditions

Planning Ref	Description	Distance from the Scheme
2018/0111	'*Hybrid Application on 131.7 hectares of land to the east of the A140 seeking outline planning permission for 1275 no. dwellings, 8 hectares of employment land for uses within Classes B1, B2 and B8, 2-hectare primary school site, community facilities site, associated infrastructure and public open space. Together with application for full permission for a bypass including roundabouts and junctions*'.	A review of the proposed masterplan shows that the parts of 2018/0111 within 250m of the Scheme comprise Phases C and E (residential) and Phase E3 (commercial) all located to the west of CRC4, and Phases 3 and A (residential) located to the south and west of Sub-Sites 4A and 4B. At the time of writing construction of the bypass road has been completed (opened August 2025) however none of the other phases within the Study Area are understood to be in construction and construction could therefore take place at the same time as the Scheme.
2023/3020	'*Erection of 7 x single storey dwellings, 1 x two storey dwelling, garages and construction of a vehicular access*'.	Approximately 190m north of Site 9. At the time of writing, construction of 2023/3020 does not appear to have commenced and construction could therefore take place at the same time as the Scheme.
2024/3817	'*Solar photovoltaic (PV) farm development with ancillary infrastructure, security fencing and access*'	Adjacent to (and overlaps with) Sub-Site 1C, adjacent to the west of the BESS site. At the time of writing, construction of 2023/3020 does not appear to have commenced and construction could therefore take place at the same time as the Scheme.

Cumulative Effects Assessment

16.11.5 The approach to cumulative assessment considers whether the Order Limits are within a 250m Study Area associated with contamination or instability. This Study Area is also based on professional judgement, knowledge of similar projects and DMRB LA 109 (Ref 16-24) and (Ref 16-25). Although not directly relevant to the Scheme, the Study Area accords with the Study Area recommended in Guidance for the Safe Development of Housing on Land Affected by Contamination (Ref 16-26).

16.11.6 This is informed by professional judgement and considerations of the following:

- Release of contaminated dust – typical wind direction and distance;
- Release of contaminated water – flow direction;

- Release of ground gases or volatile vapours – typical wind direction and distance for above ground releases and a maximum of 250m for below ground migration; and
- Alterations to on-Site or off-Site ground levels or groundwater levels that could induce land stability changes.

16.11.7 The DMRB (Ref 16-47) provides a specific methodology for assessing the significance of cumulative impacts. This has been used as a guide for the purposes of this assessment by considering:

- Which receptors or resources are affected?
- How will the activity or activities affect the condition of the resource?
- What are the probabilities of such effects occurring?
- What ability does the receptor/resource have to absorb further effects before change becomes irreversible?

16.11.8 To enable consideration of a worst-case scenario, it is assumed that, where development consent for the Scheme has been granted or has been applied for, the other identified cumulative schemes could be constructed at the same time as the Scheme or in the following months, thus giving rise to potential construction-related cumulative effects.

Controls Adopted at Relevant Cumulative Schemes

16.11.9 A review of the documents submitted in support of the relevant cumulative schemes described in **Table 16.13** above has shown:

- The submission for 2018/0111 is supported by a PRA which identifies that the risks associated with SPCs within the application boundary for 2018/0111 were typically 'Low', defined as '*considered conceivable but unlikely*'. A CEMP, supported by a Contamination Discovery Plan was also submitted to provide mitigation of potential contaminated land hazards during construction of these projects.
- The submission for 2023/3020 was supported by a PRA which identified that the risks associated with SPCs within the application boundary for 2023/3020 were typically 'Low', defined as '*considered conceivable but unlikely*' and stated that '*Based upon the information contained herein it is recommended that no intrusive site investigation is required with respect to contamination*'. The decision notice for this application required only the reporting and management of unexpected contamination, if it is encountered during the construction works.
- The submission for 2024/3817 was not accompanied by a PRA. Planning Condition 6 requires a 'Construction Management Plan' to be provided which should include details of the dust management controls to be

adopted. The planning conditions do not require any further assessments of contaminated land, or a CEMP that includes mitigation against contaminated land hazards to be provided[20].

Releases of Contamination to Groundwater

16.11.10 There is potential that existing contamination (if present) within the soils could be mobilised into the groundwater during the construction and decommissioning phases. Releases of contamination during the operational phase are not anticipated.

16.11.11 In areas where SPCs have not been identified the Phase 1 GCA (**ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]**) identified a typically Very Low risk to hydrogeology during the construction and decommissioning phases (in absence of any mitigation). In areas where SPCs have been identified, a Low risk to hydrogeology receptors has been identified.

16.11.12 Of the SPCs within the Order Limits, none are located within 250m of any of the identified relevant cumulative schemes.

16.11.13 In conjunction with the embedded mitigation measures described above, the likelihood of a release of contamination to groundwater during the construction and decommissioning Phases, which then subsequently migrates to a relevant cumulative scheme (**Table 16.13),** is considered highly unlikely.

16.11.14 Similarly, based on the ground conditions and mitigation measures to be adopted during the construction of the relevant cumulative schemes (**Table 16.13**) a release of contamination to groundwater during construction of one of the cumulative schemes, which then subsequently migrates into the Order Limits is considered highly unlikely.

16.11.15 In the absence of cumulative schemes the construction and operational phase effects to hydrogeology receptors associated with exposure to existing potential contamination through ground disturbance have been assessed as **Minor**. It is considered that the very low likelihood of a release of contamination combined with the incorporation of the mitigation measures described above means that the cumulative effects to hydrogeology receptors associated with exposure to existing potential contamination through ground disturbance are **Negligible** and **Not Significant**.

Releases of Contamination to Air

16.11.16 There is potential that existing contamination within the soils (if present) could be mobilised into the air as dust during the construction and

[20] Condition 17 of 2024/3817 does require a CEMP to be prepared, however this is specifically a ‘CEMP: Biodiversity’ and provides ecological controls only.

decommissioning phases. This contamination could potentially migrate to the cumulative schemes within the Study Area. The primary effect of releases to air would be related to human health. Releases of contamination (if present) to the air would likely be discernible at the cumulative schemes within the Study Area.

16.11.17 In areas where SPCs have not been **ES: Appendix 16.1 Phase 1 Ground Conditions Assessment [EN0110014/APP/6.3.16.1]** identified a typically Very Low risk to Human Health within the Study Area during the construction and decommissioning phases (in absence of any mitigation). In areas where SPCs have been identified, a Low risk to Human Health within the Study Area has been identified.

16.11.18 Of the SPCs within the Order Limits, none are located within 250m of any of the identified relevant cumulative schemes.

16.11.19 In conjunction with the embedded mitigation measures described above, the likelihood of a release of contamination to air during the construction and decommissioning phases, which then subsequently migrates to a relevant cumulative scheme (**Table 16.13**), is considered highly unlikely.

16.11.20 Similarly, based on the ground conditions and mitigation measures to be adopted during the construction of the relevant cumulative schemes (**Table 16.13**) a release of contamination to air during construction of one of the cumulative schemes, which then subsequently migrates into the Order Limits is considered highly unlikely.

16.11.21 It is considered that the low likelihood of a release of contamination and the incorporation of the mitigation measures described above means that the cumulative impact due to releases of contamination to air are **Negligible** and **Not Significant**.

Land Stability

16.11.22 The proposed elements of the Scheme would comprise new Solar PV Arrays, substations and the BESS. The possibility for use of piled foundations cannot be ruled out at this stage of the design process. The Solar PV Arrays will be constructed on small-scale piled (driven or screw) foundations or will be ballasted with concrete blocks. Such forms of construction, in the absence of any significant excavation, are not anticipated to introduce land stability hazards to the identified relevant cumulative schemes within the Study Area.

16.11.23 The identified cumulative schemes (**Table 16.13**) comprise either new residential/commercial/educational development, new roads and new Solar PV Arrays and inverter and/or substation infrastructure. Given the similarity in geological setting for the cumulative schemes within the Study Area, it is anticipated that the solar development will utilise similar approach to Solar PV Array construction as the Scheme. The residential / commercial / educational cumulative schemes would likely utilise shallow foundations.

Such forms of construction are not anticipated to introduce land stability hazards to the land within the Order Limits.

16.11.24 Cumulative land stability effects are not anticipated to the remaining identified potential schemes outside of the 250m Study Area given the topography of the region and the nature of the cumulative schemes, i.e., none appear to involve significant excavation or reprofiling such as quarrying works.

16.11.25 Cumulative effects to land stability are therefore considered to be **Negligible** and **Not Significant**.

Table 16.14: Summary of Residual Effects for Ground Conditions

Receptor	Sensitivity	Description of Effect	Magnitude of Impact	Scale and Nature of Effect	Significant/Not Significant
Construction Phase					
Human Health	High to Very High	Exposure to existing potential contamination through ground disturbance	Very Small	Minor Adverse	Not Significant
Hydrology	Low to Medium		Very Small	Negligible	Not Significant
Hydrogeology	Very High		Very Small	Minor Adverse	Not Significant
Safeguarded Minerals	Medium	Sterilisation of safeguarded minerals due to ground disturbance	Very Small	Negligible	Not Significant
Peat Soils	Very High	Loss of peat soils due to ground disturbance	Negligible	Negligible	Not Significant
Operational Phase					
Human Health	High to Very High	Exposure to existing potential contamination through ground disturbance	Very Small	Minor Adverse	Not Significant
Hydrology	Low to Medium		Very Small	Negligible	Not Significant
Hydrogeology	Very High		Very Small	Minor Adverse	Not Significant
Safeguarded Minerals	Medium	Sterilisation of safeguarded minerals due to presence of the scheme.	Negligible	Negligible	Not Significant

Decommissioning Phase					
Human Health	High to Very High	Exposure to existing potential contamination through ground disturbance	Very Small	Minor Adverse	Not Significant
Hydrology	Low to Medium		Very Small	Negligible	Not Significant
Hydrogeology	Very High		Very Small	Minor Adverse	Not Significant
Safeguarded Minerals	Medium	Sterilisation of safeguarded minerals due to ground disturbance	Very Small	Negligible	Not Significant
Peat Soils	Very High	Loss of peat soils due to ground disturbance	Negligible	Negligible	Not Significant

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