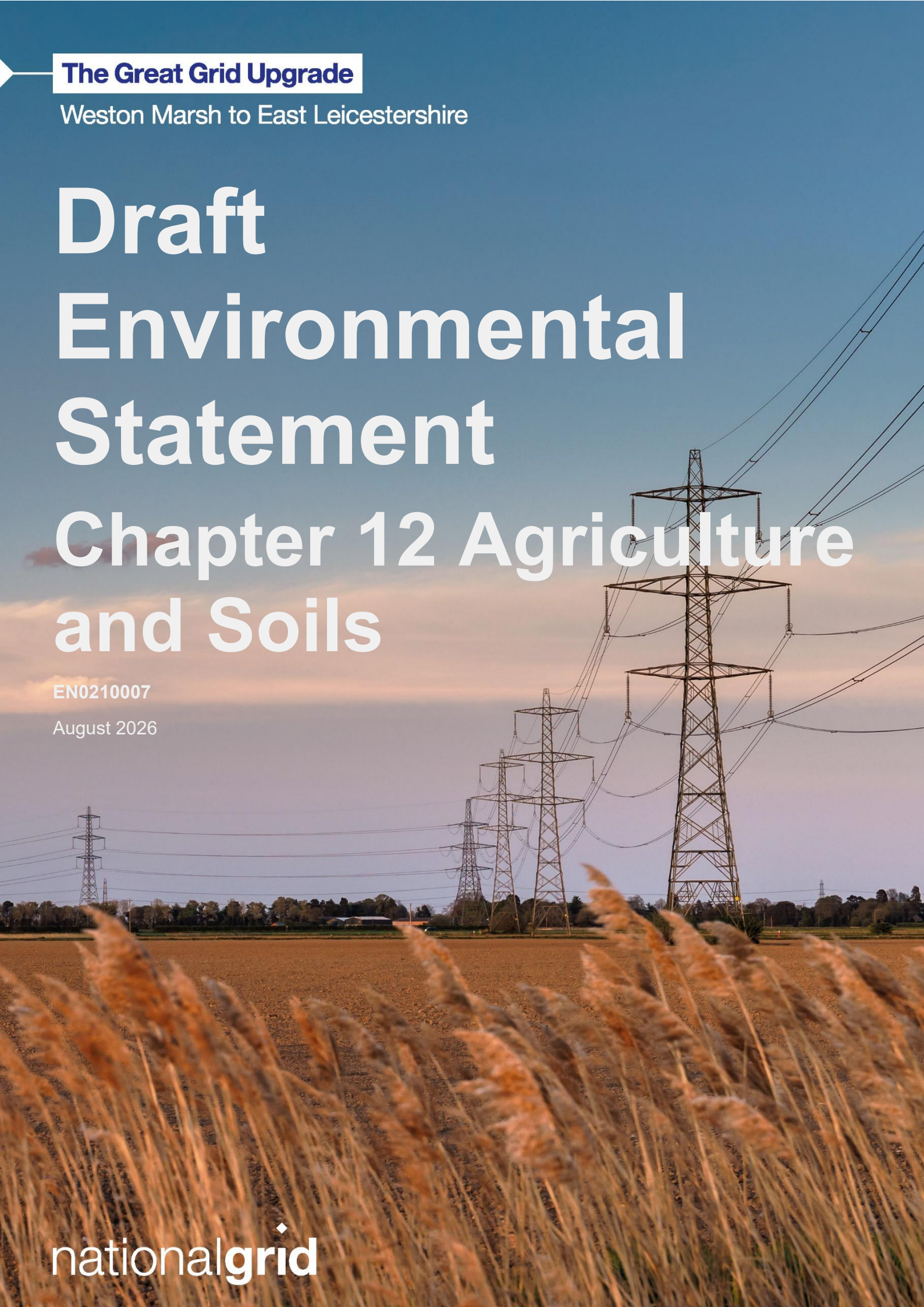




The Great Grid Upgrade

Weston Marsh to East Leicestershire

Draft Environmental Statement Chapter 12 Agriculture and Soils

EN0210007

August 2026

nationalgrid

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12. Agriculture and Soils

12.1 Introduction

- 12.1.1 This chapter reports the preliminary assessment of the potential effects of the Weston Marsh to East Leicestershire Project (the Project) on Agriculture and Soils. This chapter includes consideration of the following matters:
- potential effects on agricultural land including best and most versatile (BMV) land;
 - potential effects on soil resources; and
 - potential impacts on agricultural landholdings, from temporary and permanent land use.
- 12.1.2 This chapter should be read in conjunction with the following chapters which provide the Project context and approach to EIA:
- **Chapter 2 Regulatory and Planning Policy Context;**
 - **Chapter 3 Main Alternatives Considered;**
 - **Chapter 4 Description of the Project;** and
 - **Chapter 5 EIA Approach and Methodology.**
- 12.1.3 In addition, there may be interrelationships with other disciplines. Therefore, this chapter should also be read in conjunction with the following chapters:
- **Chapter 6 Landscape** – where soils are significant in characterising landscapes and the soil requirements for establishing vegetation for landscaping;
 - **Chapter 8 Ecology and Biodiversity** – where habitat mapping identifies land use, particularly where soil is fundamental to a habitat and its biodiversity, and the soil requirements for habitat creation proposals;
 - **Chapter 10 Water Environment** – which includes the connection between the surface water cycle and drainage and agriculture; and
 - **Chapter 11 Geology and Hydrogeology** – which includes the base geology beneath soil formation and detail of groundwater receptors that could be impacted by any land contamination or pollution-related impacts from the Project.
- 12.1.4 This chapter is supported by the following figures and appendices:
- **Figure 12.1 Predictive Agricultural Land Classification;** and
 - **Figure 12.2 Soil Associations**
 - **Appendix 12A Draft Outline Soil Management Plan**

12.2 Legislation, Policy Framework and Guidance

Legislation and National Policy

- 12.2.1 Legislation and national policy relevant to the Project and this chapter are described in **Chapter 2 Regulatory and Planning Policy Context**, and supporting appendices **Appendix 2A Key Legislation**, **Appendix 2B National and Regional Planning Policy** and **Appendix 2C Local Policy**.

Regional and Local Policy

- 12.2.2 **Chapter 2 Regulatory and Planning Policy Context** sets out relevant regional and local policy. Regional and local plans or policies relevant to this assessment are as follows:
- South East Lincolnshire Local Plan 2011-2036 (Ref 12.1) contains a strategic priority to minimise the loss of South East Lincolnshire's high quality agricultural land. This is also reflected in Policy 3 for the design of new developments which includes minimising land-take, to protect best and most versatile (BMV) soils.
 - South Kesteven District Council Local Plan 2011- 2036 (Ref 12.2) spatial strategy references protection of BMV agricultural land so as to protect opportunities for food production and the continuance of the agricultural economy.
 - Melton Borough Local Plan 2011-2036 (Ref 12.3) includes a vision for the efficient use of land and the location of new development that will ensure BMV agricultural land can continue to support a strong rural economy. Avoiding loss of BMV land is incorporated into Policy SS3 for sustainable communities.
 - Harborough Local Plan 2011-2031 (Ref 12.4) includes Policy GI5 relating to biodiversity and geodiversity that seeks to ensure no loss of any best and most versatile agricultural land unless this is demonstrably necessary to facilitate the delivery of sustainable development.
 - North Northamptonshire Joint Core Strategy 2011-2031 (Ref 12.5) requires that soils should be protected from pollution and the best and most versatile agricultural land should be safeguarded, wherever possible.
 - West Northamptonshire Joint Core Strategy (Ref 12.6) policy R2 relating to rural economy, will support proposals which sustain and enhance the rural economy by creating or safeguarding jobs and businesses where they are of an appropriate scale for their location, respect the environmental quality and character of the rural area and protect the best and most versatile agricultural land.

Guidance

- 12.2.3 National guidance exists for field assessment of soils, assessment of environmental impacts and for good practice in handling soils and the sustainable use of soil in relation to development projects. Relevant guidance specific to agriculture and soils, that has informed this non-statutory Draft Environmental Statement (DES) (referred to in this document as "DES" and "non-statutory DES") and will inform the assessment within the ES, comprises:
- Natural England's Guide to Assessing Development Proposals on Agricultural Land (Ref 12.7): sets out the government policies and legislation that developers

and local planning authorities (LPAs) should refer to when considering proposals that affect agricultural land and provides guidance on when Natural England should be consulted on development proposals. The guidance notes that the LPA should ensure that development proposals include plans to protect soils. It explains circumstances in which new detailed surveys may be required and summarises the required survey methodology (also presented in Natural England's Technical Information Note 049 (Ref 12.8)).

- Institute of Sustainability and Environmental Professionals (ISEP), formerly known as the Institute of Environmental Management and Assessment (IEMA), published the first guidance for the consideration of the impacts of development on soils and land in EIA: A New Perspective on Land and Soil in Environmental Impact Assessment (Ref 12.9) (hereafter referred to as 'the ISEP guidance').
- ISEP has subsequently introduced complementary guidance for a soil functions-based evaluation methodology and improved mitigation measures for soil conservation, to avoid and minimise detrimental impacts on soil (Ref 12.10). It focuses on outcome-based environmental reporting. ISEP identifies that this advice note can be considered a supplement to Annex 'D' of the ISEP guidance, referred to above.
- Department for Environment, Food and Rural Affairs (Defra) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Ref 12.12) provides technical guidance on the handling, storage and (re)use of soil within construction projects.
- Institute of Quarrying Good Practice Guide for Handling Soils in Mineral Workings (Ref 12.13) details good practice methods for stripping, handling, storage, reinstatement, and management of soil resources. This guidance updates and replaces the Ministry of Agriculture, Fisheries and Food's (MAFF) Good Practice Guide for Handling Soils and despite originating in the quarrying sector is considered relevant as the described measures are applicable to all development where soils are handled.
- Agricultural Land Classification of England and Wales: Guidelines for grading the quality of agricultural land, published by the Welsh Government and Defra in December 2025 (Ref 12.15) provides an update of the 1988 MAFF Guidelines (Ref 12.14). No changes to grading criteria or reference climate data have been made from the earlier document.
- British Society of Soil Science (BSSS) Guidance Document 3: Working with Soil - Guidance Note on Benefitting from Soil Management in Development and Construction (Ref 12.17) has been written for development planning and control professionals, site owners and developers to help promote the protection of soils and the important functions they support within the planning system and the development of individual sites.

12.3 Scope of Assessment

- 12.3.1 The scope of the assessment has been informed by the **Appendix 5B Scoping Opinion** (adopted by the Planning Inspectorate on behalf of the Secretary of State on 17 December 2025, following the submission of **Appendix 5A EIA Scoping Report**) and ongoing engagement with relevant technical consultees.

- 12.3.2 A full summary of all issues raised relevant to agriculture and soils in the Scoping Opinion and National Grid's response is provided in **Appendix 5C Preliminary Scoping Opinion Response**. Further details of engagement undertaken to date is provided in Section 12.4.

12.4 Stakeholder Engagement

- 12.4.1 Relevant local authorities and technical stakeholders have been contacted to arrange discussion on potential effects on agriculture and soils, with engagement with Lincolnshire County Council having been scheduled.

12.5 Assessment Methodology

- 12.5.1 This section describes the methodology used to establish the existing and future baseline together with the methodology/approach used to undertake the preliminary assessment on agriculture and soils. The overarching approach is also described in **Chapter 5 EIA Approach and Methodology**. This section also identifies further assessment needed to be undertaken as part of the Environmental Statement (ES).
- 12.5.2 This preliminary assessment of agriculture and soils has been undertaken based on ISEP guidance (Ref 12.9), with particular reference to Section 9: Assessing Impacts on Land and Soil. It focuses on the potential impacts to agricultural land and land use including the loss of BMV land, and loss of soil functions/volumes and soil-related features.
- 12.5.3 Subsequent guidance by ISEP (relating particularly to solar PV development) (Ref 12.11) identifies the potential effects on agricultural landholdings. It notes that landowners are compensated through commercial agreements, but that EIA should consider the socio-economic impacts of displacement of tenant farmers, agricultural workers, and the impact of land-take on the continued viability of affected farms and the wider local agricultural economy. This will require farm impact assessments, which are scheduled to inform the ES, and will involve meetings with landowners and long-term tenants. It is proposed landholder interviews are conducted where land use falls within the high and medium magnitude categories.

Study Area

- 12.5.4 The Study Area for the physical soil and land resources is the draft Order Limits, as presented in **Figure 12.1 Predictive Agricultural Land Classification** and **Figure 12.2 Soil Associations**. Impacts regarding the loss of agricultural land relate only to those soils directly affected and do not require a buffer. Farm impact assessments will assess how impacts within the draft Order Limits affect the whole farm, including for example, changes to field drainage or operational changes, and disruption arising from pre-construction surveys and site investigation activities, but this is determined by land ownership which is not illustrated in the figures.
- 12.5.5 The draft Order Limits will be used to identify land holdings for consideration of potential impacts. The ES will include an assessment of effects on viability and the agricultural economy will be extended to whole farms, not just the area within the draft Order Limits.

Data Collection

Desk study

- 12.5.6 The current and future predicted baseline environments have been informed by the following data sources:
- Predictive Agricultural Land Classification (ALC) mapping has been published by Defra (Ref 12.18). The ALC system classifies land into five grades. Grade one is best quality and grade five is poorest quality. Grade 3 is divided between Subgrades 3a and 3b. Grade 1 to Subgrade 3a are considered BMV farmland.
 - The Land Information System (LandIS) operated by Cranfield University, includes the 'Soilscapes Viewer'. It is an online mapping tool providing summary information of the broad regional variation in the agricultural cropping and soil landscapes of England and Wales (Ref 12.19). Information is provided on soil texture, fertility, and drainage, which is used to present generalised information on land cover and agricultural cropping suitability. Soilscape units are high-level soil mapping units used to describe broad, distinguishable soil types and their patterns across the landscape. They are assigned a Soilscape reference number within LandIS and attributes are listed within the mapping viewer.
 - The Soil Survey of England and Wales - Eastern England (Ref 12.20) as presented on the National Soil Map of England and Wales digital mapping product NATMAP. NATMAP has been made open access via LandIS (Ref 12.19).
- 12.5.7 The following additional sources of published information have been used to establish the baseline environment for agriculture and soils:
- Climatological Data for Agricultural Land Classification (ALC) (Met Office, 1989) (Ref 12.21).
 - Research to develop the evidence base on soil erosion and water use in agriculture: Final Technical Report (Cranfield University, 2015) (Ref 12.22).

Site visit and surveys

- 12.5.8 Data for the DES have been collected based on the preliminary Project design. Baseline ALC and soil surveys are scheduled for the substation sites and to inform micro-siting of the proposed new overhead line infrastructure. Surveys will be carried out later in 2026 and in 2027 to inform design development and will be reported in full in the ES, including the Outline Soil Management Plan. As such, these data were not available to support this DES assessment or the **Appendix 12A Draft Outline Soil Management Plan**.
- 12.5.9 Samples will be taken at the agreed standard of one observation per hectare in the permanent footprint of the substations. Land affected by the installation of new towers will be subject to soil and land surveys for the ES only where there is the potential for micro-siting to avoid BMV land or reduce whole farm impacts. However, opportunities for micro-siting will be limited by other engineering and environmental constraints. Surveys for micro-siting would be more frequent than for the standard one observation per hectare to provide the very localised data required. It is currently anticipated that reconductoring will only result in temporary, short-term impacts to agricultural soils and farm operations, associated with access to existing infrastructure via established access routes. Accordingly, no surveys are proposed in the reconductoring section. However, protective measures for soils are identified in the Outline Soil Management Plan to be submitted with the ES.

- 12.5.10 Areas of ecological mitigation, resulting in semi-permanent change in land use from agricultural use will be subject to further survey and will be considered in the ES.

Land referencing and landowner/tenant interviews

- 12.5.11 Land referencing throughout the draft Order Limits and Study Areas (discussed in Paragraph 12.5.5) has been undertaken and will confirm identification of landholders and/or tenants. The relevant parties subject to potential impacts on farm operation will be identified through ongoing engagement and contacted to arrange discussions and interviews. The ES will present information arising from this engagement.
- 12.5.12 Stakeholders identified as potentially subject to significant effects will be encouraged to take part in interviews to determine the continued viability of affected farms and the wider local agricultural economy.
- 12.5.13 Should stakeholders choose not to engage, the ES would rely on estimates of severance and access constraints using aerial imagery. Estimates would then be cross-referenced to other landholdings from which more comprehensive data could be obtained.
- 12.5.14 Interviews will be semi-structured (using a predetermined set of open-ended questions and topics as a guide but allowing flexibility for follow-up questions and discussion based on responses) to quantify effects on the land area within the holding and to qualitatively present effects on viability and impacts on the agricultural economy. No commercially sensitive quantified information will be presented.

Further data to be collected to inform the ES

- 12.5.15 Further information on field drainage will be derived during landholder interviews, surveys, design, and development of a drainage strategy for the Project which will be provided with the ES. Where potential significant effects are identified they will be considered appropriately in the ES along with measures to avoid, reduce and manage those effects.

Impact Assessment Methodology

Sensitivity

- 12.5.16 The sensitivity criteria used to inform the assessment of effects on agricultural land and soils are developed from Table 2 of the ISEP guidance (Ref 12.9) and are presented in **Table 12.1** and **Table 12.2** below.
- 12.5.17 **Table 12.2** references soil properties, namely Field Capacity Days and wetness class. Field capacity refers to the soil water content held in the soil after excess water has drained from larger soil pores. Field Capacity Days quantifies the period when the soils are at field capacity, typically during autumn and winter. Field capacity ends in spring when evapotranspiration exceeds rainfall and a moisture deficit accumulates. Wetness class divides soils into six classes, based on the depth to a slowly permeable subsoil layer or to gleying. Gleying refers to chemical changes in soil that is consistently waterlogged leading to anaerobic conditions.
- 12.5.18 Sensitivity criteria for agricultural landholdings are based on the spatial relationship between agricultural infrastructure and the farmed land and the frequency of access required between areas of the holding. Descriptions are provided in **Table 12.3**.

Table 12.1 Sensitivity of soil receptors

Sensitivity	Description
Very high	ALC Grade 1 & 2
High	ALC Subgrade 3a
Medium	ALC Subgrade 3b
Low	ALC Grade 4 & 5
Negligible	As for low sensitivity but with only indirect, tenuous and unproven links between sources of impact and soil functions.

Table 12.2 Sensitivity of topsoil and subsoil resources

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

Table 12.3 Sensitivity of agricultural landholdings

Receptor Sensitivity	Description
Very high	Areas of land in which the enterprise is wholly reliant on the spatial relationship of land to key agricultural infrastructure. Access between land and key agricultural infrastructure is required on a frequent basis (daily).
High	Areas of land in which the enterprise is dependent on the spatial relationship of land to key agricultural infrastructure. Access between land and key agricultural infrastructure is required on a frequent basis (weekly).

Receptor Sensitivity	Description
Medium	Areas of land in which the enterprise is partially dependent on the spatial relationship of land to key agricultural infrastructure. Access between land and key agricultural infrastructure is required on a reasonably frequent basis (monthly).
Low	Areas of land which the enterprise is not dependent on the spatial relationship of land to key agricultural infrastructure. Access between land and key agricultural infrastructure is required on an infrequent basis (monthly or less frequent)
Negligible	Areas of land which are infrequently used on a non-commercial basis.

Magnitude

- 12.5.19 Magnitude of impact criteria used to inform the assessment of effects to agricultural land and soils are presented in **Table 12.4**. These are taken from Table 3 of the ISEP guidance (Ref 12.9). These consider the magnitude (or scale) of change from current baseline conditions, described in the guidance as being based on: '*permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading)*' (Section 9.1).
- 12.5.20 Magnitude of impact criteria for agricultural landholdings are presented in **Table 12.5**. These are adapted from Design Manual for Roads and Bridges LA 112 Population and Human Health (Ref 12.23). Although the criteria were developed in relation to highway schemes, they have been applied to a wider range of infrastructure development sectors.

Table 12.4 Magnitude of impact on agriculture and soils

Magnitude	Description
Large	Permanent irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading) or permanent improvement of one or more soil functions or soil volumes (due to remediation or restoration) over greater than 20 hectares (ha) of agricultural land.
Medium	Permanent irreversible loss (including permanent sealing or land quality downgrading) or permanent improvement of one or more soil functions or soil volumes (due to remediation or restoration) of greater than 5 ha but less than 20 ha of agricultural land.
Small	Permanent irreversible loss (including permanent sealing or land quality downgrading) or permanent improvement of one or more soil functions or soil volumes (due to remediation or restoration) of less than 5 ha of agricultural land. Temporary reversible loss/reduction of one or more soil function(s) and restriction to current or approved future use (e.g., through degradation, compaction, erosion of soil resource) or a temporary improvement in one or more soil functions due to remediation or restoration or off-site improvement.

Magnitude	Description
Negligible	No discernible loss/reduction or improvement of soil functions or soil volumes that restrict current or proposed land use.

Table 12.5 Magnitude of impact on agricultural landholdings

Magnitude	Description
Large	Private property and housing, community land and assets, development land and businesses and agricultural landholdings: • loss of resource and/or quality and integrity of resource; Severe damage to key characteristics, features or elements, e.g., direct acquisition and demolition of buildings and direct development of land to accommodate assets; and/or • introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision.
Medium	Private property and housing, community land and assets, development land and businesses and agricultural landholdings: • partial loss of or damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or • introduction (adverse) or removal (beneficial) of severe severance with limited/moderate accessibility provision.
Small	Private property and housing, community land and assets, development land and businesses and agricultural landholdings: • discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes to operating conditions that do not compromise overall viability of property, businesses, community assets or agricultural holdings; and/or • introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.
Negligible	Private property and housing, community land and assets, development land and businesses and agricultural landholdings: • very minor loss or detrimental alteration to one or more characteristics, features or elements, e.g., acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and/or • very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.

Significance of effects

- 12.5.21 The general approach adopted for evaluating the significance of effects, considering the sensitivity of the receptor and the magnitude of impacts, is outlined in **Table 12.6**. The significance matrix allows for an element of professional judgement to consider, for example, permanent loss of cropped agricultural land for creation of permanent ecological habitats, but where soil function is preserved.
- 12.5.22 Following the criteria set out in the ISEP guidance (Ref 12.9), any permanent loss of highly sensitive Grade 1 or Grade 2 agricultural land is classed as a significant effect regardless of the scale of that loss. Similarly, permanent loss of BMV land in Subgrade 3a may potentially result in significant effects but is scale dependent.

Table 12.6 Determination of significance matrix

Sensitivity of Receptor						
Magnitude of Impact		Very high	High	Medium	Low	Negligible
	Large	Major	Major/ moderate	Moderate/ minor	Minor	Minor/ negligible
	Medium	Major/ moderate	Moderate	Moderate/ minor	Minor/ negligible	Negligible
	Small	Moderate/ minor	Moderate/ minor	Minor	Minor/ negligible	Negligible
	Negligible	Minor/ negligible	Minor/ negligible	Minor/negligi ble	Negligible	Negligible

- 12.5.23 A major or moderate effect is considered significant and a minor or negligible effect is considered not significant. The ISEP guidelines presents a significance criterion at the boundary of moderate (significant) and minor (not significant) where professional judgement may be applied. This matrix approach provides a guide to authors, but professional judgement can be used in concluding the significance of an effect. Both positive and negative effects will be considered.

Assessment Assumptions and Limitations

- 12.5.24 It is assumed that at the end of the construction phase, land temporarily taken by the Project will be reinstated and returned to its previous use, which in the context of this chapter relates to agricultural use, whilst land required permanently for the Project will remain out of agricultural use.
- 12.5.25 The predictive model ALC data will be used to assess effects of tower foundations. For substation sites focused soil and ALC surveys will be reported in the ES, subject to land access.

12.6 Baseline Conditions

Existing Baseline

- 12.6.1 The Project has been divided into five Sections as described in **Chapter 4 Description of the Project** and shown in **Figure 1.2 Draft Order Limits**. The Sections are defined by the geographical alignment of the draft Order Limits and the administrative boundaries of the local authorities. The following section outlines the agriculture and soils baseline. It has been divided into five Sections, as shown in **Figure 12.1 Predictive Agricultural Land Classification** and **Figure 12.2 Soil Associations Map** and is reported below by Section.

Section 1

Soils and geology

- 12.6.2 Soil associations within Section 1 are presented in **Table 12.7**. Each soil type is deep and stoneless, either clayey or silty, derived from marine alluvium.

Table 12.7 Soil associations within the draft Order Limits in Section 1

Soil Association	Area (ha)	Soil Site Characteristic	Dominant Soils	Geology
AGNEY	32.1	Seasonally wet deep silty	Deep stoneless calcareous fine and coarse silty soils.	Marine alluvium
WALLASEA 2	5.9	Seasonally wet deep clay	Deep stoneless clayey soils. Calcareous in places.	Marine alluvium
WISBECH	236.0	Seasonally wet deep silty	Deep stoneless calcareous coarse silty soils.	Marine alluvium
Water	0.8	N/A	N/A	N/A

Soilscape and land use

- 12.6.3 The soils in Section 1 fall exclusively within Soilscape 21. They are loamy and clayey soils of coastal flats with naturally high groundwater. Soils are mostly drained. Shallow groundwater and ditches at field boundaries make water resources vulnerable to pollution. The land is typically flat and soils are generally stoneless with much available water. As such, lighter soils support a wide range of crops and are highly productive.

Agricultural Land Classification

- 12.6.4 The predictive ALC grade identifies that all land in Section 1 is BMV land. It is dominated by Grade 1 land with areas of Grade 2 and Subgrade 3a land, summarised in **Table 12.8** and shown on **Figure 12.1 Predictive Agricultural Land Classification**.

Table 12.8 Predictive Agricultural Land Classification grades within the draft Order Limits in Section 1

ALC Grade	Area (ha)	Percentage
Grade 1	258.9	72.4
Grade 2	31.78	8.9
Subgrade 3a	65.9	18.4
Subgrade 3b	0	0
Grade 4	0	0
Grade 5	0	0
Non-agricultural	0	0
Urban	0	0

Agricultural holdings

- 12.6.5 Agricultural landholdings will be referenced for the ES, to provide assessment of total landholding and area of affected land, both permanent and temporary. The ES will determine issues of displacement, severance and restrictive access.

Section 2

Soils and geology

- 12.6.1 Soil associations within Section 2 are presented in **Table 12.9**. Soil types are typically loamy, but there are also areas of deep clay and silt close to the boundary with Section 1. The geology (referenced in **Table 12.9**) associated with each soil type is variable.

Table 12.9 Soil associations within the Order Limits in Section 2

Soil Association	Area (ha)	Soil Site Characteristic	Dominant Soils	Geology
ASWARBY	14.2	Loam over limestone	Shallow permeable calcareous fine loamy soils over limestone, some affected by groundwater.	Jurassic limestone and clay
BADSEY 2	10.8	Loam over gravel	Well-drained calcareous fine loamy soils over limestone gravel.	River terrace and lacustrine gravel
CURDRIDGE	108.1	Seasonally wet deep loam	Deep stoneless permeable coarse loamy soils with	Jurassic sand and clay

Soil Association	Area (ha)	Soil Site Characteristic	Dominant Soils	Geology
			groundwater controlled by ditches.	
DENCHWORTH	18.5	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.	Jurassic and Cretaceous clay
ELMTON 1	230.2	Shallow loam over limestone	Shallow well-drained brashy calcareous fine loamy soils over limestone.	Jurassic limestone
ELMTON 3	122.2	Shallow loam over limestone	Shallow well-drained brashy calcareous fine loamy soils over limestone.	Jurassic limestone and clay
RAGDALE	332.8	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
WALLASEA 2	99.6	Seasonally wet deep clay	Deep stoneless clayey soils. Calcareous in places.	Marine alluvium

Soilscape and land use

- 12.6.1 Soilscape 21 is represented also in the eastern parts of Section 2. Soilscape 21 is loamy and clayey soils of coastal flats with naturally high groundwater. Progressing westward, the soils form a mixture of Soilscares 5 and 22. Soilscape 5 contains freely draining lime-rich loamy soils. The soils are considered well suited to autumn-sown cereal cropping. Soilscape 22 comprises loamy soils with naturally high groundwater, which also makes water resources vulnerable to pollution. Soils are typically drained and may be droughty in summer. Most land is used for arable cropping. The ALC is a combination of Grades 2 and 3 with the higher grade more likely to be associated with Soilscape 5.
- 12.6.2 Westward the soils of Section 2 form bands (oriented north-south) of Soilscares 18 and 3. Soilscape 18 comprises slowly permeable, seasonally wet clayey soils that may become compacted or poached. The soils are best suited to grass production for livestock with some cereal production for animal feed. Land may be tile drained (using a porous pipework laid within the soil profile) with periodic mole drainage, whereby a 'mole' plough pulls a cylindrical 'bullet' through the soil profile to create a semi-permanent unlined tunnel. Soilscape 3 comprises shallow, lime-rich soils over chalk or limestone. Cereals can be grown but over hard limestone, soils are suitable only for grassland. Crop yields are most likely limited by soil moisture.

Agricultural Land Classification

- 12.6.3 The predictive ALC identifies BMV land distributed between Grade 1 and Subgrade 3a, with the latter comprising half the land of Section 2. There are also substantial areas of non-BMV Subgrade 3b land. The data are summarised in **Table 12.10**.

Table 12.10 Predictive Agricultural Land Classification grades within the draft Order Limits in Section 2

ALC Grade	Area (ha)	Percentage
Grade 1	107.3	11.5
Grade 2	0	0
Subgrade 3a	474.6	50.7
Subgrade 3b	349.3	37.3
Grade 4	0	0
Grade 5	0	0
Non-agricultural	2.5	0.3
Urban	2.7	0.3

Substation WMEL-A

- 12.6.4 The WMEL A substation is within the Elmtun 1 and Denchworth and Ragdale soil associations. The slowly permeable, and waterlogging Denchworth soil type is anticipated to be sensitive to disturbance. The ongoing surveys will determine the sensitivity/resilience of the soil resource which will be considered in the ES.
- 12.6.5 The predictive ALC model divides the substation site between ALC Subgrades 3a and 3b in the ratio 55 %:45 %. Field survey results may differ from the predictive ALC model and for the purposes of the DES the worst-case approach assumes all land is BMV land. Adjacent woodland, from which a buffer is to be maintained, is classed as non-agricultural and will not be subject to soil survey.

Agricultural holdings

- 12.6.6 Agricultural landholdings will be referenced for the ES, to provide assessment of total landholding and area of affected land, both permanent and temporary. The ES will determine issues of displacement, severance and restrictive access.

Section 3

Soils and geology

- 12.6.7 Soil associations within Section 3 are presented in **Table 12.11**. Soil types are typically deep loams and clays. The geology, referenced in **Table 12.11**, exhibits variability to include Jurassic and Cretaceous materials but also river alluvium, glaciofluvial river terrace drift and chalky till.

Table 12.11 Soil associations within the draft Order Limits in Section 3

Soil Association	Area (ha)	Soil Site Characteristic	Dominant Soils	Geology
ASHLEY	22.3	Deep loam to clay	Fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging associated with similar but wetter soils.	Chalky till
BANBURY	18.2	Loam over sandstone	Well-drained brashy fine and coarse loamy ferruginous soils over ironstone.	Jurassic and Cretaceous ironstone
FLADBURY 1	6.7	Seasonally wet deep clay	Stoneless clayey soils, in places calcareous, variably affected by groundwater.	River alluvium
FLINT	8.4	Deep red loam	Reddish fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging.	Reddish till
HANSLOPE	263.1	Deep clay	Slowly permeable calcareous clayey soils.	Chalky till
OXPASTURE	28.2	Deep loam to clay	Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.	Drift over Jurassic and Cretaceous clay shale
RAGDALE	403.2	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
WICKHAM 2	62.9	Seasonally wet silty to clayey over shale	Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.	Drift over Jurassic and Cretaceous clay or mudstone
Water body	1.3	N/A	N/A	N/A

Soilscape and land use

- 12.6.8 Section 3 is dominated by Soilscape 18 (described in paragraph 12.6.2). For much of Section 3 it is in mosaic with Soilscape 9, which comprises lime-rich loamy and clayey soils with impeded drainage. These soils are suited to autumn-sown crops and grassland.
- 12.6.9 Distribution of Soilscape 7 is very localised, but it is present south of Sewstern, at the eastern boundary of Section 3 and around Holwell in the western part. Soilscape 7 contains freely draining acid but base-rich soils suitable for arable crops and grassland. Soil moisture is most likely to limit yields, particularly where soils are stony or shallow.
- 12.6.10 West of Melton Mowbray, there are also areas of Soilscape 20 on floodplain soils, and of Soilscape 6. Soilscape 20 comprises clayey and loamy soils with naturally high groundwater. Grassland is productive provided drainage is maintained but there is a risk of poaching and soil damage early and late in the grazing season. Cereal production is only possible where the flood risk is low. Soilscape 6 is a freely draining, slightly acid loamy soil, suitable for cereal cropping or grass. Grass has a long grazing season. Shortage of soil moisture is the most likely limiting factor on cereal yields, particularly where stony or shallow.

Agricultural Land Classification

- 12.6.11 The predictive ALC model identifies that a little over half of land within Section 3 is non-BMV Subgrade 3b. The BMV land is dominated by Subgrade 3a with a relatively minor element of Grade 2. The predictive ALC distribution is summarised in **Table 12.12**.

Table 12.12 Predictive Agricultural Land Classification grades within the Draft Order Limits in Section 3

ALC Grade	Area (ha)	Percentage
Grade 1	0	0
Grade 2	47.5	5.8
Subgrade 3a	317.7	39.0
Subgrade 3b	432.7	53.2
Grade 4	0	0
Grade 5	0	0
Non-agricultural	11.7	1.4
Urban	4.5	0.5

Substation WMEL-B

- 12.6.12 Substation WMEL-B is within the Hanslope and Ragdale soil associations, with a small area of Wickham 2 and closely bordering Banbury. The soil types are anticipated to present a mosaic, which will be determined by field survey. The resolution of national soil mapping may not fully reflect a very intimate mixture of soil types. Surveys will be undertaken and data provided in the ES.

- 12.6.13 The predictive ALC model identifies that the WMEL-B substation site is equally divided between BMV land (a combination of ALC Grade 2 and Subgrade 3a) and non-BMV land (Subgrade 3b, with a minor component of non-agricultural land). Field survey results may differ from the predictive model of ALC, particularly because of the complexity of soil associations within the site. For the purposes of the DES, BMV land has been assumed.

Agricultural holdings

- 12.6.14 Agricultural landholdings will be referenced for the ES, to provide assessment of total landholding and area of affected land, both permanent and temporary. The ES will determine issues of displacement, severance and restrictive access.

Section 4

Soils and geology

- 12.6.15 Soil associations within Section 4 are presented in **Table 12.13**. Soil types are typically deep loams and clays, with some areas of silt over shale. The geology, referenced in **Table 12.13**, exhibits variability to include Jurassic and Cretaceous materials but also river alluvium and chalky till.

Table 12.13 Soil associations within the draft Order Limits in Section 4

Soil Association	Area (ha)	Soil Site Characteristic	Dominant Soils	Geology
BANBURY	3.8	Loam over sandstone	Well-drained brashy fine and coarse loamy ferruginous soils over ironstone.	Jurassic and Cretaceous ironstone
DENCHWORTH	33.7	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.	Jurassic and Cretaceous clay
FLADBURY 1	35.5	Seasonally wet deep clay	Stoneless clayey soils, in places calcareous, variably affected by groundwater.	River alluvium
HANSLOPE	17.9	Deep clay	Slowly permeable calcareous clayey soils.	Chalky till
RAGDALE	142.5	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
WICKHAM 2	101.5	Seasonally wet silty to clayey over shale	Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.	Drift over Jurassic and Cretaceous clay or mudstone

Soilscape and land use

- 12.6.16 Section 4, like Section 3 is dominated by Soilscape 18. It incorporates Soilscares 8, 9 and 20. Soilscape 8 is slightly acid loamy and clayey soils with impeded drainage. Cropping options are reasonably flexible but are most suited to autumn-sown crops and grassland, particularly as wet soil conditions in spring may limit groundwork options and grazing opportunities. The remaining Soilscares have been described previously.

Agricultural Land Classification

- 12.6.17 The predictive ALC grading within Section 4 is heavily dominated by non-BMV Subgrade 3b, comprising over 90 % of land. There is a relatively minor component of BMV Subgrade 3a and a limited area of Grade 2. Some limited areas of Grade 4, associated with floodplain soils are present. The data are summarised in **Table 12.14**.

Table 12.14 Predictive Agricultural Land Classification grades within the draft Order Limits in Section 4

ALC Grade	Area (ha)	Percentage
Grade 1	0	0
Grade 2	1.3	0.4
Subgrade 3a	15.3	4.5
Subgrade 3b	308.9	91.7
Grade 4	3.2	1.0
Grade 5	0	0
Non-agricultural	6.2	1.8
Urban	0.1	<0.1

Agricultural holdings

- 12.6.18 Agricultural landholdings will be referenced for the ES, to provide assessment of total landholding and area of temporarily affected land. The ES will determine issues of temporary severance and restrictive access.

Section 5

Soils and geology

- 12.6.19 Soil associations within Section 5 are presented in **Table 12.15**. Soil types are principally deep clays, with some loams and silts. Section 5 includes areas of restored soils following ironstone working. The geology, referenced in **Table 12.15**, includes Jurassic and Cretaceous ironstone, including soils of the Banbury association, that have not been worked. Other geology includes Permian, Jurassic and Cretaceous limestone, drift over Jurassic and Cretaceous mudstone, chalky till and river alluvium and river terrace drift.

Table 12.15 Soil associations within the draft Order Limits in Section 5

Soil Association	Area (ha)	Soil Site Characteristic	Dominant Soils	Geology
ABERFORD	5.7	Loam over limestone	Shallow, locally brashy well-drained calcareous fine loamy soils over limestone.	Permian Jurassic and Eocene limestone
BANBURY	64.2	Loam over sandstone	Well-drained brashy fine and coarse loamy ferruginous soils over ironstone.	Jurassic and Cretaceous ironstone
DENCHWORTH	27.8	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils.	Jurassic and Cretaceous clay
FLADBURY 1	48.8	Seasonally wet deep clay	Stoneless clayey soils, in places calcareous, variably affected by groundwater.	River alluvium
FLY RST* IRONSTONE	34.7	Restored following ironstone working	Restored ironstone workings. Very variable depending on restoration but mainly fine loamy over clayey often reddish soils.	Jurassic ironstone
HANSLOPE	169.8	Deep clay	Slowly permeable calcareous clayey soils.	Chalky till
MORETON	45.6	Clayey over limestone	Jurassic clay and limestone	Jurassic clay and limestone
OXPASTURE	28.0	Deep loam to clay	Fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging.	Drift over Jurassic and Cretaceous clay shale
RAGDALE	15.9	Seasonally wet deep clay	Slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils.	Chalky till
STRETHAM	15.5	Deep clay	Deep well drained calcareous clayey soils	Chalky till
WATERSTOCK	5.2	Deep loam	Deep permeable mainly fine loamy soils, variably affected by groundwater.	River terrace drift

Soil Association	Area (ha)	Soil Site Characteristic	Dominant Soils	Geology
WICKHAM 2	82.3	Seasonally wet silty to clayey over shale	Slowly permeable seasonally waterlogged fine loamy over clayey, fine silty over clayey and clayey soils.	Drift over Jurassic and Cretaceous clay or mudstone
Water body	4.5	N/A	N/A	N/A

*Abbreviation used within data identifying restored land after ironstone extraction.

Soilscapes and land use

- 12.6.20 Section 5 comprises an intricate mosaic of Soilscapes. These are principally Soilscapes 5, 7, 8, 9 and 18, described in the preceding descriptions. There are also very limited areas of Soilscape 24, which are restored soils, mostly from quarry and opencast spoil. Many such sites suffer from compaction and are most suitable for grass.

Agricultural Land Classification

- 12.6.21 The predictive ALC grading within Section 5 identifies that approximately half the land is BMV Subgrade 3a, with further BMV land being of Grade 2. Non-BMV Subgrade 3b land accounts for approximately a third of Section 5. The data are presented in **Table 12.16**.

Table 12.16 Predictive Agricultural Land Classification grades within the draft Order Limits in Section 5

ALC Grade	Area (ha)	Percentage
Grade 1	0	0
Grade 2	78.7	14.4
Subgrade 3a	264.9	48.3
Subgrade 3b	171.1	31.2
Grade 4	0	0
Grade 5	0	0
Non-agricultural	15.0	2.7
Urban	18.3	3.3

Agricultural holdings

- 12.6.22 Agricultural landholdings will be referenced for the ES, to provide assessment of total landholding and area of temporarily affected land. The ES will determine issues of temporary severance and restrictive access.

Future Baseline

- 12.6.23 The future baseline relates to known or anticipated changes to the current baseline, in the future, in the absence of the Project. Relevant factors in defining the future baseline and considered in this DES are described here or will be considered the ES.
- 12.6.24 It is considered that the baseline in relation to soils and ALC grades would not change from that described within the timeframe for the construction of the Project. There may be potential changes in relation to climate change, including greater rainfall intensity and droughts, that could affect soil conditions, land grade and farming practices. It is likely that these would only be visible over periods of time equivalent to or longer than the operational life of the Project.
- 12.6.25 There could potentially be changes to land management practices and business approaches across the landowners/land managers over the construction and operation of the Project. Discussions with landowners and tenants are proposed. These will be mainly focused on access and severance but will include issues relating to field drainage and irrigation. Where applicable, any potential changes will be assessed in the ES.

12.7 Design, Standard, and Additional Mitigation Measures

- 12.7.1 Mitigation measures to avoid, reduce, manage, or control potential impacts and resulting effects of the Project are typically described and considered in the assessment in three groups or types, as defined in **Chapter 5 EIA Approach and Methodology** of this DES. Each measure considered in this preliminary assessment is described in the relevant section below.

Design Measures

- 12.7.2 The Project and draft Order Limits have been designed to avoid sensitive agricultural land and soil receptors as far as practicable. This is in accordance with the 'Holford Rules' (Ref 12.24) applicable to routing of new overhead lines and the 'Horlock Rules' (Ref 12.25) which apply to the design and siting of substations.
- 12.7.3 Mapping ALC classification has, and will continue to be, used in design evolution through design change review but the widespread presence of BMV land makes avoidance impractical.
- 12.7.4 The correlation between ALC and soil resilience has been noted in this DES, whereby lighter and more freely draining soils which are frequently associated with higher ALC grades are also the most resilient to disturbance. This means that for temporary measures, the likely effects are less impactful on land considered most sensitive in relation to ALC.

Standard Measures

- 12.7.5 Standard measures are those that would be implemented on a project of this scale and nature regardless of being subject to statutory assessment. As such these measures will be applied and have been assumed implemented in the assessment.

- 12.7.6 A range of standard measures for the Project will be adopted throughout the duration of the construction phase. A Draft Outline Code of Construction Practice (CoCP) is provided in **Appendix 4A Draft Outline CoCP**. Measures relevant to the control and management of impacts that could affect agriculture and soils are as follows (refer to **Appendix 4A** for the full description of each measure):
- GG03: on the requirement for a final CoCP (based on the provisions in the Outline CoCP) to be produced prior to the commencement of construction.
 - GG04: on the appointment of Environmental Managers and Environmental Clerks of Works during construction.
 - GG05: on environmental training for construction workers, including on soil management.
 - GG06 and GG09: on recording existing conditions to inform appropriate reinstatement, and on reinstatement.
 - GG07: on production of a Soil Management Plan (SMP) prior to construction.
 - GG20: on dust suppression during earthworks and stockpiling of soil.
 - GG25/AS09: on the use of temporary work pads of suitable materials (stone, wooden, bog mats or similar) where heavy equipment is to be used.
 - LV03: requiring a five-year aftercare period of mitigation planting.
 - AS01: on management measures to be included in the SMP.
 - AS02: on returning land to agricultural use, soil conditions, and appropriate depth.
 - AS03: on maintaining access to residential, commercial, community and agricultural land uses and engagement with the landowner/occupier.
 - AS04: on water supplies for livestock.
 - AS05: on land drainage.
 - AS06: on procedure if a potential burial site is discovered.
 - AS07: on movement of plant and vehicles in the event of a disease outbreak in the vicinity of the Project and working methods required to reduce the biosecurity risk.
 - AS08: on the prevention of preferential drainage pathways being created.
 - AS10: where practicable, all soil would be reused on site.

Additional Mitigation Measures

- 12.7.7 Additional mitigation measures are those identified through assessment to reduce likely significant adverse environmental effects which may still occur despite the inclusion of the embedded design and standard measures described above.
- 12.7.8 Financial effects arising from disruption or severance to agricultural landholdings, including reductions in operational capacity or farm income, would be addressed through separate land and compensation agreements and are therefore not considered environmental mitigation measures within the scope of the ES.

12.8 Preliminary Assessment of Effects

- 12.8.1 A summary of potential impacts and mitigation measures identified in this preliminary assessment, and likely significance of the resulting effect with that mitigation in place, is provided in **Table 12.17**. Where appropriate for likely significant or notable effects, further explanation is provided in the following sections on construction, and operation and maintenance effects. The preliminary assessment summary provided in **Table 12.17** is reported by receptor type for each Section 1 to 5 and considers both permanent and temporary effects. This section provides an overall summary of the potential significant effects identified for each agriculture matter for the Project as a whole.

Construction

- 12.8.2 Likely significant effects on agricultural land derive from the construction of substation sites and tower foundations on BMV land. This results in the permanent loss of soil resources and of agricultural land.
- 12.8.3 Short-term temporary and reversible effects of construction for compounds and access routes will be managed through good practice measures to avoid significant adverse effects on the physical soil resource and agricultural land. Methods of soil stabilisation are proposed to minimise the volumes of soil to be stripped, stored and restored. Details will be included in the Outline Soil Management Plan with the ES. Adverse effects of temporary construction measures will be experienced principally by the agricultural landholdings affected.

Soils and geology

- 12.8.4 Substation platform and tower foundations will result in the loss of soil function and associated ecosystem function from the soil resource. Soil type and the sensitivity of soils, within the substation sites, will be confirmed for the ES by field survey. Soil ecosystem services include carbon capture and infiltration. Field drainage will be protected or restored. The sequestration of carbon and development of soil organic matter will be mitigated by the inclusion of landscaping measures.
- 12.8.5 The temporary loss of agricultural soil function or volume with consequences for soil ecosystem services will be minimised and reversible with the proposed measures described in Section 12.7 in place. Therefore, this is a small magnitude of impact on a receptor of medium or low sensitivity, resulting in a minor effect, which is not significant.
- 12.8.6 Agricultural drainage will be maintained, restored or re-routed. Temporary effects to conserve existing land drainage will be small magnitude and mitigated through design. Residual effects are, therefore, not likely to be significant. Preliminary information gathered from landowner questionnaires and interviews and will be assessed in the ES. Further investigation and drainage conservation measures will be contained within a detailed Soil Management Plan to be prepared post-consent, prepared largely in accordance with the framework SMP.
- 12.8.7 Construction of the WMEL-A and WMEL-B substations will each require large magnitude permanent land take, with temporary construction compounds. Each substation would be sited within land comprising approximately equal proportions of Subgrade 3a and Subgrade 3b land (based on the predictive ALC model). Field survey is required to clarify the model outputs. For the purpose of the DES, a worst-case approach has been adopted whereby all land is assessed as Subgrade 3a land, which is BMV land. Large magnitude adoption of high sensitivity land results in a major or moderate adverse effect, which is **significant**, for each substation.

- 12.8.8 The construction of the new overhead line between Weston Marsh and WMEL-B substation will result in towers with permanent foundations of approximately 15 m x 15 m. Applying a buffer to the base where agricultural machinery will not cultivate each foundation represents a permanent loss of 0.026 ha. Cumulatively, over Sections 1 to 3 this 5.5 ha loss represents a medium magnitude impact on principally medium and high sensitivity soils which results in a moderate adverse effect, which is **significant**.

Agricultural Land Classification

- 12.8.9 Temporary works are recognised within the ISEP guidance (Ref 12.9) as being of small magnitude. Access will be concentrated at field boundaries but will be separated by a mitigation buffer from valuable habitats, particularly ancient woodland. Cropping options within the buffer area may be reduced if its shape and/or width are restrictive to agricultural machinery, such as booms for crop spraying.
- 12.8.10 Temporary construction works can be managed through good practice measures contained within the SMP and are small magnitude (because of their temporary nature). This may yield moderate adverse effects on the most sensitive land but generally, is identified as a minor adverse effect, which is not significant. This potentially significant effect will be confirmed when the final design and ALC survey data are available and reported in the ES.
- 12.8.11 The WMEL-A substation will occupy 28.0 ha of land, with a further 5.2 ha of land within the site boundary unavailable for agriculture. This area includes temporary construction features required to facilitate delivery of the Project, such as construction compounds, haul roads, laydown areas and other supporting construction areas. Adopting a worst case whereby all the land is Subgrade 3a (highly sensitive) and large magnitude loss of BMV land, the substation would potentially present a major adverse effect, which is **significant**. If a large proportion of the land is confirmed as Subgrade 3b by survey this would represent a moderate adverse effect, which remains **significant**.
- 12.8.12 The WMEL-B substation site occupies 20.7 ha of land, predictively modelled as a combination of Grade 2 and Subgrades 3a and 3b land. This area includes temporary construction features required to facilitate delivery of the Project, such as construction compounds, haul roads, laydown areas and other supporting construction areas. Again, adopting a worst-case position with all land very high, or high sensitivity BMV land and large magnitude impact, the construction will potentially present a major adverse effect, which would be **significant**.
- 12.8.13 The construction of the new overhead line between Weston Marsh and WMEL-B substation will result in towers with permanent foundations of approximately 15 m x 15 m. Applying a buffer to the base where agricultural machinery will not cultivate each foundation represents a permanent loss of 0.026 ha. Cumulatively, over Sections 1 to 3, these 5.5 ha represent a medium magnitude impact on principally very high and high sensitivity BMV land which would result in a moderate adverse effect, which is **significant**.

Agricultural holdings

- 12.8.14 Effects on agricultural holdings relate primarily to economic viability and displacement but other effects around severance and access will be determined during landholder interviews. Implementation of mitigation measures, such as the provision of temporary or permanent access to farmland, engagement, and siting of towers, and

the short time required to construct an individual tower, is expected to reduce the effects of the overhead line and towers on agricultural landholdings from construction to a level that is not significant.

- 12.8.15 The large temporary and permanent footprint of the substations (defined above), the extent and nature of the work, and the construction period could result in impacts of medium or large magnitude on the agricultural holdings directly impacted. Further engagement with those affected would confirm the sensitivity of these receptors in accordance with the methodology described in Section 12.5 but there is potential for significant effects on these holdings. Interviews will provide additional information and the assessment of such effects will be reported in the ES.

Operation and Maintenance

- 12.8.16 The construction phase assessment accounts for both temporary and permanent loss of agricultural land and soils resources. The Scoping Opinion (ID 3.8.1 to 3.8.3), provided in **Appendix 5B Scoping Opinion**, identified that operational effects should be recognised separately. Periodic vehicle access for routine maintenance and emergency repairs may require temporary access tracks and small compound areas but these are likely to be limited in extent. Temporary effects are all small magnitude in accordance with accepted guidance (Ref 12.9), therefore, operational and maintenance effects on agricultural land classification and soil resources will be not significant.
- 12.8.17 The construction phase assessment accounts for both temporary and permanent effects on agricultural holdings. Subsequent operational and maintenance impacts would be localised and are not expected to be any greater than negligible, therefore the effect would be **not significant**.

Table 12.17 Preliminary summary of agriculture and soils effects

Receptor(s)	Key Design, Standard and Additional Mitigation	Impact	Magnitude of Change	Sensitivity/ Value	Likely Significance of Effect
Construction					
Section 1					
Permanent loss of agricultural land/BMV land (as defined by the ALC system) from substation infrastructure, tower foundations, and permanent access.	Opportunities for micro-siting will be considered, within engineering and other environmental constraints.	Sealing of BMV land and loss of soil function.	Large	Very high	Major (significant)
Permanent loss of agricultural soil function or volume with consequences for soil ecosystem services.	Drainage integrated to compensate for reduced infiltration to agricultural soil.	Localised reduction in soil ecosystem services, including agricultural crop production.	Large	Medium or low	Moderate or minor (potentially significant)
Temporary loss of agricultural land/BMV land (as defined by the ALC system) used for construction compounds, and temporary access.	Ground protection. Some areas to be subject to topsoil stripping and temporary storage, subject to methods to be specified within the SMP.	Temporary use of agricultural land, including BMV land.	Small	Very high	Moderate or minor (potentially significant)
Temporary loss of agricultural soil function or volume with consequences for soil ecosystem services.	Ground protection. Soil stripping and temporary storage to conserve soil quality. Methods to be specified in the SMP.	Temporary reduction in soil ecosystem services, including agricultural crop production.	Small	Medium or low	Minor (not significant)

Receptor(s)	Key Design, Standard and Additional Mitigation	Impact	Magnitude of Change	Sensitivity/ Value	Likely Significance of Effect
Agricultural landholdings	Incorporate, where practicable, landowner preferences.	Permanent reduction to farmed area. Temporary severance and restrictive access. Restrictions to current irrigation practices.	Large or medium	Medium	Moderate or minor (potentially significant)
Section 2					
Permanent loss of agricultural land/BMV land (as defined by the ALC system) from substation infrastructure, tower foundations, and permanent access.	Opportunities for micro-siting will be considered, within engineering and other environmental constraints.	Sealing of BMV land and loss of soil function.	Large	Very high or high	Major or moderate (significant)
Permanent loss of agricultural soil function or volume with consequences for soil ecosystem services.	Drainage integrated to compensate for reduced infiltration to agricultural soil.	Localised reduction in soil ecosystem services, including agricultural crop production.	Large	Medium or low	Moderate or minor (potentially significant)
Temporary loss of agricultural land/BMV land (as defined by the ALC system) used for construction compounds, and temporary access.	Ground protection. Some areas to be subject to topsoil stripping and temporary storage, subject to methods to be specified within the SMP.	Temporary use of agricultural land, including BMV land.	Small	Very high or high	Moderate or minor (potentially significant)
Temporary loss of agricultural soil function or volume with consequences for soil ecosystem services.	Ground protection. Soil stripping and temporary storage to conserve soil quality. Methods to be specified in the SMP.	Temporary reduction in soil ecosystem services, including agricultural crop production.	Small	Medium or low	Minor (not significant)

Receptor(s)	Key Design, Standard and Additional Mitigation	Impact	Magnitude of Change	Sensitivity/ Value	Likely Significance of Effect
Agricultural landholdings	Incorporate, where practicable, landowner preferences.	Permanent reduction to farmed area. Temporary severance and restrictive access. Restrictions to current irrigation practices.	Large or medium	Medium	Moderate or minor (potentially significant)
Section 3					
Permanent loss of agricultural land/BMV land (as defined by the ALC system) from substation infrastructure, tower foundations, and permanent access.	Opportunities for micro-siting will be considered, within engineering and other environmental constraints.	Sealing of BMV land and loss of soil function.	Large	Principally high	Moderate (significant)
Permanent loss of agricultural soil function or volume with consequences for soil ecosystem services.	Drainage integrated to compensate for reduced infiltration to agricultural soil.	Localised reduction in soil ecosystem services, including agricultural crop production.	Small	Medium or low	Minor (not significant)
Temporary loss of agricultural land/BMV land (as defined by the ALC system) used for construction compounds, and temporary access.	Ground protection. Some areas to be subject to topsoil stripping and temporary storage, subject to methods to be specified within the SMP.	Temporary use of agricultural land, including BMV land.	Small	Principally high	Minor (not significant)
Temporary loss of agricultural soil function or volume with consequences for soil ecosystem services.	Ground protection. Soil stripping and temporary storage to conserve soil quality. Methods to be specified in the SMP.	Temporary reduction in soil ecosystem services, including agricultural crop production.	Small	Medium or low	Minor (not significant)

Receptor(s)	Key Design, Standard and Additional Mitigation	Impact	Magnitude of Change	Sensitivity/ Value	Likely Significance of Effect
Agricultural landholdings	Incorporate, where practicable, landowner preferences.	Permanent reduction to farmed area. Temporary severance and restrictive access. Restrictions to current irrigation practices.	Large or medium	Medium	Moderate or minor (potentially significant)
Section 4					
Temporary loss of agricultural land/BMV land (as defined by the ALC system) used for construction compounds, and temporary access.	Ground protection. Methods to be specified within the SMP.	Temporary use of agricultural land, including BMV land.	Small	High or medium	Minor (not significant)
Temporary loss of agricultural soil function or volume with consequences for soil ecosystem services.	Ground protection. Methods to be specified in the SMP.	Temporary reduction in soil ecosystem services, including agricultural crop production.	Small	Medium or low	Minor (not significant)
Agricultural landholdings	Incorporate, where practicable, landowner preferences.	Temporary severance and restrictive access.	Small	Medium	Minor (not significant)
Section 5					
Temporary loss of agricultural land/BMV land (as defined by the ALC system) used for construction compounds, and temporary access.	Ground protection. Methods to be specified within the SMP.	Temporary use of agricultural land, including BMV land.	Small	High or medium	Minor (not significant)

Receptor(s)	Key Design, Standard and Additional Mitigation	Impact	Magnitude of Change	Sensitivity/ Value	Likely Significance of Effect
Temporary loss of agricultural soil function or volume with consequences for soil ecosystem services.	Ground protection. Methods to be specified in the SMP.	Temporary reduction in soil ecosystem services, including agricultural crop production.	Small	Medium or low	Minor (not significant)
Agricultural landholdings	Incorporate, where practicable, landowner preferences.	Temporary severance and restrictive access.	Small	Medium	Minor (not significant)
(All sections)					
Temporary loss of agricultural land/BMV land (as defined by the ALC system) used for construction compounds, and temporary access.	Ground protection. Methods to be specified within the SMP.	Temporary use of agricultural land, including BMV land.	Small	High or medium	Minor (not significant)
Temporary loss of agricultural soil function or volume with consequences for soil ecosystem services.	Ground protection. Methods to be specified in the SMP.	Temporary reduction in soil ecosystem services, including agricultural crop production.	Small	Medium or low	Minor (not significant)
Agricultural landholdings	Incorporate, where practicable, landowner preferences.	Temporary severance and restrictive access.	Small	Medium	Minor (not significant)

Alternative Scenarios

- 12.8.18 As described in Section 4.4 of **Chapter 4 Description of the Project**, there are elements of the Project which have not been fixed at this stage. Therefore, flexibility needs to be considered in this DES. Two alternative scenarios are outlined in **Table 4.3** and are assessed in **Table 12.18** below.
- 12.8.19 This assessment considers each scenario, together with the assumptions and mitigation measures described in this chapter. It provides a qualitative appraisal of the potential changes to the preliminary conclusions reported in this section, should these scenarios occur.
- 12.8.20 **Table 12.18** presents the conclusions of this appraisal, supported by appropriate qualitative justification, to ensure that any potentially significant effects are identified in this DES. If these alternative scenarios remain under consideration in the application for development consent, they will be appropriately assessed in the ES.

Table 12.18 Preliminary assessment of alternative scenarios

Scenario	Potential Change in Impacts	Potential Change in Effects
1. No (or reduced) haul roads	In the absence of haul roads, agricultural equipment would be used to transport construction materials. This would use existing agricultural accesses with temporary trackway laid on agricultural land. This scenario potentially reduces temporary severance of landholdings and temporary loss of agricultural land/BMV land. The effect on soil resources would be managed through an SMP. Haul roads, once installed, would create stabilised access, which is less sensitive to operation on wet soils, presenting a lesser constraint to year-round, wet working. Whilst temporary trackway provides protection of soil resources, its effectiveness reduces on wet soils. Land restoration of haul roads would involve more stages of restoration in comparison with the use of existing agricultural accesses.	Without haul roads, timing of operations is likely to be more critical to avoid trafficking wet soils. Low ground pressure agricultural machinery could be used to mitigate effects and soil management planning would be embedded. On balance, a reduction in the extent of haul roads would potentially remove or reduce significant effects reported on agricultural land/BMV land and/or soil function. Similarly, it is likely to be less disruptive to on-farm activities, although restoration of temporary trackway may take longer before land can be returned to agricultural use. This will be investigated and confirmed during stakeholder engagement.
2. Off-site construction compound near Melton Mowbray	There may be an opportunity for efficiency of scale if developing a central off-site construction compound, thereby potentially reducing the total compound areas requiring temporary adoption of agricultural land. Concentrating resources for site restoration at a central compound using non-agricultural land would reduce impacts on agricultural land/BMV land, agricultural soil function and agricultural holdings. This would also simplify records of soil resource stripping, transport and storage. However, good practice will be embedded in the SMP irrespective of the number of compounds	Creation of a centralised off-site construction compound reduces the number of farm holdings temporarily affected, due to a reduction in the number of construction compounds required. The use of a centralised off-site compound would potentially remove or reduce significant effects reported on agricultural land/BMV land and/or soil function.

12.9 Monitoring

- 12.9.1 **Appendix 12A Draft Outline Soils Management Plan** identifies specific indicators of poor soil health, readily observable through unsatisfactory vegetation growth and/or drainage. **Appendix 4A Draft Outline Code of Construction Practice** sets out responsibilities for environmental management during construction of the Project. Observations on soil quality would include poor growth of vegetation, with evidence of chlorosis (yellowing of plant tissues) as an indicator of waterlogging, poor soil structure, nutrient deficiency or disease. Similarly, should persistent localised surface water ponding be identified, this would indicate inhibited water infiltration capacity. These issues, where soils have been disturbed, would require specialist technical

advice for remediation. The specialism may derive from the agricultural community or a soil scientist.

- 12.9.2 Regular in-field or laboratory testing of soils is not proposed unless adverse observations of field and vegetation condition has been identified. Specification for further monitoring and analysis would be from a suitably qualified specialist.

12.10 Further Assessment

- 12.10.1 Land and soil surveys will be completed to confirm ALC grades and soil types and inform the ES and accompanying Outline SMP. This will allow a detailed breakdown of the different grades of agricultural land permanently lost and temporarily impacted to be provided in the ES and considered in the assessment..
- 12.10.2 The **Appendix 5B Scoping Opinion** stated that consideration should be given to the use of BMV land in the Applicant's discussion of alternatives. The Corridor Preliminary Routeing and Siting Study (Ref 12.26) reports the findings of the appraisal of alternatives following National Grid standard methodology and included consideration of BMV. Given the pattern of BMV land within the Study Area and the east west direction of infrastructure required, this was not a key deciding factor in corridor options appraisal as all options passed through similar patterns of BMV. Where relevant, BMV will continue to be considered design change and in option appraisal.
- 12.10.3 Ongoing stakeholder engagement including semi-structured interviews with landowners and/or tenants would be completed to gain further insight in relation to effects on agricultural landholdings.
- 12.10.4 Intra and inter-project cumulative effects will be included in the ES. Inter-project cumulative effects will be assessed in relation to Sections 1 to 5. Defra provides headline statistics relating to farmland on county-wide and larger regional divisions, which will be used to contextualise the scale of effects.

References

- Ref 12.1 South East Lincolnshire Joint Strategic Planning Committee (2019). South East Lincolnshire Local Plan 2011-2036 [online]. Available at: <https://southeastlincslocalplan.org/media/21941/South-East-Lincolnshire-Local-Plan-2011-2036/pdf/Local-Plan-text-March-2019.pdf?m=1720710748483> [Accessed 9 January 2026].
- Ref 12.2 South Kesteven District Council (2020). South Kesteven District Council Local Plan 2011-2036 [online]. Available at: <https://www.southkesteven.gov.uk/planning-building-control/planning-policy-local-plans/south-kesteven-local-plan> [Accessed 9 January 2026].
- Ref 12.3 Melton Borough Council (2018). Melton Local Plan 2011-2036 [online]. Available at: <https://www.meltonplan.co.uk/adoptedplan> [Accessed 9 January 2026].
- Ref 12.4 Harborough District Council (2019). Harborough Local Plan 2011-2031 [online]. Available at: https://www.harborough.gov.uk/info/20004/planning_strategy/220/harborough_local_plan_2011-2031 [Accessed 9 January 2026].
- Ref 12.5 North Northamptonshire Joint Planning Unit (2016 & 2021). North Northamptonshire Joint Core Strategy 2011-2031 and Part 2 Local Plans [online]. Available at: <https://www.northnorthants.gov.uk/planning-strategies-and-plans/north-northamptonshire-local-plan> [Accessed 9 January 2026].
- Ref 12.6 West Northamptonshire Joint Planning Unit (2014). West Northamptonshire Joint Core Strategy Local Plan [online]. Available at: <https://www.westnorthants.gov.uk/west-northamptonshire-joint-core-strategy/west-northamptonshire-joint-core-strategy-local-plan-part> [Accessed 9 January 2026].
- Ref 12.7 Natural England (2021). Guide to assessing development proposals on agricultural land. Available at: <https://www.gov.uk/government/publications/agricultural-land-assess-proposals-for-development> (Accessed 19 December 2025)
- Ref 12.8 Natural England (2012). Technical Information Note 049, 'Agricultural Land Classification: protecting the Best and Most Versatile agricultural land'. Available at: <http://publications.naturalengland.org.uk/publication/35012> (Accessed 19 December 2025)
- Ref 12.9 Institute of Sustainability and Environmental Professionals (2022). A New Perspective on Land and Soil in Environmental Impact Assessment. Available at: https://www.iema.net/media/3xejdu0u/2022-iema_land_and_soils_guidance.pdf (Accessed 19 December 2025)
- Ref 12.10 Institute of Sustainability and Environmental Professionals (2025). Soil Health and Environmental Assessment. Available at: [isep-soil-health-in-environmental-assessment-2025.pdf](https://www.iemaglobal.org/resources/news/2026/january/the-best-and-most-versatile-farmland-should-be-protected-amid-rapid-expansion-of-uk-solar-power-says-new-guidance/). (Accessed 19 May 2026)
- Ref 12.11 Institute of Sustainability and Environmental Professionals (2025). Solar PV on Agricultural Land: Essential Components of Environmental Assessments and Reports. Available at: <https://www.isepglobal.org/resources/news/2026/january/the-best-and-most-versatile-farmland-should-be-protected-amid-rapid-expansion-of-uk-solar-power-says-new-guidance/> (Accessed 2/2/2026)

- Ref 12.12 Department for Environment Food and Rural Affairs (Defra) (2009). Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Available at: <https://assets.publishing.service.gov.uk/media/5b2264ff40f0b634cfb50650/pb13298-code-of-practice-090910.pdf> (Accessed 12 June 2026)
- Ref 12.13 Institute of Quarrying (2021). Good Practice Guide for Handling Soils in Mineral Workings. Available at: <https://www.quarrying.org/soils-guidance> (Accessed 19 December 2025)
- Ref 12.14 Ministry of Agriculture, Fisheries and Food (1988). Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land. Available at: <https://webarchive.nationalarchives.gov.uk/ukgwa/20130402151656/http://archive.defra.gov.uk/foodfarm/landmanage/land-use/documents/alc-guidelines-1988.pdf> (Accessed 19 December 2025)
- Ref 12.15 Department for Environment Food and Rural Affairs (Defra) and Welsh Government (2025). Agricultural Land Classification of England and Wales: Guidelines for grading the quality of agricultural land. Available at: <https://publications.naturalengland.org.uk/publication/6257050620264448> (Accessed 9 March 2026)
- Ref 12.16 Planning Inspectorate (2025). Scoping Opinion: Proposed Weston Marsh to East Leicestershire. Available at: <https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN0210007-000022-Scoping%20Opinion.pdf> (Accessed 9 March 2026)
- Ref 12.17 British Society of Soil Science (2021). Guidance Document 3: Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction. Available at <https://soils.org.uk/wp-content/uploads/2022/01/WWS3-Benefitting-from-Soil-Management-in-Development-and-Construction-Jan-2022.pdf> (Accessed 19 December 2025)
- Ref 12.18 Department for Environment, Food and Rural Affairs. (2025). Predictive Agricultural Land Classification Map for England. Available at: <https://environment.data.gov.uk/dataset/a817d96f-271d-487b-89ad-48d271f931aa> (Accessed 12 June 2026)
- Ref 12.19 Cranfield University (2025). Land Information System. Available at: <https://www.landis.org.uk/> (Accessed 19 December 2025)
- Ref 12.20 Soil Survey of England and Wales (1984). Soils and their Use in Eastern England and accompanying 1:250,000 map Sheet 4
- Ref 12.21 Met Office (1989). Climatological Data for Agricultural Land Classification (ALC010). Retrieved from Natural England Publications. Available at: <https://publications.naturalengland.org.uk/publication/6493605842649088> (Accessed 9 July 2025)
- Ref 12.22 Cranfield University (2015). Research to develop the evidence base on soil erosion and water use in agriculture: Final Technical Report. Available at: <https://www.theccc.org.uk/wp-content/uploads/2015/06/Cranfield-University-for-the-ASC.pdf> (Accessed 9 July 2025)

- Ref 12.23 Highways England (2019) Design Manual for Roads and Bridges LA 112 Population and Human Health. Available at: <https://www.standardsforhighways.co.uk/tses/attachments/1e13d6ac-755e-4d60-9735-f976bf64580a?inline=true> (Accessed 19 May 2026)
- Ref 12.24 National Grid The Holford Rules. Available at <https://www.nationalgrid.com/sites/default/files/documents/13795-The%20Holford%20Rules.pdf> (Accessed 9 January 2026)
- Ref 12.25 National Grid Horlock Rules. Available at: <https://www.nationalgrid.com/sites/default/files/documents/13796-The%20Horlock%20Rules.pdf> (Accessed 9 January 2026)
- Ref 12.26 National Grid (2025) Corridor Preliminary Routeing and Siting Study, Weston Marsh to East Leicestershire. Available at: <https://www.nationalgrid.com/the-great-grid-upgrade/weston-marsh-to-east-leicestershire/document-library> (Accessed 9 July 2025)

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