BEACON FEN ENERGY PARK

Planning Inspectorate Reference: EN010151

Chapter 14 – Soils and Agricultural Land
Document Reference: 6.2 ES Vol.1, 6.2.14
April 2025

The Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 - Regulation 5(2)(a)
The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/572) – Regulation 14

Quality information

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14.1 Introduction

14.1.1 This ES Chapter has been prepared by Wardell Armstrong LLP (part of SLR) ('WA') on behalf of Beacon Fen Energy Park Ltd (the 'Applicant') in support of an application for a Development Consent Order (DCO) for Beacon Fen Energy Park (the 'Proposed Development')

14.1.2 This Chapter reports the likely effects of the Proposed Development on Soils and Agricultural Land in the context of the Site and surrounding area. In particular it considers the likely significant effects of the Proposed Development on agricultural land (in terms of land lost from agricultural production) and soil resource (in terms of damage, degradation, and loss of soil resource) during the construction, operational and decommissioning phases of the Proposed Development.

14.1.3 This Chapter (and its associated figures and appendices) is not intended to be read as a standalone assessment and reference should be made to the front end of this ES (Chapters 1 – 5) and particularly to the description of **Chapter 2: Proposed Development (Document Ref: 6.2 ES Vol.1, 6.2.2)** which includes details about the Site, the design parameters and construction methodology, as well as **Chapter 19: Summary of Significant Effects (Document Ref: 6.2 ES Vol.1, 6.2.19).**

14.1.4 This chapter is accompanied by the following Appendices and Figures:

- **Appendix 14.1: Agricultural Quality of Land at Beacon Fen North, Lincolnshire Report (Land Research Associates, 2023) (Document Ref: 6.3 ES Vol.2, 6.3.92)**
- **Appendix 14.2: Agricultural Land Classification Report, Beacon Fen (Wardell Armstrong, 2023) (Document Ref: 6.3 ES Vol.2, 6.3.93)**
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14.2 Legislation and Policy

14.2.1 The legislation and policy considered relevant to the assessment of soils and agricultural land are listed below.

Planning Policy

14.2.2 The applicable planning policy includes:

- National Planning Policy Framework (NPPF) December 2024[1]
- Overarching National Policy Statement for Energy (EN-1) (Published November 2023)[2]
- National Policy Statement for Renewable Energy Infrastructure (EN-3) (Published November 2023)[3]
- Central Lincolnshire Local Plan (Adopted 2023)[4]
- South East Lincolnshire Local Plan 2011-36 (Adopted 2019)[5]

Overarching National Policy Statement for Energy (EN-1) (Published November 2023)[2]

14.2.3 Paragraph 5.11.4 states that "*Development of land will affect soil resources, including physical loss of and damage to soil resources, through land contamination and structural damage. Indirect impacts may also arise from changes in the local water regime, organic matter content, soil biodiversity and soil process.*"

14.2.4 Paragraph 5.11.12 states that applicants should endeavour to minimise impacts on the best and most versatile agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification).

14.2.5 Paragraph 5.11.13 states that applicants should seek to minimise impacts on soil health and protect and improve soil quality. Paragraph 5.11.14 outlines that the sustainable reuse of soils needs to be carefully considered in line with

[1] Department for Levelling Up, Housing and Communities. (2024) National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2. [Accessed December 2024].
[2] Department for Energy Security and Net Zero (2023) Overarching National Policy Statement for Energy (EN-1) November 2023. Available at: https://assets.publishing.service.gov.uk/media/655dc190d03a8d001207fe33/overarching-nps-for-energy-en1.pdf. [Accessed December 2024].
[3] Department for Energy Security and Net Zero (2023) National Policy Statement for Renewable Energy Infrastructure (EN-3) November 2023. Available at: https://assets.publishing.service.gov.uk/media/655dc352d03a8d001207fe37/nps-renewable-energy-infrastructure-en3.pdf [Accessed December 2024].
[4] Central Lincolnshire Local Plan Team and North Kesteven District Council (2023) Central Lincolnshire Local Plan (Adopted 2023). Available at: https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf [Accessed December 2024].
[5] South East Lincolnshire Joint Strategic Planning Committee (2019) South East Lincolnshire Local Plan 2011 – 2036. Available a[redacted] [Accessed December 2024].

good practice guidance where large quantities of soil are surplus to requirements.

National Policy Statement for Renewable Energy Infrastructure (EN-3) (Published November 2023)[3]

14.2.6 Section 2.10 considers the development of Solar Photovoltaic Generation.

14.2.7 Paragraph 2.10.29 states that where the proposed use of any agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land (avoiding the use of "Best and Most Versatile" agricultural land where possible). Paragraph 2.10.30 states that whilst the development of ground mounted solar arrays is not prohibited on Best and Most Versatile agricultural land, the impacts of such are expected to be considered.

14.2.8 Paragraph 2.10.31 states that at this scale it is likely that applicants' developments may use some agricultural land therefore applicants should explain their choice of site, noting the preference for development to be on suitable brownfield, industrial and low and medium grade agricultural land. Paragraph 2.10.32 discusses that where sited on agricultural land, consideration may be given as to whether the proposal allows for continued agricultural use and/or can be co-located with other functions (for example, storage, hydrogen electrolysers) to maximise the efficiency of land use.

14.2.9 Paragraph 2.10.33 discusses the Agricultural Land Classification system and states that field surveys should be used to establish the ALC grades in accordance with the current, or any successor to it, grading criteria and identify the soil types to inform soil management at the construction, operation, and decommissioning phases in line with the Defra Construction Code.

14.2.10 Additionally, Paragraph 2.10.34 states that applicants are encouraged to develop and implement a Soil Resources and Management Plan which could help to use and manage soils sustainably and minimise adverse impacts on soil health and potential land contamination and that this should be in line with the ambition set out in the Environmental Improvement Plan to bring 40% of England's agricultural soils into sustainable management by 2028 and increase this to up to 60% by 2030.

14.2.11 Paragraph 2.10.81 states that where soil stripping occurs topsoil and subsoil should be stripped, stored, and replaced separately to minimise soil damage and to provide optimal conditions for site restoration.

14.2.12 Paragraph 2.10.127 refers to the DEFRA Construction code of practice for the sustainable use of soils on construction sites and discusses that mitigation measures should focus on minimising damage to soil that remains in place, and minimising damage to soil being excavated and stockpiled. It also states that mitigation measures should aim to preserve soil health and soil structure to minimise soil carbon loss and maintain water infiltration and soil biodiversity. Mitigation measures for agricultural soils include use of green cover, multispecies cover crops - especially during the winter - minimising compaction and adding soil organic matter.

14.2.13 Paragraph 2.10.145 states that the Secretary of State should take into account the economic and other benefits of the best and most versatile agricultural land and that the Secretary of State should ensure that the applicant has put

forward appropriate mitigation measures to minimise impacts on soils or soil resources.

National Planning Policy Framework (NPPF) December 2024[1]

14.2.14 Under Section 15 of the NPPF[1] (2024): Conserving and enhancing the natural environment, Paragraph 187 states that *'planning policies and decisions should contribute to and enhance the natural and local environment by:*

- *a) "protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- *b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
- *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- *f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate*."

14.2.15 The footnote to Paragraph 188 states that *"where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality*".

Central Lincolnshire Local Plan (Adopted 2023)[4]

14.2.16 The Central Lincolnshire Local Plan was adopted in April 2023 and includes the following relevant policies:

- Policy S14: Renewable Energy
- Policy S17: Carbon Sinks
- Policy S67: Best and Most Versatile Agricultural Land

14.2.17 One of the objectives of the local plan is "to protect and enhance soil and land resources and quality in Central Lincolnshire".

14.2.18 Policy S14 states that for solar thermal or photovoltaics panels and associated infrastructure to be installed on existing property, there will be under a presumption in favour of permission unless there is clear and demonstrable significant harm arising. Proposals for ground-based photovoltaics and associated infrastructure, including commercial large-scale proposals, will be under a presumption in favour unless:

- there is clear and demonstrable significant harm arising; or

- the proposal is (following a site-specific soil assessment) to take place on Best and Most Versatile (BMV) agricultural land and does not meet the requirements of Policy S67; or

- the land is allocated for another purpose in this Local Plan or other statutory based document (such as a nature recovery strategy or a Local Transport Plan), and the proposal is not compatible with such other allocation.

14.2.19 Policy S14 also states that proposals for ground-based photovoltaics should be accompanied by evidence demonstrating how opportunities for delivering biodiversity net gain will be maximised in the scheme taking account of soil, natural features, existing habitats, and planting proposals accompanying the scheme to create new habitats linking into the nature recovery strategy.

14.2.20 Policy S17 states that existing carbon sinks, such as peat soils, must be protected, and where opportunities exist, they should be enhanced in order to continue to act as a carbon sink. Where development is proposed on land containing peat soils or other identified carbon sinks, the applicant must submit a proportionate evaluation of the impact of the proposal on either the peat soil's carbon content or any other form of identified carbon sink as relevant and in all cases an appropriate management plan must be submitted. There will be a presumption in favour of preservation of peat and other carbon sinks in-situ. Proposals that will result in unavoidable harm to, or loss of, peat soils or other identified carbon sinks will only be permitted if it is demonstrated that:

- a) the site is allocated for development; or

- b) there is not a less harmful viable option to development of that site. In any such case, the harm caused must be shown to have been reduced to the minimum possible and appropriate, satisfactory provision will be made for the evaluation, recording and interpretation of the peat soils or other form of carbon sink before commencement of development. For peat soils that are to be removed, the soils must be temporarily stored and then used in a way that will limit carbon loss to the atmosphere. Proposals to enhance peat soils and protect its qualities will be supported.

14.2.21 Policy S67 states that proposals should protect the best and most versatile agricultural land so as to protect opportunities for food production and the continuance of the agricultural economy. With the exception of allocated sites, significant development resulting in the loss and the best and most versatile agricultural land will only be supported if:

- a) The need for the proposed development has been clearly established and there is insufficient lower grade land available at that settlement (unless development of such lower grade land would be inconsistent with other sustainability considerations); and

- b) The benefits and/or sustainability considerations outweigh the need to protect such land, when taking into account the economic and other benefits of the best and most versatile agricultural land; and

- c) The impacts of the proposal upon ongoing agricultural operations have been minimised through the use of appropriate design solutions; and

- d) Where feasible, once any development which is supported has ceased its useful life the land will be restored to its former use (this condition will be secured by planning condition where appropriate).

14.2.22 Additionally, Policy S67 states that where proposals are for sites of 1 hectare of larger, which would result in the loss of best and most versatile agricultural land, an agricultural land classification report should be submitted, setting out the justification for such a loss and how criterion b has been met.

14.2.23 One of the objectives of the local plan is "*to protect and enhance soil and land resources and quality in Central Lincolnshire*".

South East Lincolnshire Local Plan 2011-36 (Adopted March 2019)[5]

14.2.24 The South East Lincolnshire Local Plan was adopted in March 2019 and includes the following relevant policies:

- Policy 3: Design of New Development

- Policy 31: Climate Change and Renewable and Low Carbon Energy

14.2.25 Policy 3 (Design of New Development) states that development proposals should demonstrate how issues where they are relevant to the proposal including "the use of locally sourced building materials, minimising the use of water and minimising land take, to protect best and most versatile soils" will be secured.

14.2.26 Policy 31 (Climate Change and Renewable and Low Carbon Energy) on renewable energy states that "with the exception of Wind Energy the development of renewable energy facilities, associated infrastructure and the integration of decentralised technologies on existing or proposed structures will be permitted provided, individually, or cumulatively, there would be no significant harm to agricultural land take".

14.3 Consultation & Scope of Assessment

Consultation Undertaken to Date

14.3.1 Consultation has been ongoing throughout the preparation of the DCO application; to date, it can broadly be divided into the following key stages:

- EIA Scoping;

- Early Non-Statutory Consultation;

- Statutory Consultation; and

- Direct Topic-Specific Consultation.

14.3.2 Table 14.1 provides a summary of the consultation activities undertaken in support of the preparation of this Chapter.

Table 14.1 – Summary of Consultation Undertaken

ORGANISATION	DATE	FORM OF CONSULTATION	SUMMARY OF CONSULTATION RESPONSE	SUMMARY OF OUTCOMES AND IMPLEMENTATION WITHIN THE ES Chapter
EIA Scoping				
Natural England	18/05/2023	Scoping Opinion	The ES should set out details of how any adverse impacts on BMV agricultural land can be minimized through Site design/masterplan. In order to fully assess the impacts to BMV, a detailed ALC survey may be necessary, e.g. one auger boring per hectare supported by pits dug in each main soil type. The ES should include details of the decommissioning and after use of the Site, which should include details on how this will avoid impacts on soils and ensure the agricultural land can be restored to its former condition.	The evaluated survey approach is based upon the scoping opinion and through further engagement with Natural England regarding survey methodology. A full ALC survey has been conducted across the Solar Array Area and the Bespoke Access Corridor. A detailed soil survey of the Cable Route Corridor will be conducted pre-construction in order to inform soil management. Using the data from the Cable Route Corridor survey, the Outline Soil Management Plan (OSMP) **(Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95)** will be developed into a detailed Soil Management Plan (SMP) prior to construction. This will set out soil handling measures based on industry standard good practice guidance to mitigate impacts on the agricultural quality of the land within the Cable Route Corridor as a result of construction activities. Initial design of the Solar Array Area was informed by the LRA semi-detailed ALC report for this area **(Appendix 14.1, Document Ref: 6.3 ES Vol.2, 6.3.92**). The detailed ALC survey for the Solar Array Area has been considered as part of the final design

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				layouts. Minimisation of development of the best and most versatile land was considered in the siting of the substation and Battery Energy Storage System (BESS). See Alternative Site Assessment **(Appendix 2 of Planning Statement, Document Ref. 5.5).** At this stage, the position of the Bespoke Access Road within the Bespoke Access Corridor remains to be confirmed. This assessment is therefore based on a worst-case assessment that the BMV land cannot be avoided and the ALC grades of the land within footprint of the Bespoke Access Road will reflect the detailed survey for the Bespoke Access Corridor (37% Grade 2, 49% Subgrade 3a, and 14% Subgrade 3b). . Land restoration and soil protection are considered within this ES Chapter. Soil management over the operational phase has been considered and the land management strategies will prioritise supporting ecological benefits and improvements in soil quality.
North Kesteven District Council (Landscope Land & Property)	18/05/2023	Scoping Opinion	Inclusion of other Lincolnshire Solar Energy NSIP schemes in the cumulative effects. Either the Land Soils and Groundwater chapter or the Ecology and Biodiversity chapter should consider the interplay between agricultural and ecological/BNG impacts and therefore the degree to which effects are temporary/ reversible. Additionally, NKDC raises	Other Lincolnshire Solar Energy NSIP schemes have been assessed within the Cumulative Effects. Following a review of the scoping opinion, detailed ALC surveys have been completed for the Solar Array

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			grazing management at solar panels as a potential issue as it will not deliver the level of biodiversity that the Site could achieve if biodiversity gains were prioritised over agricultural production. NKDC refer to the 2023 Draft NPS EN-3 which states that where use of agricultural land is necessary, poorer quality should be used preferred to higher quality land. Avoidance of effects and alternatives including the scope to avoid use of BMV through scheme design should be justified and made clear in the ES. NKDC highlighted the concerns on the lack of detailed survey information and refers to the 2021 Natural England 'Guide to assessing development proposals on agricultural land' document which requires augering every hectare on a regular grid on agricultural land.	Area and the Bespoke Access Corridor. A survey of the Cable Route Corridor will be completed pre-construction to inform a detailed SMP which will set out measures to mitigate construction impacts on soils and agricultural land within the Cable Route Corridor. Initial design of the Solar Array Area was informed by the LRA semi-detailed ALC report **(Appendix 14.1, Document Ref: 6.3 ES Vol.2, 6.3.92)**. The detailed ALC survey for the Solar Array Area has been considered as part of the final design layouts. The location of the Bespoke Access Road within the Bespoke Access Corridor has not been confirmed at this stage, but a detailed ALC survey of the Bespoke Access Corridor has been carried out. This assessment is based on a worst case scenario where BMV land cannot be avoided and the ALC grades of the land within footprint of the Bespoke Access Road are consistent with the detailed ALC survey for the Bespoke Access Corridor (37% Grade 2, 49% Subgrade 3a, and 14% Subgrade 3b). Land restoration and soil protection are considered within the ES. Soil management over the operational

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				phase has been considered and the land management strategies will prioritise supporting ecological benefits and improvements in soil quality.
Lincolnshire County Council	16/05/2023	Scoping Opinion	Due consideration required to the alternative of keeping the land in agricultural use and its current contribution to food production in the region. Council agrees this matter should be 'scoped in' and appropriate assessments included as part of the ES. The ES and ALC assessment should clearly identify how much of the Site comprises of agricultural land and identify its ALC grade and current use. The ES should identify what (if any) measures would be taken to retain the agricultural land in productive use. The ES should consider the economic effects of the loss or change to the use of the agricultural land as well as a consideration of the potential carbon footprint created through the displacement or removal of this land from productive use (calculated to ensure that the full carbon gains or benefits of this proposal are accurate). The 'alternatives' exercise needs to consider alternative Site layouts and potentially a reduction in MW generating capacity in order to demonstrate avoidance or minimisation of agricultural land impacts.	Following a review of the scoping opinion, full detailed ALC surveys have been completed for the Solar Array Area and the Bespoke Access Corridor. A detailed soil survey of the Cable Route Corridor will be carried out pre-construction to inform a detailed SMP which will set out measures to mitigate construction impacts on soil resources and agricultural land. Soil management over the operational phase has been considered and the land management strategies will prioritise supporting ecological benefits and improvements in soil quality. This may include agricultural usage but the opportunity to focus on soil quality and biodiversity outcomes over the operational phase are of equal value as continuing in agricultural production. The land management strategy is set out in the Outline Landscape and Ecological Management Plan (LEMP) (**Document Ref: 6.3 ES Vol.2, 6.3.19**) and guidance for soil management during the operational is provided in the OSMP **(Appendix 14.4, Document**

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				Ref: 6.3 ES Vol.2, 6.3.95). At present, continued agricultural use of the Solar Array Area during the operational phase through grazing has not been confirmed and this assessment is therefore based on a "worst-case" scenario where the land is removed from agricultural production for the duration of this operational phase.
Planning Inspectorate	26/05/2023	Scoping Opinion	Disagree with scoping out agricultural land drainage on the basis that it will not directly impact the assessment of soils and agricultural land but instead will impact on "the potential economic and hydrological effects of the land management". The ES should provide an assessment of agricultural land drainage where there is potential for likely significant effects to occur on soils and agricultural land or demonstrate that no likely significant effects would occur with agreement from relevant statutory consultees. Where there are inter-related effects, these should be appropriately cross-referenced within the ES. Agrees that the potential impact on land holdings and farm business/viability may be scoped out from the Soils and Agricultural Land aspect chapter providing this is addressed within the socioeconomics chapter of the ES and that the appropriate cross-referencing between aspects is included to ensure a comprehensive assessment has been undertaken. The Applicant should ensure that a sufficient number of auger locations are used across the Site to accurately inform the assessment in line with relevant guidance and standards. It is also noted (in paragraph 12.6.2) that ALC surveys have not yet been conducted for the Cable Route Corridor. However, it is not clear whether surveys of Cable Route Corridor will be conducted to inform the baseline. If ALC surveys are not proposed to be conducted for the Cable Route Corridor the ES should clearly justify this with reference to guidance.	Agricultural land drainage has been reconsidered and it is agreed the initial assessment was limited to only include the consideration for ALC grading. A reassessment has been provided detailing the factors that can be considered. The conclusion remains that it be scoped out as any impacts on agricultural drainage will be non significant. As part of **Chapter 11: Water Resources and Flood Risk (Document Ref: 6.2 ES Vol.1, 6.2.11)**, the drainage network within the Order Limits is mapped. Mitigation measures will be included within the **CEMP (Document Ref: 6.3 ES Vol.2, 6.3.7)** to divert or repair any drains damaged during construction. A Flood Risk Assessment has been produced to accompany **Chapter 11: Water Resources and Floor Risk (Document Ref: 6.2 ES Vol.1, 6.2.11)** which includes a drainage strategy for the operational phase. This is

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			The Scoping Report states that a site-specific Soil Management Plan (SMP) will be prepared and that with the implementation of this, significant effects on soil resources would not occur. The Inspectorate would expect to see an outline version of the SMP provided alongside the application documents.	discussed in detail in paragraphs 14.3.8 to 14.3.14. Following a review of the scoping opinion, full detailed ALC surveys have been completed for the Solar Array Area and the Bespoke Access Corridor which follow the relevant guidance and standards, as described in more detail in Appendices 14.2 and 14.3. A detailed soil survey will be carried out for the Cable Route Corridor pre-construction to inform a detailed SMP which will include measures to mitigate impacts on soils and agricultural land during construction. The measures to be included have been summarised in an outline SMP (OSMP) produced to accompany this chapter (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). The OSMP is based on the detailed ALC surveys of the Solar Array Area and Bespoke Access Corridor, and high-level desk based data for the Cable Route Corridor. The data from a detailed soil survey of the Cable Route Corridor will be included in a detailed SMP produced pre-construction. The land management strategy is set out in the outline LEMP **(Document Ref: 6.3 ES Vol.2, 6.3.19)** and

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				guidance for soil management during the operational is provided in the OSMP **(Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). At present, continued agricultural use of the Solar Array Area during the operational phase through grazing has not been confirmed and this assessment is therefore based on a "worst-case" scenario where the land is removed from agricultural production for the duration of this operational phase.
Early Non-Statutory Consultation				
N/A			The non-statutory feedback has been reviewed and contained no relevant responses to soils and agricultural land.	
Statutory Consultation Responses				
Natural England		PEIR Response	ALC Survey – Solar Array Area: NE welcomed the full detailed ALC survey conducted on the solar array area. NE state that the soils data from the detailed ALC survey should be used to inform a soil management plan for the whole site, regardless of whether the use is permanent or temporary in nature. This will ensure soils are handled according to best practice and reinstated to a high standard to reduce the impacts.	An OSMP (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**) has been produced to accompany the ES chapter and is informed by Site-specific soils information from the ALC surveys of the Solar Array Area and Bespoke Access Corridor, and high-level desk-based soils information for the Cable Route Corridor. The OSMP will be developed into a detailed SMP prior to the construction phase using information gained from a proposed ALC survey of the Cable Route Corridor.
			ALC Survey – Cable and Access Route: NE note that detailed ALC surveys for the cable and access routes had not been conducted at the time of writing the PEIR. NE acknowledge the PEIR assessment	This has been noted and a detailed ALC survey of the Bespoke Access Corridor was carried out in September

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			was based on high level desk-based information with interpolation of soils and ALC data, however, they state that detailed ALC surveys would "best inform" the soil management plan and that the survey methodology is to be confirmed with NE following further consultation.	2024 to inform the ES chapter and its accompanying **OSMP** (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). A detailed survey of the Cable Route Corridor has not been carried out at this stage. As a result, the ES chapter and OSMP uses the same high level desk-based information used for the PEIR. It is proposed that a detailed soil survey of the Cable Route Corridor will be carried out pre-construction to inform a detailed SMP which will set out measures to mitigate construction impacts on the soil resource and agricultural land.
			ALC Survey Report: The inclusion of the full ALC survey report for the solar array area as appendix 14.2 of the PEIR was welcomed by NE.	Acknowledged. The ALC report for the Bespoke Access Corridor is now also provided as **Appendix 14.3 (Document Ref: 6.3 ES Vol.2, 6.3.94)** to this ES chapter.
			Siting of Substation and BESS Infrastructure: NE note that the substation and BESS is located in an area of Grade 3a agricultural land. NE advise that the siting of all hard infrastructure should avoid BMV land as far as possible. NE state that there may be a suitable area of subgrade 3b quality land to the north of the current BESS location that would be better suited for this infrastructure. Where avoidance of BMV land is not possible, justification must be provided for this.	As detailed in Table 3.2 of **Chapter 3 – Alternatives and Design Evolution (Document Ref: 6.2 ES Vol.1, 6.2.3)**, consideration has been given to several discipline chapters (including Soils and Agricultural Land) in the siting of the substation and BESS infrastructure within the Solar Array Area. Two options were considered, one in the central part of the Solar

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				Array Area and the second on the southern edge near the reservoir. Option 1 was deemed by the Applicant as the best location for the infrastructure as it results in fewer potentially significant effects. It is also the best option from a Soils and Agricultural Land perspective as it avoids siting the substation and BESS on higher value Grade 2 land. Whilst Option 1 does involve locating the development on Subgrade 3a quality land, avoiding this was not possible due to the need to give balanced consideration to other siting requirements and environmental effects such as noise and access.
			Presentation of Land Take NE recommend further breakdown of land take into permanent and temporary land take and the proportion/amount of BMV and non-BMV land take for each element of the development. NE state that the implications of each element of the project on soils and agricultural land may vary, and this should be accounted for and addressed within the SMP.	Land take is broken down into permanent and temporary land take for BMV and non-BMV land in Section 14.5 of **Chapter 14: Soils and Agricultural Land (Document Ref: ES Vol. 1, 6.2.14.** The **OSMP (Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). produced to accompany the ES chapter includes measures to be included in a detailed SMP which mitigate against the impacts of each

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				element of the project on soils and agricultural land.
			Outline Soil Management Plan (OSMP) NE welcome the commitment to create an OSMP which should cover the construction, operation and decommissioning phases. NE state that the OSMP should consider the soil resource across the entire site, including areas not directly disturbed by the development (i.e. ecological enhancement areas) as these areas may still be impacted through trafficking.	The **OSMP** (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). covers each element of the project, including areas not directly disturbed. Some of the elements will be dealt with in more detail in the detailed SMP.
			Decommissioning and Time Limit NE note that no specific time limit for the operational lifetime of the development is provided in the PEIR. NE state that this should be included within the DCO, alongside a commitment to decommissioning and restoring the site to its former agricultural quality. NE advise that where agricultural land in areas occupied by hard infrastructure is not considered to be permanently lost, a commitment must be made to reinstate the land to its former ALC grade and details of how this would be achieved should be included within the ES/OSMP/decommissioning plans	**Chapter 2: Proposed Development (Document Ref: 6.2 ES Vol.1, 6.2.2**) of this EIA states that the Proposed Development is expected to be operational for approximately 40 years, after which it will be decommissioned and the Solar Array Area returned to agricultural use. As mentioned **in Chapter 2: Proposed Development (Document Ref: 6.2 ES Vol.1, 6.2.2)**, it is proposed that the Bespoke Access Road is removed during decommissioning and the land returned to agriculture in consultation with the landowners. However, as the construction and restoration of the Bespoke Access Road would involve soil stripping, soil sealing, and long-term storage prior to reinstatement, this assessment is based on the “worst-case” scenario where the Bespoke Access Road land-take (3.98 ha including associated ditches and verges) is permanent.

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				An **OSMP** (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). has been produced to accompany this ES chapter which outlines how areas of hard infrastructure can be returned to agriculture.
North Kesteven District Council		PEIR Response	ALC Survey and Report – Solar Array Area: NKDC note that Landscope, the consultants employed to review the solar array area ALC report, raised no objections to the scope not the findings of the survey.	This has been noted.
			ALC Survey – Access Route:- NKDC note that, pending the ALC survey findings for the access route, the assessment should consider the degree to which retaining the access route for the 40-year operational period would impact upon agriculture across any areas truncated by the route.	A detailed ALC survey of the Bespoke Access Corridor was carried out in September 2024 and the data are used for the impact assessment in this ES chapter. An area of 18.91 ha will be removed from agricultural production during the construction phase. Of this area, the 3.98 ha impacted by the road, verges and drainage ditches will be unavailable for agricultural use for the duration of the operational phase, and has been assessed as being permanently lost from agriculture as a worst case as it would involve soil sealing and long-term soil storage. The remainder of the area within the Bespoke Access Corridor either side of the Bespoke Access Road (14.93 ha) will be available for agricultural use during the operational period, and this assessment has been updated to reflect this.

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			NKDC state that the decision on whether to retain the access route permanently will need to be reflected in adjustments to the overall amount/proportions of BMV loss, and whether this is temporary or permanent.	A detailed ALC survey of the Bespoke Access Corridor has been carried out and the data are used to assess the impact on BMV land in this ES chapter. As mentioned in **Chapter 2: Proposed Development (Document Ref: 6.2 ES Vol.1, 6.2.2)**, it is proposed that the Bespoke Access Road is removed during decommissioning and the land returned to agriculture in consultation with the landowners. However, given that the construction and restoration of the Bespoke Access Corridor will involve soil stripping, soil sealing, and long-term soil storage prior to reinstatement, this assessment is based on the "worst-case" scenario where the Bespoke Access Road land-take (3.98 ha including associated ditches and verges) is permanent.
			Assessment of Effects: NKDC do not agree that the impact magnitude in the PEIR should be assessed on the basis that the proposals are "long-term temporary" and that the only "permanent" effects only relate to those involving soil sealing. NKDC reference paragraph 163 of the NPPF with regards to applications for repowering and extending the life of existing renewable sites, which states that local planning authorities should "give significant weight to the benefits of utilising an established site and approve the proposal if its impacts are or can be made acceptable." NKDC state that "long-term temporary" effects could be up to 80 years if sites are repowered which "significantly stretches the interpretation of 'temporary'".	The Applicant does not agree with this and intends to keep "temporary" and "permanent" development as its assessment categories. This approach is based on the IEMA (2022) guidance which is considered the industry standard for the consideration of soils and agricultural land in EIA. The IEMA (2022) guidance states that land-take by developments can be defined as "hard" and "soft" development. Hard development involves soil sealing and

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			NKDC state that "long-term temporary" is not defined, and that the possibility of sites being repowered make the effects on agricultural land "akin to permanent effects". NKDC favour the approach that "built development will result in long term temporary reversible loss (assessed as permanent as a worst case) of agricultural land' resulting in significant residual effects (paragraph 14.8.3)". NKDC refer to The Central Lincolnshire Local Plan (CLLP) definition of a "significant" loss of BMV as 1 ha or more. NKDC state that this should include both permanent and temporary loss.	is considered a "permanent land use change" A similar approach has been accepted for Gate Burton Energy Park (Section 12.10.33 of Document Reference: EN010131/APP/3.1)[6] where the "permanent" land take was limited to the areas of hard development such as the BESS and substation, and the array area taken out of agricultural production for the 60 year operational phase was defined as "temporary". We also include in our assumptions in this ES chapter that the assessment is based on a 40-year operational phase.
			Operational Phase Land Use: NKDC state that the mitigation proposals for the development of c. 47.5% BMV land are poorly developed and would welcome further engagement on the matter prior to DCO submission. If sheep grazing is proposed, NKDC encourage the development of a detailed mitigation plan which incorporates measures relevant to grazing from the BRE (2014) Agricultural Good Practice Guidance for Solar Farms document, and "ideally" evidencing a contract with a grazer.	At this stage, it has not been confirmed that the site will be grazed during the operational phase and it is not a matter within the Applicant's gift to commit to however the Applicant is open to further discussion on this. We have therefore based this assessment on a "worst case" assumption that the land is taken out of agricultural production for the operational phase before being restored during decommissioning. An OSMP (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). has been

[6] Gate Burton ES Chapter 12 – accessed February 2025

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				produced to accompany this ES chapter which includes guidance on how grazing can be incorporated into the operational phase of a solar farm to maintain agricultural production whilst also providing biodiversity benefits, based on the BRE (2014) document and the Solar Energy UK (2022) good-practice guidance document. Should grazing be included within the proposed operational phase land management strategy at a later stage of this application, this OSMP sets out how this can be achieved.
			Access Route Corridor Land Use Change: Paragraph 14.6.64 states that, as a worst-case scenario, land use change would be temporary and that the area would be restored to its pre-development use at the end of the construction phase. NKDC highlight that this is not consistent with statements elsewhere in the document which confirm whether the access route will remain during operation. This requires clarification.	As explained in **Chapter 2: Proposed Development (Document Ref: 6.2 ES Vol.1, 6.2.2)**, it is proposed that the Bespoke Access Road will be removed during decommissioning and the land returned to agriculture use. Whilst it is assumed that the road will be removed, it is possible that engagement with the landowners at that time will establish a preference for it to be retained. Optionality has been deliberately retained in the Application to facilitate such a scenario. As the construction and restoration of the Bespoke Access Road would involve soil stripping, soil sealing, and long-term soil storage prior to reinstatement,

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				this assessment is based on the "worst-case" scenario where the Bespoke Access Road land-take (3.98 ha including associated ditches and verges) is permanent.
			Intra-project effects: NKDC state that if areas of BMV land are used for BNG purposes, these areas should be assumed to be adversely affected (in terms of loss of agricultural land) as they are unlikely to remain compatible with ongoing agricultural operations/grazing mitigation.	It is acknowledged that the areas used for BNG purposes will not be available during the operational phase for agricultural production. This assessment is now based on the assumption that the Solar Array Area is not used for agriculture during the operational phase.
			Cumulative Impacts Assessment: Paragraph 14.9.3 references Gate Burton energy park which is assumed to be an error. NKDC draw attention to the proportions of BMV at Springwell Solar NSIP which are now published within their PEIR. NKDC also state that the assessment should also include the Sleaford West SUE and Mareham Lane solar developments. NKDC state that they consider the individual and cumulative impacts of the loss of BMV land to be "significant", consistent with the approach for the nearby Heckington Fen solar NSIP.	This was not an error but has been removed from the ES for clarity. The cumulative impact assessment has been updated to include the proportions of BMV at Springwell Solar NSIP, Sleaford West SUE, Mareham Lane, in addition to several other developments identified for inclusion. The cumulative assessment is set out at the end of this chapter. We have determined that the cumulative impact is non-significant, based on the fact that the solar developments will not result in permanent loss of land across the majority of the sites, following the IEMA methodology. There is also the

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				potential for maintaining agricultural use within some of the solar developments through grazing during the operational phase. Permanent impacts are limited to the areas of soil sealing.
			Consideration of Alternatives: Chapter 14 does not specify whether alternatives have been considered in the context of BMV land. Avoidance should be the first consideration through the removal of BMV land from within the order limits. NKDC provided an attached plan which highlighted an area of whole fields of Grade 2 or Subgrade 3a land which they state should be considered for deletion from the scheme.	**Chapter 3: Alternatives & Design Evolution (Document Ref: 6.2 ES Vol.1, 6.2.3)** states that ALC grading and the presence of BMV land was factored into the Site Selection process. The order limits of the Proposed Development have also gone through a process of design evolution and refinement, informed by environmental assessments, engineering and design considerations, and feedback with consultees and stakeholders. This area of BMV land has not been removed from the scheme. However, ALC data for the Solar Array Area was considered for the siting of the substation and BESS, with development on the area of Grade 2 land in the south avoided.
Lincolnshire Council		PEIR Response	Highlights the likelihood of high to moderate BMV land along cable route and access route, and notes that these are yet to be surveyed.	A detailed ALC survey of the Bespoke Access Corridor has been carried out and the data are used for assessing impacts in this ES chapter and accompanying **OSMP (Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**).

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				The Cable Route Corridor will be surveyed pre-construction to inform a detailed SMP which will include measures to mitigate construction impacts on soils and agricultural land. High level desk-based baseline data are used to assess impacts on the Cable Route Corridor.
			If grazing is to be proposed details should be provide as to how this would be secured.	At this stage, the assessment is based on a “worst case” assumption that the land within the Solar Array Area is not grazed and therefore removed from agricultural use for the operational phase. Should grazing of the land be proposed at a later stage of this application, recommendations based on the BRE (2014) and Solar Energy UK (2022) guidance documents has been provided in the OSMP (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**). .
			The use of BMV land should be kept to a minimum to reduce the impact on UK food security and the applicant should give consideration to removing areas of BMV land from the proposal.	ALC grading and BMV presence was included in the site selection process, as detailed in **Chapter 3: Alternatives & Design Evolution** (**Document Ref: 6.2 ES Vol.1, 6.2.3)**. ALC grading has also been considered for the siting of the BESS and substation within the Solar Array Area to avoid hard development on an area of Grade 2 in the south. The route of

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				the Bespoke Access Road has not been finalised at this stage. As a result, this assessment is based on a reasonable worst-case that BMV land cannot be avoided and the ALC grades of the land within footprint of the Bespoke Access Road reflect the detailed survey for the Bespoke Access Corridor (37% Grade 2, 49% Subgrade 3a, and 14% Subgrade 3b). Similarly, the Cable Route within the Cable Route Corridor has not been finalised, therefore it is assumed based on high-level desk based information that the land is of ALC Grade 1 or 2 quality, as a worst case assessment.
			LCC do not agree that the impact magnitude as stated in paragraph 14.4.11 should be based on the proposals being considered 'long-term temporary'(undefined) and that permanent effects only relate to areas where soil sealing is proposed.	The Applicant does not agree with this and intends to keep "temporary" and "permanent" land-take as assessment categories. This is based on the definition of "permanent" land-take and hard development in the IEMA (2022) guidance. We also include in our assumptions in the ES chapter that the assessment is based on a 40-year operational phase.
			The loss of agricultural land from food production should be assessed over the lifetime of the development and include both permanent and temporary losses.	The impact of both permanent and temporary land use change resulting from the Proposed Development is included in the assessment.

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				Impacts are assessed separately for the construction, operational and decommissioning phases of the development. Impacts arising during the construction phase of the development that remain for the operational lifetime of the development are not reassessed for subsequent phases of the development to avoid double-counting impacts.
			There is uncertainty around the life of access road and locations of compounds are unknown which may affect the overall assessment of BMV land loss.	The ES is based on the most recent layout plans for the various infrastructure elements. The ES chapter has been updated to reflect **Chapter 2: Proposed Development (Document Ref: 6.2 ES Vol.1, 6.2.2)** which states that the Bespoke Access Road will remain in place for the operational phase and will be removed during decommissioning. However, as the construction and restoration of the Bespoke Access Road would involve soil stripping, soil sealing, and long-term storage prior to reinstatement, this assessment is based on the “worst-case” scenario where the Bespoke Access Road land-take (3.98 ha including associated ditches and verges) is permanent given that its construction involves soil sealing.

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			Paragraph 14.9.1 refers to intra-project effects relating to the use of land for BNG purposes which may be favoured over use of the solar array area for agricultural purposes. Areas of the site where mitigation and enhancement is proposed would also remove land from agricultural production and therefore should be considered in the assessment of BMV loss.	It is acknowledged that the areas used for BNG purposes will not be available during the operational phase for agricultural production. This assessment is now based on the assumption that the Solar Array Area is not used for agriculture during the operational phase.
			There is potential for damage and deterioration of these highest agricultural quality soils and land through construction activities and soil handling. The mitigation measures set out in section 14.6 of the PEIR, the proposed Outline Soil Management Plan (OSMP) and the inclusion of site-specific strategies to minimise impact on ALC in the CEMP are therefore welcomed and these details should be included in the DCO application when submitted.	It is acknowledged that the mitigation measures included protect the soil resource and are therefore included within the DCO application. The OSMP **(Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95)**. will be developed pre-construction into a detailed SMP which will set out measures to mitigate against impacts on soil and agricultural land.
			Referring to Table 14.13 – Cumulative Effects Assessment of Development, this table should be updated in light of the published data in respect of the **Springwell Solar Farm development**. Consideration should also be given to following NSIP proposals in Lincolnshire, **the One Earth (**appears on short and long lists in appendix 4.1 and 4.2) and **Meridian Solar Farm developments** and the proposed **Grimsby to Walpole National Grid Upgrade proposal.**	The ES Chapter's cumulative assessment section has been updated to include these proposals.
Direct Topic-Specific Consultation				
Natural England	24/07/2023	Meeting between Wardell Armstrong and Natural England to discuss survey methodology	The main point of discussion was the ALC survey requirements for the solar array element. A review of the existing reconnaissance levels survey was conducted, and NE raised concerns over its accuracy and how BMV land was identified in the report. A method of appending further targets survey points into the reconnaissance survey was discussed and if there was any precedence that would support a lower density ALC survey. There was a separate	Full detailed ALC approach agreed to establish baseline for the Solar Array Area following email response from Natural England (02/08/2023) after the meeting between Wardell Armstrong and Natural England (24/07/2023).

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			discussion on the best approach for assessing the cable route corridor and several options proposed to NE for consideration.	The detailed ALC results for the Solar Array are provided in Appendix 14.2 **(Document Ref: 6.3 ES Vol.2, 6.3.93)**. There was a general discussion on the survey requirements for the Cable Route Corridor. At this stage, a survey of the Cable Route Corridor has not been conducted, but it is proposed that a detailed soil survey will be carried out pre-construction. The results of the survey will inform a detailed SMP produced pre-construction which will set out measures to mitigate against impacts to the soil and agricultural land.
	02/08/2023	Email response regarding outcome of meeting	NE considers this a major development and therefore it should be informed by detailed survey data. An approach to integrating targeted detailed surveys into the reconnaissance results for the array area was outlined that would ensure that areas of BMV land are accurately identified. A separate response on the cable route survey requirements was provided. NE emphasised that detailed soil survey information is required to inform the cable installation process and linked this with ALC survey which can provided this as part of the same survey. They stated a preference for a detailed ALC for the cable route and outlined where a semi detailed survey may be suitable for area where predictive mapping indicates that the land is non BMV. .	
Landscope Land & Property – representing North Kesteven District Council		Review of ALC survey and assessment methodology for Solar Array Area and proposed methodology for the Cable Route Corridor.	The baseline information for ALC and soils within the Solar Array Area and Cable Route Corridor was reviewed and a proposed approach for the assessment was discussed. For the Array Area, a general agreement was reached on the approach for assessing soils and ALC and the proposal to adopt the IEMA guidance for the assessment was accepted. Landscope expects NE to provide a final decision on the survey requirements for all other elements of the project. Landscope raised the need for effective Soil Management Planning for all elements that meets industry standards and is sufficiently detailed to avoid or address impacts to ensure the land can be returned to agriculture. General points of agreement during the meeting were:	A detailed ALC survey of the Bespoke Access Corridor and has Solar Array Area been carried out and the data are used for assessing impacts in this ES chapter and accompanying **OSMP** (**Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95**) ALC grading and BMV presence was included in the site selection process, as detailed in **Chapter 3: Alternatives & Design Evolution (Document Ref: 6.2 ES Vol.1, 6.2.3)**.

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			• They are happy with the scope and methodology of the soil / ALC surveys being conducted for the Solar Array Area. • Agreed that the IEMA guidance on soil and ALC in the planning process is appropriate. • Agreed to review and comment on the refined Cable Route Corridor and was not sure if a full ALC for the other elements was needed. • Accept the need for a Soil Management Plan which follows industry standards for soil management, IEMA guidance, and includes for a schedule of condition to ensure any damage during construction can be identified and 'put right'.	ALC grading has also been considered for the siting of the BESS and substation within the Solar Array Area to avoid hard development on an area of Grade 2 in the south. An OSMP has been provided that follows IEMA standards.

Scope of the Assessment

14.3.3 The Proposed Development will occupy agricultural land (arable) and will result in a change to its agricultural potential over the lifespan of the project. Associated works such as the creation of access tracks, substation, and Battery Energy Storage System (BESS) will have a more direct and potentially permanent impact on the agricultural potential of the land. These elements of the design involve soil stripping and soil sealing for the duration of the Proposed Development's lifetime. Whilst storing the stripped soils for the duration of the operational phase enables these areas to be restored to agricultural use following decommissioning, this assessment considers this 'permanent' development as a worst-case scenario, based on the definition of permanent land-take and hard development in the IEMA (2022) guidance.

14.3.4 The potential impact resulting from activities associated with the construction of the Proposed Development upon the agricultural land and soil resources present has, therefore, been considered. This has been done via an assessment of the quantity and quality of the agricultural land that may be affected, as well as the sensitivity of the soil receptor (i.e., resistance and resilience of the soil environment in terms of susceptibility to erosion and/or presence of organic soils/peat and the degree of loss of soil resource) that may be affected.

Effects not considered within the Scope

14.3.5 The following effects have been scoped out of the assessment:

Land Holdings

14.3.6 Justification: Land holdings have been scoped out of the assessment as the size of the land holding and the potential impact on farm business/viability is a socioeconomic assessment. Please refer to **Chapter 15: Socio-economic ES Chapter (Document Ref: 6.2 ES Vol.1, 6.2.15**) for further information on this aspect.

Assessment of effects for the operational and decommissioning phase (Cable Route Corridor)

14.3.7 Justification: The Proposed Development will result in a temporary disruption to agriculture during the construction phase within the Cable Route Corridor, however, all agricultural land within the boundary of the Cable Route Corridor will be returned to agricultural use following construction and the cable will be left in situ during decommissioning (**Chapter 2: Proposed Development, Document Ref: 6.2 ES Vol.1, 6.2.2**). Therefore, there would be no potential for further impacts on the agricultural land and soil resource within the Cable Route Corridor during the operational and decommissioning phases.

Agricultural Land Drainage

14.3.8 Justification: Agricultural land drainage is considered within the assessment of ALC to ensure that the ALC grade can be accurately considered and to assess if the disruption of an agricultural drainage system will have an impact on soil and ALC quality locally. Accurate ALC assessments require the surveyor to base their classification on the assumption that all reasonable efforts will be made to optimize agricultural drainage. This is done to ensure that recent land management, which may have neglected land drainage, does not influence the ALC classification. For the Solar Array Area and Bespoke Access Corridor,

it was shown during the ALC surveys that the land drainage is fully optimised and no assumption regarding land drainage was required. As the Cable Route Corridor also predominantly consists of functioning agricultural land, it can be assumed that the land has also been suitably drained, and this will be confirmed during the soil survey that will be conducted across this area.

14.3.9 The ALC capacity of the land across the Bespoke Access Corridor, Solar Array Area and the Cable Route Corridor are reliant on the effective management of surface and groundwater by the local Internal Drainage boards (IDB). The IDB maintains and operates a primary system of drainage channels and pumping stations that have been designed to prevent or reduce the impact of flooding.

14.3.10 Individual landowners can supplement this primary drainage system with secondary systems (agricultural drainage) that will improve drainage condition of the upper soil profile to support seasonal establishment (spring crops) and to expand the range of crops that are grown. Ditches, tile drains, and mole drains are used locally for this purpose and were evident during the detailed ALC and soil surveys that have been completed for the Solar Array Area and Bespoke Access Corridor.

14.3.11 There will be no disruption to the primary drainage infrastructure managed by the local IDB due to the Proposed Development and this secures a core aspect of ALC capacity for the land base. The primary drainage scheme also fragments and isolates the land drainage patterns at the field scale meaning that there is no inter dependence between the fields in terms of drainage.

14.3.12 The **Flood Risk Assessment (FRA) (Document Ref: 6.3 ES Vol.2, 6.3.81)** produced to accompany the **Water Resources and Flood Risk ES chapter (Document Ref: 6.2 ES Vol.1, 6.2.11)** includes a description of the land drainage network within the Order Limits. As part of the embedded measures, the **Construction Environmental Management Plan (CEMP) (Document Ref: 6.3 ES Vol.2, 6.3.7)** will include mitigation measures to avoid damage to the mapped secondary drainage systems within the Solar Array Area, Bespoke Access Corridor, and Cable Route Corridor, and where this is not practicable, field drains will be diverted, replaced or such other solution required to alleviate flooding in consultation with the landowner.

14.3.13 During the operational phase, land drainage across the Solar Array Area will be supported by the land drainage scheme that is outlined in the FRA **(Appendix 11.1, Document Ref: 6.3 ES Vol.2, 6.3.81)**.

14.3.14 Due to the reasons discussed above, the impacts upon agricultural land drainage are considered to be negligible in the context of Soils and ALC and are therefore not considered further in this chapter. Land drainage is considered within **Chapter 11: Water Resources and Flood Risk (Document Ref: 6.2 ES Vol.1, 6.2.11).**

Limitations & Exclusions

Limitations

14.3.15 At this current stage of the planning process, the following matters are still ongoing and present a limitation to the baseline data informing the assessment of effects:

- For this chapter, the assessment of effects relating to the Cable Route Corridor has been based upon high level desk-based information with

interpolation of soils and ALC data as no detailed survey data is available at this stage in the planning process. As a worst case, it is assumed based on the desk-based information that Cable Route within the Cable Route Corridor is consists of land of ALC Grade 1 and 2 quality, corresponding to a “Very High” receptor sensitivity in the IEMA guidance.

- A soil survey of the Cable Route will be conducted pre-construction to inform a detailed SMP which will set out measures to mitigate construction impacts upon the soil resource and agricultural land. The survey methodology for the Cable Route Corridor would be confirmed with Natural England following further consultation.

- The final Bespoke Access Road route within the Bespoke Access Corridor has not been determined. Impacts upon these receptors are therefore assessed based on preliminary designs which may change at the detailed design phase. As a worst case, it has been assumed that BMV land cannot be avoided and the ALC grades of the land within footprint of the Bespoke Access Road reflect the detailed survey for the Bespoke Access Corridor (37% Grade 2, 49% Subgrade 3a, and 14% Subgrade 3b).

Assumptions

14.3.16 The baseline conditions of the following design elements of the project have been based upon the following:

- **Solar Array Area:** The baseline conditions for the soil characteristics and agricultural land classification for the Solar Array Area are based upon a detailed ALC survey conducted by Wardell Armstrong in August and September 2023 (see **Appendix 14.2 Document Ref: 6.3 ES Vol.2, 6.3.93, and Figure 14.1 Document Ref: 6.3 ES Vol.3, 6.4.73**). This survey provided detailed baseline information sufficient to inform this ES Chapter and **OSMP** (**Document Ref: 6.3 ES Vol.2, 6.3.95**).

- **Bespoke Access Corridor:** The baseline conditions for the soils and agricultural land within the Bespoke Access Corridor are based on a detailed ALC survey carried out by Wardell Armstrong in September 2024 (**Appendix 14.3 Document Ref: 6.3 ES Vol.2, 6.3.94, and Figure 14.3 Document Ref: 6.3 ES Vol.3, 6.4.75**). These results are used to inform this ES chapter and the **OSMP (Document Ref: 6.3 ES Vol.2, 6.3.95)**. The Bespoke Access Road will remain in place for the operational phase and is proposed to be removed during decommissioning following, and subject to, consultation with the landowners. For the purposes of this assessment, it has been assumed as a worst-case scenario that the Bespoke Access Road will result in permanent loss of land due to there being soil sealing for the duration of the operational phase.

- **Cable Route Corridor:** The desk study for the Cable Route Corridor has collated the publicly available information from the Provisional ALC Data, Natural England’s BMV likelihood maps, and the Soil Survey of England and Wales in order to inform the assessment of affects. It is assumed that the cable will remain in-situ for the

operational phase and thus no further disruption to soil or agricultural land would occur during this phase. The cable will be left in situ during decommissioning.

14.3.17 The assessment of impacts resulting from the construction of the above elements of the project are based on the design plans referred to below in paragraph 14.6.1. At this stage of the project, these design plans are not finalised but allow for an indicative assessment of likely effects. The exact layout of infrastructure within the Solar Array Area, Cable Route within the Cable Route Corridor and Bespoke Access Road within the Bespoke Access Corridor will be determined at the detailed design stage.

14.3.18 As the detailed route for the Bespoke Access Road is not finalised it has been assumed for the purposes of this assessment as a reasonable worst-case that BMV land cannot be avoided and that the ALC grading of the land impacted by the Bespoke Access Road reflect the grading for the wider Bespoke Access Corridor. Similarly, the location of the Cable Route within the Cable Route Corridor has not been finalised. It is therefore assumed, based on provisional ALC data, that the land impacted by the cable is all Grade 1 or 2, which are included within the highest receptor sensitivity category in the assessment methodology.

14.3.19 The following design assumptions have been made in relation to the Solar Array Area, Cable Route Corridor, and Bespoke Access Corridor:

Solar Array Area

- The solar panels and BESS are expected to have an operational lifespan of up to 40 years, after which they will be safely decommissioned and the Solar Array Area returned to agricultural use.

- Solar array foundations would be driven between 1m to 2.5m directly into the ground without prior soil removal and this is expected to pose a minimal risk to soil quality and soil loss. .

- The only potential requirement for the stripping, temporary stockpiling or storage of topsoil would be associated with the construction of any required access tracks, substation, BESS, compounds, storage buildings and cabins (collectively these are referred to here as ‘built infrastructure’). Whilst stripped soils can be used to restore these areas to agricultural land post-decommissioning, the impacts of built-development on land and soils have been assessed as a permanent impact as a worst-case.

- The construction of the solar panel arrays will involve removal of all the land from agricultural production for the duration of the operational phase. However, it must be acknowledged that there is the possibility for the land to be used for agriculture in some capacity (e.g., grazing) during the operational phase of the Solar Array Area. Whilst sheep grazing during the operational phase remains an option, it will not be confirmed until the detailed design stage. Therefore, this impact assessment has been based on a “worst case” assumption where there is no grazing. The assessment may be updated at a later stage of the application should continued agricultural use of the land during the operational phase be confirmed.

- For the purposes of this assessment, the land take resulting from these elements has been obtained from a design plan (LCA-2023-01-C-Beacon Fen: Solar Array Area Illustrative Layout). The Works Plan **(Document Ref: 2.4)** set out the maximum extents for these infrastructure within the Order Limits, therefore, this represents a worst case assessment.

- During the operational phase of the Solar Array Area element of the Proposed Development, it is assumed that there is no further development of built infrastructure and therefore no further impacts on the soils or ALC capacity of the land resulting from construction activities.

- The foundations that support the panels can be removed with minimal disturbance at the end of the operational life of the Proposed Development, hence loss of agricultural land beneath the solar arrays have been assessed as a temporary disturbance.

- All built infrastructure (e.g. substations, BESS, access roads and other elements involving soil sealing) can be removed at the end of the operational life of the Proposed Development however this will require restoration to the baseline standard and such long-term reversible impacts for these areas are assessed as a permanent loss as a worst-case scenario.

Cable Route Corridor

- The requirement for the stripping and storage of soils during the construction stage is expected, as well as temporary trackways for vehicle access to the working areas.

- The exact location of the cable within the Cable Route Corridor has not been finalised. As a reasonable worst case assessment, it is expected that temporary soil disturbance will occur over a working width of 30 m along the length of the 13 km cable route during the construction phase.

- Vehicle access tracks would be required at either end of any underground section which will result in permanent land loss.

- Following cable instalment, soil will be reinstated above the cable trench and working areas and the land returned to agricultural use. Any temporary access tracks would be removed and the land restored to agricultural use. Agricultural land drainage will be reinstated as part of the restoration works and will be included in the detailed CEMP **(Document Ref: 6.3 ES Vol.2, 6.3.7)**.

- The Grid connection will require an extension to the existing National Grid Bicker Fen Substation. Two design options have been proposed for this extension. As a worst case scenario, this assessment has been based on the design option using Air-Insulated Switchgear (AIS) as it involves the greatest permanent land-take. The area lost to the substation extension is provisional ALC Grade 2 quality, however, the entire area is not currently in agricultural use. For the purposes of this

assessment, it has been assumed that the entire area has the potential to be used for agriculture.

- It is assumed that the cable will be left in situ during decommissioning.

Bespoke Access Corridor

- The requirement for the stripping of soils during the construction stage and storage for the duration of the operational phase is expected.

- It is currently proposed that the Bespoke Access Road will be removed during decommissioning with the stored soils reinstated and the land returned to agricultural production. However, as a worst case, the impacts of the Bespoke Access Road are assumed to be permanent due to the requirement for soil sealing for the duration of the operational phase. For the purposes of this assessment, it has been assumed that the Bespoke Access Road and its associated drainage ditches and verges has a land-take of 3.98 ha.

- As a reasonable worst case assessment, it is assumed that the Bespoke Access Road will require a 50 m wide construction corridor over the length of the road. This results in an area of 18.91 ha being removed from agricultural use during the construction phase. Of this area, the 14.93 ha adjacent to the Bespoke Access Road will be returned to agriculture during the operational phase.

14.4 Assessment Methodology & Significance Criteria

Extent of the Study Area

14.4.1 The redline boundary of the proposed Solar Array Area and Cable Route Corridor (including Bicker Fen substation extension works) consists of approximately 529 ha and 183 ha of land, respectively. The Bespoke Access Corridor covers approximately 45 ha of land. The majority of the land for all elements is under agricultural management for arable production.

Assessment Methodology

Guidance

- Natural England (2021), Guide to assessing development proposals on agricultural land[7]

- Natural England (2012), Technical Information Note 049, 'Agricultural Land Classification: protecting the Best and Most Versatile agricultural land'[8]

[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/guide-to-assessing-development-proposals-on-agricultural-land.
[8] Natural England, (2012) Technical Information Note 049 (TIN049): Agricultural Land Classification: Protecting the Best and Most Versatile Agricultural Land. Available at: https://www.iow.gov.uk/azservices/documents/2782-FE14-Natural-England-TIN049-Agricultural-Land-Classification.pdf

- Institute of Quarrying (2021), Good Practice Guide for Handling Soils in Mineral Workings [9]
- DEFRA (2009), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites[10]
- IEMA (2022) A New Perspective on Land and Soil in Environmental Impact Assessment.[11]
- British Society of Soil Science (BSSS) (2022) Working with Soil Guidance Note on 'Benefitting from Soil Management in Development and Construction'[12]
- BRE (2014) Agricultural Good Practice Guidance for Solar Farms[13]

14.4.2 The aim of the Institute of Quarrying's 2021 guidance 'Good Practice Guide for Handling Soil in Mineral Workings'[9] is to contribute to achieving sustainable soil based after uses and to minimise impacts on the soil resources and enhance soil functions wherever possible. Amongst other things this document sets out protocols for the stripping and storage of soils and successful soil reinstatement and restoration methods. Defra's 2009 guidance document[10] which is referenced in the Planning Practice Guidance for the Natural Environment[14], relates to construction sites and contains good practice guidance on the handling and storage of soil resources to ensure the sustainable management of soils.

14.4.3 The Institute of Environmental Management and Assessment (IEMA) issued their new guidance document 'A New Perspective on Land and Soil in Environmental Impact Assessment'[11] on 17 February 2022. This document comprises the first published guidance on the consideration of soils and land in EIA but does not include a methodology for how such assessment should be undertaken. The guidance aims to advocate *'a broader approach that involves assessing the natural capital and functional ecosystem services provided by land and soils'* and is used to inform the assessment methodology to assess the impacts of soil resources. The assessment methodology draws upon this guidance and reflects the most up to date industry guidance on assessing the impacts on land and soils in Environmental Impact Assessment.

Baseline Data

14.4.4 For the Solar Array area, a 'semi-detailed' ALC survey was completed by Land Research Associates (**Appendix 14.1, Document Ref: 6.3 ES Vol.2, 6.3.92**). Following consultation with Natural England and to address consultee

[9] Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings. Available at: [redacted]

[10] Defra (2009) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf

[11] Institute of Environmental Management & Assessment (IEMA) (2022) A New Perspective on Land and Soil in Environmental Impact Assessment. Available to access through: [redacted]

[12] BSSS (2022) Benefitting from Soil Management in Development and Construction. Available at: https://soils.org.uk/wp-content/uploads/2022/02/WWS3-Benefitting-from-Soil-Management-in-Development-and-Construction-Jan-2022.pdf

[13] BRE (2014) Agricultural Good Practice Guidance for Solar Farms. Available at: [redacted] Accessed March 2024.

[14] UK Government (2019) Planning Practice Guidance Natural Environment. Available at: https://www.gov.uk/guidance/natural-environment. Accessed October 2023.

comments (Lincolnshire County Council and North Kesteven District Council), a second, full detailed ALC survey, was conducted on the Solar Array Area by Wardell Armstrong at a density of 1 point per hectare as per guidance provided in Natural England's Technical Information Note 049[8] and Natural England's 2021 Guide to Assessing Development Proposals on Agricultural Land[7], with the collection of laboratory samples in line with the 2022 IEMA guidance[11] which states that *"where sampled soils are of a clay loam and silty clay loam texture, additional laboratory testing is required to determine the soils' clay content for the accurate determination of ALC".* This survey report can be found in Appendix 14.2 (**Document Ref: 6.3 ES Vol.2, 6.3.93)** and provides a detailed baseline upon which the assessment of impacts on soil and agricultural land within the solar array area is based upon.

14.4.5 For the Bespoke Access Corridor, a detailed ALC survey was carried out by Wardell Armstrong in September 2024. This survey was carried out in accordance with the requirements set out above in paragraph 14.4.4. The results of this survey are presented in Appendix 14.3 (**Document Ref: 6.3 ES Vol.2, 6.3.94**).

14.4.6 Other desk-based sources of information used to inform the baseline are:

- 1:250,000 'Provisional Agricultural Land Classification Maps'[15].
- Met Office (1989) Climatological Data for Agricultural Land Classification (ALC): Grid point datasets of climatic variables at 5 km intervals for England and Wales[16].
- Soil Survey of England and Wales (1984) Soils and their Use in Eastern England, with accompanying 1: 250,000 map, Sheet 4.
- Multi-Agency Geographical Information for the Countryside (MAGIC)[17].
- Cranfield University (2015). Research to develop the evidence base on soil erosion and water use in agriculture[18].
- Cranfield University (2023) The Soils Guide. Available at LandIS – Land Information System – Soils guide Accessed July 2023.[19]
- Natural England (2017) Likelihood of Best and Most Versatile (BMV) Agricultural Land – Strategic scale map East Midlands region[20].

[15] DEFRA (2020) Provisional Agricultural Land Classification Maps and Data. Available at: https://data.gov.uk/dataset/952421ec-da63-4569-817d-4d6399df40a1/provisional-agricultural-land-classification-alc Accessed September 2023.
[16] Met Office (1989) Climatological Data for Agricultural Land Classification (ALC): Grid point datasets of climatic variables at 5 km intervals for England and Wales. Available at: https://data.gov.uk/dataset/8a334958-ff65-4f5c-9674-5a85e61ee269/climatological-data-for-agricultural-land-classification Accessed September 2023.
[17] HM Government. Multi-Agency Geographical Information for the Countryside (MAGIC). Available at: www.magic.gov.uk
[18] Knox *et al*. (2015). 'Research to develop the evidence base on soil erosion and water use in agriculture: Final Technical Report. pp147' Available at [redacted] Accessed September 2023.
[19] Cranfield University (2023) The Soils Guide. Available at LandIS - Land Information System - Soils guide Accessed September 2023.
[20] Natural England (2017) Likelihood of Best and Most Versatile (BMV) Agricultural Land - Strategic scale map East midlands region (ALC017) Available at: [redacted] Accessed September 2023.

14.4.7 As a detailed soil survey had not been carried out for the Cable Route Corridor (including the Bicker Fen substation extension works) at the time of this assessment, the baseline for this area was informed by the above desk-based sources.

Significance Criteria

14.4.8 Effects that are deemed to be significant for the purposes of this assessment are those that are described as being of Moderate or Major nature and thus significant. The assessment methodology draws upon the IEMA guidance 'A New Perspective on Land and Soil in Environmental Impact Assessment'[11] which was published on 17 February 2022.

14.4.9 The construction of the Proposed Development would result in the direct loss of land within the Site due to the 'built infrastructure' component of the development and would change agricultural land use potential across the whole Site during the construction and operational phase. There is also the potential for damage and loss of the soil resources present within the Site as a result of unsuitable handling, storage, and management practices during construction.

14.4.10 Subsequently, the potential impact upon the land surface and soil resources arising as a result of activities associated with the construction of the Proposed Development has been considered.

14.4.11 In the following section, the sensitivity criteria, and factors for magnitude of change are discussed separately for the two receptors (1: Land and 2: Soil Resources). The effects matrix is then detailed and can be used for all identified receptors.

14.4.12 In the following sections the terms 'temporary' or 'permanent' have been used to describe the Proposed Development. The majority of the land-take involved in the Proposed Development is 'temporary' as land will be returned to its former use following decommissioning. However, areas of built development involving soil sealing (e.g., substation, BESS, the Bespoke Access Road and the access tracks within the Solar Array Area) are assessed as permanent impacts based on a "worst-case" scenario.

Receptor: Land

14.4.13 Table 2 of the IEMA guidance[11] covers a wide range of soil functions and most cannot be appropriately placed into discrete categories for the assessment process. Therefore, assigning sensitivity involves consideration of all the available information and an element of professional judgement.

14.4.14 Agriculture is the primary land use within the Site and the available baseline shows that the soils under consideration are mineral soils. Based on the IEMA system, the sensitivity of soils will therefore be based on the land's ability to provide food and fuel. This has been assessed using the ALC system, with higher grades assigned higher sensitivities. The receptor sensitivity criteria for 'Land' are outlined in Table 14.2.

Table 14.2 – Receptor Sensitivity (Land)

RECEPTOR	SENSITIVITY	JUSTIFICATION
Soils supporting agricultural	Very high	Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown (commonly including top fruit, soft fruit, salad crops and winter harvested vegetables). Yields are

RECEPTOR	SENSITIVITY	JUSTIFICATION
land quality of grades 1 and 2		high and less variable than on land of lower quality. Land with minor limitations that affect crop yield, cultivations or harvesting. Grade 2 may comprise soils that show difficulties with the production of more demanding crops (e.g., winter harvested vegetables and arable root crops). The level of yield is generally high but may be lower or more variable than Grade 1.
Soils supporting agricultural land quality of subgrade 3a	High	Land capable of consistently producing moderate to high yields of a narrow range of arable crops (especially cereals) or moderate yields of a wide range of crops (including cereals, grass, oilseed rape, potatoes, sugar beet) and the less demanding horticultural crops.
Soils supporting agricultural land quality of subgrade 3b	Medium	Land capable of producing moderate yields of a narrow range of crops (principally cereals and grass) or lower yields of a wider range of crops or high yields of grass that can be grazed or harvested over most of the year.
Soils supporting agricultural land quality of grades 4 and 5	Low	Land with severe limitations that significantly restrict the range of crops and / or level of yields. Is mainly suited to grass with occasional arable crops (e.g., cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high, but there may be difficulties in utilisation.
Other soils	Negligible	As per 'Low' sensitivity, but with indirect, tenuous, and unproven links between sources of impact and soil functions (i.e., non-agricultural, or urban). Built-up or 'hard' uses with relatively little potential for a return to agriculture.

14.4.15 The magnitude of change criteria for the receptor 'Land' is shown in Table 14.3, which has been adapted from Chapter 9: Table 3 of the IEMA guidance.

Table 14.3 – Magnitude of Change (Land)

MAGNITUDE	LAND TAKE
High	Permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading) over an area of more than 20 ha or loss of soil-related features (including effects from 'temporary developments'*).
Medium	Permanent, irreversible loss of one or more soil functions or soil volumes over an area of between 5 and 20 ha or loss of soil-related features (including effects from 'temporary developments'*).
Low	Permanent, irreversible loss over less than 5 ha or a temporary, reversible loss of one or more soil functions or soil volumes, or temporary, reversible loss of soil-related features.
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 result in permanent damage to soils.*

Receptor: Soil Resources

14.4.16 The effect of permanent and temporary development resulting from the Proposed Development will be assessed in terms of the identified soil resources, their sensitivity, and the degree of damage and loss of soil resource. The assessment criteria combine standard industry approaches, the IEMA guidance and professional judgement.

14.4.17 The sensitivity of soil resources to disturbance is based on how susceptible the soils are to damage when disturbed and includes the assumption that good working practice, such as that set out in 2009 DEFRA guidance[10] is followed.

The sensitivity criteria also explore how soils with different inherent properties will have differing resilience to disturbance, and the impacts from construction may be more severe in certain situations. The proposed sensitivity criteria are detailed in Table 14.4.

Soil Resources: Structural Damage

Table 14.4 – Receptor Sensitivity (Soil Resources – Structural Damage)

RECEPTOR	SENSITIVITY	JUSTIFICATION
Soils with low resilience to structural damage	High	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 (FCDs) 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) WCV or WCVI.
Soils with medium resilience to structural damage	Medium	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 wetness classes WCIII and WCIV.
Soils with high resilience to structural damage	Low	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 WCI to WCII.

Soil Resources: Loss

14.4.18 Where soils are left exposed, the sensitivity of soil resources to loss is considered in relation with impacts of environmental factors such as wind and water. In this assessment the soil erodibility, which is a measure of the susceptibility of soils to loss both in-situ (i.e., as an undisturbed soil profile) and during soil stockpiling, due to wind or water erosion (natural erosion potential) will be used. The sensitivity levels on erosion used for this assessment stem from the sensitivity classification compiled by Cranfield University[18] and is detailed in Table 14.5.

Table 14.5 – Receptor Sensitivity (Soil Resources – Loss)

RECEPTOR	SENSITIVITY	JUSTIFICATION
Soils with high risk of erosion and organic soils (peat)	High	Development on these soils should be avoided. If this is not possible, they require careful consideration and site-specific planning of construction methods (e.g., use of temporary working surfaces, sensitive storage, protection from drying out) in order to preserve their functions. Soils are of high biodiversity value. High importance as a carbon store and active role in carbon sequestration, which have little capacity to tolerate change. Increased mitigation requirements beyond standard measures are required for organically managed land.
Soils with moderate risk of erosion (organo-	Medium	Whilst standard mitigation measures will provide appropriate protection to these soils, damage is likely to occur if worked in less-than-ideal conditions (e.g.,

RECEPTOR	SENSITIVITY	JUSTIFICATION
mineral soils: i.e., peaty soils or peaty gleys, peat < 50 cm)		when above their plastic limit – the moisture state where soil begins to behave as a plastic material). The soils should be given appropriate consideration due to their importance for agricultural production.
Soils with low risk of erosion	Low	These soils are generally more resistant to damage and may be appropriately managed by standard good practice construction measures.

14.4.19 Soils of differing texture and structural development may be subject to a range of potential impacts during and following reinstatement.

14.4.20 For example, the incorrect handling/reinstatement of a heavy textured (clay rich) soil whilst in a plastic state may cause permanent or semi-permanent soil compaction. The resulting soil profile will have a reduced natural drainage compared to the undisturbed soil profiles and a subsequent increased risk of soil loss (erosion) due to surface water run-off. Whereas sandy soils are more resistant to compaction pressures and have a greater capacity to recover from compaction without intervention or management. Sandy soils will also remain more permeable if compaction does occur and the drainage potential of these soils is therefore more easily maintained upon reinstatement.

14.4.21 It is assumed that soils currently designated to non-agricultural classes, including urban and non-agricultural land, are not exposed to loss and damage, as standard best practice is already in place to maintain and secure their soil function. Therefore, the area considered for impact on receptors of soil resources only concerns soils currently under agricultural use. For 'Damage to Soil Resources' the footprint of proposed hardstanding (damage through soil handling) under the Proposed Development is considered, whereas the area of soils left in-situ is considered for the potential for 'Loss of Soil Resources'. The ratio between the two receptors constitutes a single magnitude of change that will be applied to both analyses. The area that is affected by the respective receptor category is expressed in the percentage of agricultural land onsite.

14.4.22 The magnitude of change criteria for soil resources (damage to soil resources and loss of soil resources) is shown in Table 14.6, which has been adapted from Chapter 9: Table 3 of the IEMA guidance[11].

Table 14.6 – Magnitude of Change (Soil Resources)

MAGNITUDE	DAMAGE TO SOIL RESOURCES	LOSS OF SOIL RESOURCES
High	Permanent change to soil quality of > 75 % of the soil resource.	< 25 % of soil resources retained in-situ.
Medium	Permanent change to soil quality of 25 – 50 % of the soil resource.	25 – 75 % of soil resources retained in-situ.
Low	Permanent change to soil quality of 5 – 25 % of the soil resource.	75 – 95 % of soil resources retained in-situ.
Negligible	Permanent change to soil quality of < 5 % of the soil resource.	> 95 % of soil resources retained in-situ

Level of effects

14.4.23 The classification of effects for loss of land (agricultural), and loss and damage of soil resources, has been assessed using Table 14.7. Where effects are determined as Major or Moderate, the effect will be considered as Significant in EIA terms. Where effects are determined as Minor or Negligible, the effect will be considered Not Significant in EIA terms. Where effects are Minor to Moderate they may be significant in EIA terms and professional judgement and sound reasoning will be used to determine the significance.

Table 14.7 – Level of Effects

		MAGNITUDE OF CHANGE				
		High	**Medium**	**Low**	**Negligible**	**No Change**
SENSITIVITY/ VALUE OF RECEPTOR	**Very High**	Major (Significant)	Major (Significant)	Major or Moderate (Significant)	Minor (Not Significant)	Neutral (Not Significant)
	High	Major (Significant)	Major or Moderate (Significant)	Moderate or Minor (Potentially Significant*)	Minor (Not Significant)	Neutral (Not Significant)
	Medium	Major or Moderate (Significant)	Moderate (Significant*)	Minor (Not Significant)	Minor (Not Significant)	Neutral (Not Significant)
	Low	Moderate or Minor (Potentially Significant*)	Minor (Not Significant)	Minor (Not Significant)	Minor (Not Significant)	Neutral (Not Significant)
	Negligible	Minor (Not Significant)	Minor (Not Significant)	Minor (Not Significant)	Minor (Not Significant)	Neutral (Not Significant)

*Professional judgement will be used to determine the significance of the effect in the particular circumstances.
Note: Major, Moderate or Minor effects have the potential to be adverse or beneficial.

14.5 Baseline Conditions

Current Baseline Conditions

14.5.1 The Site is comprised of three areas: the Solar Array Area, Cable Route Corridor (which includes the Bicker Fen substation extension works), and the Bespoke Access Corridor.

Agricultural Land Classification

Solar Array Site

14.5.2 The provisional ALC data maps the Solar Array Site as Grade 3 agricultural land and it falls within the High likelihood of BMV land (>60 % area BMV) category towards the centre, east and northeast areas of the Site and Moderate likelihood of BMV land (20-60 % area BMV) category towards the southwest end of the Site.

14.5.3 The detailed ALC assessment carried out by Wardell Armstrong found the Solar Array Area to be made up of 49.5% Subgrade 3b, 44.6% Subgrade 3a and 2.8% Grade 2 agricultural land (Table 14.8). The remaining land was recorded as non-agricultural and is defined as “other”. Subgrade 3b land

occupies most of the Northwest, North and large proportions of the central areas of the Solar Array Area. The northeast of the Solar Array Area is predominantly Subgrade 3a as well as areas to the south and southwest. Within these areas of Subgrade 3a there are pockets of Grade 2 land. The Solar Array Area also contains non-agricultural land including woodland, reservoirs, and drainage ditches.

14.5.4 There are no climatic limitations to the agricultural land classification grade for the Solar Array Area. Field Capacity Days (FCDs) at the Solar Array Area Site is 106 days.

14.5.5 Table 14.8 displays the breakdown of agricultural land within the Solar Array Area. The distribution of these ALC grades within the Solar Array Area is shown in Figure 14.1. Minor updates to the Order Limits after the survey was carried out result in a slight discrepancy between the total area of 528.17 ha in Table 14.18 and the updated 529.16 ha area of the Solar Array Area. However, given that the provisional ALC grading is Grade 3 for the Solar Array Area, it is not anticipated that the inclusion of the additional area of 0.99 ha would substantially change the relative proportions of ALC grades within the Solar Array Area.

Table 14.8: Summary of detailed ALC survey grades within the Solar Array Area.

ALC OR OTHER LAND CATEGORY	AREA (HA)	PERCENTAGE % WITHIN APPLICATION BOUNDARY	PERCENTAGE % OF SURVEYED AREA (EXCLUDING LAND MARKED AS 'OTHER')
Grade 2 (very good)	14.61	2.8	2.9
Subgrade 3a (good)	235.51	44.6	46.0
Subgrade 3b (moderate)	261.43	49.5	51.1
Other	16.62	3.1	
Total	**528.17**	**100**	**100 (511.55 ha)**

Cable Route Corridor

14.5.6 The current boundary of the Cable Route Corridor is approximately 183 ha and provisional ALC data shows that this is comprised predominantly of Grade 2 (145.73 ha, 79.57%) agricultural land, with portions of Grade 1 (28.18 ha, 15.39%) and Grade 3 (9.24 ha, 6.28%). The Cable Route Corridor shows a High and Moderate BMV likelihood.

14.5.7 There are no climatic limitations to the agricultural land classification grade for the area. FCDs at the Cable Route Corridor Site is 109 days.

14.5.8 The provisional ALC breakdown within the Cable Route Area, along with the identified soil association are summarised in Table 14.9.

Table 14.9 – Provisional ALC grading and associated soil association for the proposed Cable Route Corridor

SOIL ASSOCIATION	GRADE 1	GRADE 2	GRADE 3	TOTAL
512c		5.29 ha	3.54 ha	8.84 ha
711t		52.84 ha	4.96 ha	57.80 ha
812c	0.88 ha			0.88 ha
813g	27.30 ha	87.60 ha	0.74 ha	115.64 ha
Total (% of Cable Route Corridor)	28.18 ha (15.39%)	145.73 ha (79.57%)	9.25 ha (5.05%)	183.16 ha

Bespoke Access Corridor

14.5.9 The current boundary of the Bespoke Access Corridor Area is approximately 45 ha and the provisional ALC data shows that this is comprised entirely of Grade 3 agricultural land (Detailed ALC surveys have been completed on the Bespoke Access Corridor Area). The Bespoke Access Corridor Area shows a Moderate Likelihood of BMV with a small area of High Likelihood of BMV in the southwest of the Bespoke Access Corridor Area.

14.5.10 Table 14.10 provides a breakdown of the ALC grades within the Bespoke Access Corridor obtained through a detailed ALC survey carried out by Wardell Armstrong. The survey found that the Bespoke Access Corridor mostly consisted of Subgrade 3a and Grade 2 quality agricultural land, with some areas of Subgrade 3b and non-agricultural land use also recorded. The distribution of these grades within the Bespoke Access Corridor is shown in Figure 14.3. The Bespoke Access Corridor has an interpolated 115 FCDs and climate does not directly limit the ALC grading within the surveyed area. The main limitation to ALC grading within the Bespoke Access Corridor is Soil Wetness.

14.5.11 As with the Solar Array Area, minor changes to the Order Limits after the survey was carried out result in a slight discrepancy between the total surveyed area of 45.42 ha included in Table 14.10 and the updated area of 45.31 ha for the Bespoke Access Road. Given that the provisional ALC grading is Grade 3 for the entire area, it is not anticipated that the minor changes to the Order Limits would substantially change the relative proportions of ALC grades within the Bespoke Access Corridor and these figures are therefore still used.

Table 14.10 – Summary of detailed ALC survey grading within the Bespoke Access Corridor

ALC OR OTHER LAND CATEGORY	AREA (HA)	PERCENTAGE % WITHIN APPLICATION BOUNDARY	PERCENTAGE % OF SURVEYED AREA (EXCLUDING LAND MARKED AS 'NOT SURVEYED' OR 'OTHER')
Grade 2 (very good)	16.60	36.6	37
Subgrade 3a (good)	22.08	48.6	49
Subgrade 3b (moderate)	6.28	13.6	14
Not surveyed	0.10	0.2	
Other	0.45	1.0	
Total	**45.42**	**100**	**100 (44.86 ha)**

Provisional and Post 1988 ALC Data within Lincolnshire County Council and North Kesteven District Boundaries

14.5.12 Table 14.11 displays the total agricultural land within Lincolnshire County Council boundary and is calculated based upon the provisional ALC data and post 1988 ALC data. For the purpose of assessing the amount of Subgrade 3a and Subgrade 3b land within the administrative boundary, the Grade 3 provisional calculations assume a 50/50 split between Subgrade 3a and Subgrade 3b.

Table 14.11 Provisional ALC Data and Post 1988 Data Combined with Administrative Boundaries

ALC GRADE	LINCOLNSHIRE COUNTY COUNCIL BOUNDARY (HECTARES OF LAND)
Grade 1	75568.28 ha
Grade 2	186336.8 ha
Subgrade 3a	148602.9 ha
Subgrade 3b	148345.9 ha
Grade 4	14762.45 ha
Non-agricultural	25655.91 ha
Total	599272.2 ha

Soil Resources

14.5.13 Table 14.12 describes the range of soil associations found on the Site.

Table 14.12: The Soil Associations found with the Solar Array Area, Cable Route Corridor and Bespoke Access Corridor Area based on the Soil Survey of England and Wales (1984) and LandIS.

SOIL ASSOCIATION	WALLASEA 2 (813G)	BECCLES 3 (711T)	RUSKINGTON (512C)	AGNEY (812C)
Soil Series	Wallasea, Newchurch, Blacktoft, Wisbech	Beccles, Ashley, Hanslope	Ruskington, Ickford, Newsleaford	Agney, Wisbech
Geology	Marine alluvium	Chalky till	Glaciofluvial sand and gravel	Marine Alluvium
Soil characteristics	Stoneless clayey soils, calcareous in places. Some calcareous silty soils. Flat land often with low ridges giving a complex soil pattern. Groundwater controlled by ditches and pumps.	Slowly permeable seasonally waterlogged fine loamy over clayey soils, associated with similar clayey soils.	Deep permeable calcareous coarse and fine loamy and sandy soils affected by groundwater. Flat land.	Deep stoneless calcareous fine and coarse silty soils. Groundwater usually controlled by ditches and pumps. Flat land.

SOIL ASSOCIATION	WALLASEA 2 (813G)	BECCLES 3 (711T)	RUSKINGTON (512C)	AGNEY (812C)
Soil Water Regime (WC = Wetness Class)	Most of the land is pump-drained and the more permeable Blacktoft and Wisbech soils are well drained (WC I). Wallasea and Newchurch soils are less permeable but respond to underdrainage; drained soils are occasionally waterlogged (WC II) but undrained soils are waterlogged for long periods in winter (WC III or IV).	All the soils have slowly permeable subsoils which cause waterlogging for much of the winter (WC III and IV) and a limited winter rainfall acceptance potential. Surplus water is shed laterally as surface run-off.	Most of the soils have been artificially drained so are only occasionally waterlogged in winter (WC II) as they respond well to drainage. Locally, however, where there is hard ironpan or an undulating, slowly permeable clay substratum the soils lie wet for longer.	The land is mostly drained by ditches and pumps and the soils are rarely waterlogged (Wetness Class I).
Erodibility	Very small risk from water	Very small risk from water	Very small risk from water	Very small risk from water
Area found	Solar Panel Array Area and Cable Route Corridor	Solar Panel Array Area, Cable Route Corridor, and Bespoke Access Corridor	Solar Panel Array Area, Cable Route Corridor, and Bespoke Access Corridor	Cable Route Corridor

Soil Characteristics within Solar Array Area

14.5.14 The soil characteristics described below are based upon the Detailed ALC report produced by Wardell Armstrong for the Solar Array Area (**Appendix 14.2, Document Ref: 6.3 ES Vol.2, 6.3.93**).

14.5.15 The survey identified three main soil profile types, and these are consistent with the characteristics of the Beccles 3 711t, Wallasea 2 813g and Ruskington 512c soil associations. The distribution of soil profiles showing characteristics indicative of these associations is shown in Figure 14.2 for the Solar Array Area.

14.5.16 Topsoil of the Beccles 711t characteristics were typically heavy clay loam to clay texture (sandy clay loam was also recorded) with depth ranging between 20cm and 50 cm. Topsoil with Wallasea 813g characteristics had silty clay to clay textures with depth ranging between 30 and 45cm. Topsoil with Ruskington 512c characteristics were typically sandy loam to sandy clay loam

(some Ickford soils with heavy clay loam and clay topsoil also found) with depths ranging from 26cm to 60cm.

14.5.17 Upper subsoil for Beccles 711t type soils was typically a clay texture (sandy clay loam, heavy clay loam, were also recorded) with depths ranging between 35cm and 120 cm. >2% ochreous mottling was common. The upper subsoil for Wallasea 813g type soils were typically silty clays with depth ranging between 50 to 80cm. The upper subsoil for Ruskington 512c type soils was typically loamy sand or sandy loam (heavy clay loam or clay for Ickford soils) with depths ranging between 35 and 100cm.

14.5.18 For Beccles type soils the lower subsoil was typically a clay texture with chalk stones present. Depths ranging between 50 and 120cm. Wallasea type soils typically had clay lower subsoils with depths between 80 and 110cm. The lower subsoils for Ruskington type soils had varying textures of sand, loamy sand, sandy loams, sandy clay loams and some occurrence of clay, with depth ranging between 40cm and 120cm. >2% ochreous mottling was common in all lower subsoils.

14.5.19 The detailed survey confirms the main limitation for the Solar Array Site is Wetness with 58% of the points having Wetness Class (WC) III. The majority of these were found within soils identified as either having Beccles 711t or Wallasea 813g soil associations characteristics which have heavy textured topsoil and heavy textured slowly permeable subsoils. These soils were either classed as Subgrade 3b or Subgrade 3a (where there were medium textured or calcareous topsoil). Approximately 30% of the surveyed points are WC II and were typically present at points within transition areas between soil types where there were more permeable, better structured subsoils or within soils identified with Ruskington soil association characteristics (sandier more permeable soils). These soils were typically Subgrade 3a with occurrences of Grade 2 where there were medium textured/calcareous topsoils. Only 12% of the land had WC I and was typically found where there were well-structured lighter textured subsoils with good drainage. The majority of these had droughtiness as the main limitation due to the reduced available water content of the lighter textured subsoils and the relatively low rainfall for the area.

Soil Characteristics within Bespoke Access Corridor

14.5.20 The soil characteristics below described are based on the Detailed ALC report produced by Wardell Armstrong for the Bespoke Access Corridor (**Appendix 14.3, Document Ref: 6.3 ES Vol.2, 6.3.94**).

14.5.21 The survey identified two main soil profile types which were consistent with the characteristics of the Beccles 3 (711t) Ruskington (512c) soil associations described above in paragraphs 14.5.16 to 14.5.18. The distribution of soil profiles showing characteristics indicative of these associations is shown in Figure 14.4 for the Bespoke Access Corridor.

14.5.22 Topsoil texture for the Ruskington (512c) soils varied from sandy loam and sandy clay loam to heavy clay loam which extended to an average depth of 33 cm. The underlying subsoil was also variable, with textures ranging from sand, loamy sand, sandy loam and sandy clay loam to heavy clay loam and clay.

14.5.23 The Beccles 3 (711t) soils mostly belonged to Wetness Class III, whereas many of the sandier textured Ruskington (512c) soils belonged to Wetness Class II.

Soil Characteristics within Cable Route Corridor (Based on Survey of England and Wales (1984) and LandIS

14.5.24 The majority of the mapped soils associations in the Cable Route Corridor are the same as those found within the Solar Array Area. The notable differences are that the Cable Route Corridor encompasses a wider range of soil types although in terms of soil texture they are likely to be very similar to those across the Solar Array Area and will be comprised primarily of clay textured soils with isolated area of lighter textured sandy loams.

14.5.25 The provisional ALC data indicates that despite the occurrence of similar soil types to those found within the Solar Array Area, the land within the Cable Route Corridor has a higher overall potential to be BMV. It is expected that this is due to the occurrence of more Wetness Class II and III conditions across the Cable Route Corridor due to better drainage.

Sensitive Receptors

14.5.26 In summary, the key sensitive receptors, and the potential impacts upon them within the study area comprise:

- Agricultural land may be subject to loss as a result of the Proposed Development. This land consists of Grade 1, 2, Subgrade 3a, and Subgrade 3b agricultural land of which Grade 1, 2 and Subgrade 3a land is classed as BMV land.

- Loss of soil resource as a result of the Proposed Development due to soil erosion from water or wind. The soils involved are predominantly of a clay texture (low risk of erosion), but sandier textures (high risk of erosion) were recorded in some areas.

- Damage to soil resource (soil structural damage) as a result of the Proposed Development due to soil handling. Soils on the Solar Array Site are typically heavy clay loam/clay textured and are of Wetness Class III and have 106 FCD and therefore have a medium resilience to structural damage. Where sandy loam textures were present, and soils were of Wetness Class II soils have a high resilience to structural damage. Similar soils were recorded within the Bespoke Access Corridor with heavy clay loam/clay and sandy clay loam textured topsoils present. In combination with the 115 FCDs, this results in a medium resilience to structural damage.

Agricultural Land

14.5.27 Based upon Table 2 ‘Guidance on Proposed Receptor Sensitivity and Typical Soil Resource / Functions Description’ of the IEMA guidance, the following potential sensitive receptors have been identified for the Site:

- Agricultural Land of Grade 1 and 2, being of **very high sensitivity**

- Agricultural Land of Subgrade 3a, being of **high sensitivity**

- Agricultural Land of Subgrade 3b, being of **medium sensitivity**

14.5.28 The change in land use will include the temporary disruption of soil functions through cable installation within the Cable Route Corridor, construction of the Bespoke Access Road within the Bespoke Access Corridor, and construction of the Solar Array Area. There will also be a change in agricultural management of the Solar Array Area and within the footprint of the Bespoke Access Road during the operational phase. At this stage, the position of the Bespoke Access Road within the Bespoke Access Corridor remains to be confirmed. Given that this would require long term storage of stripped soils, this has been assessed as a permanent impact based on a worst case. The same approach of a worst case permanent loss has been taken for other built-infrastructure elements such as the BESS, substation and access tracks within the Solar Array Area, and the Bicker Fen substation extension works within the Cable Route Corridor.

Loss of Soil Resources

14.5.29 The majority of the soils present within the Solar Array Area and Bespoke Access Corridor are clays with a very small risk of erosion from water and they therefore have a **low sensitivity** to loss. Smaller areas of soils with higher sand contents were recorded and where these occurred the soils have a high risk of erosion and a **high sensitivity**.

14.5.30 For the purposes of this assessment, a **medium sensitivity** for soil loss within the Solar Array Area and Bespoke Access Corridor has been applied as a worst-case scenario to account for the presence of both clay textured and sandy textured soils.

14.5.31 Based on the mapped soil associations, the soils within the Cable Route Corridor include a range of soil textures with the majority being clays belonging to the Wallasea and Beccles 3 associations. Based on the information available, the sensitivity of the soil within the Cable Route Corridor to loss is considered as **low**. Soil association data also indicates that soils of the Ruskington association are also present in the Cable Route Corridor, and where these sandier soils are mapped, there is expected to be a **high sensitivity** for soil loss. For the purposes of this assessment, a **medium sensitivity** for soil loss within the Cable Route Corridor has been applied as a worst-case scenario to account for the presence of both clay textured and sandy textured soils.

Damage to Soil Resources

14.5.32 Based upon ‘Table 4: Sensitivity of Soil Receptors’ of the IEMA guidance, it is likely that the majority of soils present on the Site have a **medium sensitivity** to structural damage based upon the estimate of < 150 FCDs and the presence of heavy clay loams, clay, sandy clay loams, and medium clay loams present in the topsoil and subsoils. The majority of the soils within the Solar Array Area and the Bespoke Access Corridor also belonged to Wetness Class III.

14.5.33 Where a sandy loam textured topsoil or subsoil and Wetness Class II has been recorded, the soils are likely to have a **Low sensitivity** and, thus, has a high resilience to structural damage.

Future Baseline Conditions

14.5.34 In the absence of the Proposed Development, it is expected that the future baseline for the land would remain as it is with land retaining in its current agricultural land capacity and being managed for arable production.

14.5.35 It is expected that the future baseline of soil resources on the Site would remain as per the current baseline in the absence of the Proposed Development.

14.6 Assessment of Effects

Design Layout and Land Use Breakdown

14.6.1 Table 14.13 presents the land take for different aspects of the Proposed Development based on the following design plans:

- LCA-2023-01-C-Beacon Fen: Solar Array Area Illustrative Layout
- LCA-2023-01-C-Beacon Fen: Preliminary Cable Route Design
- ST19595-599-P3: Bespoke Access Corridor Layout

14.6.2 75% (395.62 ha) of the Solar Array Area would be covered by the solar arrays, which would be piled directly into the ground without prior soil removal. Of this 11.69 ha is Grade 2, 180.02 ha is Subgrade 3a, and 203.92 ha is Subgrade 3b. In total the solar panels would cover 191.71 ha of 'best and most versatile' (BMV) land.

14.6.3 The requirement for directly impacting the soil by stripping, temporary stockpiling or storage would be associated with the construction of the access tracks and roads within the Solar Array Area, construction compounds, BESS, substation and transformer stations (referred to here as 'built infrastructure'). Using the breakdown in Table 14.13 the total area of proposed built infrastructure on agricultural soil is estimated to be 23.31 ha of the Solar Array Area which constitutes 4.4% of the agricultural soil within the Solar Array Area.

14.6.4 Of the land-take by the proposed built infrastructure elements within the Solar Array Area, only 0.19 ha will be on Grade 2 land. The built development is mostly situated on a mixture of Subgrade 3a and Subgrade 3b and avoidance of BMV land is considered to be unavoidable due to the site layout and design constraints.

14.6.5 During the construction phase, 18.91 ha of land within the Bespoke Access Corridor will be made unavailable for agriculture. The Bespoke Access Road and the associated drainage ditches and verges within the Bespoke Access Corridor cover an area of 3.98 ha which will remain unavailable for the operational phase and is assumed to be permanently lost due to long-term soil sealing. The remaining land within the Bespoke Access Corridor either side of the Bespoke Access Road (14.93 ha) would be returned to agriculture post-construction. Detailed ALC survey data show that the Bespoke Access Corridor predominantly consists of Subgrade 3a quality land (49%) with areas of Grade 2 (37%) and Subgrade 3b (14%) land also present. Given that the exact route of the Bespoke Access Road is not confirmed, it is assumed as a reasonable worst case that BMV land cannot be avoided and that the relative proportions of each ALC grade within the area of the Bespoke Access Road

will reflect the wider Bespoke Access Corridor (i.e. 37% Grade 2, 49% Subgrade 3a, and 14% Subgrade 3b).

Table 14.13 – Land use breakdown for the proposed development of the site in hectares.

LAND USE	GRADE 1	GRADE 2	SUBGRADE 3A	SUBGRADE 3B	NON-AGRICULTURAL	TOTAL (AGRICULTURAL LAND)
Solar Array Area						
Solar Panels	0.00	11.69	180.02	203.92	0.00	395.63
Substation and BESS*	0.00	0.00	7.87	2.62	0.00	10.49
Construction Compounds*	0.00	0.00	2.29	1.02	0.00	3.31
Cable Route Easement	0.00	0.00	0.00	0.01	0.00	0.01
Access Tracks*	0.00	0.18	3.04	4.24	0.04	7.50
Access Roads*	0.00	0.00	0.75	1.05	0.01	1.81
Transformer Stations*	0.00	0.01	0.11	0.13	0.00	0.25
Permanent land loss Subtotal	**0.00**	**0.19**	**14.06**	**9.06**	**0.05**	**23.31**
Temporary land loss Subtotal	**0.00**	**11.69**	**180.02**	**203.93**	**0.00**	**395.64**
Overall Subtotal	**0.00**	**11.88**	**194.08**	**212.99**	**0.05**	**418.95**
Cable Route Corridor						
Cable Route (30 m buffer)	0.00	39 provisional	0.00	0.00	0.00	39.00
Construction compounds	2.23 provisional	10.82 provisional	0.33 provisional assuming a 50:50 split	0.33 provisional assuming a 50:50 split	0.00	13.71
Air Insulated Switchgear (AIS) system*	0.00	1.8 ha provisional	0.00	0.00	0.00	1.80
Cable Sealing End*	0.00	0.90 provisional	0.00	0.00	0.00	0.90
Permanent Land Loss Subtotal	0.00	2.70	0.00	0.00	0.00	2.70
Temporary Land Loss Subtotal	2.23	49.82	0.33	0.33	0.00	52.71
Overall Subtotal	2.23	52.52	0.33	0.33	0.00	55.41
Bespoke Access Corridor						
Bespoke Access Road, drainage ditches and verges*	0.00	1.47	1.95	0.56	0.00	3.98

50 m wide Construction Corridor	0.00	5.52	7.32	2.09	0.00	14.93
Permanent Land Loss Subtotal	0.00	1.47	1.95	0.56	0.00	3.98
Temporary Land Loss Subtotal	0.00	5.52	7.32	2.09	0.00	14.93
Overall Subtotal	0.00	6.99	9.27	2.65	3.98	3.98
Permanent Land Loss Order Limits Total	**0.00**	**4.36**	**16.01**	**9.62**	**4.03**	**29.99**
Temporary Land Loss Order Limits Total	**2.23**	**67.03**	**187.67**	**206.35**	**0.00**	**463.28**
Order Limits Totals	**2.23**	**71.39**	**203.68**	**215.97**	**4.03**	**493.27**

*Areas assessed as “permanent” development (Built Environment)

Embedded Mitigation

14.6.6 As set out in **Chapter 3: Alternatives and Design Evolution (Document Ref: 6.2 ES Vol.1, 6.2.3)**, ALC grading and the avoidance of BMV land was considered in the site selection process**.** ALC survey results for the Solar Array Area have also been used to inform on the siting of the BESS and onsite substation to avoid hard development on an area of Grade 2 quality land in the south.

14.6.7 Embedded mitigation measures are secured through the Outline Soil Management Plan (OSMP) **\\9Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95)**, which was developed based upon the findings of the site-specific soil survey of the Solar Array Area and Bespoke Access Corridor, and high-level desk-based soils and ALC data for the Cable Route Corridor. The OSMP is included as part of the DCO Application and secured through the draft DCO.

14.6.8 The OSMP details the requirements for the development of a site-specific SMP which will required as part of the construction phase. In addition to the ALC surveys already conducted for the Solar Array Area and Bespoke Access Corridor, a detailed soil survey of the Cable Route Corridor will be carried out pre-construction to inform the site-specific SMP.

14.6.9 The OSMP secures industry best practice guidance relating to soil handling include the Institute of Quarrying’s 2021 ‘Good Practice Guide for Handling Soils in Mineral Workings’[9] and DEFRA’s 2009 ‘Construction Code of Practice for the Sustainable Use of Soils on Construction Sites’[10] which both provide guidance on soil management, handling, storage, replacement and mitigation for soil works.

14.6.10 Pre entry assessments of agricultural land drainage systems will be required and considered as part of the CEMP (**Document Ref: 6.3 ES Vol.2, 6.3.7**), which refers to the soil management measures included in the OSMP. The CEMP will include mitigation measures to avoid damage to mapped

underdrainage, and where this is not practicable, field drains will be diverted or replaced or such other solution required to alleviate flooding in consultation with the landowner. As part of the Chapter 11: Water Resources and Flood Risk ES chapter **(Document Ref: 6.2 ES Vol.1, 6.2.11**), an **FRA (Document Ref: 6.3 ES Vol.2, 6.3.81)** has been produced. This report sets out a drainage strategy for the Site which will incorporate Sustainable Drainage Systems (SuDS) where feasible. These mitigation measures will alleviate impacts on drainage within the Solar Array Area during the operational phase.

14.6.11 The measures and strategies in the OSMP include but are not limited to the following general principles of soil handling and soil stripping and ALC protection:

- No trafficking of vehicles / plant or material storage to occur upon unprotected topsoil (traffic on subsoil should be minimised and localised, with the use of temporary running surfaces recommended).
- No trafficking of vehicles / plant on reinstated soil unless for cultivation and then only in suitable soil moisture and weather conditions.
- All plant and machinery must always be maintained in a safe and efficient working condition.
- No soil handling to be carried out when the soil moisture content is above the lower plastic limit.
- No mixing of topsoil with subsoil, or soil resources from different units (soil types) or mixing of soil with other materials.
- Soil is only to be stored in pre-planned, marked, and mapped soil storage areas away from potential sources of contamination.
- A daily record of the Site and soil conditions, and operations undertaken to be maintained.
- Soils should only be moved under the driest practicable conditions, and this must take account of prevailing weather conditions.
- Local drainage required as part the Proposed Development will be integrated to support local drainage conditions and will be detailed along with ALC restoration planning in the CEMP **(Document Ref: 6.3 ES Vol.2, 6.3.7).**
- The separately identifiable topsoils and subsoils encountered (and stripped for storage) are to be stored separately in stockpiles. Soils must be kept free of contamination.
- Low ground pressure (LGP) models or tracked vehicles should be used where possible. This will greatly minimise the extent and/or intensity of the soil loosening required after restoration. Consequently, it will reduce the costs and potential delays due to the need for additional soil cultivation.

14.7 Assessment of Effects - Solar Array Area

Construction Phase

Land

14.7.1 The Solar Array Area comprises a total of 529 ha of land, of which 528.17 ha was subject to a detailed ALC survey (approximately 1 ha was added to the Solar Array Area after the survey was concluded as part of a targeted consultation). Of the surveyed area, 250.12 ha is BMV land (14.61 ha Grade 2 and 235.51 ha Subgrade 3a) and 261.43 ha of non-BMV (all Subgrade 3b) agricultural land. The remaining land is classed as "Other" and does not directly support agricultural production. The combination of these grades translates to a **medium to very high sensitivity** for the receptor 'Land' (assessed as **high sensitivity**).

14.7.2 During the construction phase, all land within the Solar Array Area will be removed from agricultural production. However, the temporary nature of the solar arrays means that the land take is not all permanent, and that the land-take associated with the solar arrays can be returned to agriculture after decommissioning.

14.7.3 The permanent land-take within the Solar Array Area is limited to the footprint of the areas of built development including the BESS, substation, transformer stations, construction compounds, and the access tracks and roads required for construction and maintenance, a total of 23.31 ha of agricultural land. As there is more than 20 ha of permanent (worst case) land-take associated with the construction phase, **the magnitude of this change** compared to the baseline for the receptor 'Land' is considered to be **major**.

14.7.4 The initial effect on the receptor 'Land' is assessed as being "High" due to the presence of medium, high, and very highly sensitive agricultural land (Subgrade 3b, Subgrade 3a and Grade 2 agricultural land) within the Solar Array Area. A major impact magnitude has been assumed based on a permanent (worst-case scenario) land-take for 23.31 ha where built infrastructure is located. With embedded mitigation in place, the resulting effect on the receptor 'Land' is considered **Major** and thus **significant** in EIA terms.

Soil resources - Loss of Soils

14.7.5 Table 14.5 presents the sensitivity of different soil types to loss based upon their susceptibility to erosion. The soils within the Solar Array Area are typically heavy textured (clays or heavy clay loams) and therefore, the sensitivity of the soil resource with respect to soil loss through erosion is considered to be Low. Where soils with higher sand contents were recorded (medium sandy loam, medium sand, loamy sand textures), they are likely to have a high sensitivity and a high risk of erosion.

14.7.6 For the purposes of this assessment, a **medium sensitivity** for soil loss within the Solar Array Area has been applied as a worst-case scenario to account for the presence of both clay textured and sandy textured soils.

14.7.7 It is expected that the majority of soils onsite would remain in-situ. Based upon Table 14.13, 505.69 ha of the of soil resource would remain in-situ which equates to 96% of the Solar Array Area and this is associated with a **negligible magnitude of change** compared to the baseline.

14.7.8 By following best practice guidance and implementing a site-specific SMP, it is anticipated that the loss of soil resources would be minimal. With the above embedded mitigation in place, the resulting effect on the receptor 'loss of soil' is therefore considered to be **Minor and Not Significant** in EIA terms.

Soil resources - Damage to Soils

14.7.9 The main threats to soils during construction works are trafficking of vehicles/plant and incorrect soil handling, which can cause damage to soil structure through compaction and smearing (both effects are sometimes referred to as 'deformation').

14.7.10 These effects compromise the ability of the soil to perform its functions (such as providing adequate amounts of water, air, and nutrients to plant roots), and its suitability for reuse within the Site without costly and time-consuming remediation. The risk of soil compaction increases with soil wetness and works involving soil handling pose a greater risk if conducted when the soil is saturated. Activities associated with the construction phase of the Proposed Development may result in the disturbance and damage to the soil present, which could result in a long-term impact to the onsite soil resource due to reduced quality.

14.7.11 The requirement for the stripping, temporary stockpiling or storage of topsoil would be associated with the construction of the substation, BESS, access tracks/roads, transformer stations and construction compound.

14.7.12 Damage to soils which occurs through disturbance, handling, and trafficking soils, is a main concern during the construction phase. Clay soils are susceptible to compaction and structural damage during both the construction and operations phase when handled in wet conditions, however standard mitigation measures will provide appropriate protection.

14.7.13 The ALC survey (see **Appendix 14.2, Document Ref: 6.3 ES Vol.2, 6.3.93)** found that the majority of soils on the Solar Array Area range between heavy clay loam, clay, heavy silty clay loam and sandy clay loam soils which combined with 106 Field Capacity Days would have a medium resilience to structural damage. Therefore, the **sensitivity** of the soil resource with respect to damage to soil structure is **Medium**.

14.7.14 Soils with a sandy loam or loamy sand texture of Wetness Class II were also recorded and where these soils occurred, the sensitivity of soil resource to structural damage would be considered low.

14.7.15 In the worst-case scenario, the proportion of the Solar Array Area affected by soil sealing and associated built infrastructure would change the soil quality of 4% of the soil resource and therefore have a **negligible magnitude of change** compared to the baseline.

14.7.16 By following best practice guidance and implementing a site-specific SMP, it is anticipated that structural damage of the soil resources would be minimal. With the above embedded mitigation in place, the resulting effect on the receptor 'damage to soil' is therefore considered to be **Minor and Not Significant in EIA terms**.

14.7.17 Table 14.14 summarises the potential impacts from construction with the embedded mitigation measures in place discussed in the section above.

Table 14.14: Construction Effects for Solar Array Area

	LAND		SOIL RESOURCES	
Impact	*Permanent loss of land (including BMV agricultural land)*		*Damage to soils*	*Loss of soil resources*
Element	Footprint of Proposed Development on land which has been classed as Permanent		All soils onsite prone to damage on agricultural land	All soils retained in-situ on agricultural land
Receptor Sensitivity	Assessed as High overall due to range of ALC Grades occurring within the Solar Array Area: Very High: Grade 2 High: Subgrade 3a Medium: Subgrade 3b		Medium (proportional average): 106FCD and clay/clay loam textures Low: 106 FCD and sandy loams texture	Predominantly low (very small risk of water erosion, small risk) where clay soils are present. High in smaller areas where sandier soils are present. Reassessed as Medium as a worst-case scenario to account for the presence of sandier soils
Magnitude of change	Major - built development covers an area of 23.31 ha, resulting in permanent worst case) loss		Negligible - 4% of soils subject to built development, resulting in permanent (worst case) loss	Negligible - 96% of soils to remain in-situ and not permanently lost.
Effect	**Major (Significant)**		**Minor (Not Significant)**	**Minor (Not Significant)**

Operational Phase

14.7.18 The land within the Solar Array Area may be available for grazing during the operational phase, however, this has not been confirmed at this stage. This assessment is therefore based on a "worst case" assessment that approximately 529 ha of land within the Solar Array Area remains out of agricultural production for the duration of the operational phase. The soils will provide other ecosystem services during the operational phase including for biodiversity and carbon storage due to the lower intensity land management strategies that will be adopted during operation.

14.7.19 There will be no further development of built infrastructure and therefore no further loss of agricultural land or soil disturbance during the operational

phase. Vehicle movements for periodic servicing of panels and associated infrastructure will mostly be confined to access tracks/roads. Therefore, there will be no substantial change to the soils remaining in-situ within the Site during the operational phase. To avoid double counting impacts, the Major (adverse) impact associated with the permanent land take by built infrastructure during the construction phase is not re-assessed for the operational phase.

14.7.20 As stated above, it is assumed the land will not be available for agricultural production over the 40-year operational period. As most of the soil will remain functional over this period and since the agricultural potential of the land will remain intact, the receptor sensitivity is High. The temporary and reversible removal of the Solar Array Area from agricultural production during the operational phase constitutes a Low magnitude of change. The above combination of receptor sensitivity and magnitude of change results in a Moderate or Minor (adverse) impact, which has been assessed as Minor and not significant using professional judgement given that the Solar Array Area predominantly consists of Subgrade 3a and 3b quality land.

14.7.21 For the receptor 'Loss of Soil Resource' there is a medium sensitivity and a negligible magnitude of change associated with the operational phase of the Solar Array Area (due to the temporary nature of any changes during this phase) which would result in a Minor (Not Significant) impact.

14.7.22 For the receptor 'Damage to Soil Resource' there is a medium sensitivity and a negligible magnitude of change associated with the operational phase of the Solar Array Area (due to the temporary nature of any changes during this phase) which would result in a Minor (Not Significant) impact.

Decommissioning Phase

14.7.23 As the solar array piles will be driven directly into the ground, their removal will result in minimal soil damage or loss.

14.7.24 The main threats to soils and land during decommissioning relates to the trafficking of vehicles/plant and incorrect soil handling, which can cause damage to soil structure through compaction and smearing (both effects are sometimes referred to as 'deformation').

14.7.25 Appropriate soil management planning and adopting best practice guidance, as set out in the OSMP, will ensure that potential impacts on the soil resource are minimal and reversable. For the purposes of the decommissioning phase the OSMP will form a part of (and is therefore secured through) the outline Decommissioning Environmental Management Plan (DEMP) **(Document Ref: 6.3 ES Vol.2, 6.2.8)**. The magnitude of change for both soil resource (loss and damage) and land is assessed as Low when accounting for this embedded mitigation.

14.7.26 For the receptor 'Land' there is a High sensitivity and a Low magnitude of change associated with the decommissioning phase of the Solar Array Area which would result in a Moderate or Minor effect that has been assessed as Minor and not significant.

14.7.27 For the receptors 'Loss of Soils Resource' and 'Damage to Soil Resource' there is a Medium sensitivity and a negligible magnitude of change associated with the decommissioning phase of the Solar Array Area which would result in a Minor (Not Significant) impact.

14.8 Assessment of Effects - Cable Route Corridor

Construction Phase

Land

14.8.1 The proposed Cable Route Corridor comprises a total of 183 ha of land, of which 28.18 ha is provisional Grade 1, 145.73 ha is provisional Grade 2, and 9.24 ha is provisional Grade 3 quality agricultural land. Assuming a 50/50 split of the provisional ALC data for Grade 3 agricultural land between Subgrade 3a and Subgrade 3b, there is a total of 178.53 ha of BMV land within the Cable Route Corridor.

14.8.2 The Cable Route is largely through land with a high likelihood of BMV land being present (>60% area BMV), except for an area in the north which is mapped by Natural England as having a moderate BMV likelihood (20-60% area BMV).

14.8.3 Based upon our current understanding of the baseline, the receptor sensitivity for 'Land' is a combination of High (Subgrade 3a) and Very High (Grade 1 and Grade 2). Given the predominance of Grade 2 land within this area, a Very High sensitivity has been assigned to the Cable Route Corridor.

14.8.4 With the embedded mitigation measures (Section 14.6) it is assumed that any loss of land resulting from laying the cable within the Cable Route Corridor along with the temporary access tracks would be temporary as the land will be reinstated to agricultural use following construction. Construction compounds will cover approximately 13.71 ha of land within the Cable Route Corridor. However, given that these construction compounds will only be required for the duration of the trenching, these have been assessed as being temporary impacts, unlike the Solar Array Area compounds which will be required for a longer period of time.

14.8.5 The AIS system and Cable Sealing End constructed as part of the Bicker Fen extension will result in the permanent loss of 2.7 ha of provisional Grade 2 agricultural land. Given that there will be less than 5 ha of agricultural land permanently lost, the impact magnitude for the Cable Route Corridor has been assessed as being Low.

14.8.6 The resulting effect on the receptor 'Land' is Major or Moderate (Significant).

Soil Resource – Loss of Soil Resource

14.8.7 Ruskington (512c) soils present towards the north of Heckington are likely to be less resilient to erosion due to their sandier texture. Beccles 3 (711t) soils also present towards Heckington are likely to be more resilient (clay texture, less prone to erosion). Wallasea 2 (813g) soils present south of Heckington for the remaining route, likely to more resilient (clay texture, less prone to erosion).

14.8.8 Based upon the desk-based analysis of the soil resources, the receptor sensitivity for 'loss of soil resource' is Medium as a worst-case scenario to account for the presence of both sandier and clay textured soils.

14.8.9 It is estimated that soil disturbance will occur over approximately 55.41 ha (30%) of the Cable Route Corridor (Table 14.13). With the embedded mitigation measures (Section 14.6) in place, it is assumed that any loss of the

soil resource resulting from the Cable Route Corridor would be minimised and all impacts temporary as good practice measures will be employed. Any temporarily displaced soil would be reinstated to its baseline condition following the temporary construction works and therefore the magnitude of change would be Low.

14.8.10 With the embedded mitigation, the potential resulting effect on the receptor 'Loss of Soil Resource' is Minor and Not Significant.

Soil Resource – Damage to Soil Resource

14.8.11 Ruskington (512c) soils present towards the north of Heckington are likely to be more resilient to structural damage (sandier soils, free draining soils). Beccles 3 (711t) soils also present towards Heckington, are likely to be less resilient to structural damage (prone to waterlogging). Wallasea 2 (813g) soils present south of Heckington for the remaining route, are also likely to be less resilient to structural damage (clays, very prone to waterlogging, marshland/marine alluvium influence).

14.8.12 Based upon the desk-based analysis of the soil resources the receptor sensitivity for 'damage to soil resource' is Medium as a worst-case scenario to account for the presence of both sandier and clay textured soils.

14.8.13 As mentioned above, soil disturbance will occur on approximately 30% of the Cable Route Corridor. However, with the embedded mitigation measures in place, it is assumed that any damage to the soil resource would be minimised as good practice measures will be employed, resulting in no permanent change to the quality of the soil resource. Therefore, the magnitude of change would be Low.

14.8.14 With the embedded mitigation, the resulting effect on the receptor 'Damage to Soil Resource' is Minor and Not Significant.

Decommissioning Phase

14.8.15 As specified in **Chapter 2: Proposed Development** (**Document Ref: 6.2 ES Vol.1, 6.2.3)**, it is assumed that the cable will remain in situ during decommissioning and will not be removed. Therefore, it is not anticipated that there will be any further effects on agricultural land or the soil resource (in terms of loss and structural damage) within the Cable Route Corridor post-construction.

14.9 Assessment of Effects – Bespoke Access Corridor

Construction Phase

Land

14.9.1 The proposed Bespoke Access Corridor comprises approximately 45 ha of land. A detailed ALC survey showed that the Bespoke Access Corridor predominantly consisted of Subgrade 3a (22.08 ha, 48.62%) quality agricultural land, with areas of Grade 2 (16.60 ha, 37.01%) and Subgrade 3b (6.18 ha, 13.60%) quality agricultural land also present to a lesser extent. The remainder of the area was non-agricultural land (0.45 ha, 1.00%) or not surveyed (0.10 ha, 0.22%).

14.9.2 Owing to the predominance of BMV quality land within the Bespoke Access Corridor, it has been assumed as a worst case that BMV land cannot be avoided and that the ALC grades impacted the Bespoke Access Road construction reflect those of the wider Bespoke Access Corridor. Due to the predominance of Subgrade 3a and Grade 2 land within this area, the Land receptor has a High to Very High sensitivity based on the criteria in Table 14.2.

14.9.3 The removal of 18.91 ha of land within the Bespoke Access Corridor from agricultural production during the construction phase is expected to be a temporary impact as following construction of the Bespoke Access Road the surrounding land can be reinstated to agricultural use (or its predevelopment use). As a worst-case assessment, the 3.98 ha of 'hard development' where the Bespoke Access Road is sited has been assessed as 'permanent' loss of BMV land and associated soil', consistent with the approach taken for areas of built infrastructure within the Solar Array Area. Therefore, the magnitude of change is assessed as being Low.

14.9.4 With embedded mitigation measures in place, the potential resulting effect on the receptor 'Land' is deemed as being Moderate and Significant based on professional judgement given the proportion of Grade 2 land involved.

Soil Resource – Loss of Soil Resource

14.9.5 Most of the soils within the Bespoke Access Corridor had characteristics indicative of the Beccles 3 (711t) association which have a clayey texture and therefore have a lower risk of erosion. Areas of Ruskington (512c) soils were also found within the Bespoke Access Corridor and are at higher risk of loss through erosion (high sensitivity) due to their sandy texture.

14.9.6 The soil resources within the Bespoke Access Corridor has been assigned a Medium sensitivity to 'loss through erosion' as a worst-case scenario to account for the presence of both sandier and clay textured soils.

14.9.7 The embedded mitigation measures in place will ensure that any loss of the soil resource through erosion resulting from the Bespoke Access Corridor would be minimised and any temporarily displaced soil would be reinstated to its baseline condition following the temporary construction works.

14.9.8 With embedded mitigation measures in place, the potential resulting effect on the receptor 'Loss of Soil Resources" is deemed as being Minor and Not Significant.

14.9.9 With the embedded mitigation, the potential resulting effect on the receptor 'Loss of Soil Resource' is Minor and Not Significant.

Soil Resource – Damage to Soil Resource

14.9.10 The Beccles 3 (711t) soils found within the Bespoke Access Corridor have low resilience to structural damage as they are prone to waterlogging and have a clayey texture. The sandy lighter textured Ruskington (512c) soils also occurring within the Bespoke Access Corridor are more resilient to structural damage (sandier, free draining soils).

14.9.11 Based upon the soil texture and climatic data included within the ALC report for the Bespoke Access Corridor, the receptor sensitivity for 'Damage to Soil Resource' is assessed as being Medium as a worst-case scenario to account for the presence of both sandier and clay textured soils.

14.9.12 The embedded mitigation measures in place will also help ensure that any damage to the soil resource resulting from soil stripping and storage of soils to accommodate the Bespoke Access Corridor would be minimised and there is no permanent change to the quality of the soil resource. The soil resource would therefore be available for reuse during decommissioning and not permanently damaged, resulting in a Negligible impact magnitude (Table 14.6).

14.9.13 The resulting effect on the receptor 'Damage to Soil Resource' is Minor and Not Significant.

Operational Phase

14.9.14 The 3.98 ha area lost to the Bespoke Access Road will remain unavailable for agriculture during this phase. This is not assessed further for the operational phase as the construction phase assessment was based on the assumption that it is permanently lost.

14.9.15 There will be no further construction of built infrastructure or disturbance of the soil resource during the operational phase within the Bespoke Access Corridor.

Decommissioning Phase

14.9.16 It is proposed that the Bespoke Access Road will be removed during decommissioning.

14.9.17 It is anticipated that any effects on agricultural land and the soil resource (in terms of loss and structural damage) resulting from the removal of the Bespoke Access Road during decommissioning will be the same as those identified during the construction phase.

RECEPTOR	IMPACT	RECEPTOR SENSITIVITY	MAGNITUDE OF CHANGE	EFFECT
Solar Array Area				
Adverse Construction Effects				
Land	Loss of land (including BMV agricultural land) due to Built Environment (permanent) and solar arrays (temporary and reversible)	<u>Permanent Loss (in worst case scenario):23.31 ha</u> Very high: 0.19 ha of Grade 2 High: 14.06 ha of Subgrade 3a Medium: 9.06 ha of Subgrade 3b Negligible: 0.05 ha of Non-agricultural land Medium to Very High receptor sensitivity (assessed as High receptor sensitivity). <u>Temporary Loss: 395.63 ha</u> Very high: 11.69 ha of Grade 2 High: 180.02 ha of Subgrade 3a Medium: 203.92 ha of Subgrade 3b Negligible: 0 ha of Non-agricultural land Medium to Very High receptor sensitivity	High (as permanent land take is >20 ha)	Major (Significant)

RECEPTOR	IMPACT	RECEPTOR SENSITIVITY	MAGNITUDE OF CHANGE	EFFECT
Damage to Soil Resources	Soils prone to damage on agricultural land as a result of soil handling	Medium (proportional average): 106 FCD and clay/clay loam textures Low: 106 FCD and sandy loams texture	Low (4% permanent displacement of soils)	Minor (Not Significant)
Loss of Soil Resources	Removal of in-situ soil	Predominantly low (very small risk of water erosion, small risk) where clay soils are present. High in smaller areas where sandier soils are present. Reassessed as Medium as a worst-case scenario to account for the presence of sandier soils	Low (96% of soils to remain in-situ)	Minor (Not Significant)
Adverse Operational Effects				
Land	Loss of land or removal of land from agricultural production (including BMV agricultural land)	<u>Temporary Loss: approximately 529 ha</u> Very high: 14.61 ha of Grade 2 High: 235.51 ha of Subgrade 3a Medium: 261.43 ha of Subgrade 3b Negligible: 16.62 ha of Non-agricultural land Assigned as High sensitivity.	Low (Land to remain out of agricultural production but reversible. No further built development and permanent loss to occur)	Minor (Not Significant)

RECEPTOR	IMPACT	RECEPTOR SENSITIVITY	MAGNITUDE OF CHANGE	EFFECT
Damage to Soil Resources	Soils prone to damage on agricultural land as a result of soil handling	Medium (proportional average): 106 FCD and clay/clay loam textures Low: 106 FCD and sandy loams texture	Negligible (No further soil disturbance)	Minor (Not Significant)
Loss of Soil Resources	Removal of in-situ soil	Predominantly low (very small risk of water erosion, small risk) where clay soils are present. High in smaller areas where sandier soils are present. Reassessed as Medium as a worst-case scenario to account for the presence of sandier soils	Negligible (No further disturbance of soils)	Minor (Not Significant)
Adverse Decommissioning Effects				
Land	Loss of land or removal of land from agricultural production (including BMV agricultural land)	Temporary Loss: approximately 529 ha Very high: 14.61 ha of Grade 2 High: 235.51 ha of Subgrade 3a Medium: 261.43 ha of Subgrade 3b Negligible: 16.62 ha of Non-agricultural land Medium to Very High receptor sensitivity.	Low (temporary loss of land whilst area is returned to agriculture)	Minor (Not Significant)
Damage to Soil Resources	Soils prone to damage on agricultural land as a result of soil handling	Medium (proportional average): 106 FCD and clay/clay loam textures Low: 106 FCD and sandy loams texture	Low (4% permanent displacement of soils)	Minor (Not Significant)

RECEPTOR	IMPACT	RECEPTOR SENSITIVITY	MAGNITUDE OF CHANGE	EFFECT
Loss of Soil Resources	Removal of in-situ soil	Predominantly low (very small risk of water erosion, small risk) where clay soils are present. High in smaller areas where sandier soils are present. Reassessed as Medium as a worst-case scenario to account for the presence of sandier soils	Low (96% of soils to remain in-situ)	Minor (Not Significant)
Cable Route Corridor				
Adverse Construction Effects				
Land	Land (including BMV agricultural land) removed from agricultural production	<u>Permanent loss: 2.7 ha</u> Very high: 2.7 ha of Grade 2 <u>Temporary Loss: 52.71 ha</u> Very high: 2.23 ha Grade 1 and 49.82 ha of Grade 2 High: 0.33 ha of Subgrade 3a Medium: 0.33 ha of Subgrade 3b Assigned Very High receptor sensitivity due to permanent loss of Grade 2 and as loss of lower grades is temporary	Low (<5 ha permanent loss, remaining loss of land temporary and reversible)	Major or Moderate (Significant)
Damage to Soil Resource	Soils prone to damage on agricultural land.	Assigned Medium sensitivity to account for different soil types within the area	Low magnitude of change, accounting for embedded	Minor (Not Significant)

RECEPTOR	IMPACT	RECEPTOR SENSITIVITY	MAGNITUDE OF CHANGE	EFFECT
			mitigation which would minimise damage to soil structure.	
Loss of Soil Resource	Removal of in-situ soil temporarily.	Assigned Medium sensitivity to account for different soil types within the area	Low magnitude of change, accounting for embedded mitigation which would minimise loss through erosion.	Minor (Not Significant)
Operational and decommissioning phase impacts have not been assessed for the Cable Route Corridor as there will be no further loss of land or soil disturbance during these phases.				
Bespoke Access Corridor				
Adverse Construction Effects				
Land	Land (including BMV agricultural land) removed from agricultural production	<u>Permanent Loss: 3.98 ha</u> Assumed that BMV loss cannot be avoided and area is mostly Grade 2 to Subgrade 3a: High to Very high sensitivity <u>Temporary Loss: 18.91 ha</u> Overall receptor sensitivity assigned as being Very High as a worst case due to high proportion of Grade 2 land involved	Low (<5 ha permanent loss of land)	Moderate (Significant)

RECEPTOR	IMPACT	RECEPTOR SENSITIVITY	MAGNITUDE OF CHANGE	EFFECT
Damage to Soil Resource	Soils prone to damage on agricultural land.	Assigned Medium sensitivity to account for different soil types within the area	Low (<5% of soils to be permanently displaced)	Minor (Not Significant)
Loss of Soil Resource	Removal of in-situ soil temporarily.	Assigned Medium sensitivity to account for different soil types within the area	Low (>95% of soils to remain in-situ)	Minor (Not Significant)

Operational phase impacts have not been assessed for the Bespoke Access Corridor as there will be no further loss of land or soil disturbance during this phase.

Decommissioning phase impacts on the soil resource are assumed to be the same as those identified during the construction phase as restoring the Bespoke Access Road will involve excavation of soil stockpiles and replacement of soil to reinstate the original profile.

14.10 Additional Mitigation

14.10.1 The only significant effect identified is in respect of elements of the built infrastructure on the agricultural land receptor, for which the Applicant considers there is no additional mitigation possible (beyond the mitigation by design already implemented in the parameters of the Proposed Development). As such, no additional mitigation is proposed.

Monitoring

14.10.2 In order to ensure compliance with the detailed SMP, the works will be monitored during soil handling activities; thereby ensuring that the soils are maintained in good condition permitting the continued, sustainable use of the soil resource.

14.11 Residual Effects

14.11.1 As no additional mitigation measures are proposed, the residual effects remain as identified in the assessment above.

14.12 Assessment of Cumulative Effects

Intra-Cumulative Effects

14.12.1 There are potential intra-project effects relating to the **Soils and Agricultural Land ES Chapter** and **Chapter 7: Ecology (Document Ref: 6.2 ES Vol.1, 6.2.7)** where the benefits of using the land for biodiversity net gain purposes may be favoured over the continued use of the Solar Array Area for agricultural purposes. At this stage, it is currently proposed that the land will be managed as specified in the **outline LEMP (Document Ref: 6.3 ES Vol.2, 6.3.19)** during the operational phase and not be used for agriculture, as discussed above in Section 14.8. The impact of temporarily removing the land from agricultural production for the operational phase has a Low magnitude of impact based on its reversibility (Table 14.3). Given that the land within the Solar Array Area has been assessed as having a High receptor sensitivity, this corresponds to a Moderate or Minor impact (Table 14.7), assessed as being Moderate and significant as a worst case using professional judgement as there is a substantial proportion of BMV land involved.

Inter-Cumulative Effects

14.12.2 There are not considered to be any relevant cumulative effects on soil resources as the effects of soil loss are contained within the specific Site.

14.12.3 There may be relevant effects on agricultural land, which are considered below. For the purposes of this assessment, land noted as ‘unsurveyed’, ‘urban’ or ‘non-agricultural’ will be considered ‘non-agricultural’ land in the revised grading. Additionally, where Provisional Grade 3 land is encountered, a split will be made between Subgrade 3a and Subgrade 3b for the revised ALC grading for purposes of cumulative assessment.

14.12.4 Table 14.15 below sets out the baseline conditions relevant to the projects within the Lincolnshire County Council administrative boundary that have been considered to have the potential for a cumulative effect with the Proposed

Development (in accordance with the current scope set out within **Chapter 4: Scope and Methodology** (**Document Ref: 6.2 ES Vol.1, 6.2.4).**

Table 14.15 - Cumulative Effects Assessment of Developments

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
Nationally Significant Infrastructure Projects (NSIPs)		
Heckington Fen Energy Park (EN010123)[21] Construction, operation and decommissioning of a solar photovoltaic (PV) electricity generating facility.	524 ha Site Grade 1: 58ha Grade 2: 39 ha Subgrade 3a: 160 ha Subgrade 3b: 265 ha Non-agricultural: 2 ha	Grade 1: 58ha Grade 2: 39 ha Subgrade 3a: 160 ha Subgrade 3b: 265 ha Non-agricultural: 2 ha
Springwell Solar Farm (EN010149)[22] Proposed new solar farm with battery storage and supporting grid connection infrastructure in North Kesteven, Lincs.	591.3 ha Site area of Solar PV development Grade 2: 14.3 ha Subgrade 3a: 196.4 ha Subgrade 3b: 376.4 ha Grade 4: 4.2 ha	Grade 2: 14.3 ha Subgrade 3a: 196.4 ha Subgrade 3b: 376.4 ha Grade 4: 4.2 ha
Tillbridge Solar Project Farm (Information is from Scoping Report and figures are provisional awaiting an ALC Survey) (EN010142)[23] Solar PV modules, PV module mounting structures, string combiner boxes, Solar DC/AC Inverters, Battery Energy Storage System (BESS), Battery DC/DC convertors, LV/MV transformer stations including switchgear, MH/HV transformer stations, MV/HV switch gear, on-site cabling, weather monitoring stations, fencing and security measures, building with control room and operation/ maintenance facilities, including	1,330 ha Grade 2: 8 ha Grade 3a: 103 ha Grade 3b: 1218 ha Grade 4: 1 ha	Grade 2: 8 ha Grade 3a: 103 ha Grade 3b: 1218 ha Grade 4: 1 ha

[21]Heckington Fen Energy Park (2023) Environmental Statement Chapter 16 Land Use and Agriculture. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010123/EN010123-000137-6.1.16%20-%20Chapter%2016%20-%20Land%20Use%20and%20Agriculture.pdf
[22] Springwell Solar Farm (2023) Springwell Solar Farm PEIR Volume 1, Chapter 10: Land, Soils, and Groundwater. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010149/EN010149-000170-6.1%20Environmental%20Statement%20Volume%201%20Chapter%2011%20-%20Land,%20Soil%20and%20Groundwater.pdf [Accessed February 2025]
[23]Tillbridge Solar Project (September 2023) Appendix 15-2: Agricultural Land Classification Baseline Report. Available at: EN010142-000298-6.2 Appndx 15-2 Agricultural Land Classification Baseline Report.pdf [Accessed February 2025]

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
storage, grid connection and HV cable route, main access into the site for construction purposes off the main highway; and access tracks for construction and maintenance.		
Temple Oaks Renewable Energy Park (EN010126)[24] Ground mounted solar panels and ancillary infrastructure including centralised inverters mounted behind the panels, transformers, and temporary construction compounds. In addition, a Battery Energy Storage System would be located within the site.	350 ha Site Grade 3b: 350 ha	Subgrade 3b: 350 ha
Cottam Solar Project (EN010133)[25] Construct, operate (including maintenance), and decommission a ground mounted solar photovoltaic (PV) panel array energy generating facility, a Battery Energy Storage System (BESS), and supporting infrastructure.	1179.7 ha Site Grade 2: 6.1 ha Subgrade 3a: 43 ha Subgrade 3b: 1118.3 ha Not surveyed 13.3 ha	Grade 2: 6.1 ha Subgrade 3a: 43 ha Subgrade 3b: 1118.3 ha Non-agricultural: 13.3 ha
West Burton Solar Project (EN010132)[26] Ground mounted solar photovoltaic (PV) generating stations; grid connection infrastructure and energy storage; and the Cable Route Corridors.	757.8 ha Site Grade 1: 17.6 ha Grade 2: 9.5 ha Subgrade 3a: 172.4 ha Subgrade 3b: 557 ha Non-agricultural: 1.3 ha	Grade 1: 17.6 ha Grade 2: 9.5 ha Subgrade 3a: 172.4 ha Subgrade 3b: 557 ha Non-agricultural: 1.3 ha
Gate Burton Energy Park (EN010131)[27] Development consent to construct, operate, maintain, and decommission ground mounted	652 ha Site Subgrade 3a: 73.6 ha Subgrade 3b: 548.9 ha	Solar and Energy Storage Park: Subgrade 3a: 80.4 Subgrade 3b: 553.4

[24]Temple Oaks Renewable Energy Park (2022) Temple Oaks Renewable Energy Park Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010126/EN010126-000020-Temple%20Oaks%20Scoping%20Report%20220630%20re-ISSUED.pdf
[25]Cottam Solar Project (2023) Environmental Statement Chapter 19: Soils and Agriculture. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010133/EN010133-000239-C6.2.19%20ES%20Chapter%2019_Soils%20and%20Agriculture.pdf
[26]West Burton Solar Project (2023) Environmental Statement Chapter 19: Soils and Agriculture. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010132/EN010132-000370-WB6.2.19%20ES%20Chapter%2019_Soils%20and%20Agriculture.pdf
[27] Gate Burton Energy Park (2023) Environmental Statement Chapter 12: Socio-Economics and Land Use. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010131/EN010131-000209-EN010131%20APP%203.1%20ES%20Chapter%2012%20-%20Socio-Economics.pdf

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
solar photovoltaic (PV) panel arrays, on-site battery storage and associated infrastructure.	Non-agricultural: 18.2 ha Estimated BMV: 6.8 ha. Estimated Subgrade 3b: 4.5 ha. Grid Connection Corridor 172 ha Estimated BMV: 74.8 ha. Estimated Subgrade 3b: 58.4 ha. Non-agricultural: 38.8 ha	Non-agricultural: 18.2 ha Grid Connection Corridor: Subgrade 3a: 74.8 ha Subgrade 3b: 58.4 ha Non-agricultural: 38.8 ha *Estimated BMV has been classed as Subgrade 3a for the purposes of this assessment and estimated subgrade 3b has been classed at Subgrade 3b
Mallard Pass Solar Project (EN010127)[28] Development consent to construct, operate, maintain, and decommission ground mounted solar photovoltaic (PV) panel arrays, on-site battery storage and associated infrastructure.	Across order limits of Site: 852 ha Grade 2: 100 ha Subgrade 3a: 260 ha Subgrade 3b: 439 ha Grade 4: 18 ha Urban: 3 ha Not surveyed (roads, railways, verges etc): 32 ha	Grade 2: 100 ha Subgrade 3a: 260 ha Subgrade 3b: 439 ha Grade 4: 18 ha Non-agricultural: 21 ha
Lincolnshire Reservoir (Screening)[29] Reservoir exceeding 30 million cubic metres of water storage, together with associated development including water transfer pipelines, abstraction facilities, pumping stations, treatment works, renewable energy generation, access roads, parking, wildlife and environmental areas, leisure and recreation and education facilities.	Minimum land area of 5km^2 (500 ha) for the preliminary Site boundary Described as predominantly Subgrade 3a	Subgrade 3a: 500 ha

[28] Mallard Pass Solar Farm (2022) Environmental Statement Appendix 12.4: Land Use and Soils- Agricultural Land Classification Survey. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010127/EN010127-000163-Appendix%2012.4%20ALC%20Survey.pdf
[29] Anglian Water (2022) Site Selection Report For a reservoir in Lincolnshire. Available at: https://www.lincsreservoir.co.uk/assets/images/downloads/Site-Selection-Report%E2%80%93Lincolnshire-Reservoir%E2%80%93phase-one-consultation-2022.pdf

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
Triton Knoll Electrical System (EN090019)[30] **Also considered: B/19/0281** Triton Knoll Electrical System works are needed to transmit the electricity generated by the consented Triton Knoll Offshore Wind Farm to the National Grid. The electrical system will include: onshore and offshore buried export cables and associated works; an intermediate electrical compound to provide voltage stability and compensate for electrical losses; and a substation located in the vicinity of the grid connection point.	**Site boundary unknown** 12.2% of the study area would fall within ALC Grade 1 (the highest grade), 54.6% within ALC Grade 2 and 31.8% as Grade 3. *ES Documents appear to have been archived so no detailed information is available.	n/a
Outer Dowsing Offshore Wind Generating System (EN010130)[31] Offshore wind farm and associated offshore and onshore infrastructure including offshore and onshore high voltage electricity cables, onshore and offshore electricity substation(s), connection(s) to the National Grid and ancillary and temporary works.	Provisional Grade 1, 2 and 3 in Scoping Report within large scoping boundary (size of scoping boundary not defined and subsequent ALC breakdown not provided)	n/a
Boston Alternative Energy Facility (EN010095)[32] The facilities which will deliver 102 Mwe (gross) and approximately 80Mwe (net) of energy to the National Grid using Refuse Derived Fuel (RDF) as feedstock.	The Application Site covers 26.8 ha. Grade 1 as current known baseline with detailed Post 1988 outside of Site Boundary where Grade 2 and Subgrade 3a land were identified. The Application Site covers 26.8 ha.	Grade 1: 26.8 ha

[30] The Planning Inspectorate (2016) Triton Knoll Electrical System: Examining Authority's Report of Findings and Conclusions and Recommendation to the Secretary of State for Energy and Climate Change. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN020019/EN020019-004772-Examining%20Authority%20Recommendation%20Report.pdf
[31] Outer Dowsing Offshore Wind Generating System (2022) Outer Dowsing Offshore Wind Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010130/EN010130-000055-EN010130-Scoping-Report-Low-Resolution.pdf
[32] Royal Haskoning DHV (2021) Boston Alternative Energy Facility – Environmental Statement Chapter 11 Contaminated Land, Land Use and Hydrogeology Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010095/EN010095-000433-6.2.11.%C2%A0Chapter%2011%20Contaminated%20Land,%20Land%20Use%20and%20Hydrogeology.pdf

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
Fosse Green Energy (EN010154)[33] Installation of solar photovoltaic (PV) panels, associated electrical equipment, cabling and on-site energy storage facilities together with grid connection infrastructure	1003 ha Described in Scoping as Predominantly Grade 3 agricultural land, with some Grade 2 agricultural land (Provisional)	1003 ha of agricultural land Grade 2: 250.75 ha Subgrade 3a: 376.13 ha Subgrade 3b: 376.13 ha *For purposes of this assessment due to the lack of an ALC breakdown and the statement that the land is predominantly Grade 3 with some Grade 2, an assumption of 25% Grade 2 land and 75% Grade 3 land has been made
A46 Newark Bypass (TR010065)[34] The scheme comprises on-line widening, to the north of the existing route, for most of its length between Farndon roundabout and the A1 followed by a new section of offline dual carriageway proposed between the A1 and Winthorpe roundabout, where the new dual carriageway ties into the existing A46 to the west of Winthorpe roundabout. The widening works include earthwork widening along the existing embankments, and new structures where the route crosses the Nottingham to Lincoln and East Coast main railway lines, River Trent and the A1. The roundabouts at Farndon and Winthorpe will be enlarged and partially signalised, while the Cattle Market roundabout will be grade separated by elevating the A46. Access to the A1 to / from A46 will also be improved by upgrading the Brownhill and Friendly Farmer roundabouts.	6.5km of upgraded road requiring approximately 3,571,482 m2 (357.15 ha) of land within the red line boundary to be acquired permanently, and approximately 601,567 m2 (60.16 ha) of land would be needed temporarily during construction. Based on an intrusive agricultural land classification (ALC) survey conducted in spring 2021 and desktop information, the ALC grades identified in the study area include subgrade 3a (20% of study area), 3b (36% study area) and non-agricultural land (44% study area).	Total area of Site estimated at 431.31 ha and breakdown based on percentages: Subgrade 3a: 86.26 ha Subgrade 3b: 155.27 ha Non-agricultural: 189.78 ha

[33] Fosse Green Energy Limited (2023) Fosse Green Energy Environmental Impact Assessment Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010154/EN010154-000011-EN010154%20-%20Scoping%20Report.pdf
[34] National Highways (2022) A46 Newark Bypass Environmental Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010065/TR010065-000002-A46N%20-%20Scoping%20Report.pdf

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
West Burton C Power Station (EN010088)[35] Construct, operate (including maintenance) and decommission a gas-fired electricity generating station of up to 299MW at the existing West Burton Power Station site. The proposed development would comprise up to five Open Cycle Gas Turbines and associated buildings, structures, and plant, as well as associated development	32.8 ha Site No description of agricultural land classification is provided within the PINS documents.	n/a
Viking CCS Pipeline (EN070008)[36] The Viking CCS Pipeline project comprises a new 55 km (approx.) onshore underground pipeline from the point of receipt of dense phase CO2 at Immingham, through its transportation to facilities at TGT, and transportation from TGT through the existing LOGGS pipeline to Mean Low Water Spring (MLWS).	DCO site boundary: 613 ha Grade 2: 76.54 ha Subgrade 3a: 469.57 ha Subgrade 3b: 18.90 ha Non-agricultural: 48.98 ha	Grade 2: 76.54 ha Subgrade 3a: 469.57 ha Subgrade 3b: 18.90 ha Non-agricultural: 48.98 ha
One Earth Solar Farm[37] Construction of a Solar Farm and collated Battery Energy Storage System (BESS) that would allow for the generation, export and storage of electricity exceeding 50 MW.	1500 ha Site Provisional ALC maps shows that site is predominantly Grade 3 agricultural land with an area of Grade 4 agricultural land.	Subgrade 3a: 562.5 ha Subgrade 3b: 562.5 ha Grade 4: 375 ha *For purposes of this assessment due to the lack of an ALC breakdown and the statement that the land is predominantly Grade 3 with some Grade 4, an assumption of 25% Grade 4 land and 75% Grade 3 land has been made. A

[35] EDF Energy (2019) West Burton C Environmental Statement Chapter 3 Description of the Site and its Surroundings. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010088/EN010088-000248-5.2%20-%20WBC%20-%20ES%20Chapter%203%20-%20Description%20of%20the%20Site%20and%20its%20Surroundings.pdf
[36] AECOM (2022) V Net Zero Pipeline Project Environmental Impact Assessment Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN070008/EN070008-000228-EN070008_Viking_CCS_Pipeline_6.2.10_Env_Statement%20Vol%20II_Chapter%2010_V1.pdf [Accessed February 2025]
[37] One Earth Solar Farm (2023) One Earth Solar Farm Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010159/EN010159-000005-One%20Earth%20-%20Scoping%20Report.pdf

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
		50/50 split has been applied to the Grade 3 land.
Meridian Solar Farm[38] Construction, operation, maintenance and decommissioning of a solar photovoltaic (PV) and electrical battery storage generating facility with a generation capacity of up to 750MW.	Currently in pre-application stage with no detailed site information available	n/a
Grimsby to Walpole[39] New c140km long 400kv overhead line and 5 new substations stretching from a new substation to the west of Grimsby in the north to a new substation at Walpole near Wisbech in the south. Three further substations will be built, two to the south west of Mablethorpe and one to the north east of Spalding.	Currently in pre-application stage with no detailed site information available	n/a
Eastern Green Link 3 and 4 New National Grid offshore high voltage electricity links and associated onshore infrastructure between Scotland and England. Involves underground cabling from landfall to converter stations, three converter stations, direct current switching station, and a substation in the Walpole area.	Currently in pre-application stage. Provisional Grade 1, Grade 2 and Grade 3 land included within large scoping boundary. Breakdown of areas of different grades within scoping boundary not provided. Scoping boundary to be refined and replaced by Order Limits based on Scoping Opinion.	n/a
Leoda Solar Farm[40] Ground-mounted solar electricity generating station with a targeted gross output of 500 to 600 Megawatts (MW) and associated grid connection infrastructure.	Approx 900 ha Site Grade 2: 100 ha Grade 3: 800 ha	Grade 2: 100 Ha Subgrade 3a: 400 ha Subgrade 3b: 400 ha
Total Land take for NSIP Developments		Grade 1: 135 ha

[38] NSIP (2024) Meridian Solar Farm Project Information. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010169.
[39] NSIP (2024) Grimsby to Walpole Project Information. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN020036.

[40] Leoda Solar Farm, Scoping Report (2025) Available at: https://nsip-documents.planninginspectorate.gov.uk/published-documents/EN0110016-000003-Leoda%20EIA%20Scoping%20Report_January%202025.pdf [Accessed February 2025]

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
		Grade 2: 510 ha Subgrade 3a: 4492 ha Subgrade 3b: 5259 ha Grade 4: 405 ha Non-agricultural: 130 ha Total agricultural land take: 11,038 ha Total land take: 11,371 ha Total BMV agricultural land take: 4191 ha
Non-NSIP Developments considered for Cumulative Assessment		
Handley Chase, Sleaford (13/0498/OUT)[41] Erection of 1,450 dwellings, two form entry primary school, care home, Local Centre (incorporating 5 no. retail units with offices above, health centre, nursery, community centre and public house) public open space, sports pitches and allotments and associated infrastructure (outline with means of access).	~61 ha Site Grade 2: 26.1 ha Subgrade 3a: 17.2 ha Subgrade 3b: 15.2 ha Non-agricultural: 2.46 ha	Grade 2: 26.1 ha Subgrade 3a: 17.2 ha Subgrade 3b: 15.2 ha
Gorse Lane Solar Farm (19/0060/FUL)[42] Erection of Solar PV Park (circa 20MW electricity generating capacity) including inverters, substations, office building, store, perimeter fencing, access tracks, temporary construction compound and associated development.	~95 ha Site Subgrade 3b: 94 ha	Subgrade 3b: 94ha
Ewerby Thorpe Solar (14/1034/EIASCR)[43]	Site boundary not provided	N/a

[41] CSA Environmental Planning (2013) Environmental Statement, Handley Chase, Sleaford. Chapter 9 Land Use. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?keyVal=MM89RSLL04900&activeTab=summary

[42] ARCUS (2018) Planning Statement, Gorse Lane Solar Farm. Chapter 4 Development Plan Policy Framework. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=PLDOJMLLG4X00

[43] North Kesteven District Council (2014) Screening Opinion. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=N9J59GLL00S00

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
Erection of solar array with generating capacity of up to 28 MW and associated infrastructure.		
Proposed Residential Development Heckington (15/0383/EIASCR)[44] Proposed residential development comprising up to 600 dwellings and associated works situated on land north of Sleaford Road, Oak Way, Mulberry Walk, Hubbard Close and Colby Way and West of Howell Road Heckington.	19 ha Site No description of ALC in screening documents	N/a
Heckington Fen Overhead Lines (22/1596/OHL)[45] **(22/1597/OHL)**[46] **(22/1598/OHL)**[47] **(22/1599/OHL)**[48] Proposed removal of sections of existing overhead line and replacement with new underground power cable. Proposed removal of existing 11kv overhead power line and erection of new overhead power line. Proposed removal of existing 11kv overhead power line and erection of new overhead power line together with installation of new PMT transformers.	Site boundary not provided	N/a

[44] North Kesteven District Council (2015) Screening Opinion. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=NLQ1GXLL03I00
[45] North Kesteven District Council (2022) Screening Opinion. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=RL4KXILL06200
[46] North Kesteven District Council (2022) Screening Opinion. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=RL4L2DLL06200
[47] North Kesteven District Council (2022) Screening Opinion. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=RL4L7FLL06200
[48] North Kesteven District Council (2022) Screening Opinion. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=RL4LKPLL06200

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
Viking Link UK Onshore Scheme (17/1200/FUL)[49] **Also considered: (B/17/0340) and (H04-0823-17)** Works to facilitate the Viking Link electrical interconnector with an approximate capacity of 1400 megawatts (MW) extending from Revsing, Jutland, (Denmark) to Bicker Fen, Lincolnshire (UK) comprising, Installation of two (2) subsea high voltage direct current (DC) cables between Mean Low Water Springs (MLWS) and landfall at Boygrift in East Lindsey. Installation of two (2) onshore DC cables between the landfall at Boygrift and the converter station at North Ing Drove in South Holland. Construction of associated Temporary Construction Compounds (TCC) and Temporary Works Areas (TWA) and temporary vehicle access arrangements required for DC and AC cable installation. Erection of converter station buildings together with the formation of internal roads, permanent access road from the A52, erection of security fencing, formation of landscaping with associated temporary construction compounds. Installation of up to six (6) onshore high voltage alternating current (AC) cables between the converter station at North Ing Drove and the existing Bicker Fen 400 kilovolt (400kV) Substation owned and operated by National Grid Electricity Transmission Plc (NGET). Installation of link pillars along the AC cable route for inspection and maintenance	720 ha Site* Totals are given for DC cable working width and temporary works areas only (excluding ZoI) which were extracted from individual section data tables. Grade 1: 23.7 ha Grade 2: 182.6 ha Grade 3: 105.5 ha Grade 4: 0.4 ha * During construction activities, there will be the temporary loss of approximately 265.1 ha of agricultural land within the DC cable working width and a further 46.8 ha temporarily lost to TCCs (total = 311.9 ha), of which 251.8 ha (95.0%) is likely to be BMV agricultural land.	Grade 1: 23.7 ha Grade 2: 182.6 ha Grade 3a: 52.25 ha Grade 3b: 52.25 ha Grade 4: 0.4 ha

[49] Viking Link: UK Onshore Scheme (2017) Environmental Statement. Chapter 9 Agriculture & Soils. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=OV8ED2LLJIU00

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
purposes, these will be contained within fenced areas. Installation of two substation bays at Bicker Fen Substation to allow Viking Link to be connected to the National Grid electricity transmission system. Installation of all associated drainage mitigation works and Installation of fibre-optic cable(s) with the high voltage AC and DC cables (A bay consists of switching equipment including circuit breakers, disconnector and measuring equipment. NGET will be providing Viking Link the space available to connect to Bicker Fen).		
Little Hale Fen Solar (21/1337/EIASCR)[50] Proposed solar farm (up to 49.995MW generating capacity) and associated infrastructure including grid connection cabling to Bicker Fen Substation.	79 ha Site Provisional Grade 2: 79 ha	Grade 2: 79 ha
Vicarage Drove Solar Farm (B/21/0443)[51] Proposed construction and operation of a solar photovoltaic farm, battery storage and associated infrastructure, including inverters, batteries, substation compound, security cameras, fencing, access tracks and landscaping.	80.36 ha Site Grade 2: (26.06 ha) Grade 3a (54.3 ha)	Grade 2: (26.06 ha) Subgrade 3a (54.3 ha)
Vicarage Drove Solar Farm (B/21/0121)[52] The proposal is for the construction, operation, maintenance and decommissioning of a ground mounted solar farm with a maximum export capacity of up to 49.9 megawatts laid out across various field enclosures across the site in addition	122 ha Site It is understood that the site comprises primarily Grade 2 agricultural land (provisional data). Part of the Site falls within the site boundary of Vicarage Drove Solar Farm (B/21/0433	Grade 2: 41.64 ha* *reassessed as 41.64 ha of land as 80.36 ha of the Site is considered within the boundary of the Vicarage

[50] Axis (2021) Screening Letter. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=QYV586LL06200
[51] LRA (2021) Agricultural Quality of Vicarage Drove Proposed Solar Farm. Available at: https://www.boston.gov.uk/planning-application-search
[52] DWD LLP (2021) Screening Letter. Available at: https://www.boston.gov.uk/planning-application-search

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
to a battery storage and other associated infrastructure.		Drove Solar Farm development (B/21/0443)
Bicker Solar Farm Cable Connection (B/22/0198)[53] Construction and installation of a 132kV underground electrical cable to connect Bicker Solar Farm to Bicker Fen Substation.	0.9 ha Site No provisional ALC Grade given	N/a
Bicker Fen Solar Farm (B/22/0356)[54] Proposed development of a photovoltaic solar array, grid connection, access improvements works and ancillary development on land at bicker fen, Boston, and South Holland.	110 ha Site Grade 1: 7 ha Grade 2: 7 ha Grade 3a: 96 ha	Grade 1: 7 ha Grade 2: 7 ha Grade 3a: 96 ha
Mareham Lane Solar Farm (23/1419/FUL)[55] Installation of a solar farm comprising ground mounted solar PV panels with a generating capacity of up to 49.99MW (AC), including mounting framework, inverters, underground cabling, stock proof fence, CCTV, internal tracks and associated infrastructure, landscaping and ecological works for a temporary period of 50 years	77 ha Site Subgrade 3b: 77 ha[56]	Subgrade 3b: 77 ha

[53] DWD (2022) Planning application. Available at: https://www.boston.gov.uk/planning-application-search
[54] Soil Environment Services Ltd (2021) ALC Bicker Fen Farm. Available at: https://www.boston.gov.uk/planning-application-search
[55] North Kesteven district Council (n.d.) 23/1419/FUL Planning Application documents. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=S4UCCBLLJTU00
[56] Soil Environment Services (2023) Agricultural Land Classification: Land adjoining Thorns Farm Aswarby. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/files/0F425562DB667159731715A160CB69FF/pdf/23_1419_FUL-AGRICULTURAL_LAND_CLASSIFICATION-2227024.pdf

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
Sleaford West Sustainable Urban Extension (16/0498/OUT)[57] Erection of up to 1,400 dwellings, care home, two form entry primary school, secondary education facility, employment land (3 hectares - Class E (g) industrial processes, research and development and offices), local centre (incorporating family restaurant/public house, 40 bed hotel, health centre, 1,190m2 of Class E (a) retail floorspace with offices above and a community centre), public open space and outdoor sports facilities, formation of new roundabout onto A15, highway improvements to Drove Lane and St Deny's Avenue, associated infrastructure, and demolition of existing buildings (outline with means of access).	77.5 ha Proposed Allocation Site[58] Subgrade 3a: 46.5 ha Subgrade 3b: 27.1 ha Other: 3.9 ha	Subgrade 3a: 46.5 ha Subgrade 3b: 27.1 ha Other: 3.9 ha
Land south of the A153, Anwick (EIA/01/24)[59] Proposed renewable biogas plant.	8.5 ha Site Provisional Grade 2: 4.8 ha Provisional Grade 3: 3.7 ha	Grade 2: 4.8 ha Subgrade 3a: 3.35 ha Subgrade 3b: 3.35 ha
Land North Of Pride Parkway (20/1475/FUL / 20/1357/EIASCR)[60] Hybrid planning application for the construction of an employment park comprising of general industrial and warehouse and distribution floorspace, trade showroom floorspace and associated infrastructure.	14.7 ha Site Provisional Grade 2: 10.9 ha Provisional Grade 3: 3.8 ha	Grade 2: 10.9 ha Subgrade 3a: 1.9 ha Subgrade 3b: 1.9 ha
Nat Grid Navenby Heath Substation	11.8 ha Site Subgrade 3b: 11.8 ha	Subgrade 3b: 11.8 ha

[57] North Kesteven district Council (n.d) 16/0498/OUT Planning Application documents. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=O68JSOLLFHA00
[58] Landtec Associates (2013) Land at Sleaford (West) Agricultural Land Classification. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/files/D3B935062DD6A262FC89FB13D34056FC/pdf/16_0498_OUT-SOILS_REPORT_-_AGRICULTURAL_LAND_CLASSIFICATION-1205127.pdf
[59] Lincolnshire County Council (n.d.) EIA/01/24 Application documents. Available at: https://lincolnshire.planning-register.co.uk/Planning/Display?applicationNumber=EIA%2F01%2F24
[60] North Kesteven District Council (n.d.) 20/1475/FUL Planning Application documents. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=QIYPFXLLMJB00

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
(23/0390/EIASCO)[61] 400MW Battery Storage Development		
Land Lying To The South Of Little Hale Drove (24/1265/FUL)[62] **Also considered 24/0311/EIASCR** Erection of 99MW Battery Energy Storage System (BESS) and associated infrastructure	2.5 ha Site Subgrade 3a: 1.8 ha Subgrade 3b: 0.7 ha	Subgrade 3a: 1.8 ha Subgrade 3b: 0.7 ha
Land Adjacent Burton Gorse Plantation North Of Whitecross Lane (24/1041/EIASCR)[63] EIA Screening Opinion for proposed solar farm and associated development	74 ha Site Provisional Grade 3: 74 ha	Subgrade 3a: 37 ha Subgrade 3b: 37 ha
Land off Sleaford Road (20/0057/OUT)[64] **Also considered: 24/1476/RESM** Outline planning application with all matters reserved except for means of access, including residential development (Use Class C3) of up to 1,087 dwellings, up to 0.44ha Use Class C2 (residential institution), up to 2.6ha employment use development (including Use Classes E and a Mobility Hub), engineering and site works, landscaping, drainage, and other associated infrastructure	44.4 ha Site Provisional Grade 2: 44.4 ha	Grade 2: 44.4 ha
Land North Of Cornwall Way & Northfield Road (24/0912/FUL)[65] Erection of 186 dwellings with associated infrastructure, open space and landscaping	8.0 ha Site Provisional Grade 2: 3.4 ha Provisional Grade 3: 4.6 ha	Grade 2: 3.4 ha Subgrade 3a: 2.3 ha Subgrade 3b: 2.3 ha

[61] North Kesteven District Council (n.d.) 23/0390/EIASCO. Planning Application documents. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/simpleSearchResults.do?action=firstPage
[62] Land Research Associates (2024) ALC Report. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/files/2CFD2C0CF041DF7623939216DA686091/pdf/24_1265_FUL-AGRICULTURAL_QUALITY-2316876.pdf
[63] North Kesteven District Council (2024) Delegated Officer Report Recommendation Available at: https://planningonline.n-kesteven.gov.uk/online-applications/files/97852BF98A32E6C4D5DF8CF871BD56BC/pdf/24_1041_EIASCR--2308219.pdf
[64] North Kesteven District Council (n.d.) 20/0057/OUT Planning Application documents. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/files/6281634E625FDC98AAF30279C99E272B/pdf/20_0057_OUT-ENVIRONMENTAL_STATEMENT_PART_2_1_OF_10-1702047.pdf
[65] North Kesteven District Council (n.d.) 24/0912/FUL Planning Application documents. Available at:

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
North Hykeham Relief Road (22/1426/EIASCO / 24/0374/CCC)[66] North Hykeham relief road (linking Lincoln Eastern Bypass with Lincoln Western Relief Road and the A46 Strategic Road Network)	200.2 ha Site Grade 2: 11.9 ha Subgrade 3a: 45.9 ha Subgrade 3b: 110.1 ha Grade 4: 10.1 ha Non-agricultural: 22.1 ha	Grade 2: 11.9 ha Subgrade 3a: 45.9 ha Subgrade 3b: 110.1 ha Grade 4: 10.1 ha Other: 22.1 ha
Land North Of Canwick Avenue And East Of London Road (16/1564/OUT / 24/0841/RESM)[67] Reserved matters application for the erection of 450 dwellings (appearance, landscaping, layout and scale) pursuant to outline consent 16/1564/OUT - Residential development of up to 450 dwellings, provision of primary school land (1.8ha) and formation of roundabout on Canwick Avenue along with associated highways, drainage and open space infrastructure (outline with means of access)	21.26 ha Site Grade 2: 17.1 ha Grade 3: 4.16 ha	Grade 2: 17.1 ha Subgrade 3a: 2.08 ha Subgrade 3b: 2.08 ha
Land to the south of Vicarage Drove (B/23/0423)[68] **Also considered: B/24/0363** Screening opinion under Regulation 6 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 for proposed development of a battery storage facility	4.2 ha Site Provisional Grade 2: 4.2 ha	Grade 2: 4.2 ha
Land off Vicarage Drove (B/24/0415)[69] **Also considered: B/24/0231** Proposed installation and operation of a Battery Energy Storage System (BESS) and ancillary	9.15 ha Site Subgrade 3a: 9.15	Subgrade 3a: 9.15 ha

[66] Kernon Constryside Consultants Limited (2024) Agricultural Land Quality and ES Addendum. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/files/768EA9C3C4F1590ABC1879C27259E7C3/pdf/24_0374_CCC-PART_A_APPENDIX7.1_AGRICULTURAL_LAND_QUIALITY_AND_ES_ADDENDUM-2247940.pdf
[67] North Kesteven District Council (n.d.) Planning application documents. Available at: https://planningonline.n-kesteven.gov.uk/online-applications/files/2461389E932BD90401669E0DB95EEB83/pdf/16_1564_OUT-APPLICATION_FORM-1279095.pdf
[68] Boston Borough Council (n.d.) Planning application documents. Available at: https://planningdocs.boston.gov.uk/docs/c062c470-8e10-49f7-a821-5943f835766b/3593-01-01_Site_Location_Plan.pdf
[69] Terra Analytical UK Ltd (2024) Agricultural Land Classification Report. Available at: https://planningdocs.boston.gov.uk/docs/21478487-73bd-47c1-a099-de8f0bcc5c62/Bicker_Fen_BESS_-_Agricultural_Land_Classification_Report.pdf

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
infrastructure and landscaping and biodiversity enhancements		
Bicker Fen, Land off Vicarage Drove (B/24/0245)[70] Screening opinion under Regulation 6 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) with regard to the proposed development of a temporary Energy Storage System (ESS) for a period of up to 40 years, together with associated infrastructure, site levelling works, site access, landscaping and ancillary works	13 ha Site Provisional Grade 2: 13 ha	Grade 2: 13 ha
Land off Station Road, Swineshead (B/24/0452)[71] Erection of 122 dwellings in accordance with amended plans received on 25-Nov-2024	5.78 ha Site Provisional Grade 1: 5.78 ha	Grade 1: 5.78 ha
Land off Vicarage Drove, Bicker Fen (B/24/0266)[72] Screening opinion under Regulation 6 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) to seek clarification on whether the works associated with the proposals to construct a Battery Energy Storage System (BESS) would require an EIA	16.99 ha Provisional Grade 2: 16.99 ha	Grade 2: 16.99 ha
Total for Non-NSIP Developments		Grade 1: 36.5 ha Grade 2: 489.1 ha Subgrade 3a: 446.7 ha Subgrade 3b: 357.8 ha

[70] Boston Borough Council (n.d.) Planning application documents. Available at: https://www.boston.gov.uk/planningapplicationsearch?pageSessionId=6cda67c2-1690-433c-91e1-348be28ae39f&fsn=50c74d79-919b-4a1e-9806-2fefd93dca8f
[71] Boston Borough Council (n.d.) Planning application documents. Available at: https://www.boston.gov.uk/planningapplicationsearch?pageSessionId=539f871e-417a-4993-bed2-f9c330b172e9&fsn=1157b12c-5dcc-49bc-bcbc-2833b2856065
[72] Boston Borough Council (n.d.) Planning application documents. Available at: https://www.boston.gov.uk/planningapplicationsearch?pageSessionId=539f871e-417a-4993-bed2-f9c330b172e9&fsn=a7594dd0-8b85-449b-a0db-b94e8ab7207d

PROPOSED DEVELOPMENT DESCRIPTION	ALC GRADES FROM APPLICATIONS	REVISED ALC GRADING FOR PURPOSES OF CUMULATIVE ASSESSMENT
		Grade 4: 10.5 ha Other: 26.0 ha Total agricultural land take: 1340.6 ha Total land take: 1366.6 ha

NSIP Developments

14.12.5 Table 14.16 shows that the total agricultural land take associated with the considered NSIP developments is 11,038 ha of which 4,191 ha is estimated as BMV land. Of this agricultural land, 9,799 ha of the land take is for solar NSIP developments, of which 3,032 ha is BMV land. For solar developments it is assumed that the impact on land is temporary and reversible as the majority of the land can be returned to agriculture in line with IEMA (2022) guidance.

14.12.6 The non-solar NSIP developments under consideration occupy 925.3 ha of agricultural land. Of this land 736.35 ha is BMV agricultural land.

14.12.7 Table 14.11 shows that the total amount of agricultural land within the LCC Boundary is 599,272.2 ha. Of this, 410,507.98 ha is BMV land. If all the NSIP solar developments proceed, this would occupy an estimated 1.62% of agricultural land within the LCC boundary and 0.51% of BMV land within the LCC boundary.

14.12.8 The non-solar NSIP developments under consideration would occupy 0.22% of agricultural land within the LCC boundary and 0.19% of the BMV land within the LCC boundary.

14.12.9 The total amount of land under consideration from all the considered NSIP developments equates to 1.84% of all the agricultural land within the LCC boundary and 0.7% of the BMV land.

Non-NSIP Developments Considered

14.12.10 Table 14.16 shows that the total agricultural land take associated with the considered non-NSIP developments is 925 ha of which 736 ha is estimated as BMV land.

14.12.11 Of the above non-NSIP agricultural land take, 482 ha is for solar developments, which occupy 388 ha of BMV land. For solar developments it is assumed that the impact on land is temporary and reversible.

14.12.12 The remaining (non-solar) non-NSIP developments under consideration occupy 443 ha of agricultural land. Of this land, 348 ha is BMV agricultural land.

14.12.13 Table 14.11 shows that the total amount of agricultural land within the LCC Boundary is 599,272.2 ha. Of this, 410,507.98 ha is BMV land. If all the non-NSIP proposed solar developments proceed, this would occupy an estimated 0.22% of agricultural land within the LCC boundary and 0.09% of the BMV land within the LCC boundary.

14.12.14 The total amount of land under consideration from all the non-NSIP, non-solar developments equates to 0.13% of all the agricultural land within the LCC boundary. Of this 0.09% is BMV land.

14.12.15 The total amount of land under consideration from all the non-NSIP considered developments equates to 0.22% of all the agricultural land within the LCC boundary. Of this 0.16% is BMV land.

14.12.16 Some projects have not been included within this final land breakdown due to insufficient detail and data to inform the agricultural land classification breakdown and Site boundary extents.

14.12.17 When considering the impact of all developments (within Table 14.16) within the LCC boundary, 2% (11,962.85 ha) of the agricultural land base is involved and 0.82% (4927 ha) of the BMV land within the LCC boundary.

14.12.18 Under the IEMA guidance[11], permanent land loss of over 20 ha is considered a high magnitude of change from the baseline, where this is considered within the assessment of the Proposed Development it is assumed that over 20 ha of land would be permanently (worst-case) lost due to the developments.

14.12.19 However, as many of the developments considered for cumulative assessment above are solar projects, it may be assumed that the impacts upon agricultural land due to built development are minimal and the majority of land take within these sites provides the opportunity for return to agriculture following decommissioning due to the majority of soils and agricultural infrastructure remaining in-situ.

14.12.20 Additionally, some of the other developments listed involve the temporary disruption of agricultural land (such as the Viking CCS pipeline) during construction with the restoration to agricultural land following construction. Proposed developments such as the A46 Bypass will result in more permanent land loss due to a higher proportion of built development and soil sealing within the scheme.

14.12.21 Therefore, providing appropriate guidance and mitigation measures are in place for the above developments, the associated impact on agricultural land can be minimised. It is therefore considered that the cumulative adverse impact of the Proposed Development along with the other considered developments is Moderate and significant in terms of the loss of agricultural land.

Table 14.16: Summary of Cumulative Developments and Estimated Land take.

INTENDED LAND USE	LAND TAKE FROM CUMULATIVE DEVELOPMENTS WITHIN LINCOLNSHIRE COUNTY COUNCIL BOUNDARY	ALC BREAKDOWN
NSIP Projects		
Solar (all solar projects are highlighted in grey in Table 14.15)	These developments occupy 9798.81 ha of agricultural land of which 3031.88 ha (31% approximately) is BMV agricultural land.	BMV: 75.6 ha of Grade 1, 527.65 ha of Grade 2, 2428.63 ha of Subgrade 3a Non-BMV: 6274.13 ha of Subgrade 3b, 398.2 ha of Grade 4 Non-agricultural: 94.6 ha
Non-solar	925.3 ha of agricultural land which 736.35 ha is BMV land.	BMV: 26.8 ha of Grade 1, 76.54 ha of Grade 2, 1055.83 ha of Subgrade 3a Non-BMV: 174.17 ha of Subgrade 3b Non-agricultural: 238.76 ha
Total Land Take from the Cumulative Developments	11,038 ha of which 4191 ha is BMV land.	BMV agricultural land: 4191 ha Non-BMV agricultural land: 6847 ha Non-agricultural land: 333 ha
Non-NSIP Developments		
Solar (all solar projects are highlighted in grey in Table 14.15)	These developments occupy 482 ha of agricultural land of which 388 ha is BMV land.	BMV: 388 ha Non-BMV agricultural land: 94 ha
Non-solar	These developments occupy 443 ha of agricultural land of which 348 ha is BMV land.	BMV: 348 ha Non-BMV agricultural land: 95 ha Non-agricultural land: 3.9 ha
Total Land Take from the Non-NSIP Considered Developments	925 ha of agricultural land of which 736 ha is BMV land	BMV: 736 ha Non-BMV agricultural land: 189 ha Non-agricultural land: 3.9 ha
Total Agricultural Land in LCC Boundary	Lincolnshire County Council Boundary: 599,272.2 ha of land	BMV: 410,507.98 ha Non-BMV: 188764.26 ha

14.13 Summary

14.13.1 The Proposed Development includes a Solar Array Area, Bespoke Access Corridor and Cable Route Corridor.

14.13.2 This Chapter has identified and provided an assessment of the likely effects on Land (Agricultural land) and Soils (Damage and Loss) for the three elements of the Proposed Development during construction, operation, and decommissioning.

14.13.3 The current understanding of the baseline for soils and land is provided and the relevant legislation, good practice guidance and mitigation assumptions are reviewed and the proposed EIA methodology to be followed for the ES detailed along with an overview of the expected cumulative impacts of other proposed developments with the Lincolnshire County Council administrative area.

Summary of the Baseline:

Land

14.13.4 A detailed ALC Survey has been conducted across the Proposed Solar Array Area which found that there is ~ 49.5% (261.43 ha) Subgrade 3b agricultural land, 44.6% (235.51 ha) Subgrade 3a and 2.8 % (14.61 ha) Grade 2 agricultural land.

14.13.5 A detailed ALC Survey of the Bespoke Access Corridor shows that it is predominantly comprised of Subgrade 3a agricultural land (22.08 ha, 48.6%), with areas of Grade 2 (16.60 ha, 36.6%) and Subgrade 3b (6.28 ha, 13.6%) also present.

14.13.6 The provisional ALC data shows that the Cable Route Corridor consists predominantly of Grade 2 (146.43 ha, 79.6%) agricultural land, with portions of Grade 1 (28.23 ha, 15.4%) and Grade 3 (9.23 ha, 5.0%) quality agricultural land.

Soils

14.13.7 The detailed ALC and Soil Survey across the Solar Array Area found that there were three main soil profiles identified within the Site which are consistent with the characteristics of the Beccles 3 711t, Wallasea 2 813g and Ruskington 512c soil associations. Soil profiles of the Beccles 3 association typically comprised heavy clay to clay topsoils overlying clay subsoils. Soil profiles of the Ruskington 512c association typically comprised sandy loam to sandy clay loam topsoils overlying loamy sand or sandy loam upper subsoils and varying sand textures lower subsoils with some occurrences of clay. Soil profiles of the Wallasea 2 association typically comprised silty clay or clay topsoils overlying silty clay or clay subsoils.

14.13.8 A detailed ALC survey found Beccles 3 (711t) soils to be present across most of the Bespoke Access Corridor, with areas of Ruskingston (512c) soils also present.

14.13.9 The Soil Survey of England and Wales map showed that the Cable Route Corridor comprises four soil associations: Ruskington (512c), Beccles 3 (711t), Agney (812c) and Wallasea 2 (813g).

14.13.10 The primary soil texture found in the Solar Array Area and Bespoke Access Corridor is clay and it is expected that soils would be predominantly of a clay texture across the Cable Route Corridor based upon the mapped soil associations. Across all three areas there may be small areas of sandy loams, however, these will be in the minority.

Summary of Mitigation

14.13.11 Avoidance of BMV land was considered in the site selection process.

14.13.12 ALC grading was also considered in siting the BESS and onsite substation within the Solar Array Area in order to avoid hard development on an area of Grade 2 quality agricultural land.

14.13.13 Embedded mitigation measures are also secured through an OSMP **(Appendix 14.4, Document Ref: 6.3 ES Vol.2, 6.3.95)** which is included as part of the DCO Application and will be developed into a detailed SMP pre-construction. The OSMP sets out the measures required to mitigate impacts

on agricultural land and soil based on industry standard good practice guidance on soil handling and storage.

14.13.14 Pre-entry assessments of agricultural land drainage systems will be considered as part of the CEMP (**Document Ref: 6.3 ES Vol.2, 6.3.7)**. The CEMP will also include measures to mitigate damage to the drainage system, and where this is not practicable, field drains will be diverted, replaced or such other solution required to alleviate flooding in consultation with the landowner.

14.13.15 As part of the FRA **(Document Ref: 6.3 ES Vol.2, 6.3.81)**, a drainage strategy for the site includes mitigation measures to alleviate impacts on drainage within the Solar Array Area during the operational phase.

14.13.16 There are no additional mitigation measures proposed.

Summary of Assessment:

14.13.17 The assessment follows the 2022 IEMA guidance '*A New Perspective on Land and Soil in environmental Impact Assessment*[11]'. Based upon this approach, three sensitive receptors were identified: land; soil loss; and soil damage.

Construction Phase

Land

14.13.18 For the Solar Array Area based upon the identified ALC grades present on Site (Subgrade 3b, Subgrade 3a, Grade 2) there is a Medium to Very High sensitivity to the receptor 'Land' (High sensitivity used for purposes of assessment). There is a High magnitude of change associated with the Solar Array Area as there is >20 ha of permanent (worst case) loss of land as a result of built development. The resulting effect with embedded mitigation in place is therefore Major and Significant in EIA terms.

14.13.19 For the Cable Route Corridor, the baseline information was collated from publicly available information and for the identified provisional ALC Grades (Grade 1, Grade 2, Subgrade 3a, and Subgrade 3b) there is a Medium to Very High sensitivity to the receptor 'Land'. There is a Low magnitude of change as the permanent loss is limited to 2.2 ha of provisional Grade 2 land where the Bicker Fen substation is extended, and the remaining loss of land is temporary. The resulting effect is therefore Major or Moderate and is Significant in EIA terms.

14.13.20 For the Bespoke Access Corridor, the baseline information was obtained from a detailed ALC survey. Most of the area was recorded as BMV agricultural land and it is assumed that loss of BMV land cannot be avoided. As a worst case, the sensitivity of the agricultural land was therefore assigned a High to Very High sensitivity. As a worst case, it is assumed that the construction of the Bespoke Access Road its associated ditches and verges will result in the permanent loss of 3.98 ha of agricultural land. The remaining loss of land (18.91 ha) within the Bespoke Access Corridor would be temporary and returned to agriculture post construction. As there is less than 5 ha of permanent land loss, the impact magnitude is Low. This results in a Moderate impact which is Significant in EIA terms.

Soil Resource - Loss of Soil Resource

14.13.21 For the Solar Array Area based upon the identified soil resource present on Site (predominantly clay textured soils, with smaller areas of sandier soils) there is a Medium sensitivity to the receptor 'Loss of Soil Resource'. With the implementation of embedded mitigation measures there is a Low magnitude of change. The resulting effect with embedded mitigation in place is therefore Minor and Not Significant.

14.13.22 The Soil Resource receptor within the Bespoke Access Corridor has a Medium sensitivity to loss through erosion. With the adoption of best practice to minimise soil loss there is a Low magnitude of change. The resulting effect with embedded mitigation in place is therefore Minor and Not Significant.

14.13.23 For the Cable Route Corridor, the baseline information is based upon the Soil Survey of England and Wales map and for the identified soil associations present on Site (soils are likely to be predominantly clay textured soils with smaller areas of sandier soils) there is a Medium sensitivity to the receptor 'Loss of Soil Resource'. With the implementation of embedded mitigation measures there is a Low magnitude of change. The resulting effect with embedded mitigation in place is therefore Minor and Not Significant.

Soil Resources – Damage to Soil Resource

14.13.24 For the Solar Array Area based upon the identified soil resource present on Site (predominantly clay textured soils, with smaller areas of sandier soils) there is a Medium sensitivity to the receptor 'Damage to Soil Resource'. With the implementation of embedded mitigation measures there is a Low magnitude of change. The resulting effect with embedded mitigation in place is therefore Minor and Not Significant.

14.13.25 The Soil Resource receptor within the Bespoke Access Corridor, have a Medium sensitivity to structural damage. With the implementation of embedded mitigation measures, there is a Low magnitude of change. The resulting effect with embedded mitigation in place is therefore Minor and Not Significant.

14.13.26 For the Cable Route Corridor, the baseline information is based upon the Soil Survey of England and Wales map and for the identified soil associations present on Site (soils are likely to be predominantly clay textured soils with smaller areas of sandier soils) there is a Medium sensitivity to the receptor 'Damage to Soil Resource. With the implementation of embedded mitigation measures there is a Low magnitude of change. The resulting effect with embedded mitigation in place is therefore Minor and Not Significant.

Operational Phase

14.13.27 For the Solar Array Area, the receptor 'Land' has a High sensitivity and a Low magnitude of change during the operational phase of the Solar Array Area (due to the reversible nature of any changes during this phase). This results in a Moderate or Minor impact, which has been assessed as Minor and Not Significant.

14.13.28 No further disturbance of the soil resource will occur during the operational phase. Therefore, the resulting impacts on the Soil Resource receptor with regards to the risk of structural damage and loss through erosion is Minor and Not Significant.

Decommissioning Phase

14.13.29 For the Solar Array Area, the receptor 'Land' has a High sensitivity and a Low magnitude of change associated with the decommissioning phase of the Solar Array Area which would result in a Moderate or Minor effect that has been assessed as Minor and Not Significant.

14.13.30 For the Solar Array Area, the receptors 'Loss of Soils Resource' and 'Damage to Soil Resource' have a Medium sensitivity and a Low magnitude of change during the decommissioning phase when accounting for embedded mitigation. This would result in a Minor (Not Significant) impact.

Summary of Residual Effects (including monitoring)

14.13.31 As there are no additional mitigation measures proposed, the residual effects remain as identified in the assessment above.

Summary of Cumulative Effects

Intra-Cumulative Effects

14.13.32 There are potential intra-project effects relating to the **Soils and** Agricultural **Land ES Chapter** and **Chapter 7: Ecology (Document Ref: 6.2 ES Vol.1, 6.2.7)** where the benefits of using the land for biodiversity net gain purposes may be favoured over the continued use of the Solar Array Area for agricultural purposes.

14.13.33 The Site will not be available for agricultural production for the duration of the operational phase. The reversible loss approximately 529 ha of agricultural land for this period has been assessed as having a Moderate (significant) adverse impact as a worst case due to the amount of BMV land within the site.

Inter-Cumulative Effects

14.13.34 There are not considered to be any relevant cumulative effects on soil resources as the effects of soil loss are contained within the specific Site.

14.13.35 Inter-cumulative effects for the agricultural land have been assessed. When considering the impact of all considered developments (within Table 14.14) across the Lincolnshire County Council administrative area, 2% (11,962.85 ha) of all the agricultural land is involved of which 0.82% is (4,927 ha) BMV land. The majority of the considered developments are solar developments where most of the land take may be considered temporary and reversible, with the permanent land take limited to areas of built development. Assuming that embedded mitigation allow for reinstating these sites to agricultural production and that the soil resources are protected during all phases of the developments, the inter-cumulative impact is deemed to be Moderate (Significant).

Table 14.15: Soils and Agricultural Land - Summary Assessment Matrix

Issue	Description of Impact	Geographical Significance							Impact	Nature	Significance	Mitigation Measures
		I	N	R	C	D	P	L				
Soils and Agricultural Land												
Loss of Agricultural Land	Construction Phase				X	X	X	X	Major Adverse	Lt, R/Ir	Significant	Soil Management Plan implementing best practice guidance on soil handling.
	Operational Phase				X	X	X	X	Minor Adverse	Lt, R	Not Significant	
	Decommissioning Phase				X	X	X	X	Minor Adverse	Lt, R	Not Significant	
Soil Resources (structural damage)	Construction Phase							X	Minor Adverse	Lt, R/Ir	Not Significant	
	Operational Phase							X	Minor Adverse	St, R	Not Significant	
	Decommissioning Phase							X	Minor Adverse	St, R	Not Significant	
Soil Resources (loss through erosion)	Construction Phase							X	Minor Adverse	Lt, R/Ir	Not Significant	
	Operational Phase							X	Minor Adverse	St, R	Not Significant	
	Decommissioning Phase							X	Minor Adverse	St, R	Not Significant	
Inter-Cumulative Effects	All phases			X	X	X	X	X	Moderate Adverse	St R	Significant	Restoration back to agricultural land

Key:
Geographical Significance: I = International N = National R = Regional C = County D = District P = Parish L = Low to Local
Nature: St = Short Term Mt = Medium Term Lt = Long Term R = Reversible Ir = Irreversible