South Brooks Solar Farm

Preliminary Environmental Information Volume 2: Appendix 7.2: Agricultural Soils Assessment Criteria

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1 Agricultural Soils Assessment Criteria

1.1 Introduction

1.1.1 This appendix sets out the agricultural soils assessment criteria for the Project, and is intended to be supplementary technical information to Chapter 7 of the Preliminary Environmental Information (PEI) Volume Two report. The IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment[1] has been used to inform this preliminary assessment of the potential impact of the Project on agricultural soils.

1.2 Sensitivity of agricultural land quality and soil structure

1.2.1 Sensitivity criteria for agricultural land quality and soil structure, derived from the IEMA Guide, are presented in Table 1-1 and Table 1-2 respectively. The Agricultural Land Classification (ALC) grades have been used as the determining factor for receptor sensitivity for agricultural land quality.

1.2.2 The other factors mentioned within the IEMA Guide (ecological habitat, soil biodiversity, platform for landscape, soil carbon, soil hydrology, archaeology, cultural heritage, community benefits, geodiversity and source of materials) have been assessed as part of the soil resource survey required to determine the ALC grades within the Site. During the ALC survey work completed to date (detailed in Technical Factsheet - Agricultural Land Classification), anything that can become a potential limitation to the ALC Grading was flagged by the surveyor and used to gain a full description of the soil characteristics across the Site. Texture and colour were used to measure soil carbon storage within the soil survey.

1.2.3 The ALC survey undertaken provided sufficient information to accurately describe the soil's physical characteristics across the Site. ALC is the industry standard classification to describe soil function within the UK, and the ALC survey was undertaken in accordance with the Natural England et al. (2025) ALC Guidance[2]. Therefore, although there is no direct data for the other factors mentioned within the IEMA Guide, the assessment provides an accurate representation of the soil function which is reflected through the ALC grade as all soil factors are interlinked.

Table 1-1: Receptor sensitivity relating to agricultural land quality

Sensitivity (in-situ soils)	Soil resource and soil functions
Very High	**Biomass production:** ALC Grades 1 & 2. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting protected features within a European site (e.g., Special Area of Conservation (SAC), Special Protection Area (SPA), Ramsar); Peat soils; Soils supporting a National Park, or Ancient Woodland. **Soil carbon:** Peat soils. Soils with potential for ecological/landscape restoration. **Soil hydrology:** Very important catchment pathway for water flows and flood risk management.

[1] Stapleton, C., Reed, E., Gemmell, L., Adams, K. (eds) (2022) IEMA Guide: A New Perspective on Land and Soil in Environmental Impact Assessment.
[2] Natural England et al. (2025) Agricultural Land Classification of England and Wales: Guidelines for grading the quality of agricultural land (JP069).

Sensitivity (in-situ soils)	Soil resource and soil functions
	Archaeology, cultural heritage, community benefits and geodiversity: Scheduled Monuments and adjacent areas; World Heritage and European designated sites; Soils with known archaeological interest; Soils supporting community/recreational/educational access to land covered by National Park designation. **Source of materials:** Important surface mineral reserves that would be sterilized (i.e., without future access).
High	**Biomass production**: ALC Grade 3a. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting protected features within a UK designated site (e.g., United Nations Educational, Scientific and Cultural Organisation (UNESCO) Geoparks, Site of Special Scientific Interest (SSSI) or Protected Landscapes, Special Landscape Area, and Geological Conservation Review sites); Native Forest and woodland soils; Unaltered soils supporting semi-natural vegetation (including priority habitats). **Soil carbon:** Organo-mineral soils (e.g., peaty soils). **Soil hydrology:** Important catchment pathway for water flows and flood risk management. **Archaeology, cultural heritage, community benefits and geodiversity:** Soils with probable but as yet unproven (prior to being revealed by construction) archaeological interest; Historic parks and gardens; Regionally Important Geological and Geomorphological Sites (RIGS); Soils supporting community / recreational / educational access to RIGS and Protected Landscapes. **Source of materials:** Surface mineral reserves that would be sterilized (i.e. without future access).
Medium	**Biomass production**: ALC Grade 3b. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting protected or valued features within non-statutory designated sites (e.g., Local Nature Reserves, Local Geological Sites, Sites of Nature Conservation Importance, Special Landscape Areas; Non-Native Forest and woodland soils. **Soil carbon:** Mineral soils. **Soil hydrology:** Important minor catchment pathway for water flows and flood risk management. **Archaeology, Cultural heritage, community benefits and geodiversity:** Soils with possible but as yet unproven (prior to being revealed by construction) archaeological interest; Soils supporting community/recreational/educational access to land. **Source of materials:** Surface mineral reserves that would remain accessible for extraction.
Low	**Biomass production:** ALC Grades 4 and 5 or Urban soils. **Ecological habitat, soil biodiversity and platform for landscape:** Soils supporting valued features within non- designated notable or priority habitats / landscapes; Agricultural soils. **Soil carbon:** Mineral soils. **Soil hydrology:** Pathway for local water flows and flood risk management.

Sensitivity (in-situ soils)	Soil resource and soil functions
	Archaeology, cultural heritage, community benefits and geodiversity: Soils supporting no notable cultural heritage, geodiversity nor community benefits; Soils supporting limited community/recreational/educational access to land. **Source of materials:** Surface mineral reserves that would remain accessible for extraction.

Table 1-2: Receptor sensitivity relating to soil structure

Sensitivity of topsoil and subsoil	Soil texture, field capacity days (FCD) and wetness class
High (low resilience to structural damage)	Soils with high clay and silt fractions (clays, silty clays, sandy clays, heavy silty clay loams and heavy clay loams) and organo-mineral and peaty soils where the FCD are 150 or greater; Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where the FCDs are 225 or greater; and All soils in wetness class 5 and 6 (WCV and WCVI).
Medium (medium resilience to structural damage)	Clays, silty clays, sandy clays, heavy silty clay loams, heavy clay loams, silty loams and organo-mineral and peaty soils where the FCDs are fewer than 150; Medium-textured soils (silt loams, medium silty clay loams, medium clay loams and sandy clay loams) where FCDs are fewer than 225; and Sands, loamy sands, sandy loams and sandy silt loams where the FCDs are 225 or greater or are in wetness classes 3 and 4 (WCIII and WCIV).
Low (high resilience to structural damage)	Soils with a high sand fraction (sands, loamy sands, sandy loams and sandy silt loams) where the FCDs are fewer than 225 and are in wetness classes 1 and 2 (WCI and WCII).

1.3 Magnitude of impact relating to agricultural land quality and soil structure

1.3.1 Where an impact is likely to occur because of the scheme being constructed, operated and/or decommissioned, the magnitude of impact is classified using the criteria presented in Table 1-3, which are derived from the IEMA Guide.

Table 1-3: Magnitude of impact criteria relating to agricultural land quality

Magnitude of impact (change)	Description of impacts restricting proposed land use
Major	**Adverse:** Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading) over an area of more than 20ha; or loss of soil-related features, as advised by other factor specialists in the EIA team (including effects from 'temporary developments'*). **Beneficial:** Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of more than 20ha; or gain in soil-related features, as advised by other

Magnitude of impact (change)	Description of impacts restricting proposed land use
	factor specialists in the EIA team (including effects from 'temporary developments'*).
Moderate	**Adverse:** Permanent, irreversible loss of one or more soil functions or soil volumes, over an area of between 5ha and 20ha; or loss of soil-related features, as advised by other factor specialists in the EIA team (including effects from 'temporary developments'*). **Beneficial:** Potential for improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of between 5ha and 20ha; or gain in soil related features, as advised by other factor specialists in EIA team.
Minor	**Adverse:** Permanent, irreversible loss over an area of less than 5ha or a temporary, reversible loss of one or more soil functions or soil volumes; or temporary, reversible loss of soil-related features, as advised by other factor specialists in EIA team. **Beneficial:** Potential for permanent improvement in one or more soil functions or soil volumes due to remediation or restoration over an area of less than 5ha; or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement; or temporary gain in soil-related features, as advised by other factor specialists in EIA team.
Negligible	No discernible loss or reduction or improvement of soil functions or soil volumes that restrict current or proposed land use.

*Temporary developments can result in a permanent impact if resulting disturbance or land use change causes permanent damage to soils.

1.4 Significance of effect relating to agricultural land quality and soil structure

1.4.1 The significance of effect is based on the sensitivity of the receptor and the magnitude of impact, as outlined in the IEMA Guide. The significance of effect can be either adverse or beneficial.

1.4.2 The significance of an effect is reported as either 'significant' or 'not significant'. Any effects that have been determined as 'moderate' or above are considered significant. Any effects that have been determined as 'slight' or below are considered not significant. Where the significance matrix indicates a range for the effect significance (e.g. 'slight or moderate'), professional judgement can be applied to select one option (which would be justified by evidence, as appropriate) or an effect significance range can be applied. If a significance of effect is assigned as 'slight or moderate', this would be considered significant unless further information could be provided to downgrade the significance effect to 'slight'.

1.4.3 With reference to Table 1-2 above, it should be noted that for soil structure, only the sensitivity categories of 'high', 'medium' and 'low' apply within Table 1-4. The sensitivity categories of 'very high' and 'negligible' do not apply.

Table 1-4: Significance of effect criteria relating to agricultural land quality and soils structure

Sensitivity	Magnitude of impact				
	No change	Negligible	Minor	Moderate	Major
Very high	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
Negligible	Neutral	Neutral or Slight*	Neutral or Slight	Neutral or Slight	Slight

** This cell is listed as 'Slight' in the IEMA Guide, but has been adjusted to 'Neutral or Slight' to be consistent with the ranking scheme (the significance of effect should be equal to or lower than the adjacent cell to the right, not higher)*

1.4.4 Of relevance when considering the effects of the Project on soils and agricultural land is the reversibility of effects. It has therefore been assessed that changes to the land used for the solar PV Array and other temporary facilities will be reversible, and the soil will be managed and reinstated to the pre-existing soil quality and ALC grade.

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