
EAST YORKSHIRE SOLAR FARM

**East Yorkshire Solar Farm
EN010143**

Environmental Statement

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15. Soils and Agricultural Land

15.1 Introduction

- 15.1.1 This chapter of the Environmental Statement (ES) presents the findings of an assessment of the likely significant effects of the proposed East Yorkshire Solar Farm (hereafter referred to as 'the Scheme') on agriculture and soils. For a description of the Scheme, refer to **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**.
- 15.1.2 This chapter identifies and proposes measures to address the potential impacts and likely significant effects of the Scheme on Soils and Agricultural Land during the construction, operation, and decommissioning phases.
- 15.1.3 This chapter is supported by the following appendices in **ES Volume 2 [EN010143/APP/6.2]**:
- Appendix 15-1: Legislation, Policy and Guidance (Soils and Agricultural Land);**
 - Appendix 15-2: Predictive Agricultural Land Classification (ALC) Map (Cranfield University);**
 - Appendix 15-3: ALC and Soil Survey Report;**
 - Appendix 15-4: Communications with Natural England;** and
 - Appendix 15-5: Soil Health Analysis Data.**
- 15.1.4 This chapter is supported by the following figures in **ES Volume 3 [EN010143/APP/6.3]**:
- Figure 15-1: Provisional and Post 1988 Agricultural Land Classification;**
 - Figure 15-2: Predictive Agricultural Land Classification;**
 - Figure 15-3: Agricultural Land Classification Survey for the Solar PV Site;** and
 - Figure 15-4: Soil Associations.**
- 15.1.5 This chapter is also supported by the **Framework Soil Management Plan (SMP) [EN010143/APP/7.10]** submitted with the Development Consent Order (DCO) Application.
- 15.1.6 The effects of wildlife mitigation and enhancement on soils and agricultural land should be read in conjunction with **Chapter 8: Ecology ES Volume 1 [EN010143/APP/6.1]**.
- 15.1.7 A glossary and list of abbreviations are defined in **Chapter 0: Table of Contents, Glossary and Abbreviations, ES Volume 1 [EN010143/APP/6.1]**.

15.2 Legislation, Policy and Guidance

- 15.2.1 Legislation, planning policy, and guidance relating to Soils and Agricultural Land and pertinent to the Scheme comprises of the documents listed

below. More detailed information can be found in **Appendix 15-1, ES Volume 2 [EN010143/APP/6.2]**.

Legislative Framework

- a. HM Government (2015). Statutory Instrument 2015 No. 595, The Town and Country Planning (Development Management Procedure) (England) Order 2015 (Ref 15-1); and
- b. The Agriculture Act, November 2020 (Ref 15-2).

National Policy

- a. Overarching National Policy Statement (NPS) for Energy (EN-1) (2011) (Ref 15-3);
- b. Overarching NPS for Renewable Energy (EN-3) (2011) (Ref 15-4);
- c. Overarching NPS for Electricity Networks (EN-5) (2011) (Ref 15-5);
- d. Draft Overarching National Policy Statement for Energy (EN-1) (2023) (Ref 15-6);
- e. Draft National Policy Statement for Renewable Energy (EN-3) (2023) (Ref 15-7);
- f. Draft National Policy Statement for Electricity Networks Infrastructure (EN-5) (2023) (Ref 15-8);
- g. National Planning Policy Framework (NPPF) (2023) (Ref 15-9); and
- h. The Environmental Improvement Plan (2023) (Ref 15-10).

Local Policy

- a. East Riding of Yorkshire Local Plan (2016) (Ref 15-11);
- b. East Riding of Yorkshire Local Plan Update 2020–2039 (2022) (Ref 15-12);
- c. East Riding of Yorkshire and Kingston upon Hull Joint Minerals Local Plan (Ref 15-13);
- d. Selby District Local Plan, 2005 (Saved Policies) (Ref 15-14);
- e. Selby District Core Strategy (2013) (Ref 15-15);
- f. Selby District Local Plan Preferred Options (Consultation 2021) (Ref 15-16);
- g. Saved Policies of the North Yorkshire Waste Local Plan (2006) (Ref 15-17); and
- h. North Yorkshire County Council, York City Council, North York Moors National Park Authority Minerals and Waste Joint Plan (2016) – Publication Draft (Ref 15-18).

Guidance

- a. Institute of Environmental Management and Assessment (IEMA) Guide: A New Perspective on Land and Soil in Environmental Impact Assessment (2022) (Ref 15-19);

- b. Planning Practice Guidance for the Natural Environment (PPGNE) (2019) (Ref 15-20);
- c. Natural England (2012): Technical Information Note 049 (TIN049): Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land (Ref 15-21);
- d. Department of Environment, Food and Rural Affairs (Defra) Code of Practice for the Sustainable Use of Soil on Development Sites (Ref 15-22);
- e. Natural England's Guide to Assessing Development Proposals on Agricultural Land (Ref 15-23);
- f. Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Workings (2021) (Ref 15-24);
- g. Ministry of Agriculture, Fisheries and Food's (MAFF) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land (Ref 15-25); and
- h. The British Society of Soil Science (BSSS) Guidance Note Benefiting from Soil Management in Development and Construction (Ref 15-26).

15.3 Consultation

- 15.3.1 A scoping exercise was undertaken in September 2022 to inform the content of the assessment and the approach and methods to be followed.
- 15.3.2 The Scoping Report (**Appendix 1-1, ES Volume 2 [EN010143/APP/6.2]**) was issued on 9 September 2022 and records the findings of the scoping exercise and details the technical guidance, standards, best practice and criteria to be applied in the assessment to identify and evaluate the likely significant effects of the Scheme on Soils and Agricultural Land.
- 15.3.3 The Scoping Opinion was received on 20 October 2022 (**Appendix 1-2, ES Volume 2 [EN010143/APP/6.2]**). The feedback received from stakeholders at scoping, and the Applicant's responses in relation to Soils and Agricultural Land, are presented in **Appendix 1-3, ES Volume 2 [EN010143/APP/6.2]**. This is also summarised in **Table 15-1**.
- 15.3.4 Further consultation in response to formal pre-application engagement was undertaken through the Preliminary Environmental Information (PEI) Report, issued in May 2023. Responses to this statutory consultation are presented in the **Consultation Report [EN010143/APP/5.1]**.
- 15.3.5 **Table 15-2** summarises the section 42 statutory consultation responses relating to Soils and Agricultural Land and how these have been addressed through the ES.
- 15.3.6 Further detail on consultation can also be found in **Chapter 4: Consultation, ES Volume 1 [EN010143/APP/6.1]**.

Table 15-1. Scoping opinion responses (soils and agricultural land)

Consultee	Summary of comment	How matter has been addressed	Location of response
Planning Inspectorate	The Inspectorate agrees that on the basis that the decommissioning effects are expected to be similar to or of a lesser magnitude than the construction effects these matters may be scoped out. The Inspectorate notes that an outline of the general principles that would apply during decommissioning would be contained in the Framework Decommissioning Environmental Management Plan (DEMP) to be provided with the DCO Application, and that a detailed DEMP would be produced in advance of the commencement of decommissioning works.	Noted. Decommissioning effects have been scoped out. It is confirmed that a Framework DEMP accompanies the DCO Application. This contains general principles for the sustainable management of soil resources, which will form the basis of the detailed DEMP to be produced prior to commencement of the decommissioning phase (as secured through a requirement in the Draft DCO [EN010143/PP/3.1]).	Framework DEMP [EN010143/APP/7.9]
Planning Inspectorate	There is no reference in this [Scoping Report] chapter to the assessment of potential cumulative effects on soil resources and agricultural land. The ES should include such an assessment and identify any Likely Significant Effects (LSE)	An assessment of cumulative effects on soils and agricultural land is provided in this chapter.	Cumulative effects are considered in Section 15.10 of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
	and mitigation measures if required.		
Planning Inspectorate	The Inspectorate welcomes the provision of a plan that identifies the provisional Agricultural Land Classification (ALC) of land within the Site. The ES should quantify the areas of land according to Grades 1 to 5 of the ALC, including differentiating between Grades 3a and 3b.	Details of ALC grading within the Site (including differentiation of Subgrade 3a and 3b land) is provided through a combination of Soil and ALC Surveys undertaken within the Solar PV Site and Ecology Mitigation Area and Predictive ALC data from Cranfield University which covers the whole Site.	Appendix 15-2, ES Volume 2 [EN010143/APP/6.2] presents the predictive ALC information and Appendix 15-3, ES Volume 2 [EN010143/APP/6.2] presents the soil and ALC survey report. The data gathering methodologies for the above datasets are summarised in section 15.4 of this chapter and results are summarised in section 15.5 of this chapter.
Planning Inspectorate	The Inspectorate notes that it is proposed that the detailed soil and ALC survey to be undertaken in Autumn 2022 excludes the Grid Connection Corridor on the basis that it would incur temporary impacts but following reinstatement of the soils would be available for farming in the same way as at present. ALC grading for the Grid Connection Corridor would be calculated using Natural England's 'Provisional ALC' to determine the proportions of ALC Grades 1, 2, 4 and 5. For areas provisionally mapped as Grade 3, the proportions of Subgrade 3a and 3b would be calculated using	The methodology presented at Scoping (summarised by PINS in the lefthand column) was amended at the Preliminary Environmental Information Report (PEI Report) stage. The proportion of Subgrade 3a/3b land within the Grid Connection Corridor and Interconnecting Cable Corridor has been determined using Predictive ALC data commissioned from Cranfield University. The most detailed dataset, which also considers post-1988 datasets, has been purchased. These data are more accurate than those which would have been generated by the methodology proposed at Scoping, as they are calculated by undertaking ALC calculations using the current ALC	The change of methodology has been discussed with Natural England as part of a submitted Discretionary Advice Service (DAS) request – see further in this section and Appendix 15-4, ES Volume 2 [EN010143/APP/6.2] . Appendix 15-2, ES Volume 2 [EN010143/APP/6.2] presents predictive ALC information.

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>Natural England’s ‘Likelihood of BMV Agricultural Land’. The Inspectorate agrees that this approach is appropriate in the circumstances, however recommends that it is agreed with Natural England.</p>	<p>methodology (Ref 15-25) with inputs taken from a combination of published and available survey data. This also allows the geographic distribution of the different ALC gradings to be mapped, which is not possible with the methodology put forward at Scoping. The Cranfield University methodology was used to prepare the Welsh Government’s Predictive ALC dataset (publicly available) and is expected to be used to prepare the same dataset for England for Defra over the next three to four years.</p>	
<p>Canal and River Trust</p>	<p>Consideration should be given to the impact from construction compounds and disturbance to soil for the construction of cables between the solar farms. Recognise that there is risk of contamination through poor sediment management from exposed soils, likely associated with drilling works in proximity to the river. This should be taken account of within the Construction Environment Management Plan (CEMP).</p>	<p>An assessment of the impact on soil resources has been undertaken within this chapter. The impact on soil resources has also been taken account of within the Framework CEMP and Framework SMP. The Framework SMP identifies that location specific construction method statements will be developed for watercourse crossings, including the use of a buffer with no soil stripping.</p>	<p>The assessment of impacts on soil resources has been undertaken in section 15.6.11 within this chapter. This relates also to section 15.5: Assessment Methodology and section 15.8: Embedded Mitigation. The Framework CEMP [EN010143/APP/7.7] and a Framework Soil Management Plan (SMP) [EN010143/APP/7.10]. Detailed plans will be finalised prior to construction, secured through DCO Requirement.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
Foggathorpe Parish Council	Fields included in the proposal have not been graded since the 1980s and so therefore the EIA should state how much of each grade of farmland, green space and natural environment will be lost to the scheme.	<p>As detailed above, both Predictive ALC data for the Order limits and surrounding area and a detailed / semi-detailed soil and ALC survey of the agricultural land within the Solar PV Site have been completed.</p> <p>The assessment of effects within the ES considers the ALC grading of the land within the Order limits and changes in agricultural use.</p> <p>Impacts on green space and the natural environment are addressed elsewhere within the ES (Chapter 8: Ecology and Chapter 12: Socio-economics and Land Use).</p>	<p>Appendix 15-2, ES Volume 2 [EN010143/APP/6.2], presents predictive ALC information and Appendix 15-3, ES Volume 2 [EN010143/APP/6.2] presents the findings of a full site survey of the land within the Solar PV Site.</p> <p>Chapter 8: Ecology, ES Volume 1 [EN010143/APP/6.1] considers the impacts of the Scheme on ecology and habitats.</p> <p>Chapter 12: Socio-economics and Land Use, ES Volume 1 EN010143/APP/6.1] considers the potential impacts of the Scheme on recreation.</p>
Foggathorpe Parish Council	Question the impact of agricultural land on local agriculture and crop production and the effect this will have on local hay prices.	<p>During operation, most land within the Solar PV Site would remain available for potential grazing, or otherwise would be mowed. The impact of the Scheme on local hay prices is beyond the scope of the assessment, however it is noted that most of the land within the Scheme is currently arable, with only a very small proportion in grass/hay production. Therefore, land use change would not substantially change the availability of hay locally and should a hay crop be taken this would increase availability.</p>	Operational effects on land use and soil resources are in section 15.6.11 of this chapter.

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>Furthermore, all land within the Grid Connection and Interconnecting Cable Corridors will return to their pre-development land use on completion of construction.</p>	
<p>Foggathorpe Parish Council</p>	<p>Can the EIA please estimate how many agricultural workers and farm contractor jobs will be lost?</p>	<p>An assessment of impacts of the Scheme on employment is outside the scope of this chapter.</p>	<p>Information is provided in Chapter 12: Socio-economics and Land Use, ES Volume 1 EN010143/APP/6.1], along with an assessment of impacts of the Scheme on employment.</p>
<p>Long Drax Parish Council</p>	<p>As the Solar Farm plans to be built on arable land and utilised for grazing purposes, loss of food production will need to be considered as a whole for the area and across the country and take into account the impact of this from the range of other solar farms planned for the area.</p>	<p>The assessment is being undertaken following the latest guidance on the assessment of impacts to soils and agricultural land (Ref 15-19), which does not consider food production. However, it is not considered that the Scheme would have a detrimental impact on regional food production. Meeting the 70 gigawatts (GW) by 2035 target set for the whole of the UK for solar by the UK Government in 2023 (Ref 15-35) will require an estimated 1.2% of the utilised agricultural farmland in England. Furthermore, the Scheme has been positioned to avoid BMV (i.e., the most productive) agricultural land as far as is practicable.</p>	<p>Measures to avoid BMV agricultural land are described in this chapter, Chapter 2: The Scheme and Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1]. An assessment of cumulative impacts is presented in Section 15.10 of this chapter. This includes assessment of the cumulative effects of the Scheme and other solar projects on the short-list of cumulative schemes (Appendix 17-1, ES Volume 2 [EN010143/APP/6.2]) which was agreed with the Local Planning Authorities.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>Within the ES, the impact on the natural environment should be assessed, including the expected residues and emissions from soil pollution from operation and a description of the likely significant effects on land take and soil.</p> <p>Impacts from the development on soils and BMV agricultural land should be considered in line with the NPS for National Networks. The ES should consider the degree to which soils would be disturbed or damaged and the extent to which agricultural land would be disturbed or lost, including whether any BMV agricultural and would be impacted.</p>	<p>An assessment of the impact on soil resources and land take during operation has been undertaken in section 15.9 within this chapter.</p> <p>The quoted NPS applies to rail and road projects. However, guidance in the 2023 drafts of NPS EN-1, EN-3 and EN-5, has been considered and incorporated within the assessment set out in the chapter, for example NPS EN-1 para 5.10.8 states a requirement to “<i>minimise impacts on BMV land and direct development towards non-agricultural land or land of poorer quality. Identify any effects and seek to minimise impacts on soil quality taking into account any mitigation measures proposed.</i>”</p> <p>The assessment followed the latest IEMA guidance on the assessment of impacts to soils and agricultural land (Ref 15-19). Therefore, the assessment considers the potential for loss of, or damage to, soil functions and the ability of the soils to provide ecosystem services and preserve natural capital; and potential impacts to BMV land.</p>	<p>Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1] describes the site selection process focussed around an area shown on Provisional ALC mapping as non-BMV poor quality Grade 4 land. Further ALC survey work has shown the majority of land in the Solar PV Site to be non-BMV quality (Appendix 15-3, ES Volume 2).</p> <p>Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1] sets out design parameters whereby the placement of solar PV infrastructure requiring the creation of hard standing on BMV land will be avoided where practicable.</p> <p>Measures to protect soil resources (and consequently the agricultural land they support) is considered in section 15.8 and further described in the Framework CEMP [EN010143/APP/7.7], Framework OEMP [EN010143/APP/7.8], Framework DEMP [EN010143/APP/7.9] and Framework SMP [EN010143/APP/7.10]. Delivery of a detailed CEMP, OEMP and DEMP and SMP based on these Framework documents and implementation of the measures they contain will be secured through a Requirement in the DCO.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>Soils are a valuable, finite natural resource and should also be considered for the ecosystem services they provide, including for food production, water storage and flood mitigation, as a carbon store, reservoir of biodiversity and buffer against pollution [ecosystem services]. It is therefore important that the soil resources are protected and sustainably managed. Impacts from the development on soils and best and most versatile (BMV) agricultural land should be considered in line paragraphs 5.168, 5.167 and 5.179 of the NPS for National Networks. Further guidance is set out in the Natural England Guide to assessing development proposals on agricultural land.</p>	<p>The assessment followed the latest IEMA guidance on the assessment of impacts to soils and agricultural land (Ref 15-19). Therefore, the assessment methodology in section 15.5 considers the potential for loss of, or damage to, soil functions and the ability of the soils to provide ecosystem services and preserve natural capital; and potential impacts to BMV land. The quoted NPS applies to rail and road projects, however guidance set out in NPS EN-1, EN-3 and EN-5, and their 2023 revised drafts has been taken into account as relevant within the chapter.</p>	<p>Measures to protect soil resources (and consequently the agricultural land they support, including BMV land) are considered in section 15.8 of this Chapter, the Framework CEMP [EN010143/APP/7.7], Framework OEMP [EN010143/APP/7.8] and Framework DEMP [EN010143/APP/7.9] and Framework SMP [EN010143/APP/7.10] The guidance considered in this assessment is listed in section 15.3 of this Chapter and detailed in Appendix 15-1, ES Volume 2 [EN010143/APP/6.2].</p>
Natural England	<p>The following issues should be considered and, where appropriate, included as part of the ES: 1. The degree to which soils would be disturbed or damaged as part of the development; and</p>	<p>The assessment used in this chapter follows the latest IEMA guidance (Ref 15-19) on the assessment of impacts to soils and agricultural land and therefore addresses both these points.</p>	<p>The data gathering methodologies for the above datasets are summarised in section 15.4 of this chapter and results are summarised in section 15.5 of this chapter.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>2. The extent to which agricultural land would be disturbed or lost as part of this development, including whether any BMV agricultural land would be impacted.</p>		
<p>Natural England</p>	<p>For information on the availability of existing ALC information see MAGIC map (Ref 15-33).</p>	<p>Existing ALC survey data for the Site was investigated.</p>	<p>Baseline conditions are described in section 15.5, of this chapter.</p>
<p>Natural England</p>	<p>Where an ALC and soil survey of the land is required, this should normally be at a detailed level, e.g. one auger boring per hectare, (or more detailed for a small site) supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2 metres. The survey data can inform suitable soil handling methods and appropriate reuse of the soil resource where required (e.g. agricultural reinstatement, habitat creation, landscaping, allotments and public open space).</p>	<p>A soil and ALC survey has been undertaken within the Solar PV Site and Ecology Mitigation Area by experienced soil specialists (Land Research Associates, LRA). The resultant Soil and ALC Survey Report is included as Appendix 15-3, ES Volume 2. The survey was undertaken in two phases. Firstly, a reconnaissance scale soil and ALC survey at an approximate density of one sample point per every four to five hectares was undertaken between November 2022 and January 2023. The reconnaissance survey area included all land within the Solar PV Site but excluded Ecology Mitigation Areas 1g and 1h which came into the Scheme after completion of the survey. Building upon the reconnaissance scale survey, a more detailed</p>	<p>Baseline conditions are described in section 15.5, of this chapter.</p> <p>Soil and Agricultural Land Classification Survey Report (Appendix 15-3, ES Volume 2)</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>investigation was conducted between May 2023 and September 2023. The survey densities were as agreed with Natural England (see Appendix 15-4, ES Volume 2 [EN0101443/APP/6.2]). Within the Solar PV Site, the reconnaissance survey data was infilled at a minimum density of one observation per 2 ha. Where variation in ALC grading was detected (in either survey) the detail was increased to one observation per hectare to accurately define the extent of each of the identified ALC grades. As agreed with Natural England, a detailed one observation per ha survey was conducted within the Ecology Mitigation Area.</p> <p>These data have been used to inform the baseline presented in this chapter and the Framework SMP.</p> <p>The Grid Connection Corridor describes an approximate 100 m wide corridor in which the Grid Connection Cables could be placed to allow spatial flexibility during final detailed design post-consent. The actual working corridor (area of disturbance) would typically be a maximum of 30 m and cables would be routed along roads</p>	

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>and roadside where practicable to avoid impact to agricultural land. Once the detailed design is known, further targeted survey will be undertaken (prior to construction) on any agricultural land within the working corridor (i.e., agricultural land that will be subject to direct disturbance) and the information used to inform the detailed SMP and provide baseline land quality data for the reinstatement of land. The survey would be conducted to the densities described by Natural England within the DAS response (Appendix 15-4).</p>	
<p>Natural England</p>	<p>The ES should set out details of how any adverse impacts on BMV agricultural land can be minimised through site design/masterplan. The ES should set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning, and areas for green infrastructure or biodiversity net gain. The aim will be to minimise soil handling and</p>	<p>BMV land has been considered throughout the design process, including focussing the initial site selection on areas of Grade 4 land (based on the Provisional ALC data), solar infrastructure (apart from panels) being located away from areas of BMV wherever practicable, and consideration of the use of ground screw (minimally invasive foundations relative to concrete plinths) to support infrastructure within Field Stations in areas of BMV land. The solar PV</p>	<p>Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1] describes how impacts to BMV land have been considered throughout the design process. Measures to protect soil resources (and consequently the agricultural land they support, including BMV land) are considered in section 15.8, and the Framework CEMP [EN010143/APP/7.7], Framework OEMP [EN010143/APP/7.8], Framework DEMP [EN010143/APP/7.9] and Framework SMP [EN010143/APP/7.10] include good practice measures for the sustainable management</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>maximise the sustainable use and management of the available soil to achieve successful after-uses and minimise off-site impacts.</p> <p>Further information is available in the Construction Code of Practice for the Sustainable Use of Soil on Development Sites and The British Society of Soil Science Guidance Note Benefitting from Soil Management in Development and Construction.</p>	<p>frames are directly driven into the ground and do not require foundations.</p>	<p>of soils at construction, operation and decommissioning as set out in the referenced guidance.</p>
<p>Natural England</p>	<p>Section 15.5.10 of the Scoping Report states that the Grid Connection Corridor will be scoped out of the soil and ALC surveys. We advise that the corridor should be scoped into the surveys as correct soil handling techniques will need to be employed during the construction period to ensure that the development area can return to its former land quality (ALC grade).</p>	<p>Natural England’s Discretionary Advice Service (DAS) responded in relation to the Grid Connection Corridor, stating that they “<i>require that land quality and soil resources information is gathered for any land that is disturbed by the development</i>”, see Appendix 15-4, ES Volume 2.</p> <p>The Grid Connection Corridor describes an approximate 100 m wide corridor in which the Grid Connection Cables could be placed to allow spatial flexibility during final detailed design post-consent. The actual working corridor (area of disturbance) would typically be a maximum of 30 m and</p>	<p>The DAS response is summarised in paragraph 15.3.7 onwards and presented in full in Appendix 15-4</p> <p>See also section 15.4: Additional Consultation.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>cables would be routed along roads and roadside where practicable to avoid impact to agricultural land.</p> <p>It is proposed that once the detailed design is known the survey is undertaken prior to construction on any agricultural land within the working corridor (i.e., agricultural land that will be subject to direct disturbance) and the information used to inform the detailed SMP and provide baseline land quality data for the reinstatement of land. The survey would be conducted to the densities described by Natural England within the DAS response, presented in Appendix 15-4. Delivery of the survey would be secured through the SMP. Similarly, agricultural land within the Interconnecting Cable Corridor would be surveyed prior to construction. This chapter has used data from the Predictive ALC to inform the assessment baseline and the SMP in relation to the Cable corridors.</p>	
<p>North Yorkshire County Council and</p>	<p>A Soil Resource Plan and Soil Management Plan should be produced to protect and manage</p>	<p>A Framework SMP (sometimes also referred to as a Soil Resource and Management Plan) has been produced for the Scheme. A detailed SMP will be</p>	<p>The Framework CEMP [EN010143/APP/7.7] and a Framework Soil Management Plan (SMP) [EN010143/APP/7.10].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
Selby District Council	site soils, including protection and restoration of ALC BMV land.	<p>prepared prior to construction when the contractor is appointed and further details of the construction methodology etc. are known (secured by DCO Requirement).</p> <p>Standard industry measures to mitigate the impact on soils and agricultural land, based upon best practice guidance, have also been included within Framework CEMP [EN010143/APP/7.7], Framework OEMP [EN010143/APP/7.8], Framework DEMP [EN010143/APP/7.9]. Application of the SMP will ensure soil quality is maintained allowing soils to support/achieve the same ALC grading upon restoration as prior to the Scheme (note that the ALC guidance (Ref 15-23) states that ALC survey of reinstated land should not be undertaken for five-years post-restoration to allow time for 'bedding in').</p>	
Spaldington Parish Council	Concern that the project would have a severe negative impact on local community through loss of farmland.	Loss of agricultural land use due to the Scheme is temporary. All land all land within the Grid Connection and Interconnecting Cable Corridors will be returned to its original land use at the	Areas of ecology mitigation and habitat enhancement are shown on Figure 2-3, ES Volume 3 [EN010143/APP/6.3] and discussed in detail in the Framework

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>end of the construction period. All land within the Solar PV Site (with the possible exception of Solar PV area 1c - the Grid Connection Substations, and areas of habitat enhancement) will be returned its original agricultural land use after decommissioning. Land within the Ecology Mitigation Area will remain in arable rotation or be converted to grassland. During operation, it is the intention that most land within the Solar PV Site would remain available for sheep grazing. In addition, areas of habitat enhancement would be created. Public Rights of Way (PRoW) would also remain accessible throughout construction, operation and decommissioning as set out in Chapter 2 of the ES and the Framework Public Rights of Way Management Plan (PRoWMP) and new Permissive Paths would be created.</p> <p>Impacts to local communities, including health and well-being, are considered in the Chapter 12: Socio-economics and Land Use and Chapter 14: Human Health.</p>	<p>Landscape and Ecological Management Plan (LEMP) [EN010143/APP/7.14]. PRoW and new Permissive Paths are described in Chapter 2: The Scheme ES Volume 1 [EN010143/APP/6.1] and illustrated in Figure 2-2 ES Volume 3 [EN010143/APP/6.3]. Chapter 2 also discusses the potential for retention of the Grid Connection Substations.</p> <p>The Framework PRoW MP is presented in Volume 7 [EN010143/APP/7.13].</p> <p>Impacts to local communities, including health and well-being are presented in Chapter 12: Socio-economics and Land Use, ES Volume 1 [EN010143/APP/6.1] and Chapter 14: Human Health, ES Volume 1 [EN010143/APP/6.1].</p> <p>The assessment takes account of the loss of BMV land (Section 15.9) and mitigation measures to avoid this are presented in section 15.8.</p>

Table 15-2. Statutory consultation responses (soils and agricultural land)

Consultee	Summary of comment	How matter has been addressed	Location of response
Natural England	<p>Identified a requirement that land quality and soil resources information is gathered for any land that is disturbed by the development and noted that although the Predictive ALC mapping provides an indication of the ALC grade/potential impact on BMV agricultural land, it does not provide the soil details required to inform the detailed SMP, and that therefore the results of an ALC survey would provide soils data to inform an SMP for the whole Site.</p>	<p>A soil and ALC survey was undertaken within the Solar PV Site and Ecology Mitigation Area by experienced soil specialists (Land Research Associates, LRA). The resultant Soil and Agricultural Land Classification Survey Report is included as Appendix 15-3, ES Volume 2.</p> <p>The Grid Connection Corridor describes an approximate 100 m wide corridor in which the Grid Connection Cables could be placed to allow spatial flexibility during final detailed design post-consent. The actual working corridor (area of disturbance) would typically be a maximum of 30 m and cables would be routed along roads and roadside where practicable to avoid impact to agricultural land.</p> <p>It is proposed that once the detailed design is known the survey is undertaken prior to construction on any agricultural land within the working corridor (i.e., agricultural land that will be subject to direct disturbance) and the information used to inform the detailed SMP and provide baseline land quality data for the reinstatement of land. The survey would be conducted to the densities described by Natural England within the DAS response, presented in</p>	<p>Appendix 15-2, ES Volume 2 [EN010143/APP/6.2] presents predictive ALC information and Appendix 15-3, ES Volume 2 [EN010143/APP/6.2] presents the findings of a site survey of the land within the Solar PV Site and Ecological Mitigation Area.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>Appendix 15-4. Delivery of the survey and the detailed SMP would be secured through DCO Requirement. Similarly, agricultural land within the Interconnecting Cable Corridor would be surveyed prior to construction. This chapter has used data from the Predictive ALC to inform the assessment baseline and the SMP in relation to the Cable corridors.</p> <p>Delivery of surveys of the Grid Connection Corridor and Interconnecting Cable Corridor and the detailed SMP are secured through a DCO Requirement.</p>	
<p>Natural England</p>	<p>Based on the information provided within the Preliminary Environmental Information Report (PEIR) (Chapter 15: Soils and Agricultural Land and associated Appendices), it appears that the proposed development comprises 1443.2 ha, of which 322.9 ha is BMV agricultural land (Grades 1, 2 and 3a land in the Agricultural Land Classification (ALC) system). The ALC grades have been determined from a combination of a reconnaissance ALC survey and Predictive ALC mapping. Within the Order Limits, 3.2 ha will be subject to permanent development, all of which</p>	<p>As above.</p>	<p>Appendix 15-2, ES Volume 2 [EN010143/APP/6.2] presents predictive ALC information and Appendix 15-3, ES Volume 2 [EN010143/APP/6.2] presents the findings of a site survey of the land within the Solar PV Site and Ecological Mitigation Area.</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>is non-BMV. A further 82.5 ha is proposed for habitat creation, which is assumed to be a permanent loss of agricultural land. Of this 82.5 ha, 35.8 ha is considered to be BMV.</p>		
<p>East Riding of Yorkshire Council</p>	<p>Best and Most Versatile (BMV) Land – Further guidance for the consideration of solar farms (and other forms of renewable development) is contained within the PPG. This states that where the proposal involves greenfield land, whether (i) the proposed use of any agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land; and (ii) the proposal allows for continued agricultural use where applicable and/ or encourages biodiversity improvements around arrays. It is essential that any future application addresses these two issues</p>	<p>BMV land has been considered throughout the design process as described in Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1], including focussing the initial site selection on areas of Grade 4 land (based on the Provisional ALC data), solar infrastructure (apart from panels) being located away from areas of BMV wherever practicable, and consideration of the use of ground screw (minimally invasive foundations relative to concrete plinths) to support infrastructure within Field Stations in areas of BMV land. The solar PV frames are directly driven into the ground and do not require foundations. Chapter 15: Soils and Agricultural Land, ES Volume 1 [EN010143/APP/6.1] assess the impact of the Scheme on agricultural land. An assessment against planning policy is set out within the Planning Statement [EN010143/APP/7.2].</p> <p>Details of ALC grading within the Site (including differentiation of Subgrade 3a and 3b land) is provided through a combination</p>	<p>Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1] describes how impacts to BMV land have been considered throughout the design process.</p> <p>Planning Statement [EN010143/APP/7.2].</p> <p>Chapter 15: Soils and Agricultural Land, ES Volume 1 [EN010143/APP/6.1]</p> <p>Biodiversity Net Gain Assessment Report [EN010143/APP/7.11].</p> <p>Grazing Feasibility Study, Appendix 2-1, ES Volume 2 [EN010143/APP/6.2].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>of Soil and ALC Surveys undertaken within the Solar PV Site and Ecology Mitigation Area and Predictive ALC data from Cranfield University which covers the whole Site. This shows that the majority of land within the Site is of non-BMV quality.</p> <p>BNG habitat enhancement and creation proposals take into account existing ecological functions, linkages and soil health. Experts in ecology, landscaping and BNG have collaborated on BNG enhancements and creation. The Biodiversity Net Gain Assessment Report [EN010143/APP/7.11] includes high-level management prescriptions for habitats to achieve their target condition scores, which will feed into habitat management and monitoring plans.</p> <p>The Applicant has commissioned an independent consultant to review the feasibility of sheep grazing on the grassland beneath solar panels, which has shown that sheep will be able to graze on the land. More detail is contained within the Grazing Feasibility Study, Appendix 2-1, ES Volume 2 [EN010143/APP/6.2].</p>	
<p>East Riding of Yorkshire Council</p>	<p>An Agricultural Land Classification Assessment should be undertaken and provided with any future application to confirm the land</p>	<p>The consideration of BMV throughout the design process is detailed in the row above. Soil and ALC survey has been undertaken within the Solar PV Site and Ecology</p>	<p>Section 15.5 of this chapter</p> <p>Chapter 2: The Scheme, ES Volume 1 [EN0101443/APP/6.1].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
	<p>classification of the application site. Areas of BMV land (Grade 1-3a) should be avoided.</p>	<p>Mitigation Area by experienced soil specialists (LRA). The resultant Soil and ALC Survey Report is included as Appendix 15-3, ES Volume 2. The survey was undertaken in two phases. Firstly, a reconnaissance scale soil and ALC survey at an approximate density of one sample point per every four to five hectares was undertaken between November 2022 and January 2023. The reconnaissance survey area included all land within the Solar PV Site but excluded Ecology Mitigation Areas 1g and 1h which came into the Scheme after completion of the survey.</p> <p>Building upon the reconnaissance scale survey, a more detailed investigation was conducted between May 2023 and September 2023. The survey densities were as agreed with Natural England (see Appendix 15-4, ES Volume 2 [EN0101443/APP/6.2]). Within the Solar PV Site, the reconnaissance survey data was infilled at a minimum density of one observation per 2 ha. Where variation in ALC grading was detected (in either survey) the detail was increased to one observation per hectare to accurately define the extent of each of the identified ALC grades. As agreed with Natural England, a detailed one</p>	<p>Soil and ALC Survey Report, Appendix 15-3, ES Volume 2 [EN0101443/APP/6.2].</p> <p>Communications with Natural England are detailed in Appendix 15-4, ES Volume 2 [EN0101443/APP/6.2].</p> <p>Framework SMP [EN0101443/APP/7.10].</p>

Consultee	Summary of comment	How matter has been addressed	Location of response
		<p>observation per ha survey was conducted within the Ecology Mitigation Area.</p> <p>These data are summarised in section 15.5 of this chapter and have been used to inform the baseline presented in this chapter and the Framework SMP.</p> <p>As set out in Chapter 2 of this ES, the Grid Connection Corridor describes an approximate 100 m wide corridor in which the Grid Connection Cables could be placed to allow spatial flexibility during final detailed design post-consent. The actual working corridor (area of disturbance) would typically be a maximum of 30 m and cables would be routed along roads and roadside where practicable to avoid impact to agricultural land.</p> <p>Once the detailed design is known, further targeted survey will be undertaken (prior to construction) on any agricultural land within the working corridor (i.e., agricultural land that will be subject to direct disturbance) and the information used to inform the detailed SMP and provide baseline land quality data for the reinstatement of land. The survey would be conducted to the densities described by Natural England within the DAS response (Appendix 15-4).</p>	

Additional Consultation

- 15.3.7 On 15 February 2023, Natural England was contacted through the Scheme's DAS agreement (411969 DAS East Yorkshire Solar Farm) to seek formal agreement on the proposed baseline data collection methodology. The DAS request also provided background information on the Scheme and working methods, including methods of Solar PV installation. A copy of the email correspondence is contained within **Appendix 15-4, ES Volume 2 [EN010143/APP/6.2]**. Where the supporting information presented as attachments to this email are included elsewhere in this chapter, they are not reproduced in the appendix.
- 15.3.8 Natural England provided a response on 31 March 2023, which is also presented in **Appendix 15-4, ES Volume 2 [EN010143/APP/6.2]**. The methodology for baseline data collection used in the assessment presented in this chapter has incorporated the advice and recommendations provided.
- 15.3.9 An email and memo were issued to Natural England on 9 May 2023 (**Appendix 15-4, ES Volume 2 [EN010143/APP/6.2]**) to confirm the details of the soil and ALC survey, based upon the advice received. No direct response to this email has been received to date, however Natural England previously provided its Statutory Consultation response on 16 June 2023, as set out in **Table 15-2** and the **Consultation Report [EN010143/APP/5.1]**.
- 15.3.10 The Applicant will maintain ongoing communications with farmers and landowners throughout the development and construction phases of the Scheme. Additionally, as set out in the **Framework CEMP [EN010143/APP/7.7]** a Land Officer (who may be part of the Land Agent team) will be employed for the duration of construction operations. The Site-specific data gained from discussions can assist in ensuring that construction effects of the Scheme on agriculture and agricultural operations are minimised where practicable. For example, the identification of preferred locations for designated crossing points to minimise disruption to the movement of livestock and machinery during construction works within the Grid Connection and Interconnecting Cables; or details of how works on the Grid Connection and Interconnecting Cables could be programmed to avoid specific locations during sensitive times in the farming calendar (for example during calving, although it is noted that farming operations along the Cable Corridors are predominantly arable). Engagement with landowners within the Solar PV Site has been ongoing from Scheme conception; will continue through the design and consenting phase; and will be ongoing throughout the Scheme's lifespan through to completion of decommissioning.

15.4 Assessment Methodology

Assumptions, Limitations and Uncertainties

- 15.4.1 The Scheme has five component elements, namely the Solar PV Site, Ecological Mitigation Area, the Grid Connection Corridor, the Inter-Connecting Corridor and Site Accesses (**Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]** and **Figure 1-3, ES Volume 3 [EN010143/APP/6.3]**).

- 15.4.2 No solar PV infrastructure will be placed in the Ecological Mitigation Area. The land will be subject to revised arable rotations and wet grassland creation for the benefit of migratory birds. Areas of additional ecological proposals and landscape enhancement are measured within the baseline data for the Solar PV Site.
- 15.4.3 Site Accesses incorporate existing tracks (with limited widening in places) and alteration to existing junctions. This is not expected to affect agricultural land and therefore baseline ALC data for Site Accesses are not presented.
- 15.4.4 As noted in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**, construction of the Grid Connection Cables including associated Site Accesses is anticipated to require 12 months, whereas construction of the solar farm (Solar PV Site, the Interconnecting Cables and associated Site Accesses) will require an estimated 24 months. The construction period could be of longer duration, however, the assessment of effects arising during the construction phase is based on guidance which does not require consideration of duration of impacts and therefore the duration of the construction phase would not influence the outcomes of the assessment.
- 15.4.5 The frames supporting the solar panels will be driven directly into the ground without the need for the excavation of foundations or disturbance to the surrounding land surface (soils). This is the most common solution on existing UK solar farms. The direct drive installation of frames is considered to result in no loss of soil resources or agricultural land.
- 15.4.6 The Applicant has identified options for the management of the grassland within the Solar PV Site (including land beneath and between the solar panels) and potentially in the Golden Plover Mitigation Zone of the Ecology Mitigation Area (see **Figure 2.3, ES Volume 3, [EN010143/APP/6.3]**) during the operational phase. These options include grazing by sheep. Should grazing not be possible in some or all areas of the Solar PV Site, grassland will instead be managed by mowing, typically using a tractor and flail (see **Chapter 2, ES Volume 1 [EN010143/APP/6.1]**).
- 15.4.7 The option of sheep grazing is being explored by the Applicant and a Grazing Feasibility Study (**Appendix 2-1, ES Volume 2, [EN010143/APP/6.2]**) has been undertaken by an independent sheep specialist in the UK livestock industry. This concluded that “...*the land is suitable for grass and forage crops and if managed correctly, by providing good fencing and water supplies and good sheep husbandry, then there is no reason why the land under the panels cannot successfully be grazed by sheep, as is common practice on other operational solar farms both within the UK and internationally*”.
- 15.4.8 Sheep grazing of solar farms is successfully undertaken both in the UK and abroad and has associated benefits such as soil health improvement. As grazing achieves an essential maintenance function (maintaining the grass at a low level) without the need for/cost of machinery, it is possible for solar farms to use less agriculturally productive breeds (such as heritage breeds) and to graze at lower densities. The agricultural business model for grazing would therefore be around the provision of vegetation management services in combination with the sale of fleece, meat or other products. Further information on grazing can be found in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**.

- 15.4.9 It is noted that depending upon the management objective and regime, some areas of grassland created as habitat enhancement/mitigation within the Solar PV Site and Ecology Mitigation Area could be grazed, but others (such as areas of tree planting) will not be available for grazing.
- 15.4.10 The assessment assumes that all land within the Solar PV Site is removed from agricultural use at the start of construction and impacts to agricultural land are therefore assessed as part of the construction phase. It is assumed that all grassland created within the Solar PV Site and in the Golden Plover Mitigation Area, along with all areas of hardstanding within the Solar PV Site (with the exception of the Grid Connection Substations/land in Solar PV Area 1c) will be returned to agricultural use after decommissioning (long-term reversible loss of agricultural land).
- 15.4.11 The Scheme will create new hedgerows and enhance (thicken and gap-up) existing hedgerows. The land beneath the hedgerows has been included in the grassland data as hedgerow data are provided as linear metres of hedgerow created rather than areas. Although it is expected that this hedgerow planting will be retained after decommissioning, it is not considered to represent a loss of agricultural land as it will form field/agricultural boundaries.
- 15.4.12 To represent a worst case for loss of agricultural land, it is assumed that areas of trees, shrub and orchard created within the Solar PV Site as ecological enhancement and landscaping may be considered too ecologically valuable to be removed and the land returned to agricultural use at decommissioning. For example, due to the quality of the habitat itself or due to the presence of protected species. This loss of agricultural land to tree, shrub and orchard planting therefore represents a permanent loss of agricultural land but reflects a beneficial effect in terms of ecology.
- 15.4.13 As stated in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**, it is common practice for infrastructure such as the Grid Connection Substations (Solar PV Area 1c) to be retained and used for another purpose after the development they were originally installed to support is decommissioned. And therefore, to represent a worst case all land within Solar PV Area 1c is assessed being subject to permanent development.
- 15.4.14 It should be noted that within the Scoping Report (**Appendix 1-1, PEI Report Volume 4**), it was stated that separate assessments would be conducted for 'Soil Resource Quality' and 'Loss of Soil Resources'. In line with the IEMA Guidance (Ref 15-19), this has been combined into an assessment of 'Loss of soil functions/volumes and soil-related features', as explained within the Methodology at 15.4.29.
- 15.4.15 The land within the Grid Connection and Interconnecting Cable Corridors is predominantly agricultural, however cabling will be routed within the road or roadside verges where practicable, which will limit the impact to agricultural land. Additionally, to allow some spatial flexibility at detailed design, the described Corridors are wider than the actual working areas (working corridors) where disturbance will occur (see **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**). To present a worst case it is assumed that all agricultural land within the Grid Connection and Interconnecting Cable Corridors will be subject to disturbance, which for the Grid Connection Corridor especially is a large overestimate as the working area (often referred to as the working width) would typically be a maximum 30 m

wide corridor within the approximate 100 m wide Grid Connection Corridor. Also, to present a worst case it is assumed that all land within the Grid Connection and Interconnecting Cable Corridors is agricultural.

- 15.4.16 A detailed soil and ALC survey of land within the Solar PV Site and Ecology Mitigation Area has been undertaken to inform the assessment (see section 15.5 and **Appendix 15-3, ES Volume 2 [EN010143/APP/6.2]**). The survey methodology including density of survey was agreed with Natural England (section 15.3 and **Appendix 15-4, ES Volume 2 [EN010143/APP/6.2]**).
- 15.4.17 For the Solar PV Site, the assessment uses the gradings as described by the soil survey and shown in **Figure 15-3, ES Volume 3, [EN010143/APP/6.3]** however it is noted that where small areas of BMV land are present, due to their size they likely to only be farmable as per the lower grade surrounding land.
- 15.4.18 No soil and ALC survey of the Interconnecting Cable or Grid Connection Corridors, which will be returned to their pre-development land use and land quality at the end of the construction phase, have been undertaken to inform the ES. Similarly, soil and ALC survey of the Site Accesses have not been undertaken as these are predominantly non-agricultural land (roads, verges, existing tracks, etc.). Instead, the assessments presented are based upon the Predictive ALC data obtained from Cranfield University (**Appendix 15-2, ES Volume 2 [EN010143/APP/6.2]**). This desk-based approach has been confirmed by the Planning Inspectorate (**Table 15-1**) and discussed with Natural England (section 15.3 and **Appendix 15-4, ES Volume 2 [EN010143/APP/6.2]**).
- 15.4.19 All quoted percentages are presented as one decimal place and therefore account for rounding.

Matters Scoped in/Scoped out

- 15.4.20 The Planning Inspectorate agreed that because decommissioning effects are expected to be similar to or of a lesser magnitude than the construction effects these matters may be scoped out (**Table 15-1**). The Inspectorate noted that an outline of the general principles that would apply during decommissioning would be contained in the **Framework DEMP [EN010143/APP/7.7]** and that a detailed DEMP would be produced in advance of the commencement of decommissioning works (as secured through the **Draft DCO [EN010143/APP/3.1]**).

Study Area

- 15.4.21 The Order limits are shown on **Figure 1-2, ES Volume 3 [EN/010143/APP/6.3]** and represent the maximum extent of land to be acquired or used for the construction, operation (including maintenance), and decommissioning of the Scheme. Within the ES, all land within the Order limits is referred to as the 'Site'. As defined in **Chapter 2: The Scheme ES Volume 1 [EN/010143/APP/6.1]**, the Site is split into five elements: the Solar PV Site, the Ecology Mitigation Area, the Interconnecting Cable Corridor, the Grid Connection Corridor, and Site Accesses (these are illustrated in **Figures 15-1 to 15-4, ES Volume 3 [EN/010143/APP/6.3]**).

- 15.4.22 The Study Area for agricultural land comprises all land within the Solar PV Site, the Ecology Mitigation Area, the Interconnecting Cable Corridor, and the Grid Connection Corridor (as described in **Table 15-11 to Table 15-14**). As described in paragraph 15.4.3, Site Accesses are not expected to affect agricultural land and are considered to contain non-agricultural land only, and therefore Site Accesses (approximately 10.7 ha of land within the Order limits) are excluded from the agricultural land Study Area.
- 15.4.23 The Study Area for soil resources comprises all land within the Order limits (including Site Accesses) as the sustainable management of both agricultural and non-agricultural (for example soils in roadside verges) soil resources is required.
- 15.4.24 A buffer area beyond the boundaries of the Site elements described above was not applied when defining the Study Areas, as impacts to soils and agricultural land are limited to land directly impacted by the Scheme.
- 15.4.25 To provide additional context to the discussion of agricultural land within the ES, the impacts (scale of loss of Best and Most Versatile (BMV) agricultural land) have been considered in the wider (Regional) context of the administrative boundaries of East Riding of Yorkshire Council and the former Selby District Council¹.
- 15.4.26 Additionally, a further Study Area has been considered for the assessment of cumulative impacts to loss of BMV agricultural land. This considers all developments on the short-list of other developments (**Appendix 17-1, ES Volume 2 [EN/010143/APP/6.2]**) identified as relevant to the Scheme in terms of overall loss of BMV agricultural land to development.

Methodology

Overview

- 15.4.27 In February 2022, the Institute of Environmental Management and Assessment (IEMA) issued its guidance document 'A New Perspective on Land and Soil in Environmental Impact Assessment' (Ref 15-19) (hereafter referred to as 'the IEMA guidance'). Previously, there had been no published guidance for the consideration of the impacts of development on soils and land in EIA.
- 15.4.28 The aims of the IEMA guidance are to advocate "*a broader approach [to the assessment of soils and agricultural land in EIA] that involves assessing the natural capital and functional ecosystem services provided by land and soils*". The introduction to the IEMA guidelines states that they are not prescriptive and are designed to be a selective reference document, more in the nature of a land and soil 'handbook'. Soil specialists and EIA practitioners are expected to focus on content relevant to their interests, for example in respect of specific development proposals; and to interpret and apply the guidelines as appropriate to the sensitivity of the environment at the development location, and the nature of the proposed development.

¹ On 1 April 2023 North Yorkshire County Council and its six constituent District Councils (including Selby District Council) were merged to become the Unitary Authority of North Yorkshire Council. The southern part of the Grid Connection Corridor lies within the boundary of the former Selby District and therefore this boundary has been used to give Regional context.

15.4.29 The assessment presented in this chapter is therefore based upon relevant aspects of the IEMA guidance and focusses on the potential impacts of the Scheme to agricultural land and land use including the loss of BMV land, and loss of soil functions/volumes and soil-related features.

15.4.30 The technical guidance relevant to the assessment is summarised in section 15.2 and further discussed in **Appendix 15-1, ES Volume 2 [EN010143/APP/6.2]**.

Agricultural Land

15.4.31 ALC is the standard method for classifying agricultural land according to its versatility, productivity and workability, based upon inter-related parameters including climate, relief, soil characteristics and drainage. These factors form the basis for classifying agricultural land into one of five grades (with Grade 3 land divided into Subgrades 3a and 3b), ranked from excellent (Grade 1) to very poor (Grade 5). ALC is determined using the Ministry of Agriculture, Fisheries and Food (MAFF) Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land, 1988 (Ref 15-25).

15.4.32 Best and Most Versatile agricultural land is described in NPS-EN1 (Ref 15-3) and the NPPF (Ref 15-9) as land of excellent (Grade 1), very good (Grade 2) and good (Subgrade 3a) agricultural quality. BMV land is afforded a degree of protection against development within planning policy (**see Appendix 15-1, ES Volume 2 [EN010143/APP/6.2]**) as it can support a wide variety of consistently high-yielding crops. Moderate, poor and very poor-quality land is designated Subgrade 3b or Grades 4 and 5, respectively, and is restricted to a narrower range of agricultural uses. This is referred to as non-BMV land.

Sensitivity Criteria: Agricultural Land

15.4.33 **Table 15-3** identifies the sensitivity criteria that have been used to inform the assessment of effects to agricultural land, taken from Table 2 of the IEMA guidance (Ref 15-19). These are based upon biomass production (considered as the ALC grading of the land, with land of higher grade being more productive and capable of higher biomass yields and therefore classed as being of higher sensitivity), and the degree to which the land supports ecological habitats, soil biodiversity or is a platform for landscape (based upon factors such as whether the land supports designated ecological sites).

Table 15-3. Sensitivity Criteria for Agricultural Land

Sensitivity Criteria

Very High **Biomass Production:** Land of ALC Grades 1 and 2.

Ecological habitat, soil biodiversity and platform for landscape:
Soils supporting protected features within a European Site (e.g. SAC, SPA, Ramsar); Peat soils; Soils supporting a National Park or Ancient Woodland.

Sensitivity Criteria

High	<p>Biomass production: Land of ALC Subgrade 3a.</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected features within a UK designated site (e.g. UNESCO Geoparks, SSSI or AONB, Special Landscape Area, and Geological Conservation Review sites); Native Forest and Woodland Soils; Unaltered soils supporting semi-natural vegetation (including UKBAP Priority Habitats).</p>
Medium	<p>Biomass production: ALC Subgrade 3b.</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting protected or valued features within non-statutory designated sites (e.g. Local Nature Reserves (LNR), Local Geological Sites (LGSs), Sites of Nature Conservation Importance (SNCIs), Special Landscape Areas; Non-Native Forest and woodland soils.</p>
Low	<p>Biomass production: ALC Grades 4 & 5.</p> <p>Ecological habitat, soil biodiversity and platform for landscape: Soils supporting valued features within non designated notable or priority habitats/landscapes. Agricultural soils.</p>
Negligible	<p>As for low sensitivity but with only indirect, tenuous and unproven links between sources of impact and soil functions.</p>

Magnitude of Impact: Agricultural Land

15.1.1 The criteria used to determine the magnitude of impacts to agricultural land are also derived from the IEMA guidance (Ref 15-19), and are presented in **Table 15-4**. These consider the magnitude (or scale) of change from the baseline conditions currently experienced which could result because of Scheme. The scale of variation from baseline conditions may be positive or negative. Adverse effects of a scheme are “*permanent irreversible loss of one or more soil functions or soil volumes (including the permanent sealing or land quality downgrading)*”, whilst conversely, permanent improvement of soil functions represents a benefit.

Table 15-4. Magnitude of impact on agricultural land

Magnitude	Negative impact	Positive impact
Major	Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of more than 20 ha, including soil-related features	Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20 ha, including soil-related features identified by other topic

Magnitude	Negative impact	Positive impact
	identified by other topic specialists, such as Ecology, Flood Risk and Land Use, including effects of temporary developments.	specialists, such as Ecology, Flood Risk and Land Use, including effects of temporary developments.
Moderate	Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of 5-20 ha, including soil-related features identified by other topic specialists, such as Ecology, Flood Risk and Land Use, including effects of temporary developments.	Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of 5-20 ha, including soil-related features identified by other topic specialists, such as Ecology, Flood Risk and Land Use, including effects of temporary developments.
Minor	Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading), over an area of less than 5 ha, including soil-related features identified by other topic specialists, such as Ecology, Flood Risk and Land Use, including effects of temporary developments.	Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5 ha, including soil-related features identified by other topic specialists, such as Ecology, Flood Risk and Land Use, including effects of temporary developments.
Negligible	No discernible loss or reduction of soil functions or soil volumes that restrict current or proposed land use.	No discernible improvement of soil functions or soil volumes that restrict current or proposed land use.
No change	Unaffected by development within the Site Boundary.	Unaffected by development within the Site Boundary.

Significance of Effects: Agricultural Land

15.1.2 The classification of effects for agricultural land has been assessed using **Table 15-5** below which is taken from Table 5 of the IEMA guidance (Ref 15-19). Where effects are determined as moderate or large to very large, the effect is considered significant. Where effects are determined as neutral to slight or moderate, the effect is considered not significant.

Table 15-5. Significance of effect on agricultural land (*Shading identifies significant effects*)

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

Sensitivity Criteria: Soil Resources

- 15.1.3 As set out in the IEMA guidance (Ref 15-19), the assessment considers the identified soil resources and their susceptibility to damage when being handled (this is a function of soil type and is related to soil texture and structural development as described below). In accordance with the IEMA guidance, the sensitivity criteria do not contain a Very High sensitivity rating.
- 15.1.4 Assessing the sensitivity of soil resources to damage (i.e. resistance and resilience of the soil environment, not the importance of the land for agricultural use) is recognised as being complex as soil resources provide a range of functions (ecosystem services), such as supporting plant growth (including food and other crops), water filtration and regulation (role in flood control), nutrient transformation (e.g. role in the nitrogen cycle), carbon storage and sequestration, and supporting biodiversity. The sensitivity criteria for soil resources are therefore based on the susceptibility to damage, both temporarily and permanently, when handled.
- 15.1.5 It is recognised within the IEMA guidance that some soils are more sensitive to damage when handled during construction than others. The methodology considers soils of high clay content in wetter climate regions to be most sensitive to damage. For example, the incorrect handling/reinstatement of a heavy (clay rich) soil whilst in a plastic state may result in a reinstated soil profile with reduced natural drainage compared to the natural soil profile and a subsequent increased risk of soil loss (erosion) due to surface water run-off. Soils with high sand fraction are considered to be of low sensitivity as the permeable nature of light sandy soils means that the natural structural recovery and drainage potential of these soils is more easily maintained. The Field Capacity Days (FCDs) are also taken into consideration. Field Capacity is the condition in which the soil is saturated with water and any water from rainfall will infiltrate quickly under the force of gravity or create waterlogging.
- 15.1.6 The sensitivity criteria for Soil Resources are set out in **Table 15-6**, which is based upon Table 4 of the IEMA guidance.

Table 15-6. Sensitivity of Soil Resources

Sensitivity	Soil Resources (Texture, Field Capacity Days and Wetness Class)
High (low resilience to structural damage)	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the Field Capacity Days (FCD) are 150 or greater. Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams), where the FCDs are 225 or greater. All soils in wetness class V or wetness class VI
Medium (medium resilience to structural damage)	Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils, where the FCDs are fewer than 150. Medium textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225. Sandy loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in wetness classes III and IV.
Low (high resilience to structural damage)	Soils with high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in wetness classes I and II.

15.5 Baseline Conditions

15.5.1 This section describes the baseline environmental Study Area with specific reference to Soils and Agricultural Land.

Data Sources

15.5.2 In preparation of this chapter, the following sources of published information were used to establish the baseline conditions, to support subsequent field survey:

- a. The Soil Survey of England and Wales: Northern England (1984) and associated 1:250,000 mapping (Sheet 1: Northern England) (Ref 15-29);
- b. LandIS Soils Guide (Ref 15-36);
- c. Natural England. Provisional Agricultural Land Classification: Yorkshire and The Humber (ALC003). (Ref 15-39);
- d. Natural England, Agricultural Land Classification, detail Post 1988 ALC survey, Howden Thorpe Road (Goole Hook LP Site 13) (ALCL03891) (Ref 15-38)
- e. Google Maps (©2023) (Ref 15-31);
- f. Google Streetview (©2023) (Ref 15-32);

- g. Multi-Agency Geographical Information for the Countryside (MAGIC). (DEFRA) (Ref 15-33); and
- h. Met Office (1989) Climatological Data for Agricultural Land Classification (ALC) (Ref 15-34).

Existing Baseline

- 15.5.3 Baseline information on soils and agricultural land has been derived from published data, predictive modelling, and progressive stages of field survey.

Soils

- 15.5.4 Digitised mapping of soil associations was purchased from LandIS. This is the most detailed available soils mapping covering England and Wales and is produced from survey data from the Soil Survey of England and Wales (Ref 15-27); it provides digitised soil association data at a 1:250,000 scale. The scale of the data/mapping is such that it is not accurate to the field level and does not pick up small-scale local variations in soil type. It does however provide a general indication of the soil types within the Study Area and provided a robust baseline on which to base the assessment. **Figure 15-4, ES Volume 3 [EN010143/APP/6.3]** shows the distribution of soil associations within the Site.
- 15.5.5 Most of the soils within the Solar PV Site, Ecology Mitigation Area, Grid Connection Corridor and all soils within the Interconnecting Cable Corridor are within the Foggathorpe 2 (712i) association. These are mainly slowly permeable, seasonally waterlogged stoneless clayey and fine loamy over clayey soils with some similar coarse loamy over clayey soils.
- 15.5.6 Soils of the Sessay (831b) association are present in the southern half of Solar PV Area 2g. These soils generally occur on flat land and are fine and coarse loamy, often stoneless, permeable soils affected by groundwater. They are often associated with slowly permeable seasonally waterlogged fine loamy over clayey and clayey soils. They principally occur in the south-east (Solar PV Area 2g) and south-west (Solar PV Area 3c) of the Solar PV Site with a small area in Solar PV Area 1a (**Figure 15-1, ES Volume 3 [EN010143/APP/6.3]**).
- 15.5.7 Soils of the Kexby (522a) association are present in a small area in the north-west Solar PV Area 1a. These are generally deep stoneless fine sandy soils which are affected by groundwater. They are often associated with freely draining, slightly acid sandy soils.
- 15.5.8 Soils of the Fladbury 3 (813d) association are present in the east of Areas 1e and in the Ecology Mitigation Area 1h, adjacent to the River Foulness. They are generally stoneless, clayey, fine silty and fine loamy soils affected by groundwater. They are often associated with loamy and clayey floodplain soils with naturally high groundwater.
- 15.5.9 Soils of the Newport 1 (551d) association are only mapped in southern portion of the Site Access from Newsholme Village into Solar PV Area 3c. This access will only be used during the operational phase of the Scheme and comprises an existing access track (see **Chapter 2: The Scheme and Chapter 13: Transport and Access, ES Volume 1 [EN010143/APP/6.1]**). There will therefore be no impacts to the deep well drained sandy and coarse loamy soils of the Newport 1 association due to

- use of this access; and this soil type is scoped out of further consideration in the assessment, but is mentioned in the in the Framework SMP for completeness.
- 15.5.10 A discrete deposit of deep humified fen peat was recorded on a small area of floodplain land in Area 1e adjoining the River Foulness in the north-east of the survey area. These soils are low-lying and poorly to very poorly draining (Soil Wetness Class IV or V) and coincide with the Grade 4. Additionally, within Area 1e and in Ecology Mitigation Area 1h there are areas of organic clays (peaty loams).
- 15.5.11 In addition to the Foggathorpe 2 association, described above, other soil associations are identified within the Grid Connection Corridor: Romney association is adjacent to the River Derwent, and Sessay, Blackwood and Fladbury 3 associations are around Brackenhholme.
- 15.5.12 Romney (532b) association comprises deep stoneless permeable calcareous coarse and fine silty soils formed over alluvial deposits. They are generally associated with flat land with naturally high groundwater, which is often controlled by ditches and pumps, but on the whole are considered well drained (wetness class I)
- 15.5.13 The Blackwood association (821b) comprises seasonally wet, deep permeable sandy and coarse loamy soils formed over glaciofluvial drift. The Sessay and Fladbury 3 associations are described above.
- 15.5.14 The field survey identified soil types that confirmed to the soil associations identified. The primary objective of the field survey was not to identify soil association but to derive detailed ALC grading.
- 15.5.15 Soil Health testing was undertaken in response to consultation with Natural England (see section 15.4). The methodology of data collection and results are detailed in **Appendix 15-5, ES Volume 2 [EN0101443/APP/6.2]**. The data, comprising measures of soil pH, available potassium, phosphorus and magnesium, soil organic matter (SOM) and respiration rate (a general measure of soil biological activity), are not used in the assessment of impacts to soils and agricultural land presented in this chapter (see section 15.4: Methodology). However, it was determined that the most appropriate location for their presentation was as an appendix to this chapter. The data have relevance to determination of appropriate planting and seed mixes and therefore the sampling was targeted to 16 areas identified for habitat creation at the time the surveys were undertaken. The data are therefore considered within the **Framework LEMP [EN010143/APP/7.13]**.

Table 15-7. Baseline soils data for the Solar PV Site

Soil Association	Area (ha)	% Area of Solar PV Site
Fladbury 3	8.8	0.9
Foggathorpe 2	946.7	97.7
Kexby	3.2	0.3

Soil Association	Area (ha)	% Area of Solar PV Site
Sessay	7.8	0.8
No soil cover	2.3	0.2

Table 15-8. Baseline soils data for the Ecology Mitigation Area

Soil Association	Area (ha)	% Area of Ecology Mitigation Area
Fladbury 3	13.4	12.4
Foggathorpe 2	94.5	87.6

Table 15-9. Baseline soils data for the Grid Connection Corridor

Soil Association	Area (Ha)	% Area within the Grid Connection Corridor
Romney	53.5	30.7
Foggathorpe 2	105.6	60.7
Fladbury 3	0.03	0.02
Sessay	7.2	4.1
Blackwood	1.5	0.9
No soil cover	6.3	3.6

Table 15-10. Baseline soils data for the Interconnection Corridor

Soil Association	Area (Ha)	% of land within the Interconnecting Cable Corridor
Foggathorpe 2	23.5	100.0

Agricultural land

15.5.16 The 1:250,000 scale Provisional ALC mapping is available via the Government's geographic information website, Magic.gov.uk (Ref 15-33), and is the most current and detailed published ALC data covering the Study Area. However, it is important to note that these data pre-date the revised ALC methodology issued in 1988 (Ref 15-25) and as a result, the data do not provide a distinction between ALC Subgrades 3a (BMV) and 3b (non-BMV). Additionally, the scale of the mapping is such that it does not pick up variations in ALC grade for areas less than approximately 80 ha. The Provisional ALC mapping therefore provides an indication of the land quality in the region, but the extent and distribution of BMV agricultural land within the Study Area cannot be defined from the Provisional ALC mapping alone. Provisional ALC data were used during the site selection process to

- direct the Scheme away from areas of BMV agricultural land and towards land with the lowest ALC grading in the area of search.
- 15.5.17 The Provisional and Post-1988 ALC for the Study Area and wider area is shown in **Figure 15-1, ES Volume 3 [EN010143/APP/6.3]**. The Provisional ALC data suggests that the Solar PV Site and the Interconnecting Cable Corridor is predominantly within areas classified as Grade 4 with smaller areas of Grade 3 to the south and west. Solar PV Area 2g (**Figure 15-1, ES Volume 3 [EN010143/APP/6.3]**) is mapped as a combination of Grade 3 and Grade 2 land.
- 15.5.18 To provide more accurate ALC grading for the land within the Study Area, including subdivision of Grade 3 into Subgrades 3a and 3b, Predictive ALC data for the 50 km² area covering the south-east quadrant of National Map Square SE were obtained from Cranfield University. This allowed the geographic distribution of the different ALC gradings to be mapped, including ALC Subgrades 3a and 3b (**Figure 15-2, ES Volume 3 [EN010143/APP/6.3]**).
- 15.5.19 The Predictive ALC data show the majority of agricultural land within the Solar PV Site and the Interconnecting Cable Corridor to be Subgrade 3b which is a higher grading than identified in the Provisional mapping. The reason for this is that the Provisional ALC was produced in 1968 to 1970 before the national soil mapping or either of the detailed soil surveys used in the preparation of the Predictive mapping were available. These more detailed soils data combined with the revised ALC methodology (which introduced subdivision of Grade 3) results in a Subgrade 3b (moderate quality, non-BMV) rather than a Grade 4 (poor quality, non-BMV) classification.
- 15.5.20 A soil and ALC survey was undertaken within the Solar PV Site and Ecology Mitigation Area by experienced soil specialists (Land Research Associates, LRA). The resultant **Soil and Agricultural Land Classification Survey Report** is included as **Appendix 15-3, ES Report Volume 2**. The survey was undertaken in two phases. Firstly a reconnaissance scale soil and ALC survey at an approximate density of one sample point per every four to five hectares was undertaken between November 2022 and January 2023. The reconnaissance survey area included all land within the Solar PV Site but excluded Ecology Mitigation Areas 1g and 1h which came into the Scheme after completion of the survey.
- 15.5.21 Building upon the reconnaissance scale survey, a more detailed investigation was conducted between May 2023 and September 2023. The survey densities were as agreed with Natural England (see **Appendix 15-4, ES Volume 2 [EN0101443/APP/6.2]**). Within the Solar PV Site, the reconnaissance survey data was infilled at a minimum density of one observation per 2 ha. Where variation in ALC grading was detected (in either survey) the detail was increased to one observation per hectare to accurately define the extent of each of the identified ALC grades. As agreed with Natural England, a detailed one observation per ha survey was conducted within the Ecology Mitigation Area.
- 15.5.22 The surveys were undertaken using manual tools (manual soil auger and spade) and included auger observations and soil pits (to a maximum depth of 1.2 m). Soil texture is a key factor in relation to ALC grading and often

the determining factor between a Subgrade 3a or 3b classification, particularly in clay soils. Therefore, although good estimations of texture (based on relative percentage content of clay, sand and silt) can be determined by field analysis, to confirm soil texture topsoil samples were analysed for particle size distribution (PSD).

- 15.5.23 The Predictive ALC data provides the baseline for the Interconnecting Cable Corridors and Grid Connection Corridor.
- 15.5.24 **Table 15-11** summarises the baseline ALC data for the Solar PV Site from the most recent field survey (**Appendix 15-3, ES Volume 2 [EN010143/APP/6.2]**). It is noted that an area of 6.86 ha in Solar PV Area 3c (**Figure 15-3, ES Volume 3 [EN010143/APP/6.3]**) was not surveyed because a dense coppice willow plantation prevented survey access and the data from the Cranfield Predictive ALC dataset for this area is incorporated within the detail of **Table 15-11**.
- 15.5.25 **Table 15-11** indicates that 12.99 ha of land within the Solar PV Site is BMV land, constituting 6.3% of all land in the Solar PV Site and 4.9% of land within the Study Area for agricultural land. The majority of land within the Solar PV Site, 897.59 ha (92.9% of the Solar PV Site) is non-BMV land.

Table 15-11. Baseline ALC Data for Solar PV Site

ALC grade	Area (ha)	% of land in the Solar PV Site	% of land in the Study Area for agricultural land
Grade 1	12.99	1.3	1.0
Grade 2	1.97	0.2	0.2
Subgrade 3a	46.44	4.8	3.7
Subgrade 3b	887.66	91.9	70.1
Grade 4	9.93	1.0	0.8
Non-agricultural	7.41	0.8	0.6
Total agricultural land	61.40	99.2	75.8
Total BMV land	12.99	6.3	4.9
Total non-BMV land	897.59	92.9	70.9
Total land	966.40	100.0	76.4

- 15.5.26 **Table 15-12** summarises the baseline ALC data for the Ecology Mitigation Area from the most recent field survey (**Appendix 15-3, ES Volume 2 [EN010143/APP/6.2]**) **Table 15-12** indicates that 18.49 ha of land within the Ecology Mitigation Area is BMV land, constituting 17.1 % of all land in the Ecology Mitigation Area and 1.5 % of land within the Study Area for agricultural land. The majority of land within the Ecology Mitigation Area, 87.10 ha (80.8 % of the Ecology Mitigation Area) is non-BMV land

Table 15-12. Baseline ALC Data for the Ecology Mitigation Area

ALC grade	Area (ha)	% of land in the Ecology Mitigation Area	% of land in the Study Area for agricultural land
Grade 1	0	0.0	0.0
Grade 2	0	0.0	0.0
Subgrade 3a	18.49	17.1	1.5
Subgrade 3b	87.10	80.8	6.9
Grade 4	0	0.0	0.0
Non-agricultural	2.26	2.1	0.2
Total agricultural land	105.59	97.9	8.3
Total BMV land	18.49	17.1	1.5
Total non-BMV land	87.10	80.8	6.9
Total land	107.85	100.0	8.5

15.5.27 The ALC data for the Interconnecting Cable Corridors (**Table 15-13**) and Grid Connection Corridor (**Table 15-14**) utilise the Cranfield Predictive dataset (**Appendix 15-2, ES Volume 2 [EN010143/APP/6.2]**). Both the Interconnecting Cable Corridor (**Table 15-13**) and Grid Connection Corridor (**Table 15-14**) contain agricultural land that will be subject to short-term removal from agriculture during the cabling operation. As stated in paragraph 15.4.15, to present a worst case it is assumed that all land within the Interconnecting Cable and Grid Connection Corridors is agricultural.

15.5.28 **Table 15-13** indicates that 4.29 ha of land within the Interconnecting Cable Corridor is BMV land, constituting 18.3 % of all land in the Interconnecting Cable Corridor and 0.3 % of land within the Study Area for agricultural land. The majority of land within the Interconnecting Cable Corridor, 19.18 ha (81.7 % of the Interconnecting Cable Corridor) is non-BMV land.

15.5.29 **Table 15-14** indicates that 65.14 ha of land within the Grid Connection Corridor is BMV land, constituting 38.8 % of all land in the Grid Connection Corridor and 5.1 % of land within the Study Area for agricultural land. The majority of land within the Grid Connection Corridor, 102.68 ha (61.2 % of the Grid Connection Corridor) is non-BMV land.

Table 15-13. Baseline ALC data for the Interconnecting Cable Corridor

ALC grade	Area (ha)	% of land in the Interconnecting Cable Corridor	% of land in the Study Area for agricultural land
Grade 1	0	0.0	0.0
Grade 2	0.71	3.0	0.1
Subgrade 3a	3.57	15.2	0.3
Subgrade 3b	19.18	81.7	1.5

ALC grade	Area (ha)	% of land in the Interconnecting Cable Corridor	% of land in the Study Area for agricultural land
Grade 4	0	0.0	0.0
Non-agricultural	0	0.0	0.0
Total agricultural land	23.46	100.0	1.9
Total BMV land	4.29	18.3	0.3
Total non-BMV land	19.18	81.7	1.5
Total land	23.47	100.0	1.9

Table 15-14. Baseline ALC data for the Grid Connection Corridor

ALC grade	Area (ha)	% of land in the Grid Connection Corridor	% of land in the Study Area for agricultural land
Grade 1	35.32	21.0	2.8
Grade 2	7.08	4.2	0.6
Subgrade 3a	22.74	13.6	1.8
Subgrade 3b	102.68	61.2	8.1
Grade 4	0	0.0	0.0
Non-agricultural	0	0.0	0.0
Total agricultural land	167.82	100.0	13.3
Total BMV land	65.14	38.8	5.1
Total non-BMV land	102.68	61.2	8.1
Total land	167.81	100.0	13.3

15.5.30 **Table 15-15** presents the baseline ALC data for the Study Area for agricultural land based on a combination of survey data and the Predictive ALC data as described previously. **Table 15-15** shows that the majority of land within the Study Area for agricultural land is of non-BMV quality (1,106.55 ha, 87.4 %) mainly comprising Subgrade 3b land. The BMV land within the Study Area comprises Grades 1, 2 and Subgrade 3a and totals 149.32 ha (11.8 % of the Study Area). The remaining land is non-agricultural.

Table 15-15. Baseline ALC data for the Study Area

ALC grade	Area (ha)	% of land in the Study Area for agricultural land
Grade 1	48.31	3.8
Grade 2	9.76	0.8
Subgrade 3a	91.24	7.2
Subgrade 3b	1096.62	86.7
Grade 4	9.93	0.8
Non-agricultural	9.67	0.8
Total agricultural land	1255.86	99.2
Total BMV land	149.32	11.8
Total non-BMV land	1106.55	87.4
Total land	1265.53	100.0

ALC Data for East Riding of Yorkshire and Selby District

15.5.31 For comparative purposes Table 15-16 and **Table 15-17** details the ALC grading in the administrative areas of East Riding of Yorkshire Council and former Selby District Council². The 50 km² area (south-east quadrant of National Map Square SE) covered by the Predictive ALC data, which provides subdivision of Grade 3 into Subgrades 3a and 3b, includes the majority of Selby District and the south-west of the East Riding of Yorkshire (**Appendix 15-2, ES Volume 2 [EN010143/APP/6.2]** and **Figure 15-2, ES Volume 3 [EN010143/APP/6.3]**). For the remaining areas, data have been taken from the Provisional ALC (Ref 15-33), with an assumed 50:50 split of Grade 3 into Subgrade 3a (BMV) and Subgrade 3b (non-BMV) land. The adoption of a 50:50 split is considered appropriate given the relative proportions of Subgrades 3a and 3b within the East Riding of Yorkshire (10.7 % v 9.8 %) and the former Selby District (31.0 % v 48.8 %) determined from the Predictive ALC (**Appendix 15-2, ES Volume 2 [EN010143/APP/6.2]**).

Table 15-16. ALC Grading in the East Riding of Yorkshire

ALC grade	Area (ha)	% total land area	% agricultural land of available agricultural land*
Grade 1	5,848.0	2.4	2.5

² On 1 April 2023 North Yorkshire County Council and its six constituent District Councils (including Selby District Council) were merged to become the Unitary Authority of North Yorkshire Council. The southern part of the Grid Connection Corridor lies within the boundary of the former Selby District and therefore this boundary has been used to give Regional context.

ALC grade	Area (ha)	% total land area	% agricultural land of available agricultural land*
Grade 2	107,647.1	44.7	45.8
Subgrade 3a	25,685.1	10.7	10.9
Subgrade 3b	23,668.1	9.8	10.1
Grade 3 (attributed in equal proportion to Subgrades 3a and 3b)	66,446.8	27.6	28.3
Grade 4	4,969.4	2.1	2.1
Grade 5	558.5	0.2	0.2
Non-agricultural	1,616.3	0.7	0
Urban	4,468.8	1.9	0
Total BMV land**	172,403.60	71.6	73.4
Total agricultural land	234,823.00	97.5	100.0
Total land	240,908.10	100.0	-

* Excludes land mapped as non-agricultural or urban

**All land shown on Predictive ALC as Grades 1, 2 and Subgrade 3a, plus 50% of the land Provisionally mapped as Grade 3. (Grade 3 has been split 50/50 between Subgrades 3a (BMV) and 3b (non-BMV)).

Table 15-17. ALC Grading in the former Selby District administrative area

ALC grade	Area (ha)	% total land area	% agricultural land of available agricultural land*
Grade 1	3,268.2	10.3	10.3
Grade 2	28,413.8	9.0	9.0
Subgrade 3a	9,815.6	31.0	31.1
Subgrade 3b	15,459.2	48.8	48.9
Grade 3 (attributed in equal proportion to Subgrades 3a and 3b)	2,106.3	0.7	0.7
Grade 4	87.1	0.0	0.0
Grade 5	2.2	0.0	0.0
Non-agricultural	491.8	0.2	0
Urban	227.5	0.1	0
Total BMV land**	42,550.75	71.1	71.9
Total agricultural land	59,152.40	98.7	100.0

ALC grade	Area (ha)	% total land area	% agricultural land of available agricultural land*
Total land	59,871.70	100.0	

* Excludes land mapped as non-agricultural or urban

**All land shown on Predictive ALC as Grades 1, 2 and Subgrade 3a, plus 50% of the land Provisionally mapped as Grade 3. (Grade 3 has been split 50/50 between Subgrades 3a (BMV) and 3b (non-BMV)).

15.5.32 The East Riding of Yorkshire covers an area of 240,908.2 ha of which 234,823.0 ha is agricultural land. The data show that the majority of agricultural land in the County is classified as Grade 2, Subgrade 3a, Subgrade 3b or Grade 3, which comprise 44.7%, 10.7%, 9.8% and 27.6% of the total land within the County, respectively. Small areas of Grade 1 land are also present (2.4%) focussed along the flood plains of the Rivers Ouse, Derwent and Aire. Only 2.1% of land within the County comprises Grade 4 land, much of which is associated with steeply sloping land, unsuitable for Solar PV. Isolated pockets of Grade 5 land (0.2%) are also present for example comprising the military training grounds at Strensall Camp, and the marshy/wet habitats of Skipworth Common. The urban land (1.9%) incorporates areas of built development, whereas non-agricultural land (0.7%) comprises land-uses such as the disused airfields at Normandy Barracks and Driffield; Beverley Racecourse; and areas of forestry/woodland. In total 172,403.6 ha (73.4%) of the available agricultural land within the County is predicted to be of BMV quality.

15.5.33 The administrative area of the former Selby District Council covers an area of 59,871.7 ha of which 59,152.5 ha is agricultural land. The data show that the majority of agricultural land in Selby District is classified as Grade 2, Subgrade 3a or Subgrade 3b, which comprise 47.5%, 16.4% and 25.8% of the total land within the District respectively. Small areas of Grade 1 land are also present (5.5%), again focussed along the flood plains of the Rivers Ouse, Derwent and Aire; and very small pockets of Grade 4 (0.1%) and Grade 5 (<0.01%) land also occur. The urban land (0.4%) incorporates areas of built development, whereas non-agricultural land (0.8 %) is mainly attributable to forestry plantations. In total 42,550.8 ha (71.9%) of the available agricultural land within the District is predicted to be of BMV quality.

15.5.34 The Study Area contains approximately 1,255.86 ha of agricultural land (**Table 15-15**). This equates to approximately 0.5% of the available agricultural land within East Yorkshire, 2.1% of the available agricultural land within Selby District, and 0.4% of the available agricultural land within East Yorkshire and Selby District combined.

15.5.35 Of the agricultural land within the Scheme 149.31 ha has been classified as BMV (**Table 15-15**). This equates to approximately 0.1% of the available BMV agricultural land within East Yorkshire, 0.35% of the available BMV agricultural land within Selby District, and 0.07% of the available BMV agricultural land within East Yorkshire and Selby District combined.

Future Baseline

- 15.5.36 Owing to the predominantly temporary nature of the construction phase, it is anticipated that the agricultural baseline will not change significantly because of natural processes and systems during this period or between now and the works being undertaken.
- 15.5.37 The future baseline (without the Scheme) has the potential to alter due to changes in incentives for land use and systems of farming practice. These include but are not limited to, the adoption or surrender of Agri-Environmental Schemes (it being noted that under the Agriculture Act 2020 (Ref 15-2) there is an emphasis towards incentivising landowners to better protect and improve soils); shift from pasture to arable agriculture or vice versa; and implementation of field drainage schemes. The changes to the baseline may be beneficial or adverse.
- 15.5.38 With the Scheme in place the changes above could occur during the operational lifetime of the Scheme within the Grid Connection and Interconnecting Cable Corridors where land will be returned to its pre-development land use at the end of construction period. Within the Solar PV Site and the east of the Ecology Mitigation Area (Golden Plover Mitigation Zone) there will be a change from predominantly arable farming to grassland, which is expected to result in increases in soil carbon and improvements to soil structure.
- 15.5.39 There is also the potential for long-term changes to the baseline due to climate change. These long-term changes could potentially lead to alterations in agricultural land quality (ALC grade), for example through increased levels of soil wetness in the winter and increased droughts in the summer. This may in turn influence extent and location of BMV land. Changes in rainfall may also affect decomposition rates and soil organic matter content. Changes to the baseline may be beneficial or adverse.
- 15.5.40 Although there is the potential for the baseline presented in this chapter to change over time it is considered that the data presented within this chapter provides a good representation of future land use and agricultural conditions upon which to base the assessment.

15.6 Embedded Mitigation

- 15.6.1 Where practicable, mitigation measures have been incorporated into the Scheme design and/or how it shall be constructed. Through iterative assessment, potential impacts have been predicted and opportunities to mitigate them identified with the aim of preventing or reducing impacts as much as possible. This approach provides the opportunity to prevent or reduce potential adverse impacts from the outset. This embedded mitigation/mitigation by design approach has been accounted for when evaluating the significance of the potential impacts of the Scheme.
- 15.6.2 The agricultural capability of soils will be protected by the use of best practice in soil stripping, handling and storage of soil materials;
- a. For the Grid Connection and Interconnecting Cable Corridors, topsoil and subsoil from excavation/working areas will be stripped and stored separately within designated storage areas. Soils of different types will be stored separately;

- b. Where topsoil is stripped to form access roads and foundations within the Solar PV Site, it will be stored within designated storage areas as close as possible to the area of origin and seeded to reduce erosion risk. Soils of different types will be stored separately. Clear records of the stockpiles (including annotated plans) will be maintained;
 - c. Topsoil stripping should be undertaken outside of the (wetter) winter period (October to March inclusive) where possible and should not be undertaken during or immediately after rainfall events. Where soils are worked 'wet' specific methodologies set out in the detailed SMP will be followed;
 - d. Soil stockpiles anticipated to be in place for longer than six months will be seeded with appropriate seed mix. Along with protecting the soil against erosion and nutrient loss, this will also help prevent colonisation of the stockpile by nuisance weeds that could spread seed onto adjacent land. Stockpiles will be monitored for the presence of undesirable weed species and the stockpile vegetation cover will be managed as appropriate;
 - e. Access to water supplies for all fields crossed by the cable routes will be maintained where possible;
 - f. Where possible the Grid Connection and Interconnecting Cables will be routed along roads and in roadside verges to avoid impacts to agricultural land;
 - g. For the Grid Connection and Interconnecting Cable Corridors, access to agricultural lands will be maintained throughout the construction process, as far as is practicable. The construction of the Solar PV Site will be phased, with land continuing with its pre-development agricultural use for as long as is practicable before the start of construction;
 - h. For the Grid Connection and Interconnecting Cable Corridors, following completion of construction operations, all agricultural land taken temporarily would be fully reinstated as near as practically possible to its former condition. Topsoil would be prepared and, where required, sown using an appropriate seed mix as agreed by the landowner; and
 - i. For the cable corridors, to ensure that the maximum area of productive land remains in agricultural use during the construction period, cable routing and access tracks will be directed to the edge of fields, in field boundaries or through less productive areas of individual fields wherever practicable, taking into account other environmental, socio-economic and engineering constraints.
- 15.6.3 There is the potential for disease and pathogen transfer (including undesirable weed species, such as Blackgrass (*Alopecurus myosuroides*), which landowners have reported as being present in some areas of the Solar PV Site) between different areas of agricultural land. The loss of soil resource is considered as the main cause of disease and pathogen transfer, due to the transfer of soil (and incorporated seed/spore bank) from infected to uninfected areas. The SMP to be prepared prior to construction (and secured through the DCO) will set out appropriate measures to minimise soil loss and hence biosecurity risk. A Biosecurity Plan will also be

produced as part of the detailed CEMP, and will likely include measures such as appropriate cleaning and/or disinfection of machinery and equipment in areas considered to be at high risk before moving into uninfected areas. Outline biosecurity measures are provided in the **Framework CEMP [EN010143/APP/7.7]** and **Framework SMP [EN010143/APP/7.10]**.

- 15.6.4 The UK Government's website advertising current occurrences and imposed restrictions with regards to animal and plant diseases will be checked both pre-construction and at regular intervals throughout construction. The Contractor will also subscribe to the Animal Disease Alert Subscription Service. All restrictions will be adhered to and may include additional biosecurity measures being implemented such as restricted movements within prevention zones and additional measures around the disinfection of plant and equipment (including boots and manual tools).
- 15.6.5 The implementation of the embedded mitigation measures described in this section will be secured through the production and implementation of the Plans in which they are contained in accordance with the relevant DCO Requirements (e.g. CEMP, SMP), OEMP, DEMP).

Mitigation Through Design

- 15.6.6 As further described in **Chapter 3: Alternatives and Design Evolution, ES Volume 1 [EN010143/APP/6.1]**, agricultural land quality was a key consideration for site selection. This directed the Solar PV Site towards areas provisionally mapped as ALC Grade 4. Although subsequent desk-based study and field survey have reclassified the Grade 4 land as principally Subgrade 3b (which is still classed as non-BMV). It is noted that the change in grading is the result of an update in the ALC methodology between the production of the Provisional ALC data and the calculation of the Predictive ALC data and field surveys which altered how the gradings were classified, rather than a change in the quality of the land itself.
- 15.6.7 As described in **Chapter 2: The Scheme, ES Volume 1 [EN010143/APP/6.1]**, approximately 28.75 ha of Ecology Mitigation Area 1h adjacent to the River Foulness will be used for the creation of grassland habitat (the Golden Plover Mitigation Zone), with the remaining land within the Ecology Mitigation Area (approximately 79.09 ha) remaining in the current arable rotation with amendments to improve habitat quality such as increased retention of stubble (the Goose Mitigation Zone). A description and objectives are provided in **Chapter 8: Ecology ES Volume 1 [EN010143/APP/6.1]** and the **Habitats Regulations Assessment Report [EN010143/APP/7.12]**.

Construction and Decommissioning

- 15.6.8 Industry standard guidance/current best working practice will be followed. The guidance identifies steps and techniques that mitigate against adverse impacts by ensuring the sustainable management of soil resources and constitutes embedded mitigation. This includes:
- a. The Institute of Quarrying's Good Practice Guide for Handling Soils in Mineral Workings (Ref 15-19);

- b. DEFRA's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref 15-22); and
 - c. BSSS Guidance Note: Benefiting from Soil Management in Development and Construction (Ref 15-26).
- 15.6.9 These measures are further described in the **Framework CEMP [EN010143/APP/7.7]** and the **Framework SMP [EN010143/APP/7.10]**.
- 15.6.10 During construction, mitigation is provided by managing the Solar PV Site following environmental good practice measures. The Framework SMP includes good practice measures to minimise the risk of damage to soil structure, for example the following key rules will be observed during all soil handling tasks:
- a. No trafficking/driving of vehicles/plant or materials storage to occur outside designated areas;
 - b. No trafficking/driving of vehicles/plant on reinstated soil (topsoil or subsoil);
 - c. Only direct movement of soil from donor to receptor areas (no triple handling and/or ad hoc storage);
 - d. No soil handling to be carried out when the soil moisture content is above the lower plastic limit;
 - e. Soils should only be moved under the driest practicable conditions, and this must take account of prevailing weather conditions;
 - f. No mixing of topsoil with subsoil, or of soil with other materials;
 - g. Soil only to be stored in designated soil storage areas;
 - h. Plant and machinery only work when ground or soil surface conditions enable their maximum operating efficiency;
 - i. All plant and machinery must always be maintained in a safe and efficient working condition;
 - j. Daily records of operations undertaken, and site and soil conditions should be maintained; and
 - k. Low ground pressure (LGP) models or tracked vehicles should be used where possible.

Operation

- 15.6.11 During operation, land within the Solar PV Site and Ecology Mitigation Area will be managed and protected through the application of environmental good practice measures set out in documents such as the OEMP LEMP, including applicable measures described within this section and the CEMP. Framework versions of OEMP **[EN010143/APP/7.8]** and the CEMP **[EN010143/APP/7.7]** are included as part of the DCO Application. Works plans/ method statements (or similar) for maintenance works will also be expected to contain environmental management measures, where applicable.
- 15.6.12 During operation the majority of the Ecology Mitigation Area (Goose Mitigation Zone) will continue to be within arable rotation, whilst the

remaining land (Golden Plover Mitigation Zone) will be managed as grassland.

- 15.6.13 Should grazing be undertaken (within the Solar PV Site and/or the Golden Plover Mitigation Zone), it would be managed to ensure that potential negative impacts of grazing such as over-grazing, or damage to soil structure do not occur. For example, the stocking density of the flock would be suitable for the area being grazed, rotation grazing would be followed, and the flock would be moved out of areas if the land is too wet. These measures would be set out in the detailed OEMP and secured and implemented via DCO Requirement.

15.7 Assessment of Likely Impacts and Effects

- 15.7.1 The Scheme has the potential to affect Soils and Agricultural Land (positively or negatively) during construction and operation (with decommissioning having been scoped out, see paragraph 15.7.46), in the following ways:
- a. Loss of soil function in areas of construction requiring foundations;
 - b. Improvement of soil function where arable farming is converted to permanent pasture/grassland under solar PV panels because of reduction in tillage and provision of continuous vegetation cover of the soil surface.
- 15.7.2 The assessments have been undertaken following consideration of the embedded mitigation measures as described in section 15.6.

Construction Effects

Solar PV Site - Agricultural land and land use including the loss of BMV land

- 15.7.3 Not all land within the Solar PV Site will be subject to construction activities, but it is reasonable to assume, as worst case, that all agricultural land within the Solar PV Site is taken out of agricultural use during the construction phase.
- 15.7.4 Although grazing is the Applicant's preferred method of vegetation management (which would retain the grassland beneath the Solar PV Panels in agricultural use), as a worst case it is assumed that mowing will be used and all land within the Solar PV Site removed from agricultural use at the start of the construction period and therefore loss of agricultural land in the Solar PV Site is assessed as a construction phase effect.
- 15.7.5 **Table 15-18** describes the post construction land uses within the Solar PV Site and defines the amounts of BMV and non-BMV agricultural land within each. Within the table, the 'land established with grassland' category includes the semi-improved grassland to be created under the solar PV panels and the species rich grassland created around field edges and in the areas of habitat enhancement outside panel/infrastructure areas, and the areas of flower rich grassland (see the **Framework LEMP [EN010143/APP/7.14]** for further details of the post-construction planting within the Solar PV Area).

Table 15-18. Post-construction land use and ALC grading within the Solar PV Site (Total area column includes non-agricultural land)

Land use	Total Area (Ha)	Area BMV land (ha)	Area non-BMV land (ha)	Non-agricultural land	BMV land as % of the Study Area
All land in Solar PV Site	966.4	61.4	897.59	7.41	76.4
Land established with grassland	944.54	59.91	878.43	6.20	4.7
Land established with trees, shrub and orchard	10.03	0.41	8.97	0.65	0.03
Land use for creation of hardstanding	11.65	0.67	10.42	0.56	0.05

15.7.6 **Table 15-18** shows that 944.54 ha of land within the Solar PV Site will be established with grassland (constituting 97.7 % of the Solar PV Site and 76.4 % of the Study Area for agricultural land). Of this 59.91 ha is BMV land (and represents 6.2 % of all land within the Solar PV Site and 4.7 % of land within the Study Area) and contains very highly sensitive Grade 1 and Grade 2 land and highly sensitive Subgrade 3a land. The non-BMV land predominantly comprises medium sensitivity Subgrade 3b land, with a small area of low sensitivity Grade 4 land also present.

15.7.7 As described in paragraph 15.4.10, this grassland will be returned to agricultural use after decommissioning and its loss is therefore considered to be a reversible long-term effect (in line with **Chapter 5: EIA Methodology, ES Volume 1 [EN010143/APP/6.1]**).

15.7.8 Within the grassland areas of Solar PV Areas 1e and 2a some shallow excavation and localised redistribution of topsoil will be undertaken to increase flood storage resilience (see **Chapter 9: Flood Risk, Drainage and Water Environment, ES Volume 1 [EN010143/APP/6.1]** and the **Flood Risk Assessment, Appendix 9-3, ES Volume 2 [EN010143/APP/6.2]**). Methods will be identified within the detailed SMP. The shallow hollows will be reversible using standard agricultural equipment, there will be no loss of soil volume, and the action does not constitute a loss of soil function. With the embedded mitigation measures set out in section 15.6 in place there would also be no discernible loss or reduction in soil functions or soil volumes across the rest of the grassland areas that would restrict current or proposed land use. Referring to the criteria in **Table 15-4** the magnitude of impact is classified as negligible. The long-term reversible loss of agricultural land within the Solar PV Site to grassland is therefore assessed as **slight adverse** for the Grade 1, 2 and

- Subgrade 3a (BMV) land and **neutral** for the Subgrade 3b and Grade 4 (non-BMV) land, which is **not significant**.
- 15.7.9 The creation of woodland, shrub and a traditional orchard is principally located on non-BMV Subgrade 3b land (8.97 ha) which is considered to be of medium sensitivity (**Table 15-3**). Planting areas also include 0.41 ha of BMV Subgrade 3a land which is considered to be of medium sensitivity (**Table 15-3**). However although this land is considered to be permanently removed from agricultural use, it would remain unsealed and with the embedded mitigation measures set out in section 15.6 in place there would be no discernible loss or reduction of soil functions or soil volumes that would restrict current or proposed land use. Referring to the criteria in **Table 15-4** the magnitude of impact is classified as negligible and the permanent loss of agricultural land to trees, shrub and orchard is assessed as **slight adverse** for the Subgrade 3a land and **neutral** for the Subgrade 3b land, which is **not significant** and will also have beneficial ecological effects.
- 15.7.10 Hardstanding will be created over 11.65 ha of the Solar PV Site for the installation of infrastructure such as Field Stations, internal accesses, and the Grid Connection Substations. As described section 15.6 the Scheme has been designed to avoid BMV land where practicable (and in line with other design considerations such as the need to avoid the placement of Field Stations within 250 m of residential properties etc.). The majority of hardstanding (10.42 ha) will therefore be created on medium sensitivity non-BMV Subgrade 3b land. The remaining hard standing (0.67 ha) is located on BMV land (principally high sensitivity Subgrade 3a small areas of very high sensitivity Grade 1 and Grade 2).
- 15.7.11 With the exception of the Grid Connection Substation Compounds and associated required access (Solar PV Area 1c), which are considered separately below, all hard standing within the Solar PV Site will be removed and the land restored to its previous condition and available for agricultural land use at the end of the decommissioning phase. The loss is therefore considered to be a reversible long-term effect (in line with **Chapter 5: EIA Methodology, ES Volume 1 [EN010143/APP/6.1]**). Through the application of the good practice measures for the handling and long-term storage of soil resources as set out in section 15.6 and secured through the detailed CEMP and SMP, the soils stripped to create the hard standing areas would be retained in a condition whereby there would be no discernible loss or reduction of soil functions or soil volumes that would restrict the quality of the agricultural land upon reinstatement. Referring to the criteria in **Table 15-4** the magnitude of impact is classified as negligible. The long-term reversible loss of agricultural land to hardstanding within the Solar PV Site is therefore assessed as **slight adverse** for the Grade 1, 2 and Subgrade 3a (BMV) land and **neutral** for the Subgrade 3b and Grade 4 (non-BMV) land, which is **not significant**.
- 15.7.12 All land within Solar PV Area 1c (2.0 ha) is medium sensitivity Subgrade 3b. As described in paragraph 15.4.13 it is common practice for infrastructure such as the Grid Connection Substations to be retained and used for another purpose after the development they were originally installed to support is decommissioned. And therefore, to represent a worst case all land within Solar PV Area 1c is assessed being subject to permanent development/ permanent loss of agricultural land. The permanent sealing of

less than 5 ha of agricultural land comprises a minor magnitude of impact (**Table 15-4**). This results in a **slight adverse** impact which is assessed as **not significant**.

Solar PV Site - Loss of soil functions/volumes and soil-related features

- 15.7.13 As set out in **Appendix 15-3, ES Volume 2 [EN010153/APP/6.2]**, the Field Capacity Days (FCD) (the extent to which the soils at the site are saturated) for all land within the Site is 125 to 135 days which is fewer than the 150 FCD 'high sensitivity' threshold described in **Table 15-6**.
- 15.7.14 With the embedded mitigation measures for the sustainable management of soil resources set out in section 15.6, the **Framework CEMP [EN010143/APP/7.7]** and the **Framework SMP [EN010143/APP/7.10]** in place there would be no discernible loss or reduction of soil functions or soil volumes and so the magnitude of impact would be negligible for all soils disturbed during the construction of the Scheme.
- 15.7.15 **Table 15-7** identifies that the majority of soils within the Solar PV Site are the seasonally wet clay soils of the Foggathorpe 2 association (946.7 ha or 97.7 %) which are described as belonging to wetness class III or IV (Ref. 15-36). The National Soil Map data also identifies 8.8 ha of the seasonally wet deep clays of the Fladbury 3 association along the eastern boundary of Solar PV Areas 1e and 1h. The association is described as being wetness class III or IV (Ref. 15-36). Therefore, taking into account the FCD, based upon the criteria in **Table 15-6**, soils in these two associations have been assigned a sensitivity rating of medium.
- 15.7.16 The seasonally wet loamy over clayey and clayey soils of the Sessay association are identified National Soil Map data and also broadly match the description of soils identified during the LRA Survey (Appendix 15-3, PEI Report Volume 4). These soils can be wetness class II or III and therefore to represent a worst case are classified as medium sensitivity.
- 15.7.17 Using the matrix in **Table 15-5**, where disturbance occurs the impacts to these three medium sensitivity soils are assessed as **neutral**, and **not significant**.
- 15.7.18 Although not identified by the LRA Survey, the National Soil Map data identifies a small area of Kexby association soils within the Solar PV Site. These permeable sandy soils are classed as Wetness Class I (Ref. 15-36) and are consequently of low sensitivity (**Table 15-6**). Using the matrix in **Table 15-5**, where disturbance occurs the impacts to these soils are assessed as **neutral**, and **not significant**.
- 15.7.19 Additionally, the soil and ALC survey of the Site (**Appendix 15-3, ES Volume 2 [EN010143/APP/6.2]**) also recorded a discrete deposit of deep humified fen peat in Solar PV Area 1e adjoining the River Foulness in the north-east of the survey area (**Figure 15-3, ES Volume 3 [EN010143/APP/6.3]**). This soil type is classified as being of very high sensitivity. However, as it occurs within Flood Zone 3 where no solar development (or creation of compensatory flood storage) will take place the magnitude of change is classed as '**no change**'.

Ecology Mitigation Area - Agricultural land and land use including the loss of BMV land

15.7.20 The Golden Plover Mitigation Zone will be converted to wet species rich grassland. **Table 15-19** shows that approximately three quarters of land within the Golden Plover Mitigation Zone is medium sensitivity Subgrade 3b land, with the remaining agricultural land being high sensitivity Subgrade 3a.

Table 15-19. Land use and ALC grading within Golden Plover Mitigation Zone

ALC grade	Area (ha)	% Golden Plover Mitigation Zone	% of Study Area for agricultural land
Grade 1	0	0	0
Grade 2	0	0	0
Subgrade 3a	7.20	25.03	0.66
Subgrade 3b	21.41	74.47	2.00
Grade 4	0	0	0
Non-agricultural	0.12	0.42	0.01
Total land	28.75	100	2.65
Total agricultural land for golden plover mitigation measures	28.63	99.58	2.64
Total BMV land for golden plover mitigation measures	7.20	25.03	0.66

15.7.21 As described in paragraph 15.4.10, this grassland will be returned to agricultural use after decommissioning and its loss is therefore considered to be a reversible long-term effect (in line with **Chapter 5: EIA Methodology, ES Volume 1 [EN010143/APP/6.1]**).

15.7.22 Within this area some shallow excavation and localised redistribution of topsoil will be undertaken to create a network of wide, shallow, blind linear foot drains to further enhance habitat conditions for golden plover (see **Habitats Regulations Assessment Report [EN010143/APP/7.12]**). The creation of these features is outlined in the **Framework SMP [EN010143/APP/7.10]**. These shallow features will be reversible using standard agricultural equipment, there will be no loss of soil volume, and the action does not constitute a loss of soil function. They will also avoid areas of highly sensitive peat soils. With the embedded mitigation measures set out in section 15.6 in place there would also be no discernible loss or reduction in soil functions or soil volumes across the rest of the Golden Plover Mitigation Zone that would restrict current or proposed land use. Referring to the criteria in **Table 15-4**, the magnitude of impact is

classified as negligible. The long-term reversible loss of agricultural land within the Golden Plover Mitigation Zone to grassland is therefore assessed as **slight adverse** for the Subgrade 3a (BMV) land and **neutral** for the Subgrade 3b (non-BMV) land, which is **not significant**.

- 15.7.23 The 79.09 ha of land within the Goose Mitigation Zone, predominantly contains medium sensitivity Subgrade 3b land, with the remaining agricultural land being high sensitivity Subgrade 3a (**Table 15-20**). This land will remain in the current arable rotation with amendments to improve habitat quality such as increased retention of stubble. These amendments will commence either prior to or during construction (to ensure adequate replacement habitat is in place prior to the habitat within the Solar PV Site being removed) and are hence assessed as part of the construction phase. There will be no loss of agricultural land and the impact is assessed as **No change**.

Table 15-20. Land use and ALC grading within the Goose Mitigation Zone

ALC grade	Area (ha)	% Goose Mitigation Zone	% of Study Area for agricultural land
Grade 1	0	0	0
Grade 2	0	0	0
Subgrade 3a	11.29	14.27	1.04
Subgrade 3b	65.67	83.02	6.06
Grade 4	0	0	0
Non-agricultural	2.14	2.71	0.20
Total land	79.10	100	7.30
Total agricultural land for goose mitigation measures	76.96	97.29	7.10
Total BMV land for goose mitigation measures	11.29	14.27	1.04

Ecology Mitigation Area - Loss of soil functions/volumes and soil-related features

- 15.7.24 **Table 15-7** identifies that the majority (87.6%) of soils within the Ecology Mitigation Area belong to the Foggathorpe 2 association, with the remaining soils belonging to the Fladbury 3 association. As per the assessment presented in paragraphs 15.7.13 to 15.7.17 above, impacts to these medium sensitivity soils are assessed as **neutral**, and **not significant**.

Grid Connection and Interconnecting Cable Corridors – Agricultural land and land use including the loss of BMV land

- 15.7.25 **Table 15-21** shows there is 167.81 ha of agricultural land in the Grid Connection Corridor, of which 65.14 ha is BMV land; and 23.47 ha of agricultural land in the Interconnecting Cable Corridor, of which 4.29 ha is BMV land. As a worst case it is considered that all land within the Grid

Connection and Interconnecting Cable Corridors will be temporarily disturbed during construction. The application of industry standard good practice measures for the handling of soil resources will be managed via the SMP. The land will return to agricultural use at the end of the construction period and with the mitigation measures set out in section 15.6 and the **Framework SMP [EN010143/APP/7.10]** in place the land will be reinstated to its original quality (ALC grading) with no discernible loss or reduction of soil functions or soil volumes that restrict or prevent the pre-construction land use from being reinstated. The magnitude of change from the baseline conditions would therefore be **negligible**.

Table 15-21. Baseline ALC data from predictive modelling of Grid Connection Corridor

ALC grade	Area (ha)	% Grid Connection Corridor	% Site
Grade 1	35.32	21.04	3.26
Grade 2	7.08	4.22	0.65
Subgrade 3a	22.74	13.55	2.10
Subgrade 3b	102.68	61.19	9.47
Grade 4	0.00	0.00	0.00
Non-agricultural	0.00	0.00	0.00
Total land	167.81	100.00	15.48
Total BMV land	65.14	38.81	6.01

Table 15-22. Baseline ALC data from predictive modelling of Interconnecting Cable Corridors

ALC grade	Area (ha)	% interconnecting corridor	% site
Grade 1	0.00	0.00	0.00
Grade 2	0.71	3.03	0.06
Subgrade 3a	3.57	15.21	0.33
Subgrade 3b	19.18	81.72	1.77
Grade 4	0.00	0.00	0.00
Non-agricultural	0.00	0.00	0.00
Total land	23.47	100.00	2.17
Total BMV land	4.29	18.24	0.34

15.7.26 The loss of agricultural land within the Grid Connection and Interconnecting Cable Corridors is restricted to the construction period and is therefore

considered to be a reversible short-term effect (in line with **Chapter 5: EIA Methodology, ES Volume 1 [EN010143/APP/6.1]**).

- 15.7.27 The Grid Connection and Interconnecting Cable Corridors shown in **Figures 15-1 to 15-4** identify substantially more land than will be required for the construction of the Scheme, as this allows a degree of spatial flexibility during final detailed design post-consent. The actual area of soil disturbance /temporary loss of agricultural land would be much less.
- 15.7.28 The sensitivity of the agricultural land within the Grid Connection and Interconnecting Cable Corridors varies depending upon ALC grading and ranges from Very High (Grade 1 and 2) to High (Subgrade 3a) to medium (Subgrade 3b). The impacts of the reversible short-term loss of agricultural land due to the construction of the cables are assessed as **neutral** (areas of Subgrade 3b) to **slight adverse** (areas of Grade 1,2, or Subgrade 3a), which is **not significant**.

Grid Connection and Interconnecting Cable Corridors – Loss of soil functions/volumes and soil-related features

- 15.7.29 The application of the embedded mitigation described in section 15.6 during the construction phase will ensure that where soils within the Grid Connection and Interconnecting Cable Corridors are subject to disturbance, they are managed appropriately so that their structure and function is maintained and losses of soil resource are reduced to those which are very small scale unavoidable. Consequently, there will be no discernible loss or reduction of soil functions or soil volumes that restrict the reinstatement of the land the soils, or prevent or reduce its capacity to support its pre-development land use. With the embedded mitigation in place, the magnitude of change for all soils disturbed by the cable installation and associated works is therefore classified as negligible.
- 15.7.30 As previously stated, to maintain a degree of spatial flexibility post- consent the identified Grid Connection and Interconnecting Cable Corridors are much wider than the area needed for cable installation. Some areas within the Corridors will therefore be unaffected by development and the magnitude of change to soils within these areas is classed as ‘No Change’.
- 15.7.31 **Table 15-10** and **Table 15-9** identify that all soils within the Interconnecting Cable Corridor and the majority (60.7%) of soils within Grid Connection comprise the moderately sensitive clay soils of the Foggathorpe 2 association.
- 15.7.32 The following soil associations are also identified in the Grid Connection Corridor:
- a. The well drained silty soils of the Romney association (53.5 ha, 30.7 %) - low sensitivity;
 - b. The seasonally wet deep loamy soils of the Sessay association (7.2 ha, 4.1 %) - medium sensitivity;
 - c. The seasonally wet deep sandy soils of the Blackwood association (1.5 ha, 0.9 %) - medium sensitivity; and
 - d. The seasonally wet deep sandy soils of the Fladbury 3 association (0.03 ha, 0.02%) medium sensitivity.

- 15.7.33 Using the matrix at Table 15-5, due to the negligible magnitude of change, the impacts to the low and medium sensitivity soils present within the Grid Connection and Interconnecting Cable Corridors are assessed as **neutral** and **not significant**.

Operational Effects

Solar PV Site and Ecology Mitigation Area – Agricultural land and land use including the loss of BMV land

- 15.7.34 Impacts to agricultural land (including loss of BMV land) within the Solar PV Site and Ecology Mitigation Area have been assessed as part of the construction phase as this is when the land would initially be removed from agricultural use or a change to the arable rotation would occur.
- 15.7.35 It is noted however that the agricultural land (and other land and habitats within the Site) would be managed and protected throughout the operational phase through the application of environmental good practice measures set out in documents such as the OEMP and LEMP, including applicable measures described in section 15.6. Works plans/ method statements (or similar) for maintenance works would also be expected to contain environmental management measures, again including measures set out in section 15.6 where applicable.

Solar PV Site – Loss of soil functions/volumes and soil-related features

- 15.7.36 The disturbance of soil resources within the Solar PV Site is largely restricted to construction. During the operational lifetime of the Scheme, there may be potential for additional disturbance (excavation) of soil resources to occur during any maintenance or remedial works which may be required, for instance the repair of on-site cabling, these works are considered to be very small scale and localised. It would be expected for work plans and method statements (or similar) to include the industry standard good practice soil management measures outlined in section 15.6 ensuring that the structure, function and quality of soil resources was maintained.
- 15.7.37 Therefore, with appropriate embedded mitigation in place (such as provided through the OEMP and LEMP), the magnitude of change to the low and medium sensitivity soils within the Solar PV Site is considered to be negligible, resulting in **neutral** impacts within the localised area of the works, which is **not significant**.
- 15.7.38 It is noted that no solar infrastructure will be placed in the high sensitivity peat soils in Solar PV Area 1e therefore no maintenance works will be required and no impacts to these soils will occur.
- 15.7.39 The change from predominantly arable farming practice to grassland cover would be beneficial to the structure of soils within the Solar PV Site as permanent vegetation cover would protect the soil from wind erosion when dry; from erosion due to surface water runoff during wet periods, and damage from trafficking. Improved soil structure also improves the movement of water and gases in and out of the soil making improving conditions for plant growth. Importantly soil organic carbon content can become depleted as a result of regular intensive cultivation such as occurs over the majority of the Solar PV Site at present. Research published by

the British Society of Soil Science (BSSS) (Ref 15-37)), states that the greatest and most rapid soil carbon gains can be achieved through land use change, e.g. conversion from arable land to grassland or woodland such as will occur due to the Scheme. The BSSS acknowledge that whilst this may be unrealistic on a large (UK wide) scale because of the continued need to meet food security challenges, relatively small changes in carbon stock per unit area (such as will occur within the Solar PV Site, may translate into substantial stock increases at the national or regional scale. It is noted that levels of soil carbon sequestration will not increase ad infinitum and will eventually reach an equilibrium state beyond which, no further increases are (naturally) possible. The improvements to soil structure and soil carbon content would be reversed over time upon resumption of arable agricultural practices post-decommissioning.

- 15.7.40 The long-term, reversible conversion of arable to grassland has potential to accrue improvement to soil function on over 900 ha of land during the operation of the Scheme. This area includes some very high and high sensitivity BMV land, but is predominantly medium sensitivity non-BMV land. A cautionary approach has been adopted when applying magnitude and sensitivity, presented in **Table 15-5**, to the calculation of significance as the potential benefits, although extensive in area, are not permanent and are reversible. A site-wide **slight benefit**, and an effect which is **not significant**, has been concluded.

Ecology Mitigation Area – Loss of soil functions/volumes and soil-related features

- 15.7.41 During operation the activities undertaken within the Ecology Mitigation Area will be normal farming practice (arable cropping and grassland management) and no assessment is required.
- 15.7.42 The creation of grassland cover in the Golden Plover Mitigation Zone (conversion from arable) will likely result in increases in soil carbon content and improvements in soil structure as for the Solar PV Site (per paragraph 15.7.39). Impacts are therefore assessed as a **slight benefit**, and an effect which is **not significant**.

Grid Connection and Interconnecting Cable Corridors Ecology Mitigation Area – Loss of soil functions/volumes and soil-related features

- 15.7.43 During operation, the only disturbance to/handling of soil resources within the Grid Connection and Interconnecting Cable Corridors activity will consist of routine inspections and any reactive maintenance, such as where a cable is damaged. This would be very small scale and localised. It would be expected for work plans and method statements (or similar) to include the industry standard good practice soil management measures would be applied ensuring that the structure, function and quality of soil resources was maintained.
- 15.7.44 Therefore, with appropriate embedded mitigation in place, the magnitude of change to soils within the Grid Connection and Interconnecting Cable Corridors is considered to be **negligible**, resulting in a **neutral** impact within the localised area of the works, which is **not significant**.

15.7.45 As the land would return to its original agricultural use at the end of the construction phase, operational effects to agricultural land are not assessed.

Decommissioning Effects

15.7.46 The decommissioning effects are anticipated to be of a similar or lesser magnitude than the construction effects. The Planning Inspectorate agreed, therefore, that these matters may be scoped out of the assessment. The sustainable management of soil resources at decommissioning will be secured through the DEMP (a **Framework DEMP [EN010143/APP/7.9]** is provided with the DCO Application).

15.7.47 In terms of permanent loss of agricultural land, the habitat enhancement constituting tree and hedge planting which may remain after decommissioning, along with the permanent solar PV infrastructure (substations and accesses for the substations), make up 10.9 ha of agricultural land. Of this, 0.67 ha is BMV land. This land may not be returned to agricultural use following decommissioning. The permanent loss of this land was assessed at construction.

15.7.48 The decommissioning phase will return the Order limits to the landowner, available for agricultural use, and are therefore fulfilling the assessment in construction that the impacts were long term but reversible.

Summary

15.7.49 A summary of the impacts and significance of effects during construction and operation is presented in **Table 15-23** and **Table 15-24**.

Table 15-23. Summary of magnitude of impact and significance of effect (soils and agricultural land) - Construction

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant
Solar PV Site					
Grade 1 and 2 land	Very high	Long-term reversible loss of agricultural land through conversion to hardstanding	Negligible	Slight adverse	Not Significant
Subgrade 3a land	High		Negligible	Slight adverse	Not Significant
Subgrade 3b land	Medium		Negligible	Neutral	Not Significant
Grade 1 and 2 land	Very high	Long-term reversible loss of agricultural land (arable land converted to grassland which is taken out of agricultural production)	Negligible	Slight adverse	Not significant
Subgrade 3a land	High		Negligible	Slight adverse	Not significant
Subgrade 3b land	Medium		Negligible	Neutral	Not significant
Grade 4 land	Low		Negligible	Neutral	Not significant
Subgrade 3a land	Medium	Permanent loss of agricultural land through conversion to hardstanding (Grid Connection Substations)	Minor	Slight adverse	Not significant
Subgrade 3a land	High	Permanent loss of agricultural land through conversion to trees, shrub and orchard (ecological enhancement).	Negligible	Slight adverse	Not significant
Subgrade 3b land	Medium		Negligible	Neutral	Not significant

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant
Soils within the Solar PV Site	Medium to Low	Irreversible damage to the structure, function, and resilience of the soil resource through incorrect management and handling.	Negligible	Neutral	Not significant
Peat soil	Very high	Irreversible damage to, or loss of, the peat soil resource through incorrect management and handling	No change - as no solar PV infrastructure or earthworks located in areas of peat soil.	No effect upon the receptor	-
Ecology Mitigation Area					
Subgrade 3a land	High	Long-term reversible loss of agricultural land to Golden Plover Mitigation Zone (converted to grassland which is taken out of agricultural production)	Negligible	Slight adverse	Not significant
Subgrade 3b land	Medium		Negligible	Neutral	Not significant
Subgrade 3a land	High	Amendments to current arable rotation in Goose Mitigation Zone	No Change	No effect upon the receptor	-
Subgrade 3b land	Medium		No Change	No effect upon the receptor	-
Soils within the Ecology Mitigation Area	Medium	Irreversible damage to the structure, function, and resilience of the soil resource through incorrect management and handling.	Negligible	Neutral	Not significant

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant
Grid Connection and Interconnecting Cable Corridors					
Grade 1 and 2 land	Very high	Short-term reversible loss of agricultural land during the construction phase	Negligible	Slight adverse	Not significant
Subgrade 3a land	High		Negligible	Slight adverse	Not significant
Subgrade 3b land	Medium		Negligible	Neutral	Not significant
Soils within the Grid Connection and Interconnecting Cable Corridors	Medium to Low	Irreversible damage to the structure, function, and resilience of the soil resource through incorrect management and handling.	Negligible	Neutral	Not significant

Table 15-24. Summary of magnitude of impact and significance of effect (soils and agricultural land) - Operation

Receptor	Sensitivity (Value)	Description of Impact	Magnitude of Impact	Effect Category	Significant
Solar PV Site					
Soils within the Solar PV Site	Medium to Low	Localised temporary impacts during maintenance - Incorrect management of soil resources resulting in damage to the structure, function, and resilience of the soil resource	Negligible	Neutral	Not significant
Soils within the Solar PV Site	Medium to Low	Changes to the soil resource due to conversion from arable to grassland including, improvements to soil structure (and consequent increased permeability and increased resilience to erosion) and soil carbon content. Long-term reversible (reversible if land returns to arable)	Minor to Moderate	Slight beneficial	Not significant
Ecology Mitigation Area					
Soils within the Solar PV Site	Medium to Low	Changes to the soil resource due to conversion from arable to grassland including, improvements to soil structure (and consequent increased permeability and increased resilience to erosion) and soil carbon content. Long-term reversible (reversible if land returns to arable)	Minor to Moderate	Slight beneficial	Not significant
Grid Connection and Interconnecting Cable Corridors					
Soils within the Grid Connection and Interconnecting Cable Corridors	Medium to Low	Localised temporary impacts during maintenance - Incorrect management of soil resources resulting in damage to the structure, function, and resilience of the soil resource	Negligible	Neutral	Not significant

15.8 Additional Mitigation, Enhancement, and Monitoring

15.8.1 Additional mitigation measures are only required where significant effects are identified following the application of embedded mitigation measures.

15.8.2 No significant effects to agricultural land or soil resources have been identified. It is noted that although the removal of land from mainly arable agricultural use to create areas of grassland or tree, scrub and orchard planting is considered a neutral or slight adverse effect to agricultural land, this change also presents large-scale ecological benefits. The soil resources will not be lost and functions, including carbon sequestration, are anticipated to increase.

Additional Mitigation

15.8.3 Additional mitigation measures are only required where significant effects are identified following the application of embedded mitigation measures. No significant adverse effects to soils or agricultural land are predicted to occur as a result of the Scheme and therefore no additional mitigation is required.

Additional Enhancement

15.8.4 Changes to the soil resource arising from conversion from arable to grassland include improvement to soil structure (and consequent increased permeability and increased resilience to erosion) and increased soil carbon content are identified by the British Society of Soil Science (Ref 15-37). No additional measures to accelerate the enhancement are required.

Monitoring

15.8.5 During the active phase of soil stripping, movement, storage and reinstatement, monitoring will be undertaken as specified in the SMP. During the lifetime of the Scheme no monitoring of soils is proposed.

15.9 Residual Effects

15.9.1 No significant adverse effects to soils or agricultural land are predicted to occur as a result of the Scheme and impacts remain as assessed in section 15.7.

15.9.2 There is a slight beneficial (non-significant) effect associated with the conversion of arable to grassland during the operational stage, which has potential to accrue improvement to soil structure and function over a major area during operation.

15.9.3 The decommissioning phase will return the Order limits to the landowner, available for agricultural use, and are therefore fulfilling the assessment in construction that the impacts were long term but reversible. There are no new impacts on soils during decommissioning that have needed to be assessed.

15.9.4 **Table 15-25** and **Table 15-26** summarise the residual effects of the Scheme on agricultural land and soil resources at construction and operation. Noting that the assessment of effects during the decommissioning phase was scoped out of the assessment, but effects to

soil resources are expected to be similar to or of a lesser magnitude than the construction effects. Most effects to agricultural land are reversed on decommissioning.

Table 15-25. Residual effects – Soils and Agricultural Land (construction)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
BMV agricultural land	Long-term reversible loss of agricultural land through conversion to non-agricultural grassland.	As described in section 15.6	Slight adverse. Not significant	None required	Slight adverse Not significant
Non-BMV agricultural land	Long-term reversible loss of agricultural land through conversion to non-agricultural grassland.	As described in section 15.6	Neutral Not significant	None required	Neutral Not significant
BMV agricultural land	Long-term reversible loss of agricultural land through creation of hard standing	Placement targeted on non-BMV land and as described in section 15.6.	Slight adverse Not significant	None required	Slight adverse Not significant
Non-BMV agricultural land	Long-term reversible loss of agricultural land through creation of hard standing	Placement targeted on non-BMV land and as described in section 15.6.	Neutral Not significant	None required	Neutral Not significant

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
Non-BMV agricultural land	Permanent loss 2.0 ha of Subgrade 3b agricultural land through conversion to hardstanding (Grid Connection Substations)	The design has targeted placement on land of the lowest available quality. No further mitigation identified as the creation of this infrastructure is essential to the Scheme	Slight adverse Not significant	None required	Slight adverse Not significant
BMV agricultural land	Permanent loss of agricultural land through conversion to trees, shrub and orchard (ecological enhancement).	As described in section 15.6. Loss cannot be avoided, but will deliver large scale ecological benefits	Slight adverse Not significant	None required	Slight adverse Not significant
Non-BMV agricultural land	Permanent loss of agricultural land through conversion to trees, shrub and orchard (ecological enhancement).	As described in section 15.6. Loss cannot be avoided, but will deliver large scale ecological benefits	Neutral Not significant	None required	Neutral Not significant

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
Non-BMV agricultural land	Short-term reversible loss of agricultural land during construction (Grid Connection and Interconnecting Cable Corridors)	As described in section 15.6.	Slight adverse Not significant	None required	Slight adverse Not significant
Non-BMV agricultural land	Short-term reversible loss of agricultural land during construction (Grid Connection and Interconnecting Cable Corridors)	As described in section 15.6.	Neutral Not significant	None required	Neutral Not significant
Soil resources	Irreversible damage to the structure, function, and resilience of the soil resource through incorrect management and handling.	As described in section 15.6.	Neutral Not significant	None required	Neutral Not significant
Peat soils	Irreversible damage to the structure, function, and	No solar PV infrastructure or earthworks located	No change.	None required	No change.

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
	resilience of the soil resource through incorrect management and handling	in areas of peat soil.	No effect upon the receptor		No effect upon the receptor

Table 15-26. Residual effects – Soils and Agricultural Land (operation)

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
Soil resources	Localised temporary impacts during maintenance - Incorrect management of soil resources resulting in damage to the structure, function, and resilience of the soil resource	As described in section 15.6.	Neutral Not significant	None required	Neutral Not significant

Receptor	Description of impacts including duration	Embedded mitigation	Significance of effect with embedded mitigation	Additional mitigation/enhancement measures	Residual effect
BMV agricultural land and Soil resource	Long-term, reversible. Conversion of arable land to grassland allowing for carbon storage and soil structural improvements leading to improvements inland quality	Grassland to be established and maintained to provide year-round soil cover, and as described in section 15.6.	Slight beneficial	None required but note that decommissioning would enable reversion to arable agricultural use, whereby accrued soil functional benefits would gradually diminish.	Slight beneficial Not Significant
Non-BMV agricultural land and Soil resource	Long-term, reversible. Conversion of arable land to grassland allowing for carbon storage and soil structural improvements leading to improvements inland quality	Grassland to be established and maintained to provide year-round soil cover , and as described in section 15.6.	Slight beneficial	None required but note that decommissioning would enable reversion to arable agricultural use, whereby accrued soil functional benefits would gradually diminish..	Slight beneficial Not Significant

15.10 Cumulative Effects

- 15.10.1 This section assesses the potential effects of the Scheme in combination with the potential effects of other proposed and committed plans and projects including other developments (referred to as ‘cumulative schemes’) within the surrounding area.
- 15.10.2 The cumulative schemes to be considered in combination with the Scheme have been agreed in consultation with relevant Local Planning Authorities and are listed in **Appendix 17-1, ES Volume 2 [EN010106/APP/6.2]**. The cumulative assessment methodology is presented within **Chapter 5: EIA Methodology, ES Volume 1 [EN010106/APP/6.1]**.
- 15.10.3 Cumulative effects to soil resources and their related features may occur through the addition of projects of comparable scale or where the same soils are directly impacted by more than one development. **Table 15-27** identifies shortlisted developments with boundaries which overlap with the Scheme. Projects with overlapping boundaries would benefit from coordinated activity. Responsibility to conform with planning policy and good practice these other developments will rest with individual projects. It is reasonable to assume that a commitment to following industry standard best practice and guidance, promoting the sustainable reuse of soils will be secured through Planning Condition.

Table 15-27. Potential sequential cumulative effects (Soils and Agricultural Land) – construction phase

Scheme ID	Scheme name	LPA	Distance from the Order limits	Summary of cumulative effect
EN010140	Helios Renewable Energy Project	Planning Inspectorate	Overlap with order limits	Construction anticipated 2025-26
22/01990/STPLFE	Scotland to England Green Link (SEGL2)	East Riding of Yorkshire	Overlap with order limits	Installation start date expected late 2024, commissioned by end of 2029.
2022/0711/EIA	Scotland to England Green Link (SEGL2)	North Yorkshire Council	Overlap with order limits	Installation start date expected late 2024, commissioned by end of 2029.
EN010120	Drax Carbon Capture	Planning Inspectorate	Overlap with order limits	Construction to begin part way through the demolition of the Flue Gas Desulphurisation (FGD) Plant, taking place between 2022 and 2027.

Scheme ID	Scheme name	LPA	Distance from the Order limits	Summary of cumulative effect
EN070006	Humber Low Carbon Pipelines	Planning Inspectorate	Overlap with order limits	Construction period approximately 44 months, from 2025, if approved.
EN010091	Drax Re-power.	Planning Inspectorate	Overlap with order limits	Construction potential 2024-2027
2020/1357/FULM	Lakeside Energy Storage	North Yorkshire Council	Overlap with the Order limits.	Predicted 12-month construction phase not begun
2022/0397/S73	Lakeside Energy Storage	North Yorkshire Council	Overlap with the Order limits.	Predicted 12-month construction phase not begun

- 15.10.4 At the point of connection into the national grid, the Order limits will coincide with the boundary of the works to install the new transformer at National Grid's Drax Substation. It has been determined from aerial imaging (Ref 15-31) that the spare bay into which the Scheme will connect is already hard standing (no open soil cover) and therefore there will be no impacts to soil resources and consequently no cumulative impacts to soil resources.
- 15.10.5 The proposed residential development of land east of Broadacres at Mill Lane, Carlton presented soil survey data and 8.1 ha is Subgrade 3a and BMV land with the remaining 1.4 ha Subgrade 3b. All soils would be lost from agricultural production, even parts providing green infrastructure. The extent of permanent removal of BMV land is similar to that of the Scheme.
- 15.10.6 More substantive projects are other solar farm proposals. These are the focus of cumulative effects because the duration and reversibility are similar to the Scheme.. Three of the cumulative schemes listed in **Appendix 17-1, ES Volume 2 [EN010106/APP/6.2]** are considered to have potential for likely significant effects on soils and therefore quantify the extent of ALC grades and subgrades, as summarised in **Table 15-28**.

Table 15-28. Cumulative effects from district-wide solar farm proposals (Soils and Agricultural Land)

	Scheme ID		
	EN010140	2021/0788/EIA	2023/0128/EIA
Applicant	Enso Green Holdings Ltd	Camblesforth Solar Farm Limited c/o Lanpro Services	Carlton Solar Farm Ltd
Scheme Name	Helios Renewable Energy Project	Solar Farm at Land North and South of Camela Lane	Solar Farm at Land South of A645
Planning authority	Planning Inspectorate	North Yorkshire	North Yorkshire
Grade 1 (ha)	46.8	0.9	0
Grade 2 (ha)	191.8	30.5	13.4
Subgrade 3a	262.5	20.7	71.7
Subgrade 3b	31.1	53.2	56.8

- 15.10.7 These three cumulative schemes will affect 638.3 ha of BMV land. This is significantly larger than the affected BMV associated with the other cumulative schemes listed in **Appendix 17-1, ES Volume 2 [EN010106/APP/6.2]**.
- 15.10.8 The Scheme affects 150.4 ha of BMV land, which together with the aforementioned solar developments brings the sum to 788.7 ha of BMV land cumulatively affected by solar schemes. The majority of this will be the conversion of arable land to grassland, which can (among other things) be grazed by sheep during operation and returned to arable farming following decommissioning.
- 15.10.9 The permanent loss due to vegetation planting or infrastructure such as accesses and substations is small; approximately 3% of the BMV land that is affected.
- 15.10.10 As shown in **Table 15-16** and **Table 15-17**, there is almost 215,000 ha of BMV land in the administrative areas of East Riding of Yorkshire Council and the former Selby District Council. The BMV land affected by the cumulative solar developments comprises 0.5% of all the BMV land in the East Riding of Yorkshire, and 0.4% of the BMV in the two former administrative areas together.
- 15.10.11 Approximately 20ha of BMV is estimated to be permanently lost due to the Scheme and the cumulative solar developments together. This comprises approximately 0.01% of the BMV in East Riding of Yorkshire and the former Selby District Council.
- 15.10.12 It is not considered that the cumulative schemes together change the residual effect of the Scheme on the soil receptor. The effects presented on agriculture in the Residual Effects section above remain valid.

15.10.13 During operation, the functional improvement of soil resources that would follow conversion of arable to grassland are cumulative with increased land area and recognised across the identified developments. Whilst a conservative approach has been presented in this chapter for the improved functionality of soils following arable to grassland conversion, which was assigned a Slight beneficial effect, this benefit has been emphasised within other projects and allocated a significant beneficial effect. Consequently, the cumulative effect on improved functionality of soils is **moderate significant beneficial**.

15.11 References

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