EAST PARK ENERGY

East Park Energy

EN010141

Environmental Statement
Volume 1 – Main Report

Chapter 13: Land and Soils

Document Reference: EN010141/DR/6.1

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009: Regulation 5(2)(a)

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EAST PARK ENERGY

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Environmental Statement
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Chapter 13: Land and Soils

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13.0 LAND AND SOILS

13.1 Introduction

13.1.1 This chapter presents the findings of an assessment of the likely significant impacts and effects arising from the construction, operation and decommissioning of the East Park Energy project (the 'Scheme') on land and soil receptors.

13.1.2 This chapter presents the methodology for assessment, the preliminary baseline conditions at the Site, mitigation measures that will be embedded into the design of the project, and the preliminary assessment.

13.1.3 The chapter is supported by the following appendices in **ES Volume 2 [EN010141/DR/6.2]**:

- **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]**.

13.1.4 This chapter is supported by the following figures in **ES Volume 3 [EN010141/DR/6.3]**:

- **ES Vol 3 Figure 13-1: Provisional Agricultural Land Classification [EN010141/DR/6.3]**;
- **ES Vol 3 Figure 13-2: Agricultural Land Classification [EN010141/DR/6.3]**;
- **ES Vol 3 Figure 13-3: Provisional Agricultural Land Classification for Bedford Borough and Huntingdonshire District [EN010141/DR/6.3]**;
- **ES Vol 3 Figure 13-4: National Soil Map [EN010141/DR/6.3]**; and
- **ES Vol 3 Figure 13-5: Mineral Safeguarding Areas [EN010141/DR/6.3]**.

Statement of Competence

13.1.5 The agricultural land and soils assessment lead author holds a BA (Hons), MSc, Fellow of the British Institute of Agricultural Consultants (FBIAC),

Practitioner of the Institute of Environmental Management and Assessment (PIEMA), and Member of the Institute of Soil Science. They are a Director of Reading Agricultural Consultants Ltd with over 30 years' experience of assessing the impacts of developments on agricultural land and soils, and considerable experience of providing expert evidence at public inquiries, hearings and DCO examinations.

13.2 Legislation, Policy and Guidance

Legislation

13.2.1 There is no specific relevant legislation with regards to the assessment of agricultural land and soils.

Policy

National Policy

13.2.2 The following National Policy Statements set out national planning policies in relation to nationally significant solar photovoltaic generation developments:

- Overarching National Policy Statement (NPS) for Energy (EN-1)[1];
- NPS for Renewable Energy Infrastructure (EN-3)[2]; and
- NPS for Electricity Networks Infrastructure (EN-5) [3].

13.2.3 The National Planning Policy Framework[4] (NPPF), and the accompanying online Planning Practice Guidance[5] (PPG) are also important and relevant considerations.

13.2.4 Relevant sections of these policies in relation to agricultural land and soils are:

Table 13.1 Summary of National Planning Policy

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
NPS EN-1	5.11.4	Paragraph 5.11.4 states that development of land will affect soil resources, including physical loss of and damage to soil resources, through land contamination and structural damage. Indirect impacts may also arise from changes in the local water regime, organic matter content, soil	The baseline soil resources are identified in Section 13.6 of this chapter. An assessment of impacts is undertaken in Section 13.7 of this chapter. Detailed analysis of the soil resources across the Site are provided in **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil**

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		biodiversity and soil process.	**Resources [EN010141/DR/6.2]**.
	5.11.12	Paragraph 5.11.12 states that applicants should seek to minimise impacts on best and most versatile ('BMV') agricultural land and preferably use land in areas of poorer quality (grades 3b, 4 and 5)	The approach taken to site selection is set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable. Section 13.7 of this chapter sets out embedded mitigation measures to avoid and minimise impacts on agricultural land and soil resources.
	5.11.13	Paragraph 5.11.13 states 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.	Section 13.7 of this chapter sets out embedded mitigation measures to avoid and minimise impacts on agricultural land and soil resources. The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9]** as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.
	5.11.14	Paragraph 5.11.14 indicates that applicants are encouraged to develop and implement a Soil Management Plan which could help minimise potential land contamination. The sustainable reuse of soils	The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9]** as part of the application which sets out how soils will be managed through the construction, operation and

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		needs to be carefully considered in line with good practice guidance where large quantities of soils are surplus to requirements or are affected by contamination.	decommissioning phases of the Scheme. Section 6.0 of the **outline Soil Management Plan [EN010141/DR/7.9]** addresses contaminated land and a materials management strategy.
	5.11.23	Paragraph 5.11.23 accepts that, in the case of most energy infrastructure, there may be little that can be done to mitigate the direct effects of an energy project on the existing use of the proposed site. However, applicants should nevertheless seek to minimise these effects and the effects on existing or planned uses near the site by the application of good design principles, including the layout of the project and the protection of soils during construction.	Section 13.7 of this chapter sets out embedded mitigation measures to avoid and minimise impacts on agricultural land and soil resources. The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9]** as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.
	5.11.34	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 land, the Secretary of State should take into account the economic and other benefits of that land. Where development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality.	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable.
NPS EN-3	2.10.11	Paragraph 2.10.11 refers to Powering Up Britain: The Energy Security Plan which states that government	As set out in **ES Vol 1 Chapter 3: Alternatives and Design Evolution [EN010141/DR/6.1]**, the

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		seeks large-scale ground-mounted solar deployment across the UK, looking for development mainly on brownfield, industrial and low and medium grade agricultural land. It sets out that solar and farming can be complementary, supporting each other financially, environmentally and through shared use of land, and encourages deployment of solar technology that delivers environmental benefits, with consideration for ongoing food production or environmental improvement.	Scheme necessitates the use of agricultural land, and the Applicant has sought to avoid higher grade agricultural land as far as practicable. The Applicant has designed the Scheme to deliver multiple environmental benefits, including grazing of the solar panel areas for continued agricultural use, and habitat creation as set out in the **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]**. **As set out in ES Vol 1 Chapter 2: The Scheme [EN010141/DR/6.1]** The Applicant has partnered with Rothamsted Research (an agricultural research college) to deliver an 'Agrisolar Research Area' within East Park Site D to further an understanding of how agriculture and solar development can co-exist on commercial solar installations.
	2.10.29 2.10.31	While land type should not be a predominating factor in determining the suitability of the site location, applicants should where possible utilise previously developed land, brownfield land, contaminated land and industrial land. Where the proposed 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 2.10.29). However, paragraph 2.10.31 recognises that, at	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable.

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		this scale, it is likely that developments will use some agricultural land.	
	2.10.30	Paragraph 2.10.30 clarifies that the development of ground-mounted solar arrays is not prohibited on BMV agricultural land but that the impacts of so doing need to be considered.	The Applicant notes that development of solar on BMV agricultural land is not prohibited. An assessment of the impacts and likely significant effects on agricultural land and soil resources is set out in Section 13.8 of this chapter.
	2.10.33	Paragraph 2.10.33 indicates that the Agricultural Land Classification ('ALC') is the only approved system for grading agricultural land in England and, if necessary, field surveys should be used to establish the ALC in accordance with the grading criteria and identify the soil types to inform soil management at the construction, operation and decommissioning phases.	**ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]** presents a detailed agricultural land classification of the Site and is summarised in Section 13.6 of this chapter.
	2.10.34	Paragraph 2.10.34 states that applicants are encouraged to develop and implement a Soil Resources and Management Plan which could help to use and manage soils sustainably and minimise adverse impacts on soil health and potential land contamination.	The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9]** as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.
	2.10.73-2.10.126	The relevant impacts of solar farms identified at paragraphs 2.10.73 – 2.10.126 do not identify specific impacts on agricultural land or soils (despite the cross-reference from paragraph	The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9]** as part of the application which sets out how soils will be managed through the construction, operation and

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		2.10.30), although paragraph 2.10.81 indicates that where soil stripping occurs, topsoil and subsoil should be stripped, stored, and replaced separately to minimise soil damage and to provide optimal conditions for site restoration.	decommissioning phases of the Scheme.
NPPF	Para. 187	Planning policies and decisions should contribute to and enhance the natural and local environment by protecting and enhancing soils (amongst other matters) and recognising the wider benefits from natural capital and ecosystem services, including the economic and other benefits of BMV agricultural land.	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable. The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9**] as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.
	Para. 188 Footnote 65	Plans should allocate land with the least environmental or amenity value, where consistent with other policies in the NPPF, and 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. The availability of agricultural land used for food	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		production should be considered, alongside the other policies in the NPPF, when deciding what sites are most appropriate for development.	on agricultural land where practicable.
PPG	Natural Environment – Paragraphs 001 and 002	Confirms that Natural England is a statutory consultee in relation to agricultural land, and that planning decisions should take account of best and most versatile agricultural land. Sets out that soils can deliver multiple ecosystem services in addition to, and as an alternative to, crop production. References Defra guidance with regards protecting soils on construction sites.	Natural England has been consulted on the application as set out in Section 13.3 of this chapter. The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9**] as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.
	Renewable and Low Carbon Energy – Paragraph 013	Provides advice on identifying sites for large-scale solar development, including that poorer quality land should be used in preference to higher quality land.	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable.

Local Policy

13.2.5 The Scheme lies within the administrative boundaries of Bedford Borough Council (BBC) and Huntingdonshire District Council (HDC), with HDC being a two-tier authority with Cambridgeshire County Council. Planning policy of relevance to the assessment that will be considered includes:

- Bedford Borough Local Plan 2030[6];
- Bedford Borough, Central Bedfordshire and Luton Borough Councils Minerals and Waste Local Plan: Strategic Sites and Policies[7];
- Huntingdonshire Local Plan to 2036[8]; and
- Cambridgeshire and Peterborough Minerals and Waste Local Plan[9].

13.2.6 Only the relevant local planning policies that are relevant to land and soils from the above documents have been included and summarised in Table 13.2.

Table 13.2 - Summary of Local Planning Policy

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
Huntingdonshire Local Plan to 2036	Policy LP 10	Requires all development in the countryside to seek to use land that is of lower agricultural value in preference to land of higher agricultural value and avoid the irreversible loss of BMV agricultural land where possible.	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable. An assessment of impacts and likely significant effects on agricultural land is provided in Section 13.8 of this chapter.
Bedford Borough Local Plan 2030	Policy 46S	States that the Council will seek to maximise the delivery of development through the reuse of suitably located previously	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]**

Document	Policy / Paragraph Reference	Summary of Policy / Paragraph	Where addressed in the ES?
		developed land, but that where 'significant' development is demonstrated to be necessary on agricultural land, poorer quality land should be used in preference to BMV agricultural land.	along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable.
	Policy 57	Provides support for renewable energy generation projects provided that it is demonstrated the potential impacts on BMV agricultural land have been fully addressed in consultation with the affected local communities. Figure 13 of the Bedford Local Plan 2030 identifies broad locations with potential for large scale solar energy development.	The approach taken to site selection if set out in **ES Vol 1 Chapter 3: Alternative and Design Evolution [EN010141/DR/6.1]** along with supporting appendices, including **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** which specifically addresses how the Applicant sought to avoid and minimise impact on agricultural land where practicable. The Site is partly located within the area identified in Figure 13 of the Bedford Borough Local Plan, with further consideration of this policy point set out in Section 7 of the **Planning Statement [EN010141/DR/5.3]**.

Guidance

13.2.7 Industry guidance of relevance to this assessment includes:

- Institute of Environmental Management and Assessment ('IEMA'): A New Perspective on Land and Soil in Environmental Impact Assessment[10];
- Defra's Construction Code of Practice for the Sustainable Use of Soils on Construction Sites[11]; and
- Natural England Technical Information Note (TIN) 049: Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land[12].

13.3 Consultation and Engagement

Scoping

13.3.1 Scoping of this land and soils assessment was undertaken as part of a wider environmental impact assessment (EIA) scoping exercise, the findings of which were recorded in **ES Vol 2 Appendix 4-1: EIA Scoping Report [EN010141/DR/6.2]** that was submitted in October 2023.

13.3.2 A Scoping Opinion was received in December 2023 as presented in **ES Vol 2 Appendix 4-2: EIA Scoping Opinion [EN010141/DR/6.2]**. The feedback received from PINS and stakeholders within the Scoping Opinion has been reviewed and the points relating to this chapter are summarised in Table 13.3 below.

13.3.3 Table 13.3 sets out a record of relevant scoping responses.

Table 13.3 – Scoping responses with respect to land and soils

Consultee	Summary of Comments	Response to Consultation
PINS	The Applicant proposes to scope out effects on agricultural land during construction and decommissioning on the basis that any effects would be short-term and would relate to potential impacts on soil rather than agricultural productivity. These phases are anticipated to last up to 24 months each. Considering the relatively short-term nature of the construction and decommissioning phases, the Inspectorate is content that an individual assessment of agricultural land loss for the construction and decommissioning phases it not required. However, the ES should ensure that effects of agricultural land loss are assessed over the entire lifetime of the Proposed Development including the construction, operational, and decommissioning phases.	Section 13.8 of this chapter provides an assessment of land and soil receptors at the construction, operational and decommissioning phases of the Scheme.

Consultee	Summary of Comments	Response to Consultation
PINS	The Applicant proposes to scope out effects during the operational phase on the basis that the temporary removal of parts of the site from arable cultivation would have beneficial effects on soils by allowing soil to “rest” and promote carbon sequestration. Schedule 4 of the EIA Regulations state that both positive and negative effects should be reported. As such, the Inspectorate does not agree to scope this matter out of further assessment. The ES should provide an assessment of any beneficial and adverse effects of the Proposed Development on soil resources during operation.	Section 13.8 of this chapter provides an assessment of land and soil receptors at the construction, operational and decommissioning phases of the Scheme.
PINS	Paragraph 17.4.10 states that “the Applicant has undertaken a detailed Agricultural Land Classification survey for the site…in accordance with Natural England guidance”, however it is stated in paragraph 1.7 of the ALC Report (Scoping Report, Appendix 17-1) that surveys were undertaken at one auger per four hectares. It is noted (in paragraph 1.7 of Appendix 17-1) that this is due to the “large area of agricultural land”. Natural England (NE) guidance (namely Technical Information Note TIN049) states that a detailed ALC survey requires a frequency of one boring per hectare. The ES should justify the extent of survey efforts and ensure that the text is consistent between the ES and any associated appendices.	As set out in Section 13.3 of this chapter, the Applicant has consulted with Natural England and has undertaken a more detailed agricultural land classification survey.
PINS	The Scoping Report states that a detailed ALC survey was conducted for East Park Sites A to D (included as Appendix 17-1 of the Scoping Report). It is stated that a survey of the grid corridor route was not conducted on the basis that impacts would be temporary and for a short duration, with soils being reinstated in line with guidance.	As set out in Section 13.3 of this chapter, the Applicant has consulted with Natural England and has undertaken a more detailed agricultural land classification survey, including of the grid corridor. Section 13.8 of this chapter provides an assessment of land and soil receptors which includes

Consultee	Summary of Comments	Response to Consultation
	Effects and surveys should be considered for the grid connection corridor as well as the solar PV sites where there is potential for significant effects to occur.	for the cable corridors and grid connection.
PINS	The Scoping Report states that sheep grazing is assumed under the PV panels however it is noted (in paragraph 17.7.1) that it is not currently confirmed how the land will be managed. Where the ES relies upon grazing as mitigation, it should be demonstrated that the land is not subject to restrictive covenants that would prevent such use and that such mitigation is secured in respect of the operation of the Proposed Development.	The Applicant intends to graze the solar arrays on rotation during the operational life of the Scheme. The **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]** provides an overview of the management process.
PINS	The ES should identify the agricultural land uses that will be displaced by the Proposed Development. Potential effects on farm businesses, loss of agricultural production and implications for food security from both the PV solar site and grid connection should be considered where there is potential for significant effects to occur. This should consider both effects alone and cumulatively with other projects. Effects such as severance to farm access or changes to the scale and long-term viability of farm holdings affected by the Proposed Development should also be considered.	Section 13.8 of this chapter provides an assessment of land and soil receptors at the construction, operational and decommissioning phases of the Scheme.
PINS	As stated in Cambridgeshire County Council's consultation response, the site is located within a Minerals Safeguarding Area. This is not referenced within the Scoping Report. The ES should assess the likely significant effects of the Proposed Development on the sterilisation of important mineral resources. The Applicant should seek agreement from the Minerals Planning Authority regarding the approach to assessment of this matter.	An assessment of the impact on mineral reserves is provided in Section 13.8 of this chapter and at Appendix B of the **Planning Statement [EN010141/DR/5.3]**).

Consultee	Summary of Comments	Response to Consultation
Natural England	A detailed ALC and soil survey of the agricultural land should be undertaken across the full Study Area to inform the EIA. This should normally be at a detailed level, e.g. one auger boring per hectare, 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. Natural England advise the 1 in 4 sampling density (para 1.7 APPENDIX 17-1 Agricultural Land Classification and Soil Resources) constitutes what is commonly known as a 'reconnaissance survey' (paragraph 3.1 appendix 17.1) is not sufficiently detailed for a project of this scale.	As set out in Section 13.3 of this chapter, the Applicant has consulted with Natural England and has undertaken a more detailed agricultural land classification survey, including of the grid corridor.
Natural England	The temporary displacement of soil during construction as a result of the underground cable installation and temporary haul roads / construction compounds can result in permanent land quality change and soil damage if undertaken inappropriately, therefore, Natural England advise degradation or permanent loss of BMV agricultural land should be considered in the ES and associated SMP. This is required for consultees and decision makers to understand the extent (ha) and likely long-term impacts on agricultural land quality (ALC grade). There is a risk of soil damage, ALC degradation and long term or permanent loss of BMV from cable installation (grid route). Soil will need to be handled according to best practice and reinstated to a high standard to reduce the impacts. The results from a detailed ALC survey would provide soils data to inform a soil management plan for the whole site regardless of whether the use is permanent or temporary in nature.	As set out in Section 13.3 of this chapter, the Applicant has consulted with Natural England and has undertaken a more detailed agricultural land classification survey, including of the grid corridor. Section 13.8 of this chapter provides an assessment of land and soil receptors at the construction, operational and decommissioning phases of the Scheme. The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9**] as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.
Natural England	The scheme does not include a commitment to return to arable	The Applicant intends to graze the solar arrays on rotation during the

Consultee	Summary of Comments	Response to Consultation
	production from point of construction, Natural England refers the applicant to the aforementioned NPPF footnote 62 'The availability of agricultural land used for food production should be considered'. Should the continuation of agricultural production through sheep grazing this would not be considered a land available for food production and therefore Natural England does not concur with the scope of effects on land.	operational life of the Scheme. The **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]** provides an overview of the management process. Section 13.8 of this chapter provides an assessment of land and soil receptors at the construction, operational and decommissioning phases of the Scheme.
Natural England	We note there is no assessment of the decommission process on soils (including BMV land). Natural England advise that within the ES, there is a firm commitment to decommissioning and an outline decommissioning plan that indicates. There should be more attention given to the latter stages of project lifecycles (i.e. decommissioning), ensuring that mechanisms for environmental mitigation, restoration and enhancement that are built in at the design stage are secured well into the future. The spatial distribution of ALC grades determined from a detailed ALC survey are necessary to inform the reinstatement criteria, which allows the area of each ALC Grade temporarily disturbed to be returned to the same quality as far as practicable to minimise potential loss.	As set out in Section 13.3 of this chapter, the Applicant has consulted with Natural England and has undertaken a more detailed agricultural land classification survey, including of the grid corridor. Section 13.8 of this chapter provides an assessment of land and soil receptors at the construction, operational and decommissioning phases of the Scheme. **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]** presents a detailed agricultural land classification of the Site and is summarised in Section 13.6 of this chapter. The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9**] as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.

Statutory Consultation

13.3.4 Statutory consultation on the project took place between September 2024 and October 2024. This included consultation on the Preliminary Environmental

Information Report (PEIR) which contained a preliminary assessment of land and soils effects. The feedback received from statutory consultees is summarised within Table 13.4.

Table 13.4 – PEIR consultation responses with respect to land and soils

Consultee	Summary of Comments	Response
Natural England	No comment.	Natural England had no comments on the assessment of impacts and effects undertaken for the land and soils chapter of the PEIR. This ES chapter presents an updated version of the assessment presented as part of the PEIR.
BBC	It is noted that '*a detailed agricultural land classification is currently being undertaken across the Site, and this Chapter therefore presents a preliminary assessment of the likely impacts and effects of the Scheme*'. Consequently, the Host Authorities reserves the right to comment on this chapter aspect through technical working groups and future consultation.	The Applicant notes this comment. **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]** presents a detailed agricultural land classification of the Site and is summarised in Section 13.6 of this chapter.
BBC	It would be a requirement that an outline Soil Management Plan is prepared to address the above matters and submitted as part of any future planning application coming forward. It is noted by the Promotor in Table 13.6 Natural England – response to consultation, that an SMP will be submitted.	The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9**] as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme.
HDC	Alongside working with Cambridgeshire County Council and Bedford Borough Council, HDC reserves the right to comment on this subject through technical working groups and future consultation. The scheme should not result in any contamination following the decommissioning stage due to infrastructure being retained in the ground.	The Applicant notes this comment. The Applicant has prepared an **outline Soil Management Plan [EN010141/DR/7.9**] as part of the application which sets out how soils will be managed through the construction, operation and decommissioning phases of the Scheme. The Applicant has prepared an **outline Decommissioning Environmental Management Plan [EN010141/DR/7.6]** that sets out mitigation measures which will be

Consultee	Summary of Comments	Response
		adopted at the time of decommissioning.
CCC	The Council reserves the right to comment on this subject through technical working groups and future consultation.	The Applicant notes this comment. Section 13.8 of this chapter provides an assessment of land and soil receptors at the construction, operational and decommissioning phases of the Scheme.

13.3.5 Following statutory consultation, the Applicant undertook further consultation with Natural England on the scope of the additional agricultural land classification survey required across the Site, which is provided in **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]**.

13.4 Assessment Methodology

13.4.1 The assessment of impacts on land and soils has been undertaken with consideration to IEMA's published guidance '*A New Perspective on Land and Soil in Environmental Impact Assessment*'.

13.4.2 The IEMA guidance recommends a standard approach where firstly the sensitivity of land and soil as a receptor is established before the magnitude of impact is assessed to identify the likely significance of effect.

13.4.3 The study area for this assessment is the Order Limits, as the Scheme would not directly or indirectly impact on any receptors beyond the Order Limits.

Agricultural Land and Soil Survey

13.4.4 The sensitivity of land and soil is based on data obtained from a site survey. An agricultural land classification survey was undertaken in Summer 2023 and Summer 2025 with the survey methodology informed by well-established guidelines and criteria for classifying the quality of agricultural land.

13.4.5 The data collection first involved an interpretation of published geological, topographical, soil and agro-climatic information, followed by the site surveys examining soil profiles using hand-held augers and spades.

13.4.6 In total, 314 soil profiles were examined using an Edelman (Dutch) auger at an observation density of one per 2 hectares across most of the Site, with sampling of one per hectare in areas proposed for permanent facilities, construction compounds and cable routes. In addition, additional examination of subsoil structures and stone content was undertaken for 11 hand-dug pits, and the submission of 20 topsoil samples for laboratory analysis of particle size distribution (to confirm hand-texturing in the field), soil pH, organic matter content and nutrient content.

13.4.7 The following characteristics were assessed for each soil horizon up to a maximum depth of 120cm or any impenetrable layer:

- soil texture;
- stone content;
- soil colour (including local gley and mottle colours);
- consistency;
- structural condition;
- free carbonate; and
- depth.

13.4.8 The soil characteristics were then analysed in terms of the ALC guidelines to establish the grade of agricultural land within the Site.

13.4.9 Agricultural land in England is graded between 1 and 5, depending on the extent to which physical or chemical characteristics impose long-term limitations on agricultural use. The principal physical factors influencing grading are climate, site conditions and soil which, together with interactions between them, form the basis for classifying land into one of the five grades.

- Grade 1 land is excellent quality agricultural land with very minor or no limitations to agricultural use.
- Grade 2 is very good quality agricultural land, with minor limitations which affect crop yield, cultivations or harvesting.
- Grade 3 land has moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield, and is subdivided into Subgrade 3a (good quality land) and Subgrade 3b (moderate quality land).
- Grade 4 land is poor quality agricultural land with severe limitations which significantly restrict the range of crops and/or level of yields.
- Grade 5 is very poor quality land, with severe limitations which restrict use to permanent pasture or rough grazing.

13.4.10 Land which is classified as Grades 1, 2 and 3a is defined as BMV agricultural land, with Natural England's TIN 049 estimating that 42% of agricultural land in England is BMV.

Sensitivity of Receptor

13.4.11 Section 9 of the IEMA guidance on land and soils provides guidelines on defining the sensitivity of agricultural land and soil receptors within Tables 2 and 4. The assessment presented in this chapter has considered these guidelines in developing a suitable methodology for establishing the sensitivity of land and soil receptors. Matters pertinent specifically to ecological habitat or archaeological potential are not considered as these aspects of land and soil function have been assessed separately **ES Vol 1 Chapter 6: Cultural Heritage and Archaeology [EN010141/DR/6.1]** and **ES Vol 1 Chapter 7: Ecology and Nature Conservation [EN010141/DR/6.1]**.

13.4.12 The sensitivity of agricultural land for biomass production is described in Table 2 of the IEMA guidance and relates to the ALC grade in a scale from Very High to Negligible, with Grades 1 and 2 agricultural land defined as 'very high' sensitivity.

13.4.13 The sensitivity of soil resources provides for a more detailed consideration of the soils found on Site and their susceptibility to harm as a result of the Scheme, both temporarily and permanently, as a result of handling or direct impacts. The sensitivity of soil resources is described in Table 4 of the IEMA guidance on a scale of High to Low reflecting the clay content of the soil structure and the Field Capacity Days ('FCDs') which relate to "*the hydrological state of soil, which describes the amount of water held in the soil after rainfall has saturated the soil, and the excess gravitational water has drained away and the downward movement of water has largely ceased.*"

13.4.14 The sensitivity of land and soil as a source of materials is also considered, relating to the presence of mineral reserves which could be sterilised by a project. This is classified in Table 2 of the IEMA guidance on a scale of Very High to Low sensitivity, and relates to the nature of the mineral reserve and its possible sterilisation or extraction.

13.4.15 Table 13.5 sets out the methodology used in determining the sensitivity of land and soil receptors:

Table 13.5: Sensitivity of Receptors

Sensitivity	Criteria
Very High	**Biomass Production:** Grade 1 or 2 agricultural land **Soil Resources:** Peat soils **Source of Materials:** Important surface mineral reserves that would be sterilised
High	**Biomass Production:** Grade 3a agricultural land **Soil Resources:** Soils with a low resilience to structural damage – High clay and silt fractions where FCDs are 150 or greater; or medium textured soils where FCDs are 225 or greater **Source of Materials:** Surface mineral reserves that would be sterilised
Medium	**Biomass Production:** Grade 3b agricultural land **Soil Resources:** Soils with a medium resilience to structural damage – High clay and silt fractions where FCDs are fewer than 150; or medium textured soils where FCDs are fewer than 225 **Source of Materials:** Surface mineral reserves that would remain accessible for extraction
Low	**Biomass Production:** Grade 4 agricultural land **Soil Resources:** Soils with a high resilience to structural damage – High sand fraction soils where the FCDs are fewer than 225 **Source of Materials:** Surface mineral reserves that would remain accessible for extraction
Negligible	**Biomass Production:** Grade 5 agricultural land **Soil Resources:** n/a **Source of Materials:** n/a

Magnitude of Impact

13.4.16 The IEMA guidance on land and soils provides (in Table 3) guidelines on establishing the magnitude of impacts to land and soil receptors, including for both beneficial or adverse impacts. The magnitude of impact is based on a

scale of Major (being the greatest impact) to Negligible (being the least impact), which has been adapted to High to Negligible to suit this EIA.

13.4.17 Table 13.6 sets out the methodology followed in determining the magnitude of impact to land and soil receptors.

Table 13.6: Magnitude of Impact

Magnitude of Impact	Criteria	
	Adverse impact	**Beneficial impact**
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.	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.
Medium	Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5 and 20ha.	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.
Low	Permanent, irreversible loss over less than 5ha or temporary, reversible loss of soil-related features (e.g. biomass production).	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.
Negligible	No discernible loss or reduction or improvement of soil functions that restrict current or proposed land use.	

Significance of Effect

13.4.18 The IEMA guidance on land and soils provides (in Table 5) an example matrix for determining the significance of effects on land and soil receptors. The guidance notes however that many assessment scenarios may not neatly fall within the definitions provided, and that in all cases professional judgement should be applied by experienced professionals in the context of the specific EIA being undertaken.

13.4.19 Table 13.7 sets out the method by which effects on land and soil receptors have been classified.

Table 13.7: Classification of Effects

Sensitivity	Magnitude of Impact			
	High	**Medium**	**Low**	**Negligible**
Very High	Major	Major or Moderate	Moderate	Minor or Negligible
High	Major or Moderate	Moderate	Minor	Minor or Negligible
Medium	Moderate	Minor	Minor or Negligible	Negligible
Low	Minor or negligible	Minor or Negligible	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

13.4.20 Effects which are major or moderate or more likely to be determined as significant effects, whilst effects which are minor or negligible are more likely to be not significant. In all cases, professional judgement is applied to determine the significance of the effect.

13.5 Assumptions and Limitations

13.5.1 This assessment is based on the agricultural land classification survey completed by Reading Agricultural Consultants between Summer 2023 and Summer 2025. The survey was informed by well-established guidelines and criteria for classifying the quality of agricultural land, but is not a complete survey in full accordance with the Code of Practice for the Sustainable Use of Soils on Construction Sites. This is because the survey methodology departed slightly from the recommended observation density of approximately one survey point per hectare.

13.5.2 This approach is based on the surveyor's extensive experience of undertaking agricultural land and soil surveys across large-scale sites for solar development. An initial 'reconnaissance survey' was undertaken at a survey density of 1 in 4 per hectares across the majority of the Site in summer 2023. This survey established that there are four main soil types across the Site with reasonably broad distribution, and that a majority of the Site is BMV land. Given the relatively minimal disturbance to soil profiles caused by solar development and the embedded mitigation set out in the **outline Soil Management Plan [EN010141/DR/7.9]**, it was the surveyor's professional opinion that a more detailed survey at one survey point per hectare would not be a valuable exercise to inform the assessment or approach to mitigation; instead, the more detailed survey of one survey point hectare would in this instance just confirm what was already known – that a majority of the Site was BMV land for the purposes of planning policy and this EIA, and that soils would need to be carefully managed during construction and operation. Instead, the surveyor proposed a proportionate approach to the survey where soils were sampled at 1 survey point per 2 hectares, with one in one hectare in locations of potentially greater impact (e.g. the battery energy storage system, on-site substation, construction compounds and cable corridors).

13.5.3 There are areas of the Site where access has not been possible or not been granted for agricultural land surveys. Accordingly, where land has not yet been surveyed it is identified in this report as 'Ungraded' and an assumption

has been made that this land is of an equivalence to the highest grade of land found elsewhere on the Site (i.e. Grade 2). This is considered to represent a reasonable worst case scenario as Grade 1 agricultural land is extremely unlikely to be present within the Order Limits. Regardless, for the purpose of assessment Grade 1 and Grade 2 agricultural land are both classified as 'Very High' sensitivity.

13.6 Baseline Conditions

Biomass Production: Agricultural Land

Provisional Agricultural Land Classification

13.6.1 As explained in TIN049[12], the whole of England was mapped from reconnaissance field surveys in the late 1960s and early 1970s, to provide general strategic guidance on agricultural land quality for planners. This Provisional Series of maps was originally published on an Ordnance Survey base at a scale of One Inch to One Mile (1:63,360) but is now only available at 1:250,000. The Provisional ALC map shows the site as Grade 2 and undifferentiated Grade 3, as shown on **ES Vol 3 Figure 13-1: Provisional Agricultural Land Classification [EN010141/DR/6.3]**.

13.6.2 However, as explained by TIN049, these maps are not sufficiently accurate for use in assessing individual fields or development sites, and should not be used other than as general guidance. They predated the subdivision of Grade 3 and the refinement of the methodology and criteria that took place in 1988.

13.6.3 TIN049 goes on to explain that a definitive ALC grading should be obtained by undertaking a site survey according to the published ALC guidelines.

Site Survey

13.6.4 An ALC survey was undertaken between Summer 2023 and Summer 2025 with the survey methodology informed by well-established guidelines and criteria for classifying the quality of agricultural land. The ALC survey report is presented as **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]**.

13.6.5 Noting the limitations set out in Section 13.5 of this chapter, the ALC distribution across the Site is shown on **ES Vol 3 Figure 13-2: Agricultural Land Classification [EN010141/DR/6.3]** and the areas of each grade are given in Table 13.8.

13.6.6 Table 13.8 presents a slightly updated scenario from the data presented within **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]**. This is due to changes in the Order Limits since EIA Scoping, and a detailed cross-reference against aerial imagery to remove areas that are non-agricultural such as woodlands, roads and established tracks.

Table 13.8 – Agricultural Land Classification

ALC Grade	Description	Total Area (ha)	Percentage of Site
Grade 2	Very good quality	164.0	21.2 %
Subgrade 3a	Good quality	349.5	45.2 %
Subgrade 3b	Moderate quality	182.4	23.6 %
Ungraded	*[Assumed very good quality]*	41.6	5.4 %
Non-agricultural	Woodland, roads, tracks or other non-agricultural land uses	35.4	4.6 %
Total		**772.9**	**100 %**

Agricultural Land Classification of Bedford Borough and Huntingdonshire District

13.6.7 To provide a general context of the agricultural land quality in the local area, the provisional ALC data held by Natural England has been extracted for Bedford Borough and Huntingdonshire District and is presented on **ES Vol 3 Figure 13-3: Provisional Agricultural Land Classification for Bedford Borough and Huntingdonshire District [EN010141/DR/6.3]** and in Table 13.9:

Table 13.9: Provisional Agricultural Land Classification for Bedford Borough and Huntingdonshire District

ALC Grade	Description	Total Area (ha)	Percentage of Council Area
Grade 1	Excellent	13,904.7	10.0%
Grade 2	Very good quality	58,324.6	42.0%
Grade 3	Good quality	52,353.8	37.7%
Grade 4	Poor quality	1,796.4	1.3%
Non-agricultural	Non-agricultural land uses	7,958.2	5.7%
Urban	Urban areas	4,559.3	3.3%

13.6.8 With reference to Table 13.9, when comparing the Site against the broader agricultural context within Bedford Borough and Huntingdonshire District, the Site is formed by a greater proportion of Grade 3 agricultural land when compared to the proportion in the total land area within the Council's administrative areas. The proportional increase is predominantly realised by the Site being formed of 20% less Grade 1 and Grade 2 agricultural land than the administrative areas as a whole. Whilst this is provisional data that can only be taken as a general guide, it does give an indication that the Site is located in a part of the local region that is of a comparatively lesser agricultural land value.

Table 13.10: Comparative Proportion of Agricultural Land Classifications for the Site, Bedford Borough and Huntingdonshire District

ALC Grade	Percentage of Site	Percentage of Council Area	Difference
Grade 1	0.0%	10.0%	- 10.0 %
Grade 2 *(and Ungraded)*	26.6%	42.0%	- 15.4 %

ALC Grade	Percentage of Site	Percentage of Council Area	Difference
Grade 3	68.8%	37.7%	+ 31.1 %
Grade 4	0.0%	1.3%	- 1.3 %
Non-agricultural	4.6%	5.7%	- 1.1 %
Urban	0.0%	3.3%	- 3.3 %

13.6.9 Table 13.11 presents the proportion of different provisional agricultural land classifications found in Bedford Borough and Huntingdonshire District formed by the Site.

Table 13.11: Proportion of ALC in the Site compared to Bedford Borough and Huntingdonshire District

ALC Grade	Total Area in Site (ha)	Total Area in Council Areas (ha)	Percentage
Grade 1	0.0	13,904.7	0.00 %
Grade 2 *(and Ungraded)*	205.6	58,324.6	0.35 %
Grade 3	531.95	52,353.8	1.02 %
Grade 4	0	1,796.4	0.00 %
Non-agricultural	35.4	7,958.2	0.44 %
Urban	0.0	4,559.3	0.00 %

Soil Resources

Bedrock and Geology

13.6.10 The bedrock geology is the Oxford Clay Formation, which comprises grey, smooth to slightly silty mudstone, with sporadic beds of limestone nodules.

13.6.11 Superficial deposits mapped across the Site include:

- river terrace deposits, comprising sand and gravel;
- alluvium deposits, comprising clay, silt, sand and gravel;
- Diamicton deposits of the Oadby Member at higher elevations; and
- Glaciofluvial deposits of sand and gravel on the periphery of the Diamicton units.

National Soil Mapping

13.6.12 As shown on **ES Vol 3 Figure 13-4: National Soil Map [EN010141/DR/6.3]**, four soil associations are mapped at the Site and comprise:

- **Hanslope association** – which is characterised by slowly permeable, calcareous, clayey soils with some slowly permeable, non-calcareous, clayey soils. Profiles are typically assessed as imperfectly drained in Wetness Class (WC) III. Soils respond well to drainage and can be improved to moderately well drained WC II in drier districts, such as at the Site;
- **Evesham 3 association** – which is characterised by slowly permeable, calcareous, clayey and fine loamy over clayey soils. Profiles are typically assessed as WC III, although some component soil types are assessed as WC II or, to a lesser extent, well drained WC I;
- **Denchworth association** – which is characterised by slowly permeable, seasonally waterlogged, clayey soils with similar fine loamy over clayey soils. Profiles are typically assessed as poorly drained WC IV or V. Soils can be improved to WC III in areas of lower rainfall.
- **Efford 1 association** – which is characterised by well drained, fine loamy soils often over gravel, associated with similar permeable soils variably affected by groundwater. Profiles are typically assessed as WC I.

Survey findings

13.6.13 Agricultural land quality at the Site is limited by soil wetness and/or droughtiness, and classified as Grade 2 to Subgrade 3b.

13.6.14 There are four main soil types present, Soil Type 1 through to Soil Type 4, described as follows:

Soil Type 1

13.6.15 Soil Type 1 is the most widespread within the Site. The topsoil comprises predominantly dark brown, dark greyish brown or brown, non-calcareous clay or heavy clay loam, with some medium clay loam. Stone content is very slight to slight. The topsoil has a medium subangular blocky structure and the consistency is friable to firm.

13.6.16 The upper subsoil comprises brown, olive brown, light olive brown, greyish brown or grey clay which is variably calcareous. The upper subsoil is predominantly stoneless to slightly stony, with some isolated observations containing higher volumes of stone.

13.6.17 Profiles of this soil type can be divided into two groups. One group includes profiles where the upper subsoil contains no ochreous mottling or the mottling is found only at the base of the horizon. The second group includes all profiles where mottling is observed directly below the topsoil. Clay within this horizon is predominantly firm and has a medium to coarse subangular blocky structure. Where clay is poorly structured and slowly permeable, peds are recorded to have an angular blocky structure.

13.6.18 The lower subsoil comprises predominantly grey clay, which is mostly calcareous. Stone content is stoneless to slightly stony, comprising calcareous stone. Clay within this horizon has a poor, coarse angular blocky to massive structure and contains ochreous mottling. This clay is slowly permeable and restricts the downward drainage of water.

13.6.19 Profiles of this soil type are assessed as WC II-III depending on the extent of upper subsoil gleying and the depth to a slowly permeable layer. Where observations are assessed as WC II with a clay or heavy clay loam topsoil, profiles are restricted to Subgrade 3a by soil wetness and occasionally to the same extent by droughtiness. Where observations are assessed as WC III,

profiles are further restricted to Subgrade 3b by wetness alone. Observations assessed as WC II with a medium clay loam topsoil are restricted to Grade 2 by wetness, however, within a few profiles, there is an overriding droughtiness limitation restricting them to Subgrade 3a. A relatively small number of observations lack a slowly permeable horizon. These observations are assessed as WC I and are classified as Subgrade 3a with a clay topsoil.

Soil Type 2

13.6.20 Soil Type 2 is typically found at higher elevations in the site and largely coincides with the mapped Diamicton superficial geology deposits of the Oadby Member.

13.6.21 Topsoils comprise dark brown, dark greyish brown or olive brown, calcareous clay or heavy clay loam, which lies over a permeable, calcareous clay upper subsoil.

13.6.22 The upper subsoil is greyish brown, light olive brown, light yellowish brown, olive yellow or pale yellow and is variably mottled. The lower subsoil comprises poorly structured, slowly permeable, grey, light grey or light greenish grey, mottled, calcareous clay. Clay within the lower subsoil has an angular blocky to massive structure.

13.6.23 Soil profiles have similar characteristics to Soil Type 1. However, profiles are calcareous throughout and contain calcareous stone from a shallow depth which generally increases in volume with depth. Observations have moderate deficits in available water and are restricted to Grade 2 by droughtiness. Profiles assessed as WC I or II are also restricted to Grade 2 by wetness. Profiles assessed as WC III are further limited to Subgrade 3a by soil wetness.

13.6.24 A calcareous topsoil improves water movement, aeration and soil workability, and reduces the risk of structural damage caused by poor cultivation practices. This reduces the wetness limitation placed on the land.

Soil Type 3

13.6.25 Soil Type 3 comprises loamy soils which are permeable to depth. The topsoil comprises dark greyish brown, brown, olive brown or very dark greyish brown non-calcareous clay, heavy clay loam, medium clay loam or sandy loam. Stone content varies and is very slight to moderate in volume, at 2-17%. The topsoil has a friable consistency and predominantly has a fine to medium subangular blocky structure.

13.6.26 The upper subsoil mostly comprises brown, dark yellowish brown or yellowish brown sandy clay loam, heavy clay loam or medium clay loam, with few recordings of sandy clay or sandy loam. This horizon is mostly non-calcareous. Stone content is varied and is stoneless to moderately stony, up to 25%. Mottling in this horizon is rarely observed.

13.6.27 The lower subsoil is brown, dark yellowish brown or yellowish brown. Texture is varied and comprises heavy clay loam, clay, sandy clay, sandy clay loam, sandy loam or loamy sand. Soil within this horizon is mostly non-calcareous, containing hard stone, with some small areas which are calcareous, containing a portion of calcareous stone. Stone content is slight to moderate, and commonly contains a higher percentage than overlying horizons. A few profiles have very a stony lower subsoil, recorded up to 40%. Ochreous mottling is observed in the lower subsoil at a small number of observations.

13.6.28 Soils with these characteristics are typically assessed as WC I. Profiles have slight to moderate deficits in available water through the growing season and are restricted to Grade 2 or Subgrade 3a by droughtiness. Where profiles have a clay topsoil, wetness is an overriding limitation, restricting observations to Subgrade 3a.

Soil Type 4

13.6.29 Where profiles represent a transition between Soil Types 1 and 3, they are commonly assessed as WC II. Profiles comprise non-calcareous medium or

heavy clay loam topsoil over a clay loam upper subsoil. These profiles contain slowly permeable clay in the lower subsoil at depth.

13.6.30 Profiles are restricted to Grade 2, where the topsoil is medium clay loam, or Subgrade 3a, where the topsoil is heavy clay loam.

13.6.31 Soils across the south of the cable route comprise heavy clay loam topsoil over subsoil, with some underlain by clay at depth. These observations are permeable and calcareous, classified as WC I, and are restricted to Grade 2 due to drought and soil wetness.

Source of Materials (Mineral Reserves)

13.6.32 Land and soil as a source of materials is related to the possible presence of mineral reserves which could be sterilised by a project. The identification of minerals has been established by consideration of the minerals and waste plans covering the Site.

13.6.33 The relevant Minerals and Waste Authorities and their local plans are as follows:

- **Bedford Borough Council** – Bedford Borough, Central Bedfordshire and Luton Borough Councils Minerals and Waste Local Plan: Strategic Sites and Policies, adopted 2014[13]; and
- **Cambridgeshire County Council** – Cambridgeshire and Peterborough Minerals and Waste Local Plan 2036, adopted 2021[14].

13.6.34 The Site is not within an area allocated for minerals development by either of the two Authorities.

13.6.35 As shown on **ES Vol 3 Figure 13-5: Mineral Safeguarding Areas [EN010141/DR/6.3]**, the Scheme lies partly within Mineral Safeguarding Areas ('MSAs') in both Bedford and Cambridgeshire as follows:

- **East Park Site A** – northern and eastern extents within Bedford's River Valley / Glacial Sand and Gravel MSA;

- **East Park Site B** – northern extent within Bedford's River Valley / Glacial Sand and Gravel MSA;
- **East Park Site C** – northern extent within Cambridgeshire's Sand and Gravel MSA;
- **East Park Site D** – not within a MSA;
- **Cable Corridor (Site B to Site C)** – within Cambridgeshire's Brickclay MSA;
- **Cable Corridor (Site C to Site D)** – not within a MSA; and
- **Grid Connection to Eaton Socon Substation** – not within a MSA.

13.6.36 The MSAs are illustrated on **ES Vol 3 Figure 13-5: Mineral Safeguarding Areas [EN010141/DR/6.3]** and described as follows.

River Valley / Glacial Sand and Gravel MSA (Bedford Borough)

13.6.37 The Bedford Borough, Central Bedfordshire and Luton Borough Councils Minerals and Waste Local Plan[13] describes Sand and Gravel workings within the area as follows:

> *"Sand and gravel workings are not widely distributed throughout the Plan area, especially as a result of its geology. Given the extent of permitted reserves at operational sites in the Plan area it is expected that this area will continue to produce sand and gravel aggregate from the active workings in the Valleys of the Rivers Ouse and Ivel east of Bedford during the early part of the Plan period. Existing permitted reserves at sites in this part of the Plan area will continue to supply construction materials to the areas of housing growth now being identified in development plans. Some of the identified Strategic sites in the Ouse Valley will continue to supply the processing plant at Willington, replacing existing permitted sites as they become exhausted."*

13.6.38 There is therefore no current strategy to seek extraction from the River Valley / Glacial Sand and Gravel MSA within the Site.

Brickclay MSA (Cambridgeshire County Council)

13.6.39 The Cambridgeshire and Peterborough Minerals and Waste Local Plan 2036[14] describes a strategy for Brickclay as follows:

> *"The spatial strategy for brickclay extraction is to continue extraction at existing consented sites, broadly in an area to the south and east of Peterborough. Future extraction will take place at Kings Delph, Whittlesey, a site allocated on the Policies Map. Localised specialist brickclay is also allocated at Burwell Brickpits.*
>
> *National planning policy requires that a landbank of brickclay is maintained, in the order of 25 years of supply. The extensive reserves of brickclay in the plan area, close to the Whittlesey brickworks complex, should meet this requirement. To ensure the continuity of supply, land located in the Cambridgeshire side of the Kings Delph area, which straddles the administrative boundaries of the two authorities, is allocated for future extraction, delivering an estimated 27 million tonnes of brickclay, which is over 60 years supply, in addition to existing permitted reserves on the Peterborough side."*

13.6.40 There is therefore no current strategy to seek extraction from the Brickclay MSA within the Site.

Sand and Gravel MSA (Cambridgeshire County Council)

13.6.41 The Cambridgeshire and Peterborough Minerals and Waste Local Plan 2036[14] describes a strategy for Sand and Gravel as follows:

> *"Sand and gravel is the most significant resource in the plan area. The NPPG requires Mineral Planning Authorities (MPAs) to maintain a stock of sand and gravel reserves (a landbank) equivalent to at least 7 years supply. The LAA (December 2018) records that Cambridgeshire and Peterborough, at the end of 2017, had permitted reserves of 41.43 million tonnes.*

The 10 year average of sand and gravel sales is 2.36 million tonnes per annum (Mtpa). Annual sales have however increased in recent years, with the 3 year average being 2.89Mtpa. Part of this increase is attributed to construction of the A14 improvement scheme, however the general trend upwards needs to be recognised and reflected in the annual provision rate.

Taking account of these two metrics … the Councils have determined that an appropriate annual provision rate for the Plan is 2.6Mtpa. This represents the mid-point between the 10 year sales average and the 3 year sales average, and is also a 10% increase on the 10 year sales average (10% often being used as a proxy for a buffer above the 10 year sales average in other Minerals and Waste Local Plans). At 2.6Mtpa, this would equate to a landbank of 15.9 years.

An annual provision rate over the plan period (2016 to 2036) of 2.6Mt would give rise to a total requirement for 54.6Mt of sand and gravel. Taking off sales in 2016 and 2017 (2.56Mt and 3.56Mt respectively), this leaves a remaining plan period requirement of 48.48Mt. At the end of 2017, the plan area had permitted reserves of 41.43Mt. Subtracting permitted reserves of 41.43Mt from the remaining requirement (48.48Mt) leaves a potential shortfall of 7.05Mt to be addressed.

Moving forward, the spatial strategy of this Local Plan is for extraction of sand and gravel to take place in a broad corridor north to south through the centre of the plan area."

13.6.42 There is therefore no current strategy to seek extraction from the Sand and Gravel MSA within the Site.

Future Baseline

13.6.43 There is the potential for changes to the future baseline as a result of continued climate change, changes in agri-environmental practices, or changes in mineral requirements. However, any changes cannot be easily predicted or quantified as to how they would interact specifically with the Site, and any changes could be beneficial or adverse to land and soil receptors.

13.6.44 It is considered that the baseline conditions described above are suitable for the assessment of impacts and effects to land and soils.

13.7 Embedded Mitigation and Enhancement Measures

Embedded Mitigation

Site Selection

13.7.1 A consideration of alternative sites was undertaken from the outset of the project through the site selection process which is considered part of the embedded mitigation as a first step in avoiding and reducing significant effects on land and soils. The site selection process followed two broad stages:

- The first stage, set out in the Site Identification Report in **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]** identified a 'Search Zone' for the most appropriate location for a large-scale solar project capable of utilising the available grid capacity within the Eaton Socon Substation. This first stage considered the agricultural land classification within 15km of the Eaton Socon Substation, with agricultural land classification being an important criterion in identifying a Search Zone, and a criterion that was part of the decision-making process in selecting the Search Zone to be taken forward.
- The second stage, set out in the Land Identification Report (LIR) in **ES Vol 2 Appendix 3-2: Land Identification Report [EN010141/DR/6.2]** followed on from the first stage and comprised a high-level review of the land offered to the Applicant to establish constraints to development of the Scheme and refine the overall landholding to be taken forward. This second stage considered project's design principles to determine the Site location.

13.7.2 Further detail on the Site Selection process in relation to agricultural land is provided in **ES Vol 1 Chapter 3: Alternatives and Design Evolution [EN010141/DR/6.1]**, and specifically **ES Vol 2 Appendix 3-1: Site Identification Report [EN010141/DR/6.2]**.

Construction Phase

13.7.3 An **outline Soil Management Plan (oSMP) [EN010141/DR/7.9]** has been prepared as part of the embedded mitigation for the Scheme, and has been informed by:

- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009)[11];
- Good Practice Guide for Handling Soils in Mineral Workings (Institute of Quarrying, 2021)[15];
- Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction (British Society of Soil Sciences, 2022)[16]; and
- A New Perspective on Land and Soil in Environmental Assessment (IEMA, 2022)[10].

13.7.4 If the DCO is granted, the oSMP will be developed into a final Soil Management Plan (SMP) once a contractor is appointed. The final SMP(s) produced for any phase of the Scheme will be in substantial accordance with the oSMP, as set by a Requirement of the **draft DCO [EN010141/APP/3.1]**, and approved by the relevant local planning authorities prior to construction. The following list summarises the relevant embedded mitigation measures contained within the oSMP:

- Confirm and map soil resources (topsoil and subsoil by type/parcel) to ensure like-for-like replacement;
- Designate soil storage areas within each parcel, away from watercourses, and plan phasing to minimise soil exposure;
- Vehicle movements:
    - Restrict heavy plant movements on unstripped soils – use haul routes or existing farm tracks;
    - Use of low ground-pressure machinery or temporary matting in sensitive areas;
    - Prohibit heavy vehicles on reinstated soils;

- Avoid vehicle movements during wet/frozen conditions as far as practicable, pausing works if soil is above plastic limit;

- Soil handling:
  - Strip topsoil separately (to approx. 300 mm depth but dependent on site-specific conditions) before excavation;
  - Segregate topsoil and subsoil with no mixing between soil layers or between parcels;
  - Use an excavator and dump truck method in preference to bulldozers/scrapers to reduce compaction;
- Stockpile management:
  - Maximum height of stockpiles will be 3m for topsoils or 5m for subsoil, with gentle slopes to avoid slumping;
  - Clearly label all stockpiles and prohibit vehicle access over them;
  - Locate stockpiles more than 10 m from watercourses and inspect after rainfall;
  - Seed long-term stockpiles with grass for stability and weed control;
- Pollution prevention:
  - Refuelling and plant maintenance to be undertaken only on impermeable surfaces where spill kits are available;
  - Remove or treat contaminated soil promptly if accidental spillages occur;
- Excavation and trenching:
  - Follow strip, excavate, lay, backfill, reinstate sequencing to minimise soil exposure;
  - Backfill with excavated subsoil and respread stored topsoil, retaining surplus for settlement before levelling.
  - Reinstate soil progressively through construction, restoring soils field-by-field as works complete;
- Restoration and aftercare:
  - Replace soils in original order, breaking up compacted layers with subsoiling/ripping before respreading topsoil;

- Leave reinstated soils in roughened state for aeration and infiltration;
- Sow grassland promptly to stabilise restored soils and support operational land use;

- Monitoring:
  - A soil specialist / environmental clerk of works will supervise handling, confirm conditions, and keep soil handling logs; and
  - Record soil stripping, volumes, conditions, incidents, and restoration with photographic evidence.

13.7.5 In addition, embedded mitigation measures are set out in the **outline Construction Environmental Management Plan (oCEMP) [EN010141/DR/7.3]**. If the DCO is granted, this oCEMP will be developed into a final Construction Environmental Management Plan (CEMP) once a contractor is appointed. The final CEMP(s) produced for any phase of the Scheme will be in substantial accordance with this oCEMP, as set by a Requirement of the **draft DCO [EN010141/APP/3.1]**, and approved by the relevant local planning authorities prior to construction.

Operational Phase

13.7.6 In the operational phase the requirement for access across the Site will be more limited, and any disturbed soils from construction will have been reinstated.

13.7.7 It is assumed that maintenance vehicles for the solar infrastructure will generally stick to the access tracks, and will only leave the access tracks during periods where soils are drier and therefore less susceptible to compaction and waterlogging.

13.7.8 For the landscape maintenance operations including for grass cutting and grazing management, vehicles used will have low pressure tyres and generally only access relevant areas when soils are dryer and therefore less susceptible to compaction and waterlogging.

13.7.9 Management of soils during the operational phase will be delivered by the **outline Soil Management Plan [EN010141/DR/7.9]**, as well as the **outline Operational Environmental Management Plan (oOEMP) [EN010141/DR/7.5]** and the **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]**.

13.7.10 The above outline management plans will be developed into final management plans which will be in substantial accordance with the outline documents, as set out in the Requirements of the **draft DCO [EN010141/DR/3.1]**, with approval by the relevant LPAs prior to the relevant phase of development.

Decommissioning Phase

13.7.11 Best practice measures for the decommissioning phase will be adopted as set out in the **outline Soil Management Plan [EN010141/DR/7.9]** and the **outline Decommissioning Environmental Management Plan [EN010141/DR/7.6]**. The measures proposed and ultimately adopted will be similar to those set out above for the construction phase. The above outline management plans will be developed into final management plans which will be in substantial accordance with the outline documents, as set out in the Requirements of the **draft DCO [EN010141/DR/3.1]**, with approval by the relevant LPAs prior to the relevant phase of development.

13.7.12 Following decommissioning it is assumed that the land will be reverted to agricultural use across the majority of the Site.

Enhancement

Benefits to Soil Resources

13.7.13 The British Society of Soil Science published the Science Note: Soil Carbon[17] in May 2022 which notes many benefits to carbon sequestration in removing agricultural land from arable use and converting to grassland, stating that:

Although soils used for arable agriculture (annually cultivated) typically have smaller SOC [soil organic carbon] *contents than grassland or woodland soils, they are potentially more amenable to alteration through direct management interventions. Soil C* [carbon] *stocks can be increased by either increasing inputs (e.g. crop residues, cover crops, use of organic materials, inclusion of grass leys in arable rotations) or decreasing losses (i.e. reducing oxidative losses to CO_2, or particulate and dissolved organic content), via improved management such as reduced intensity tillage. Significant long-term land use change (e.g. conversion of arable land to grassland or woodland) has by far the biggest impact on SOC, but is unrealistic on a large scale because of the continued need to meet food security challenges.*

13.7.14 The Scheme will take agricultural land out of arable use and transition to grassland, as set out in the **outline Landscape and Ecological Management Plan [EN010141/DR/7.7]**. This would likely have a benefit in carbon sequestration and soil recovery in the long-term and deliver multiple ecosystem services during the operational phase of the Scheme.

Agrisolar Research Area

13.7.15 As set out in **ES Vol 1 Chapter 2: The Scheme [EN010141/DR/6.1]**, the Applicant has partnered with Rothamsted Research ('Rothamsted') to undertake scientific research on co-locating agricultural production with solar generation in the UK. This will include research into soil conditions across the Site over the operational phase of the Scheme.

13.7.16 The research proposed as part of the 'Agrisolar Research Area' in Site D will enhance an understanding of 'agrivoltaics' and their application within the UK.

13.8 Assessment of Likely Impacts and Effects

Potential Impacts

13.8.1 As set out in **ES Vol 1 Chapter 2: The Scheme [EN010141/DR/6.1]**, the Scheme has been broken down into a series of 'Work Packages', the key components of which are defined within Chapter 2.

13.8.2 Table 13.12 provides a summary of the elements of the Work Packages that have the potential to impact on land and soil receptors.

Table 13.12 – Summary of potential impacts

Work No.	Summary of scheme components and potential impacts
1	The land within Work No. 1 is for the ground mounted solar photovoltaic generating station. The solar PV mounting structures would be ram-driven posts that would result in minimal impact to soils. The solar transformers (and if selected, centralised inverters) would result in adverse impact to land and soils, requiring concrete footings and areas of hardcore around the base of the units. Based on **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]** the total footprint of all the solar transformers and centralised inverters combined across the Scheme is approximately 0.35 hectares.
2	The land within Work No. 2 is for the East Park BESS which is assumed to be hardstanding with a maximum possible footprint of approximately 1.45 hectares. This would result in adverse impact to soils in the full extent of the work area shown on the **Works Plan [EN010141/DR/2.3]** and **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]**.
3	The land within Work No. 3 is for the East Park Substation which is assumed to be hardstanding with a maximum possible footprint of approximately 0.92 hectares. This would result in adverse impact to soils in the full extent of the work area shown on the **Works Plan [EN010141/DR/2.3]** and **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]**.
4	The land within Work No. 4 is for the 400 kV grid connection between the East Park Substation and the Eaton Socon Substation. There would be potential temporary adverse impacts to soils during construction of the grid connection from the excavation of trenches, however the embedded mitigation set out in the **oSMP [EN010141/DR/7.9]** would avoid or reduce these impacts. Temporary construction access will utilise heavy duty construction matting designed to distribute weight across the soil. The oSMP sets out measures to protect and restore these soils during construction to avoid or reduce impacts. The grid connection is assumed as a worst case to encase the 400kV cable duct within cement-bound sand along with 7 cable jointing chambers, which would be buried such that the existing agricultural land use could be reinstated following construction. Nevertheless, the introduction of buried cabling along

Work No.	Summary of scheme components and potential impacts
	the grid connection will result in some adverse impact to land and soils, with the affected area approximately 0.44 hectares.
5	The land within Work No. 5 is for works to the Eaton Socon Substation. It is assumed these works would not impact on agricultural land or soils as the works would be within the footprint of the existing substation, which is currently hard standing.
6	The land within Work No. 6 is for internal cabling and ancillary infrastructure. Components of this Works No. such as fencing and gates, CCTV and monitoring systems and utility connections are likely to have a negligible impact on land and soils. The proposed cabling would all be buried at a depth sufficient to allow existing land uses to be reinstated where it crosses agricultural land between East Park Sites B and C, and between East Park Sites C and D. The cabling would not be encased in cement-bound sand and therefore the damage to land and soils would be negligible following construction. The proposed access tracks would utilise a combination of existing, upgraded, and new access tracks. This will require the stripping of topsoils that will be reused elsewhere on Site, and will have an adverse impact. Based on **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]** the affected area has been calculated as approximately 7.74 hectares. The temporary access tracks required during construction would utilise heavy duty construction matting that does not require stripping of topsoils, with soils to be managed in accordance with the oSMP **[EN010141/DR/7.9]** and reinstated following construction. The operations and maintenance area (Work No. 6A) will require the construction of hard standing, a building and a small amount of car parking. This will result in adverse impact to land and soils with the affected area calculated from the **Works Plan [EN010141/DR/2.3]** and **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]** as 0.38 hectares. The East Park BESS and substation retention basin (Work No. 6B) will require the excavation of soils for the creation of a small retention lagoon. This will result in adverse impact to land and soils with the affected area calculated from the **Works Plan [EN010141/DR/2.3]** and **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]** as approximately 0.25 hectares. The other drainage components of the Scheme would require localised redistribution of soils to create shallow swales or filter drains and would not be expected to result in adverse impact to land and soils.
7	The land within Work No. 7 is for the temporary construction and decommissioning compounds. The compounds would be formed of heavy duty construction matting and would result in temporary adverse impact to land and soils. The **oSMP [EN010141/DR/7.9]** and **oCEMP [EN010141/DR/7.3]** set out measures to protect and restore these soils during construction to avoid or reduce impacts.
8	The land within Work No. 8 is for the creation of green infrastructure in the form of landscaping and habitats. The final design of the proposed landscaping will be in substantial accordance with the Illustrative Landscape Proposals at

Work No.	Summary of scheme components and potential impacts
	Appendix A of the **outline Landscape and Ecological Management Plan (oLEMP) [EN010141/DR/7.7]**. It is proposed that the solar PV areas would be established with grazing pasture or neutral grassland, totalling approximately 448 hectares. In addition the following approximate areas of habitat are shown on **ES Vol 3 Figure 2-1: Illustrative Environmental Masterplan [EN010141/DR/6.3]** and secured by the **oLEMP [EN010141/DR/7.7]**: • Approximately 205 hectares of species-diverse grasslands which include field boundary margins and public rights of way; • Approximately 19 hectares of native species woodland as mitigation in proximity to field boundaries, watercourses and public rights of way; • Approximately 17.4km of native species hedgerow as mitigation in field boundaries, alongside public rights of way, and to restore field boundaries. The creation of the above habitats will have adverse and beneficial impacts in terms of land and soils. There will be adverse impact from a loss of potential biomass production (agricultural land), but potential beneficial impacts in relation to soil resources through improvements to soil structures and ecosystem services.
9	The land within Work No. 9 is to facilitate access to the Scheme and is within the public highway or adjacent to it, such that there will be no adverse impact to land or soils.
10	The within Work No. 10 is entirely within the area of Work No. 1, and would result in comparable impacts. For the purpose of this assessment, Work No. 10 is therefore assessed under Work No. 1.

Construction Phase

Biomass Production: Agricultural Land

13.8.3 During the construction phase there will be works ongoing in phases across the full extent of the Site, and it is assumed that agricultural use of land would cease. With reference to **ES Vol 2 Appendix 2-1: Indicative Construction Phasing and Resource Schedule [EN010141/DR/6.2]** it is assumed that East Park Sites A to D would not be in agricultural production for the full 30 months of the construction programme. The temporary works for the cable corridors between Site B and Site C, between Site C and Site D, and the grid connection would remove narrow corridors from agricultural production for shorter periods within the 30 month construction programme.

13.8.4 Construction would be completed in accordance with a final SMP with mitigation measures set out in Section 13.7 of this chapter and in the **oSMP [EN010141/DR/7.9]**. These measures would avoid and reduce potential impacts during the construction phase.

13.8.5 There will be temporary construction compounds and temporary access tracks on Site throughout the construction period. The location of these compounds and access tracks are shown on the **ES Vol 3 Figure 2-5: Indicative Construction Access and Compounds [EN010141/DR/6.3]**. The best practice mitigation measures set out in the **oSMP [EN010141/DR/7.9]** will ensure there is no discernible loss to soil structure and land quality, with any impact highly localised and reversible at the end of the construction phase. The magnitude of impact would be low as there would be no permanent, irreversible loss of soil function or volume. The effect would therefore be Moderate Adverse for the Grade 2 (including Ungraded) land, which is significant in EIA terms. The effect would be Minor Adverse for the Grade 3a land and Negligible Adverse for the Grade 3b land, which is not significant in EIA terms.

13.8.6 For East Park Sites A, B, C and D the land will be taken out of productive arable agricultural use and predominantly established as grassland or other landscaping and habitats around and beneath the solar infrastructure. The total areas of agricultural land taken out of arable use are provided in Table 13.13, which is broken down by ALC grade and by East Park Site.

Table 13.13: Areas of agricultural land taken out of arable use during the construction phase

ALC grade	Total area of agricultural land taken out of arable use during the Construction Phase			
	Site A	Site B	Site C	Site D
Grade 2	37.9 ha	84.4 ha	4.9 ha	27.5 ha
Grade 3a	36.1 ha	222.7 ha	61.2 ha	21.9 ha
Grade 3b	51.9 ha	31.5 ha	57.4 ha	34.8 ha

ALC grade	Total area of agricultural land taken out of arable use during the Construction Phase			
	Site A	Site B	Site C	Site D
Ungraded	22.6 ha	0.0 ha	0.0 ha	0.0 ha

13.8.7 Within the above figures set out in Table 13.13 there would also be land that would be subject to permanent and irreversible impacts from Scheme components such as the East Park BESS, East Park Substation, permanent access tracks, and transformer / inverter footings. Whilst this infrastructure would ultimately be decommissioned and removed, and the impacts would be highly localised, it is considered the impact would be permanent and irreversible. The total areas impacted are set out in Tables 13.14 below, and have been calculated based on the Work Areas with reference to Table 13.12. These areas are based on the impact across the full Site and therefore include the grid connection (Work No. 4).

Table 13.14: Land subject to permanent adverse impact at construction phase

Scheme Component	Total area of permanent impact, broken down by agricultural land classification				
	Grade 2	Grade 3a	Grade 3b	Ungraded	Non - agricultural
Work No. 1	0.08 ha	0.17 ha	0.10 ha	0.00 ha	0.00 ha
Work No. 2	0.00 ha	0.00 ha	1.45 ha	0.00 ha	0.00 ha
Work No. 3	0.00 ha	0.13 ha	0.79 ha	0.00 ha	0.00 ha
Work No. 4	0.45 ha	0.23 ha	0.02 ha	0.12 ha	0.08 ha
Work No. 6	0.87 ha	3.79 ha	3.40 ha	0.02 ha	1.79 ha
Sub-total:	**1.40 ha**	**4.32 ha**	**5.76 ha**	**0.14 ha**	**1.87 ha**

13.8.8 The Grade 2 (and Ungraded) land is of very high sensitivity, the total impact is 1.54 hectares which results in a low impact, and as such the effect is Moderate Adverse, which is considered significant in EIA terms.

13.8.9 The Grade 3a land is of high sensitivity, the total impact is 4.32 hectares which results in a low impact, and as such the effect is Minor Adverse, which is not considered significant in EIA terms.

13.8.10 The Grade 3b land is of medium sensitivity, the total impact is 5.76 hectares which results in a medium impact, and as such the effect is considered to be Minor Adverse, which is not considered significant in EIA terms.

13.8.11 As set out in Table 13.14, in total there would be adverse impact to 5.72 hectares of known BMV land (Grades 2 and 3a), and adverse impact to 0.14 hectares of Ungraded land that is currently assumed to be Grade 2. In total, the Scheme would therefore result in the loss of 5.86 hectares of BMV land.

13.8.12 For the land proposed for green infrastructure (Work No. 8) including new grasslands and planting areas, there would be no discernible loss or reduction of soil functions that would restrict future agricultural use, albeit the land would not be in agricultural usage. There are many Government and other agri-environment schemes that support farmers in the creation of woodland and other habitats, and these changes are reversible; if the grassland or woodland was ever to be removed the land and soils could be returned to agricultural use. The magnitude of impact would therefore be low and the effect would be Moderate Adverse for Grade 2 (and Ungraded) land, which is significant in EIA terms. The effect would be Minor Adverse for Grade 3a land, and Negligible Adverse for Grade 3b land, which is not significant in EIA terms.

Soil Resources

13.8.13 With reference to **ES Vol 2 Appendix 13-1: Agricultural Land Classification and Soil Resources [EN010141/DR/6.2]**, the number of FCDs at the Site is between 114 and 120, which is lower than is average for

lowland England (150) and is therefore favourable for undertaking agricultural field work.

13.8.14 Soil Type 1 is characterised as a clay or heavy clay loam with some medium clay loams and has an FCD fewer than 150, such that the soil has a medium resilience to structural change and an overall medium sensitivity

13.8.15 Soil Type 2 is characterised as a calcareous clay or heavy clay loam and has an FCD fewer than 150, such that the soil has a medium resilience to structural change and an overall medium sensitivity

13.8.16 Soil Type 3 is characterised as non-calcareous heavy clay loam, medium clay loam or sandy loams and has an FCD fewer than 150, such that the soil has a medium to high resilience to structural damage, and an overall medium to low sensitivity.

13.8.17 Soil Type 4 is characterised as a non-calcareous medium or heavy clay loam and has an FCD fewer than 150, such that the soil has a medium resilience to structural change and an overall medium sensitivity.

13.8.18 Impacts to soil resources will be avoided or minimised during the construction phase as a result of the measures set out in the **oSMP [EN010141/DR/7.9]**, such that the impact to soil resources would be negligible. The overall level of effect to all Soil Types would therefore be Negligible Adverse, which is not significant in EIA terms.

Source of Materials (Mineral Reserves)

13.8.19 During construction the above ground soils will be protected through the measures set out in the **oSMP [EN010141/DR/7.9]**. The land will not be sealed, and construction of the Scheme would not permanently sterilise the mineral reserves. Whilst it would not be possible to work the minerals during the construction phase, they would not be adversely impacted. The impact and effect would be Negligible, which is not significant in EIA terms.

Operational Phase

Biomass Production: Agricultural Land

13.8.20 During the operational phase, there would be no further impact or loss to agricultural land beyond that assessed at the construction phase, which is the point in time when the change in land use would occur. The magnitude of impact would therefore be negligible and the effect would be Negligible adverse, which is not significant in EIA terms.

13.8.21 The Applicant intends to graze the land within the solar arrays, as set out in the **oLEMP [EN010141/DR/7.7]**. This would ensure the land remains available for continued agricultural use, however this will be a different form of agricultural production and a change in land management that is not involved in crop production.

Soil Resources

13.8.22 There is the potential for benefits to the agricultural land as a result of the establishment of grassland across East Parks A, B, C and D during the operational phase. The grassland and other habitats would be managed in accordance with the **oLEMP [EN010141/DR/7.7]**.

13.8.23 The land would be rested from arable rotation and the grassland would bind the soils reducing the impact of vehicle trafficking during routine maintenance. There would also be an improvement in soil functions by increasing ecosystem services including carbon sequestration to remove carbon from the atmosphere and increase soil organic carbon, and reduce water run-off and siltation compared to periods where soils would be bare during arable rotation. The overall impact is assessed as high as the change would be an improvement in soil function, and as such the effect would be Moderate beneficial, which is significant in EIA terms.

Source of Materials (Mineral Reserves)

13.8.24 The Scheme is predominantly not a form of development that would sterilise the mineral reserves. The solar infrastructure would not adversely impact the ability to access the mineral reserves if required, as the development is temporary and solar mounting structures are easily demountable.

13.8.25 The most sterilising components of the Scheme would be the East Park BESS, East Park Substation, operations and maintenance area, and the retention basin for the BESS / substation. This is because of the requirement to build the BESS and substation on hard standing, whilst the retention basin would be an essential associated feature.

13.8.26 These components would not be sited in a MSA such that the effect would be Negligible, which is not significant in EIA terms.

Decommissioning Phase

Biomass Production: Agricultural Land, and Soil Resources

13.8.27 At decommissioning the Scheme would be removed and the land restored to a condition suitable for reversion to its existing use and returned to the landowners, albeit the proposed planting would be retained. The decommissioning activities would be completed in substantial accordance with the **oSMP [EN010141/DR/7.9]** and **oDEMP [EN010141/DR/7.6]**.

13.8.28 The effects at decommissioning would be of a similar or lesser magnitude of impact to the impacts during construction. The assessment of impacts at the construction phase set out above considered the permanent effects of Scheme components such as the East Park BESS, substation and cabling, which would be removed at the decommissioning stage and the soils restored, albeit it is assumed there would be permanent impacts to soil conditions (as assessed at the construction phase). The effects at decommissioning would therefore be Negligible, which is not significant in EIA terms.

Source of Materials (Mineral Reserves)

13.8.29 At decommissioning the Scheme would be removed and the MSA would not be sterilised. If required, the minerals could be worked.

13.9 Additional Mitigation, Enhancement and Monitoring

Mitigation

13.9.1 The Scheme would result in a Moderate adverse significant effect on Grade 2 agricultural land due to the permanent adverse impact at the construction phase from the creation of access tracks (within Work No. 6). It will be possible to review the internal access across the Site at the detailed design stage with the objective of further reducing the extent to which they track across Grade 2 soils, however the Scheme does have a requirement to provide optimum access for maintenance. The footprint of the access tracks is very small, albeit distributed over a large area. At this stage, there is therefore no additional mitigation required beyond that set out within Section 13.7.

Monitoring

13.9.2 It is a requirement of the oSMP **[EN010141/DR/7.9]** that a suitably qualified person keeps records of soil handing operations and regular monitoring of soil condition across the Site.

13.10 Residual Effects

13.10.1 A summary table of the residual effects of the Scheme is provided in Table 13.15, with significant effects identified in bold text:

Table 13.15: Residual Effects

Receptor	Sensitivity of Receptor	Magnitude of Impact	Significance of Effect	Additional Mitigation	Residual Effect
Construction Phase					
Grade 2 Agricultural Land	Very High	Low	**Moderate Adverse**	None – refer to Section 13.9	**Moderate Adverse**
Grade 3a Agricultural Land	High	Low	Minor Adverse	n/a	Minor Adverse
Grade 3b Agricultural Land	Medium	Low	Minor Adverse	n/a	Minor Adverse
Ungraded Agricultural Land	Very High	Low	**Moderate Adverse**	None – refer to Section 13.9	**Moderate Adverse**
Soil Type 1	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 2	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 3	Medium to Low	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 4	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Mineral Reserves	Low	Negligible	Negligible	n/a	Negligible
Operational Phase					

Receptor	Sensitivity of Receptor	Magnitude of Impact	Significance of Effect	Additional Mitigation	Residual Effect
Grade 2 Agricultural Land	Very High	Negligible	Negligible Adverse	n/a	Negligible Adverse
Grade 3a Agricultural Land	High	Negligible	Negligible Adverse	n/a	Negligible Adverse
Grade 3b Agricultural Land	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Ungraded Agricultural Land	Very High	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 1	Medium	High	**Moderate Beneficial**	n/a	**Moderate Beneficial**
Soil Type 2	Medium	High	**Moderate Beneficial**	n/a	**Moderate Beneficial**
Soil Type 3	Medium to Low	High	**Moderate Beneficial**	n/a	**Moderate Beneficial**
Soil Type 4	Medium	High	**Moderate Beneficial**	n/a	**Moderate Beneficial**
Mineral Reserves	Low	Negligible	Negligible	n/a	Negligible
Decommissioning Phase					
Grade 2 Agricultural Land	Very High	Negligible	Negligible Adverse	n/a	Negligible Adverse
Grade 3a Agricultural Land	High	Negligible	Negligible Adverse	n/a	Negligible Adverse

Receptor	Sensitivity of Receptor	Magnitude of Impact	Significance of Effect	Additional Mitigation	Residual Effect
Grade 3b Agricultural Land	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Ungraded Agricultural Land	Very High	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 1	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 2	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 3	Medium to Low	Negligible	Negligible Adverse	n/a	Negligible Adverse
Soil Type 4	Medium	Negligible	Negligible Adverse	n/a	Negligible Adverse
Mineral Reserves	Low	Negligible	Negligible	n/a	Negligible

13.11 Cumulative Effects

13.11.1 The cumulative assessment has considered the potential for cumulative environmental effects as a result of the Scheme in combination with the cumulative schemes set out in **ES Vol 2 Appendix 4-5: Short List of Other Development [EN010141/DR/6.2]**.

13.11.2 The cumulative assessment is reported in **ES Vol 1 Chapter 17: Cumulative and Intra-Project Effects [EN010141/DR/6.1]** and concludes that there would be no significant cumulative effects on land and soil receptors as a result of the Scheme in combination with any cumulative scheme. The residual effects of the Scheme would not be changed as a result of any of the cumulative schemes.

13.11.3 An assessment of the in-combination effects arising from the interaction and combination of different residual environmental effects of the Scheme affecting a single receptor is reported in Section 17.5 of **ES Vol 1 Chapter 17: Cumulative and In-Combination Effects [EN010141/DR/6.1]**.

13.12 Conclusions

13.12.1 This land and soils assessment has considered the potential impacts of the Scheme on agricultural land, soils and mineral reserves. The assessment has been undertaken using a combination of desk-based research and field survey, including an agricultural land classification and soil resources survey that has provided data on the characteristics of the Site.

13.12.2 The assessment has concluded that there would be a Moderate adverse and significant effect in relation to temporary and permanent impacts to Grade 2 agricultural land resulting primarily from the removal of land from arable agricultural production for the duration of the Scheme and the creation of access tracks across the Site. In total, 1.54 hectares of Grade 2 and Ungraded land will be permanently adversely affected by the Scheme; this is distributed across the Site in narrow strips relating to access tracks which are generally up to 4m wide, and the footprint of transformers. There would also be temporary and permanent adverse impacts to Grade 3a land which is best and most versatile, but in isolation (and in accordance with IEMA guidance that this land classification is less sensitive than Grade 2 land), the effect to Grade 3a land would be Minor adverse which is not significant in EIA terms.

13.12.3 In total, the Scheme would result in permanent adverse impact to approximately 5.86 hectares of best and most versatile land. The remainder of the best and most versatile (Grade 2 and Grade 3a) land within the Site would not be permanently adversely impacted by the Scheme and could be easily reverted to its existing agricultural condition upon completion, with benefits in relation to soil structure and resources.

13.12.4 There would be significant beneficial effects to soil resources during the operational phase as the land would be rested from arable rotation and the grassland would bind the soils reducing the impact of vehicle trafficking during routine maintenance. There would also be an improvement in soil functions by increasing ecosystem services including carbon sequestration to remove carbon from the atmosphere and increase soil organic carbon, and reduce

water run-off and siltation compared to periods where soils would be bare during arable rotation.

13.12.5 The Scheme would not result in the sterilisation of any mineral reserves.

13.13 References

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