



High Grove Solar

Preliminary Environmental Information Report

Chapter 5 Agricultural Land and Soils

April 2025

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5 Agricultural Land and Soils

5.1 Introduction

- 5.1.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents the findings of the preliminary assessment of the likely significant effects arising from the construction, operation and decommissioning of the Proposed Development on Agricultural Land and Soils.
- 5.1.1.2 This chapter sets out the relevant legislation, policy, standards and guidance applied to the assessment process; consultation undertaken to inform the assessment; assessment methodology; the relevant baseline conditions upon which the assessment is based; embedded and good practice mitigation considered in place before the assessment is undertaken; the likely significant effects that may arise as a result of the Proposed Development considering embedded and good practice mitigation; and any further mitigation requirements to avoid or reduce the likely significant effects; the remaining residual effects following further mitigation; and any monitoring required for remaining significant effects.
- 5.1.1.3 The following matters have been assessed as part of this chapter:
- Temporary and permanent loss of agricultural land, including that of Best and Most Versatile (BMV) quality.
 - Loss of or damage to soil resources.
- 5.1.1.4 Effects on agricultural holdings and farm businesses are **scoped out** of the assessment on the basis that all landowners with farm businesses who are involved in the Proposed Development have signed up by voluntary agreement and have therefore considered the potential effects on the overall viability of their farm businesses. The Planning Inspectorate's Scoping Opinion agreed to scope out this matter, subject to providing evidence of such agreements. For further information see Section 5.3.1 of this chapter.
- 5.1.1.5 Understanding intra-project effects between topics is an integral part of the Environmental Impact Assessment (EIA) process and have been considered within this chapter. The conclusions of the Chapter 12 Socio-economics assessment is considered relevant to the receptors considered within this assessment, and as such are taken into account in the overall assessment for Agricultural Land and Soils.
- 5.1.1.6 This chapter is supported by the following appendix:
- Appendix 5.1 Agricultural Land Classification Report, produced by Amet Property Limited
- 5.1.1.7 This chapter is supported by the following figures:
- Figure 5.1 Location of Observations

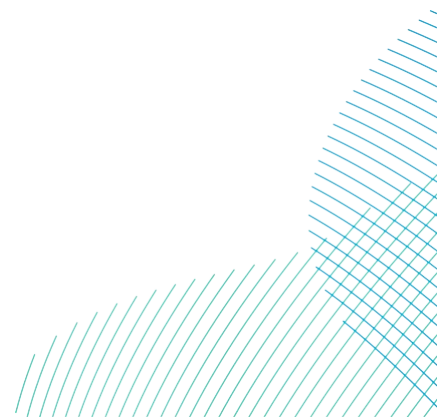
- Figure 5.2 Agricultural Land Classification

5.2 Relevant legislation, policy, standards and guidance

5.2.1.1 This section identifies the relevant legislation, planning policy, standards and guidelines which have informed this assessment, including the methodology and identification of mitigation.

5.2.2 Legislation

5.2.2.1 There is no legislation specifically relevant to the assessment of Agricultural Land and Soils in relation to the Proposed Development.



5.2.3 Policy

Table 5-1 *Agricultural Land and Soils - Policy*

Policy	Relevance to assessment
Overarching National Policy Statement (NPS) for Energy (EN-1), 2024 [1] Section 5.11 Land Use, Including open Space, Green Infrastructure, and Green Belt -	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the Agricultural Land Classification (ALC) surveys.
Paragraph 5.11.12 indicates that applicants should seek to reduce impacts on BMV agricultural land and preferably use land in areas of poorer quality (grades 3b, 4 and 5).	The surveys defined the areas of each ALC grade present such that this PEIR assessment has identified and considered implications for BMV agricultural land.
Paragraphs 5.11.13 and 14 state that applicants should also identify any effects and seek to minimise impacts on soil health and protect and improve soil quality taking into account any mitigation measures proposed, principally through a Soil Management Plan to encourage the sustainable reuse of soils.	An Outline Soil Resources Management Plan (oSRMP) will be submitted with the Development Consent Order (DCO) application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.
Paragraph 5.11.15 states that developments should contribute to and enhance the natural and local environment by preventing new and existing developments from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil pollution (amongst other matters).	
In respect of mitigation, paragraph 5.11.23 indicates that applicants should seek to minimise effects on the existing use of the proposed site and on uses near the site by applying good design principles, including the protection of soils during construction.	
Paragraph 5.11.34 indicates that the Secretary of State should ensure that applicants do not site their scheme on BMV agricultural land without justification. Where schemes are to be sited on BMV agricultural land, the Secretary of State should take into account the economic and other benefits of that land. Where development of agricultural land is	

Policy	Relevance to assessment
demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.	
NPS for Renewable Energy Infrastructure (EN-3), 2024 [2] Section 2.10 Solar Photovoltaic Generation	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys.
EN-3 aims to streamline the consenting process for large-scale solar developments by allowing decisions on solar applications to be made under section 104 of the Planning Act 2008. Solar energy is considered low carbon infrastructure and crucial for achieving net-zero goals, therefore designated Critical National Priority infrastructure under 2.17, 2.18, and Section 3. Therefore, provided assessment principles and legal requirements are met, and the mitigation hierarchy has been applied to avoid, reduce and mitigate significant adverse effects, the benefits [of the infrastructure] will generally be considered to outweigh residual effects.	An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.
Paragraph 2.10.10 indicates that solar power has an important role in delivering the government’s goals for greater energy independence, and that the government is supportive of solar that is co-located with other functions, such as agriculture, to maximise the efficiency of land use.	
Paragraph 2.10.29 indicates that while land type should not be a predominating factor in determining the suitability of the solar sites, applicants should, where possible, use previously developed land, brownfield land, contaminated land and industrial land. Where the use of any agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land, avoiding the use of BMV agricultural land where possible.	
Paragraph 2.10.30 confirms that the development of solar farms is not prohibited on BMV agricultural land but the impacts will need to be considered in line with paragraphs 2.10.73-92 and 2.10.107-126 of EN-3. Within these sections, only paragraph 2.10.81 is relevant in respect of	

Policy	Relevance to assessment
impacts on soils (paragraphs 2.10.107-126 are concerned with cultural heritage and traffic and transport noise and vibration). Paragraph 2.10.31 recognises that it is likely that developments at this scale will use some agricultural land. Applicants should explain their choice of site, noting the preference for development to be on suitable brownfield, industrial and low and medium grade agricultural land. Paragraph 2.10.32 states that where sited on agricultural land, consideration should be given to whether the proposal allows for continued agricultural use and/or can be co-located with other functions. Paragraphs 2.10.33 and 34 indicate that ALC surveys should be carried out if necessary to establish the grade of land and inform a Soil Resources and Management Plan to use and manage soils sustainably throughout the various stages of a project. Mitigation measures for soils are set out in paragraph 2.10.127.	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys. An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.

Policy	Relevance to assessment
guarantee appropriate handling of soil, backfilling, and return of the land to the baseline ALC, thus ensuring no loss or degradation of agricultural land.	
Written Ministerial Statement Solar projects must fit in with food security, 15 May 2024 [4] The written ministerial statement published under the previous Government indicated that the best agricultural land should be protected for food production and that large-scale solar should avoid BMV land where possible. The written ministerial statement largely reiterates policy in NPS EN-3 but with increased emphasis on protecting the nation's food security.	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys.
National Planning Policy Framework, December 2024 [5] Section 15 Conserving and enhancing the natural environment Paragraph 187 states that planning policies and decisions should contribute to and enhance the natural and local environment by protecting and enhancing soils, and recognising the economic and other benefits of the best and most versatile agricultural land. Paragraph 188 notes that plans should allocate land with the least environmental or amenity value. Footnote 65 states that where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality. Section 6 Building a strong, competitive economy Paragraph 88b states that, in order to support a prosperous rural economy, planning policies and decisions should enable the development and diversification of agricultural and other land-based businesses.	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys. An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.
Breckland Local Plan, September 2023 [6] Policy ENV 10 Renewable Energy Development	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys.

Policy	Relevance to assessment
Proposals for renewable energy and low carbon development will be supported subject to consideration of the impacts and whether they can be made acceptable, including the irreversible loss of the highest quality agricultural land. Large scale solar farms should be focussed on previously developed and non-agricultural land. Where a proposal involves greenfield land, the Council will need to consider if the proposed use of agricultural land has been shown to be necessary and poorer quality land has been used in preference to higher quality land, and that the proposal allows for continued agricultural use and/or encourages biodiversity improvements around arrays.	

5.2.4 Standards and guidance

Table 5-2 *Agricultural Land and Soils - Standards and guidance*

Standards	Relevance to assessment
Planning Practice Guidance, 2024 [7],: Natural Environment; Renewable and low carbon energy Natural Environment paragraphs 001, which relates to how planning takes account of agricultural land, and 002, which relates to how planning can safeguard soils. Renewable and Low Carbon Energy paragraph 013 encourages the siting of large scale solar farms on previously developed and non-agricultural land, provided it is not of high environmental value; notes that the necessity of the use of agricultural land for solar farms needs to be considered, and that poorer quality land should be used in preference to higher quality land; that proposals should allow for continued agricultural use and/or encourage biodiversity improvements around arrays. The	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys. An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.

Standards	Relevance to assessment
guidance also states that solar farms are normally temporary structures and planning conditions can be used to ensure that the installations can be removed when no longer in use and the land restored to its previous use.	
Agricultural Land Classification of England and Wales - Revised guidelines and criteria for the grading of the quality of agricultural land, 1988. [8] Sets out the methodology for classifying agricultural land, as referenced in paragraph 2.10.33 of EN-3	The methodology used within this chapter to define ALC follows this guidance as reported in the Draft oSRMP.
Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, 2009 [9] The Code provides advice on the use of soils in construction projects including best practice guidance for handling.	An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP based on the guidance in the Construction Code of Practice for the Sustainable Use of Soils is provided for statutory consultation.
Agricultural Land Classification: Protecting the best and most versatile land, Technical Information Note 049, 2012 [10] Summarises the ALC system, available data and methodology.	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys. The surveys defined the areas of each ALC grade present such that this PEIR assessment has identified and considered implications for BMV agricultural land.
Guide to assessing development proposals on agricultural land, 2021 [11] Sets out how the National Planning Policy Framework and the 25 Year Environment Plan aim to protect agricultural land and soils, with a focus on using ALC to inform planning decisions.	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys.
A New Perspective of Land and Soil in Environmental Assessment, 2022 [12] Provides guidance and an approach to assessing the impacts of development proposals on agricultural land and soil properties and functions.	This PEIR chapter provides a preliminary assessment of agricultural land and soils which includes survey results from the ALC surveys. An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.

Standards	Relevance to assessment
Working with Soil Guidance Note Document 3 Benefitting from Soil Management in Development and Construction, 2022 [13] Provides guidance on Soil Resource Surveys and Soil Management Plans.	An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.
Building on soil sustainability: Principles for soils in planning and construction, 2022 [14] Sets out guiding principles for soils in planning and construction.	An oSRMP will be submitted with the DCO application to secure the commitments contained within. A Draft oSRMP is provided for statutory consultation.

5.3 Consultation

5.3.1 Scoping opinion

5.3.1.1 An EIA Scoping Report was submitted to PINS on 6 September 2024, and a Scoping Opinion was published by the Planning Inspectorate on 17 October 2024. A summary of the key comments received and how these have been addressed in this assessment or will be addressed in the Environmental Statement (ES) is presented below:

- Effects on Agricultural Land and Soils during the operational phase of the Proposed Development can be scoped out, although the duration of impacts incurred during the construction phase must be clearly identified and not underplayed;
- A survey sampling density of at least 1 auger per 2 hectares is preferable, increasing to 1 auger per 1 hectare where soils or land would be permanently impacted or lost. The survey work to date has averaged at 1 auger per 3.4 hectares. Additional survey work will be undertaken and the findings reported in the ES;
- The areas of each grade of land lost temporarily and permanently should be clearly tabulated and depicted in accompanying maps. Specific justification of use of land by grade should be provided. This will be provided for the ES once final surveys are completed and the Proposed Development design is fixed.
- The ES should provide a regional assessment of the cumulative loss of BMV land and assess any significant effects where they are likely to occur; this assessment considers the use of BMV land in the wider regional context;
- The use of BMV land should be considered in discussions on alternative layouts, and the design evolution should ensure that preference has been made for brownfield and non-agricultural land where possible;
- The Scoping Opinion indicated that the magnitude of impact should be determined once the amount of BMV land to be affected is quantified, and should not be assessed in the Scoping Report as minor before this data is available. However, the Scoping Report used the IEMA guidance [12] for assessing the magnitude of change to Agricultural Land and Soils which specifies that all temporary, reversible change of agricultural land is a minor magnitude of change. Major and moderate magnitudes of change apply only to permanent, irreversible losses of agricultural land. If the IEMA guidelines are to be used, the actual amount of BMV land involved in a reversible development is irrelevant as they are all assessed as minor magnitude on these criteria. Further consultation will take place with Natural England on this issue but until further clarification is received, the assessment will continue to use the IEMA criteria;
- The ES should be consistent in its approach to assessing significance. The significance criteria proposed in the Scoping Report were taken directly from

the IEMA criteria but have been adapted to be consistent in terminology with other topics in this PEIR; and

- The ES should include an assessment of any likely significant effects on agricultural drainage or the removal of them due to the Proposed Development. Information on drainage systems in place has been sought from landowners and an assessment will be made of the likely risks of the various elements of the Proposed Development damaging the drainage infrastructure. Given that the piles for the solar PV modules would cause limited disturbance to the soils and the land will remain in pasture during the operation of the Proposed Development, the risk of damage to drainage systems is not likely to be significant, however this will be confirmed and reported within the ES once details from landowners are provided.

5.3.1.2 Full responses to comments received as part of the Scoping Opinion will be provided as part of the ES submitted with the application for development consent.

5.3.2 Stakeholder engagement

5.3.2.1 The following stakeholders have been engaged with regards to Agricultural Land and Soils as part of the assessment process so far:

- Natural England

5.3.2.2 The outputs of the engagement undertaken are presented in Table 5-3.

Table 5-3 Agricultural Land and Soils - Engagement undertaken

Stakeholder	Date engaged	Matters raised	Response
Natural England	26 September 2024	The survey density should generally be increased from 1 in 3ha to 1 in 2ha, or 1 in 1ha where impacts will be permanent.	Survey work is ongoing and the density of sampling will be increased especially where the existing survey results have shown a relatively complex distribution of ALC grades. It was agreed that increasing the density of sampling was less critical where existing surveys have shown uniform soils and ALC grades. Any surveys required of Cable Corridors would be undertaken once the cable routes are confirmed in order to inform the SRMP. No surveys of the cable routes have yet been undertaken, although the need for sampling depends on the cable laying techniques to be used. The surveys to date have not identified peat soils. Any peat soils identified from survey

Stakeholder	Date engaged	Matters raised	Response
		Disturbance to peat soils should be avoided.	would not be disturbed in the design. Currently, 66% of the draft Order Limits is identified as BMV agricultural land. ALC survey results are used to inform the detailed design of the various components of the Proposed Development.
		The siting of fixed infrastructure (other than panels) should avoid BMV land.	

5.4 Study area

5.4.1.1 The study area for Agricultural Land and Soils comprises all agricultural land within the draft Order Limits. This amounts to approximately 2,400ha, of which approximately 1,650ha are in the Panel Areas and 750ha in the Cable Corridors.

5.5 Assessment methodology

5.5.1 Baseline sources of information

Desktop sources

5.5.1.1 The following desktop sources have been used to inform the characterisation of the existing baseline conditions of the study area:

- Mapping of bedrock and superficial geology [15]
- Mapping of soil associations (1:250,000 scale) [16]
- Soil survey bulletin [17]
- Provisional ALC mapping [18]

Survey

5.5.1.2 The following surveys have been undertaken and used to inform the characterisation of the existing baseline conditions described in this PEIR, or will be completed in time to inform the ES to be submitted with the DCO Application:

- Reconnaissance-level ALC and soil survey (reported August 2024)
- As set out in Table 5-3, additional ALC and soil survey observations to increase the observation density from 1 auger in 3 hectares to at least 1 auger in 2 hectares in the Panel Areas and to 1 in 1 hectare for any permanent infrastructure only in areas where the existing survey results have shown a relatively complex distribution of ALC grades as required.

5.5.2 Sensitive receptors

5.5.2.1 The sensitive receptors identified and considered in this preliminary assessment are:

- Agricultural land, including that of BMV quality
- Soil resources

5.5.3 Assigning receptor sensitivity

5.5.3.1 The assessment methodology is based on determining the sensitivity of, and magnitude of change on, the relevant receptors of agricultural land and soil resources.

5.5.3.2 The sensitivity criteria set out in Table 5-4 have been taken from the IEMA guidance [12].

Table 5-4 *Agricultural Land and Soils - Sensitivity*

Sensitivity	Agricultural land	Soil resources
Very High	Grades 1 and 2	Peat soils
High	Subgrade 3a	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 (WC) V or VI.
Medium	Subgrade 3b	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. Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in WCIII and WCIV.
Low	Grades 4 and 5	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in WCI and II

5.5.4 Assigning magnitude of impact

- 5.5.4.1 The Agricultural Land and Soils Scoping Chapter indicated that the IEMA guidance would be followed when determining the magnitude of change. However, the Scoping Opinion (ID 3.1.6) noted that the terminology differed to the standard magnitude criteria applied to the project (i.e. referring to major / moderate / minor / negligible from IEMA compared to high / medium / low / very low). These have been amended in Table 5-5 so that impact and effect terminology are consistent across this PEIR, whilst still following IEMA criteria definitions and methodology, as is acknowledged as acceptable practice in the IEMA guidance.
- 5.5.4.2 The Scoping Opinion (ID 3.1.5) also queried the comment in the Scoping Report that “*the guidance categorises the magnitude of change as minor*” given that there would be the loss of approximately 1,400ha of agricultural land and that the area of BMV land affected would be likely to be more than 5ha (the area to be lost that would qualify as a minor magnitude).
- 5.5.4.3 The Scoping Opinion is correct in respect of the permanent loss of agricultural land. However, the comment in the Scoping Report referred to the temporary loss of agricultural land beneath the solar PV modules which clearly accounts for the majority of the land required for the Proposed Development. As highlighted in Table 5-5, the IEMA guidance categorises all temporary losses of any scale as minor (or low using the consistent terminology). The IEMA guidance applies major (high) and moderate (medium) magnitude of change only to permanent losses.
- 5.5.4.4 The IEMA criteria for assessing the magnitude of change are replicated in Table 5-5.

Table 5-5 Agricultural Land and Soils - Magnitude of change

Magnitude	Agricultural land and soils
High	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 20ha or loss of soil-related features (e.g. biomass production, habitat support, soil carbon, soil hydrology) or Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20ha, or gain in soil-related features
Medium	Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20ha or loss of soil-related features or Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5 and 20ha, or gain in soil-related features
Low	Permanent, irreversible loss over less than 5ha or a temporary, reversible loss of one or more soil functions or soil volumes, or temporary, reversible loss of soil-related features or Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5ha or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement, or temporary gain in soil-related features
Very Low	No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use

5.5.5 Significance criteria

5.5.5.1 The receptor sensitivity and the magnitude of change are then combined to determine the overall significance of the effect, as set out in Table 5-6.

Table 5-6 Significance Matrix

Magnitude	Sensitivity			
	Very High	High	Medium	low
High	Major	Major/Moderate	Moderate	Moderate/Minor
Medium	Major/Moderate	Moderate	Moderate/Minor	Minor
Low	Moderate	Moderate/Minor	Minor	Negligible
Very low	Moderate/Minor	Minor	Negligible	Negligible

- 5.5.5.2 Typically, effects that are moderate or major are considered significant in EIA terms. Negligible or minor effects are considered not significant in EIA terms, although professional judgment can be applied.

5.5.6 Assumptions and limitations

- 5.5.6.1 This assessment is based on the reconnaissance-scale data, with one soil profile observation every 3.4 hectares. It is assumed that this provides an accurate representation of the agricultural land quality within the draft Order Limits, however further sampling is ongoing.
- 5.5.6.2 The reconnaissance survey was undertaken in August 2024, prior to the confirmed draft Order Limits and design of the Proposed Development available for PEIR. Therefore, the survey area extent as shown in Appendix 5.1 is different to the draft Order Limits presented at statutory consultation, however it is considered that a representative area has been surveyed to enable a robust preliminary assessment. The results of any additional surveys undertaken will be reported within the ES.

5.6 Baseline conditions

5.6.1 Existing baseline conditions

- 5.6.1.1 The Panel Areas would extend to 1,677ha of which approximately 1,650ha is agricultural land, primarily in arable use.
- 5.6.1.2 The land within the draft Order Limits is underlain by various chalk formations all belonging to the White Chalk Subgroup of the Chalk Group. Across much of the area east of Swaffham this is overlain by an extensive sheet of chalky, flinty till of the Lowestoft Formation. Superficial alluvium deposits are mapped in conjunction with the watercourses throughout the draft Order Limits.
- 5.6.1.3 The mapped soil information shows seven associations present across the draft Order Limits. The most extensive are:
- Beccles 1 – mainly in the east, generally slowly permeable, seasonally waterlogged, fine loamy over clayey soils.
 - Burlingham 3 – mapped centrally, between Swaffham and Bradenham, generally deep, fine loamy soils with slowly permeable subsoils and light waterlogging.
 - Worlington – mainly around Swaffham, generally deep, well drained, sandy soils.
 - Newmarket 1 – mapped in the west, generally shallow, well drained, calcareous sandy and coarse loamy soils over chalk or chalk rubble.
- 5.6.1.4 The less extensive associations are:
- Burlingham 1 – mainly west of Dereham, generally deep, coarse and fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging.

- Beccles 2 – west of Necton, generally slowly permeable, fine and coarse loamy over clayey soils, with some deep, sandy soils affected by groundwater.
- Isleham 2 – mapped in conjunction with a watercourse east of Bradenham, generally deep, permeable sandy and peaty soils affected by groundwater.

- 5.6.1.5 The agricultural land within the draft Order Limits was surveyed at a reconnaissance scale between November 2023 and July 2024 [19]. The location of observations is shown on Figure 5.1 and the ALC grades on Figure 5.2. The ALC survey report is contained in Appendix 5.1.
- 5.6.1.6 The survey identified soil types that correspond well with the mapped soil associations.
- 5.6.1.7 Across the approximate eastern half of the draft Order Limits, the topsoil is sandy clay loam or sandy loam, typically of 30-40cm depth. Across the Western Panel Areas, the topsoil is sandy loam or loamy sand, also typically of 30-40cm depth.
- 5.6.1.8 The subsoil characteristics are variable, ranging from slowly permeable clay and permeable sandy loams both commonly found in the east; loamy sand and sand found roughly centrally; and chalk in the west.
- 5.6.1.9 Soil wetness and soil droughtiness are the main limitations to the ALC. The areas of each grade classification are given in Table 5-7.

Table 5-7 ALC areas

Grade	Description	Area (ha)	%
Grade 2	Very good quality	354	21
Subgrade 3a	Good quality	761	46
Subgrade 3b	Moderate quality	536	32
Non-agricultural		7	1
Total		1657	100

5.6.2 Future baseline

- 5.6.2.1 The future baseline for Agricultural Land and Soils is expected to remain as existing in the absence of the Proposed Development due to the ALC being concerned with long-term physical characteristics and limitations rather than short-term use or management.
- 5.6.2.2 In accordance with the methodology set out in Chapter 15 Cumulative Effects Assessment of this PEIR, the following developments are relevant to this assessment and have been considered present in the future baseline:
- Norfolk Vanguard (EN010079)
 - Norfolk Boreas (EN010087)

- East Bilney Quarry (FUL/2023/0030 / C/3/2010/3028)
- Land to South of Field Lane (FUL/2023/0029)
- East Bilney Quarry (FUL/2023/0031)
- Land South of B1108 (FUL/2024/0041 / FUL/2020/0050)
- Dudgeon Onshore Substation (3PL/2012/0703/F)
- Land to the South of Lynn Road (FUL/2023/0047)

5.7 Design Principles, embedded and Good Practice Measures

5.7.1 Design Principles

- 5.7.1.1 The Proposed Development is being designed with regard to a set of design principles, as described in the draft Design Approach Document (DAD).

5.7.2 Embedded and good practice measures

- 5.7.2.1 Embedded measures are modifications to the design of a scheme, made during the pre-application phase, that are an inherent part of the design and do not require additional action to be taken. Good practice measures are standard approaches and actions undertaken to avoid or reduce environmental impacts in line with best practice guidance and legislative requirements.
- 5.7.2.2 The Proposed Development is currently evolving through an iterative design process. Measures for the Proposed Development relevant to Agricultural Land and Soils already committed to include:
- Where possible, underground cables would be installed using a cable plough or trenching. These are considered the most efficient methods of cable installation.
 - Minimising fragmentation of residual agricultural land.
 - Adopting and implementing good practice measures for all phases of the Proposed Development to minimise damage to soils that remain in place and those that are stripped, stockpiled and reinstated; minimise soil carbon losses; maintain water infiltration; and enhance soil biodiversity.
 - Avoiding locating infrastructure other than panels on BMV agricultural land as far as reasonably possible
- 5.7.2.3 The suite of management plans that will be in place for the Proposed Development and relevant to Agricultural Land and Soil include:
- Outline Construction Environmental Management Plan (oCEMP).
 - oSRMP.
 - Outline Landscape and Ecological Management Plan (oLEMP).
 - Outline Decommissioning Environmental Management Plan (oDEMP).

- 5.7.2.4 These management plans incorporate embedded and good practice measures, as well as any further mitigation identified during the EIA.
- 5.7.2.5 Draft outline versions of these management plans are provided with this PEIR for review during statutory consultation. These will be updated and submitted with the DCO application to secure the commitments contained within. Appropriate Requirements will be included in the DCO application to ensure these management plans will be developed to full versions and submitted to the relevant planning authority for approval. This will take place prior to the commencement of relevant works and measures described in them are implemented.

5.8 Assessment of effects

5.8.1 Construction

- 5.8.1.1 Potential impacts relating to Agricultural Land and Soils are the loss of productive agricultural land area and damage to soil resources.
- 5.8.1.2 The built aspects of the Proposed Development requiring permanent land take are likely to include seven 132kV substations each within a compound of approximately 0.4ha (total of 2.8ha).
- 5.8.1.3 It is anticipated that several construction compounds would be required for the construction of the Proposed Development. This is expected to include at least one central compound on each of the Panel Areas, as well as a number of satellite compounds across the site. At this stage, the compounds are expected to be up to approximately 6,000m² each in size, requiring less than 20ha in total. The compounds would be temporary, but are anticipated to involve disturbance to the land and soils. Some access tracks are anticipated to remain in place permanently for maintenance purposes.

Agricultural Land

- 5.8.1.4 The land would be removed from primary arable agricultural production at the start of the construction phase and is expected to remain largely unavailable for agricultural production during the lifetime of the Proposed Development, which is anticipated to be 40 years. As this occurs at the commencement of the construction phase, it is considered an impact arising from the construction rather than the operation of the Proposed Development.
- 5.8.1.5 Approximately 1,114ha of land in the Panel Areas has to date been identified as BMV agricultural land. Approximately 354ha is classified as Grade 2 quality which is a resource of very high sensitivity, and approximately 761ha is classified as Subgrade 3a which is a resource of high sensitivity. However, applying the IEMA criteria, the magnitude of change for the Panel Areas is low as the Proposed Development is temporary (albeit long-term) and reversible.
- 5.8.1.6 This represents a low magnitude of change on a receptor of high to very high sensitivity, which would result in a moderate adverse effect on Grade 2 quality

land which is **Significant**, and a moderate adverse effect on Subgrade 3a quality land, which is also **Significant**.

- 5.8.1.7 The permanent land requirement, including access tracks, would be likely to be less than 20ha. If the infrastructure is sited on the lowest available quality land (Subgrade 3b), this would represent a medium magnitude of change on a receptor of medium sensitivity, which would result in a moderate/minor adverse effect, which is **Not Significant**. If the permanent infrastructure is sited on BMV land (high sensitivity for Subgrade 3a, very high for Grade 2), it would result in a Moderate Adverse to Major/Moderate Adverse effect, which would be **Significant**.
- 5.8.1.8 Within the wider regional context, both Norfolk and the Eastern Region (which comprises Bedfordshire, Cambridgeshire, Essex, Hertfordshire, Norfolk and Suffolk) contain higher than average proportions of BMV land, with the area of BMV land in Norfolk estimated at approximately 284,000ha or 59% of all agricultural land and the area of BMV land in the Eastern region estimated at 1,133,000ha or 67% of all agricultural land. Natural England's TIN049 [10] estimates that BMV land accounts for 42% of all agricultural land in England.
- 5.8.1.9 The 1,129ha of BMV land in the draft Order Limits would represent approximately 0.4% of the likely BMV land in Norfolk and 0.1% of the likely BMV land in the Eastern Region. Given the estimate in the 2024 WMS [4] that, even under the most ambitious scenarios the total area of agricultural land used for solar PV modules would occupy less than 1% of the UK's agricultural land, these proportions represent a use of BMV land in the wider regional context which is **Not Significant**.

Soil Resources

- 5.8.1.10 Construction impacts on soils relate to the potential damage (from compaction) to soils from installing solar PV modules and damage to soils that need to be stripped and stored for access tracks, construction compounds and on-site infrastructure.
- 5.8.1.11 Most of the topsoils are sandy (sandy loam or loamy sand) which is a resource of low sensitivity. The sandy clay loam topsoil in the eastern half of the draft Order Limits is a resource of medium sensitivity. Most of the upper subsoil resource is heavy, comprising clay or sandy clay which is a resource of high sensitivity.
- 5.8.1.12 Adherence to the SRMP and following best practice would ensure that the magnitude of change to soil resources subject to temporary disturbance remains low. The Proposed Development would have a direct, short-term minor adverse effect on the soil resource; this effect would be **Not Significant**. There is the potential for a direct, short-term moderate adverse effect on the upper subsoils, which would be **Significant**.
- 5.8.1.13 Permanent sealing of soils under built aspects of the Proposed Development would represent a high magnitude of change. Assuming the topsoil would have been stripped, leaving subsoil in-situ, the sensitivity of the resource being sealed could range from low to high depending on the exact location of each built aspect. This would result in a permanent, Moderate Adverse effect on clay and sandy clay upper subsoil textures, which is **Significant**.

5.8.2 Operation

- 5.8.2.1 Although the Scoping Opinion agreed that the main effects on agricultural land and soils would occur as a consequence of construction and are therefore to be assessed and reported in the construction phase, there would also be effects on soil health that would accrue during the operational phase of the Proposed Development.
- 5.8.2.2 It is well established that soil health improves when arable land is converted to permanent pasture, with increases in soil organic matter, soil carbon and soil moisture, and farmers are encouraged by the Government's Sustainable Farming Incentive scheme [20] to convert arable land to grassland with low fertiliser input.
- 5.8.2.3 Empirical evidence of the soil health benefits of converting arable land to pasture is also available from the analysis of 25,000 soil samples collected between June 2023 and May 2024 by one of the UK's leading provider of agronomic analysis [21].
- 5.8.2.4 The 2023-2024 soil summary found significant contrasts in soil organic matter (SOM) levels between arable and grassland soils, with grassland soils having an average SOM twice that of arable soils, and a wider variability. SOM enhances nutrient cycling, improves soil structure and boosts water retention, which makes grassland soils healthier, more resilient and a substantial carbon sink.
- 5.8.2.5 The improvements to soil health during the operational phase of the Proposed Development would represent a high magnitude of change to mostly low-sensitivity soils, resulting in a temporary, Moderate Beneficial effect on soil resources, which is **Significant**.

5.8.3 Decommissioning

- 5.8.3.1 The effect on agricultural land quality and soils at decommissioning would be influenced by the extent of disturbance caused by the removal of the solar PV modules and the underground cabling, for example the presence, dimensions and stability of leftover voids. Currently, the most environmentally acceptable option is to leave the cables in situ, although the cables could be removed by excavating at regular intervals and pulling the cable through to the extraction point, thus avoiding the need to excavate the entire cable trench. In either case, the effects would be less than those likely to occur during the construction phase.
- 5.8.3.2 The effects on agricultural land quality and soils are likely to be similar to those reported for the construction phase, subject to best practice measures in place at the time of decommissioning.

5.9 Additional mitigation

- 5.9.1.1 There is no additional mitigation available to reduce the effect of the long-term loss of agricultural land.

- 5.9.1.2 No additional mitigation is required for soil resources as the effects are not anticipated to be significant.

5.10 Residual effects

5.10.1 Construction

- 5.10.1.1 No additional mitigation has been applied in relation to Agricultural Land and Soils. The residual effects remain as assessed in Section 5.8.

5.10.2 Operation

- 5.10.2.1 No additional mitigation is required in relation to Agricultural Land and Soils. The residual effects remain as assessed in Section 5.8.

5.10.3 Decommissioning

- 5.10.3.1 No additional mitigation has been applied in relation to Agricultural Land and Soils. The residual effects remain as assessed in Section 5.8.

5.11 Monitoring

- 5.11.1.1 Monitoring requirements will be set out in the SRMP. Draft outline versions of these Management Plans are submitted with this statutory consultation.

5.12 Opportunities for enhancement

- 5.12.1.1 Opportunities for enhancement for agriculture primarily relate to the continuation of some agricultural use and production within the Panel Areas by enabling grazing by sheep.

5.13 Summary

- 5.13.1.1 Table 5-8 presents a summary of the Agricultural Land and Soils assessment, detailing further mitigation requirements and residual effects.

Table 5-8 *Agricultural Land and Soils - Preliminary assessment summary*

Receptor	Embedded and good practice measures	Description of impact and magnitude	Significance of effect	Additional mitigation	Residual effect
Construction					
BMV agricultural land in Grade 2, Very high	None available	Direct, temporary, long-term, adverse, low	Moderate, significant	None available	Temporary Moderate Adverse, Significant
BMV agricultural land in Subgrade 3a, high	None available	Direct, temporary, long-term, adverse, low	Moderate, significant	None available	Temporary Moderate Adverse, Significant
Other agricultural land (Subgrade 3b), Medium	None available	Direct, temporary, long-term, adverse, low	Minor, not significant	None available	Temporary Minor Adverse, Not Significant
		Direct, permanent, long-term, adverse, medium	Moderate/minor, not significant		Permanent Moderate/Minor Adverse, Not Significant
Soil resources, high, medium and low	Good practice for handling soils in SRMP	Temporary, short-term, adverse, low	Minor, not significant	None required	Minor Adverse, Not Significant
Soil resources, high	Good practice for handling soils in SRMP	Direct, permanent, long-term, adverse, low	Moderate, significant	None required	Moderate Adverse, Significant
Operation					
Soil health	Good practice for handling soils in SRMP	Temporary, long-term, beneficial, high	Moderate, significant	None required	Moderate Beneficial, Significant
Decommissioning					
Soil resources	Good practice for handling soils in SRMP	Temporary, short-term, adverse, low	Minor, not significant	None required	Minor Adverse, Not Significant

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