HELIOS RENEWABLE ENERGY PROJECT

PINS Document Number:
EN010140/APP/6.1.14

Pursuant to:
APFP Regulation 5(2)(a)

Environmental Statement Chapter 14: Soils and Agricultural Land

June 2024

14. Soils and Agricultural Land

14.1. Introduction

14.1.1. This chapter of the ES assesses the likely significant effects of the Proposed Development with respect to agricultural land, soils and agricultural businesses.

14.1.2. The agricultural assessment has been undertaken by Kernon Countryside Consultants Ltd ('KCC') and the Agricultural Land Classification ('ALC') has been undertaken by Amet Property Ltd.

14.1.3. This chapter is supported by the following figures:

- Figure 14.1: Extract from Provisional ALC Map;
- Figure 14.2: Extract from Likelihood of BMV Map;
- Figure 14.3: Extract from the ALC Plan;
- Figure 14.4: Extract from the ALC Plan;
- Figure 14.5: Extract from the ALC Plan; and
- Figure 14.6: Proposed BESS Alongside Excerpt from ALC Plan.

14.1.4. The following appendices are referred to in this chapter:

- **Appendix 14.1: ALC of the Site [EN010140/APP/6.3.14.1];**
- **Appendix 14.2: Farm Reports [EN010140/APP/6.3.14.2];**
- **Appendix 14.3: Outline Soil Management Plan [EN010140/APP/6.3.14.3];** and
- **Appendix 14.4: Analysis of UK Food Security [EN010140/APP/6.3.14.4].**

14.2. Planning Policy Context

National Planning Policy

14.2.1. National planning policy that has been considered comprises the following National Policy Statements ('NPS'):

- Overarching National Policy Statement for Energy (EN-1)1; November 2023) ('NPS-EN1'); and
- National Policy Statement for Renewable Energy Infrastructure (EN-3); (November 2023) ('NPS-EN3') 2.

NPS EN-1

14.2.2. Paragraph 5.11.3 advises that "Although the re-use of previously developed land for new development can make a major contribution to sustainable development by reducing the amount of countryside and undeveloped greenfield land that needs to be used, it may not be possible for many forms of energy infrastructure". Paragraph 5.11.4 identifies 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'*.

14.2.3. It is advised in paragraph 5.11.12 that applicants 'should seek 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) and preferably use land in areas of poorer quality (grades 3b, 4 and 5).' 5.11.13 notes that "Applicants should also identify any effects and seek to minimise impacts on soil health and protect and improve soil quality taking into account any mitigation measures proposed".

NPS EN-3

14.2.4. NPS EN-3 sets out at paragraph 2.10.29 that 'while land type should not be a predominating factor in determining the suitability of the site location applicants should, where possible, utilise suitable previously developed land, brownfield land, contaminated land and industrial land. Where the proposed use of any agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land avoiding the use of "Best and Most Versatile" agricultural land where possible. 'Best and Most Versatile agricultural land is defined as land in grades 1, 2 and 3a of the Agricultural Land Classification'. The site selection process is

[1]Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf Accessed June 2023

[2]Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/37048/1940-nps-renewable-energy-en3.pdf Accessed June 2023

discussed in Chapter 4 Alternatives and Design Evolution [APPLICATION REF].

14.2.5. Paragraph 2.10.30 advises that the development of ground mounted solar arrays is not prohibited on land of ALC Grades 1, 2 or 3a, but that the impacts of this must be considered.

14.2.6. This assessment has been undertaken in accordance with the assessment of potential impacts as set out in NPS EN-3, as follows:

- Soil stripping and handling (2.10.81);
- Mitigation and soil preservation (2.10.127).

14.2.7. Paragraph 2.10.145 advises that 'the Secretary of State should take into account the economic and other benefits of best and most versatile agricultural land. The Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to minimise the impacts on soils or soil resources'.

National Planning Policy Framework

14.2.8. The National Planning Policy Framework ('NPPF') (December 2023) identifies that the economic benefits of BMV land should be recognised. Footnote 62, in the context of plan making, notes that where significant development of agricultural land is necessary, poorer quality land should be preferred. The availability of land for food production should be considered alongside other policies in the Framework.

Local Planning Policy

14.2.9. In April 2023, North Yorkshire Council ('NYC') became the administrative authority in which the Site is located, following its creation as a unitary authority by combining several district councils, including Selby District Council ('SDC'), the administrative area within which the Site had previously been located. The planning policy of SDC is still relevant to the Proposed Development.

14.2.10. The planning policy for SDC is contained within the Selby District Council Core Strategy Local Plan (October 2013)[3], the saved policies of the Selby District Local Plan (2005)[4], and the Selby Local Plan Revised Publication 2024 (2024)[5]. The Selby

[3] Available at: https://www.northyorks.gov.uk/planning-and-conservation/planning-policy/planning-policy-your-local-area/selby-planning-policy/selby-development-plan/selby-core-strategy-2013/selby-district-core-strategy-local-plan Accessed: July 2023
[4] Available at: https://www.northyorks.gov.uk/planning-and-conservation/planning-policy/planning-policy-your-local-area/selby-planning-policy/selby-development-plan/selby-district-local-plan-2005 Accessed: July 2023
[5] Available at: https://selby-consult.objective.co.uk/kse/event/37045 Accessed: June 2024

District Core Strategy (October 2013) does not contain any policies in relation to the development of agricultural land. The renewable energy policy SP17 contains no criteria relating to agricultural land. Emerging policy in the Publication Local Plan Revised Publication (March 2024) references avoiding BMV where possible (Policy SG4 A1) and avoiding Grade 1 unless there are exceptional circumstances (Policy SG4 A2). Non-BMV land should be preferred (criterion B).

Legislation

14.2.11. There is no specific legislation relevant to the assessment of agricultural effects from a proposed development.

14.3. Assessment Methodology

14.3.1. The scope of this chapter follows the methodology presented in the EIA Scoping Report submitted to the Planning Inspectorate ('PINS') and PINS' adopted EIA Scoping Opinion (**Appendix 2.2 [EN010140/APP/6.3.2.2]** of the ES}, and responses received during the Statutory Consultation process.

14.3.2. This assessment has taken into consideration the Institute of Environmental Management and Assessment's ('IEMA') '*A New Perspective on Land and Soil in Environmental Impact Assessment'* (2022)[6] (the 'IEMA Guidance') which comprises best practice guidance for the assessment of the likely significant effects on soils and agricultural land from a proposed development.

Study Area

14.3.3. The following study areas have been used:

- In terms of context for the distribution of agricultural land and land quality, the England-wide and the NYC's administrative areas have been considered;
- In terms of potential effects on agricultural land quality and soils, the boundary of the Site (as shown in **Figure 1.1 Order Limits Location Plan [EN010140/APP/6.2.1.1]** has been considered; and
- In terms of agricultural businesses, the whole of each of the affected farms (those with operations running within the Site boundary) have been considered, which

[6] Available at: https://www.iema.net/resources/blog/2022/02/17/launch-of-new-eia-guidance-on-land-and-soils Accessed: April 2024

is a greater area than the Site.

Desk-based Research and Data Sources

14.3.4. The following data sources have been used to inform the assessment:

- Provisional Agricultural Land Classification, 1:250,000 series, MAFF (1983) (reprinted 2010 by Natural England and digitised in 2020)[7];
- Likelihood of best and most versatile land maps, Natural England (2017) publications[8]; and
- Soil Survey of England and Wales 1:250,000 series soil maps, SSEW (1983).

14.3.5. The following sources of advice and guidance have been used to inform the soil handling assessment and advice:

- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, Defra (2009)[9];
- Working with Soils Guidance Note on Benefiting from Soil Management in Development and Construction, British Society of Soil Science (2022)[10];
- Building on Soil Sustainability: principles for soils in planning and construction, Lancaster University and partners (2022)[11];
- Agricultural Good Practice for Solar Farms, Building Research Establishment (2014)[12];
- Good Practice Guide for Handling Soils in Mineral Workings, The Institute of Quarrying (2021)[13].

Field Surveys

14.3.6. The following field surveys have been carried out:

- Detailed Agricultural Land Classification survey carried out by Amet Property Ltd (refer to Appendix 14.1 Agricultural Land Classification); and
- Interviews with the farmers whose operations take place within the Site boundary,

[7] A digital version of this map is available at https://environment.data.gov.uk/DefraDataDownload/?mapService=NE/AgriculturalLandClassificationProvisionalEngland&Mode=spatial
[8] Available at: Naturalengland.org.uk/likelihood of Best and Most Versatile agricultural land/Yorkshire and the Humber
[9] Defra (2009) Construction Code of Practice for the Sustainable use of Soils on Construction Sites.
[10] The British Society of Soil Science (BSSS) (2022) Working with Soils Guidance Note on Benefiting from Soil Management in Development and Construction.
[11] Lancaster University and Partners (2022) Building on Soil Sustainability: Principles for Soils in Planning and Construction.
[12] BRE (2014) Agricultural Good Practice for Solar Farms.
[13] The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings.

and walkover survey of all of the holdings carried out in February 2023. The farm reports are set out in **Appendix 14.2 [EN010140/APP/6.3.14.2].**

Assessing Significance

14.3.7. The magnitude of an impact has been judged using the criteria in Table 14.1 below. The judgement of the magnitude of impact has been made without accounting for the

14.3.8. The significance criteria used below have been devised based on professional judgement and taking full account of the IEMA Guidance. The assessment process sets out the sensitivity and the magnitude in Tables 14.1 and 14.2, and then uses the matrix in Table 14.3 to determine the resulting significance of the effects. The IEMA Guide identifies Grades 1 and 2 as of very high sensitivity, and Subgrade 3a as of high sensitivity. The definition of "Best and Most Versatile" agricultural land is Grades 1, 2 and 3a with no differentiation.

14.3.9. Natural England in their Technical Information Note TIN049[14] identifies that Grades 1 and 2 account for an estimated 21% of agricultural land in England, and Subgrade 3a a further 21%. The Utilised Agricultural Area[15] in 2023 was 8.8 million hectares, of which therefore approximately 1.85m ha is Grades 1 and 2, and 1.85m ha is Subgrade 3a, a total of approximately 3.7 million hectares of BMV agricultural land is in active agricultural use. BMV land is considered to be of England-wide importance. Impacts on soils are considered to be of local importance. Farm businesses are continually changing and so are more resilient to change and are considered to be of local importance.

Table 14.1: Receptor Sensitivity Criteria

Sensitivity	ALC/biomass production*	Sensitivity of topsoil and subsoil**	Agricultural businesses
Very high	Land of ALC Grades 1 and 2	-	-
High	Land of ALC Subgrade 3a	High clay soils where the field capacity days ('FCD')*** is >150, or medium textured soils where the FCD is >225	-
Moderate	Land of ALC Subgrade 3b	High clay soils where the FCD is <150, or medium textured soils where the	Full-time businesses, and farm businesses where the location of land is

[14] Natural England Technical Information Note TIN049 (December 2012)
[15] National Statistics: agricultural land use in England at 1 June 2023, Defra (9th November 2023)

Sensitivity	ALC/biomass production*	Sensitivity of topsoil and subsoil**	Agricultural businesses
		FCD is <225	particularly important, such as dairy farms.
Low	Land of ALC Grades 4 and 5	Soils with a high sand fraction where the FCD is <225	Part-time farms or farms with low sensitivity to change, e.g. arable land held on short-term arrangements.
Very low	Land of ALC Grades 4 and 5 with only indirect links	-	Agricultural land that is not farmed or does not form part of a farm business.

* IEMA Guidance Table 2

** IEMA Guidance Table 4. For the full list. refer to the IEMA Guidance Table 4

*** Field Capacity Days i.e. days when the soil is replete with water

14.3.10. The impact magnitude criteria are set out below. The IEMA Guidance is not based on a change of use, but on loss. Loss is defined in Table 3 of the IEMA Guidance as "*permanent, irreversible loss of one or more soil functions or soil volumes (including permanent sealing or land quality downgrading)*". In respect of temporary developments, the footnote to Table 3 notes that "*temporary developments can result in a permanent impact if resulting disturbance of land use change causes permanent damage to soils*". For the assessment, therefore, the focus is on permanent, irreversible losses, not temporary land-use changes. Temporary, reversible loss of soil-related features, as advised by other topic specialists, is identified as only a minor/low magnitude impact in Table 14.2.

Table 14.2: Impact Magnitude Criteria

Magnitude of Impact	Definition	
	Effects on Agricultural Land (Soils)	Effects on Farm Businesses (agricultural businesses)
High	The Proposed Development would directly lead to the loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of over 20 hectares ('ha') of soil-related features; or potential for improvement in one or more soil functions over an area of more than 20ha.	The impact of the Proposed Development would render a full-time agricultural business non-viable.
Medium	The Proposed Development would directly lead to the loss (including	The impact of the Proposed Development would require

	permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of between 5ha and 20ha of soil-related features; or potential for improvement in one or more soil functions over an area of between 5ha and 20ha.	significant changes in the day-to-day management of a full-time agricultural business, or closure of a part-time agricultural business. Loss of buildings or impacts on drainage or water supplies affecting the potential for at least 5ha of adjacent land to be farmed fully.
Low	The Proposed Development would directly lead to loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of less than 5ha of soil-related functions; or temporary, reversible loss of soil-related features set out in the Guide (biomass production, ecological habitat, soil carbon etc) or potential for improvement in one or more soil functions over an area of less than 5ha.	Land take would require only minor changes in the day-to-day management / structure of a full-time agricultural business or land take would have a significant effect on a part-time business. Minor effects, direct or indirect, on surrounding land beyond the boundary of the Site.
Very low	Only minor loss or reduction or improvement of soil functions or volumes.	Land take would require only negligible changes in the day-to-day management of a full-time agricultural business or land take would require only minor changes to a part-time farm business.
No change	No discernible loss or reduction in soil functions or volumes.	No effects on farm businesses.

14.3.11. The IEMA Guidance then determines the significance. Unlike the majority of ES assessments, as the IEMA Guidance includes a 'very high' sensitivity category, the criteria set out in Table 14.3 also refers to 'very high' sensitivity. Under the IEMA Guidance, one hectare of Grade 1 or 2 land lost would amount to a moderate adverse significant impact. This gives the impact a greater degree of significance than is realistic. Natural England estimate that 21% of agricultural land is Grades 1 and 2[16]. The utilised agricultural area of England at 1st June 2023 was 8.8 million hectares[17], such that there is an estimated 1.8 million hectares of Grades 1 and 2 in active agricultural use. The loss of small areas in that context should not be significant in EIA terms. Accordingly, it is considered appropriate that the assessment makes

[16] TIN049 Edition 2 "ALC: Protecting the best and most versatile agricultural land", Natural England (December 2012)
[17] Agricultural Land Use in England at 1 June 2023, Defra (9 November 2023)

moderate significance impacts not "significant" in EIA terms.

Table 14.3: Significance of Effect Matrix

		Sensitivity of Receptor / Receiving Environment				
		Very high	High	Moderate	Low	Very low
Magnitude of change/impact	High	Major adverse/ beneficial	Major adverse/ beneficial	Major adverse/ beneficial	Moderate adverse/ beneficial	Minor adverse/ beneficial
	Medium	Major adverse/ beneficial	Major adverse/ beneficial	Moderate adverse/ beneficial	Minor adverse/ beneficial	Negligible
	Low	Moderate adverse/ beneficial	Moderate adverse/ beneficial	Minor adverse/ beneficial	Negligible	Negligible
	Very low	Minor adverse/ beneficial	Minor adverse/ beneficial	Negligible	Negligible	Negligible
	No Change	Neutral	Neutral	Neutral	Neutral	Neutral

14.3.12. Major adverse or beneficial effects are considered likely to be significant in the context of the EIA Regulations. Moderate effects are considered likely to be material in the decision making process, but are not significant in EIA terms for the purposes of this assessment for the reasons given above. Neutral, negligible, and minor effects are also not considered to be significant.

Consultation

14.3.13. Table 14.4 below provides a summary of the consultation undertaken to date in support of the preparation of this assessment.

Table 14.4: Consultation Summary

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee: ES
EIA Scoping Opinion			
PINS	EIA Scoping Opinion (14th July 2022)	PINS stated that, in the absence of information providing the quantities and type of soils to be displaced, the location of cables to be buried and the classification of this land, the ES should assess the temporary displacement of soils caused by burying cables.	The localised cable laying within the Site is addressed in section 14.5 'Likely Significant Effects' of this chapter and the Outline Soil Management Plan ('oSMP') at **Appendix 14.3 EN010140/APP/4.3.14.3].** Further assessment will be undertaken once the siting of the cable within the Underground Cable Corridor has been ascertained at the detailed design stage. The effects are temporary, and will not result in a loss or downgrading of land quality. The soil will be assessed prior to construction, and methodology set out in the Soil Management Plan.
		Whilst PINS agrees that an individual assessment of the effects of land loss and on soils during the construction and decommissioning phases is not required, they request that the effect is considered for the entire lifespan of the Proposed Development.	The effects on ALC grade and on soils for the construction, operation and decommissioning phases are considered in sections 14.4 'Baseline Conditions' and 14.5 'Likely Significant Effects' of this chapter and **Appendix 14.3 oSMP [EN010140/APP/6.3.14.3].**
		PINS agrees to the Applicant's proposal to scope out effects on agricultural employment, to be considered in the socio-economics section.	The effects on agricultural employment are considered in **Chapter 13 Socio-economics [EN010140/APP/6.1.13]** of the ES. The future implications for farm businesses are considered in section 14.5 'Likely Significant Effects' of this chapter.

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee: ES
		PINS advises that field auger survey data of the main cable route should be provided to evidence the findings of the ALC report and to demonstrate that BMV land has been avoided where possible.	The siting of the cable within the Underground Cable Corridor has not been ascertained at this stage. Once the route has been determined at detailed design stage, further assessment will be undertaken to determine soil type and land quality, to advise on a detailed soil management plan to ensure that land quality and soil structure is not adversely affected.
		PINS requires that the ES should describe the construction, operational and decommissioning activities and how infrastructure has been designed to minimise effects on BMV.	The potential effects are assessed in sections 14.5 'Likely Significant Effects' and 14.6 'Mitigation Measures of this chapter and in **Appendix 14.3 oSMP EN010140/APP/6.3.14.3].** The loss of, or impact on, land of BMV has been considered and quantified.
		PINS requires that, where sheep grazing is proposed as mitigation, it should be demonstrated that the land is not subject to restrictive covenants that would prevent such use and confirm how such mitigation would be secured.	Grazing is a management tool and a beneficial agricultural land use but is not required mitigation. Section 14.5 'Likely Significant Effects' of this chapter considers the practicalities of grazing.
		PINS requires that the ES should assess the regional loss of BMV, including cumulative losses.	The cumulative assessment is set out in section 14.8 'Cumulative Effects' of this chapter.
Natural England	Natural England's response at Annex A - Soils and ALQ 4th July 2022	The ES should cover: soil disturbance; land loss and whether BMV is lost; any temporary disturbance should also be covered; a SMP should be provided;	The topics are covered in section 14.5 'Likely Significant Effects', section 14.6 'Mitigation Measures' and section 14.7 'Residual Effects' of this chapter and in **Appendix 14.3 oSMP EN010140/APP/6.3.14.3]**. The assessment considers the temporary or permanent effects

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee: ES
		how BMV has been avoided where possible should be explained; decommissioning details should be provided.	on soils and land quality, including at decommissioning, and outlines best practice in the oSMP.
North Yorkshire Council (incl SDC)	Soil Management, Agricultural Land 5th July 2022	A Soil Resource Plan and Soil Management Plan will **b**e needed.	The soil resource is described in Section 14.5 'Likely Significant Effects' of this chapter and the ALC is at **Appendix 14.1 [EN010140/APP/6.3.14.1].** An oSMP is provided at **Appendix 14.3 [EN010140/APP/6.3.14.3]**, with a detailed SMP to be secured via a DCO requirement.
Long Drax Parish Council	Email response (undated)	On a national scale, loss of prime agricultural land and devaluing it to poor sheep pasture, mainly keeping the weeds down is a concern.	The management of the Site is addressed in Section 14.5 'Likely Significant Effects' of this chapter and in **Appendix 14.3 oSMP EN010140/APP/6.3.14.3].**
Statutory Consultation			
Natural England	Statutory Consultation response 19th December 2023	Temporary and permanent impacts on soil resources and land quality should both be covered in the ES and separately identified and quantified	This Chapter addresses both.
		The ES should explain how agricultural land quality has informed the design and layout and the placing of fixed equipment	This Chapter addresses how land quality has influenced design and layout
		The potential effect on land quality of the cable connection should be addressed in the ES	The general principles are set out in this Chapter and within the oSMP (**Appendix 14.3 EN010140/APP/6.3.14.3**]).
		The ALC survey is considered to be robust but additional information was	These have been noted and the extra information added to the ALC report

Consultee	Type and Date	Summary of Consultation Response	Response to Consultee: ES
		requested regarding soil pit mapping and irrigation	(**Appendix 14.1 EN010140/APP/6.3.14.1]**)
		Additional information was sought on soil stripping, longer term soil storage, soil monitoring, timing of works, and return to comparable agricultural land quality where soil is disturbed	The oSMP is an outline document but has been expanded to address all of the specific comments made by Natural England in the consultation (**Appendix 14.3 EN010140/APP/6.3.14.3]**).
North Yorkshire Council	Statutory Consultation response 15th December 2023	The ES needs to explain why BMV land needs to be used, especially arable land, and explain what options for using poorer quality land have been considered	This is addressed in **Chapter 4 Alternatives and Design Evolution [EN010140/APP/6.1.4]** of the ES.
Hirst Courtney and West Bank Parish Council	Statutory Consultation response 7th December 2023	Concern was raised about the loss of good quality agricultural land	This Chapter (section 14.5) addresses the extent to which land is lost or land quality downgraded.

14.3.14. The farm business owners or operators at the Site have also been consulted. A summary of the information provided by them on each business is in **Appendix 14.2 [EN010140/APP/6.3.14.2]**. This information has been used to inform the assessments within this Chapter.

Limitations and Assumptions

14.3.15. There are no significant limitations to this assessment.

14.3.16. Detailed field survey has provided the data for a detailed ALC of the Site. In setting that in context, and in considering the policy framework, reference has been made to published "predictive" ALC maps and "likelihood of BMV" agricultural land maps. Those maps were not the result of field survey and have limitations to their accuracy as a consequence, but they are used in this assessment in full recognition of these limitations. Guidance is provided in Natural England's TIN049[18].

14.4. Baseline Conditions

14.4.1. This section of the chapter describes the agricultural resources in the following order:

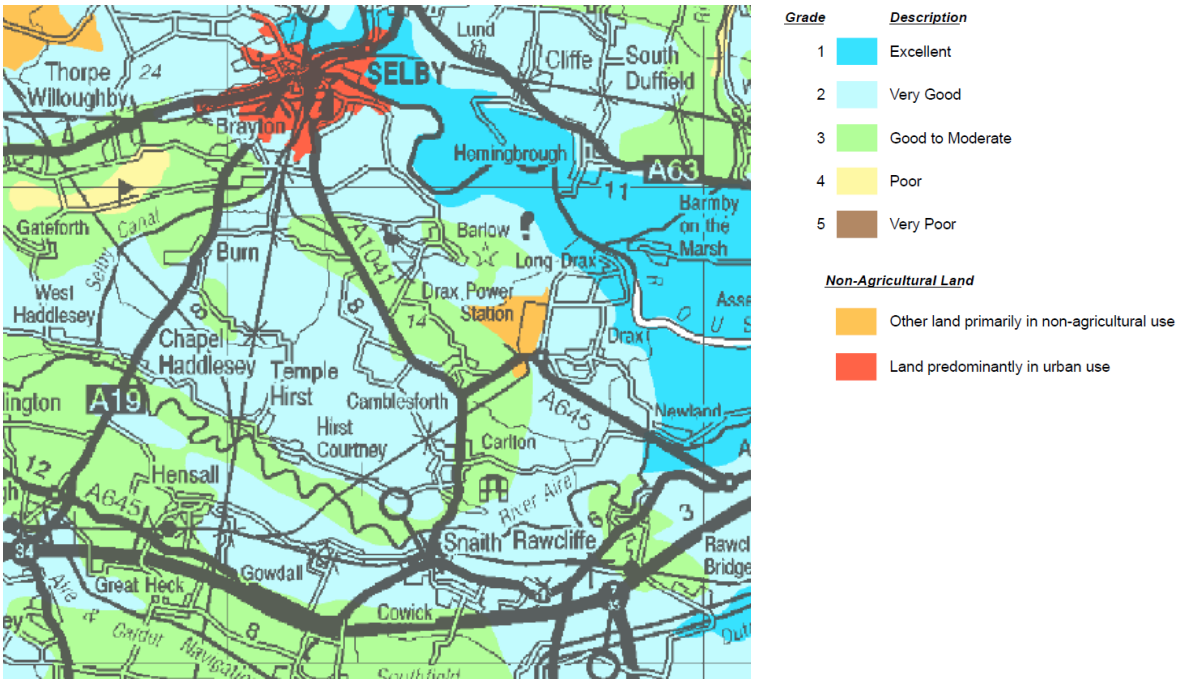
- Agricultural land quality;
- Soils;
- Farm businesses; and
- Local agricultural considerations.

Agricultural Land Quality

14.4.2. The Site is shown on the "provisional" ALC maps from the 1970s as being of Grade 2 "very good" agricultural land quality. As demonstrated on Figure 14.1 Extract from Provisional ALC Map, much of the wider area in the vicinity of the Site is similarly shown to be of Grade 2 agricultural land quality. These maps are not sufficiently accurate for use in assessment of individual fields or development sites, and should not be used other than as general guidance, as advised in Natural England's TIN 049.

[18] This can be found via https://publications.naturalengland.org.uk/publication/35012

Figure 14.1: Extract from Provisional ALC Map



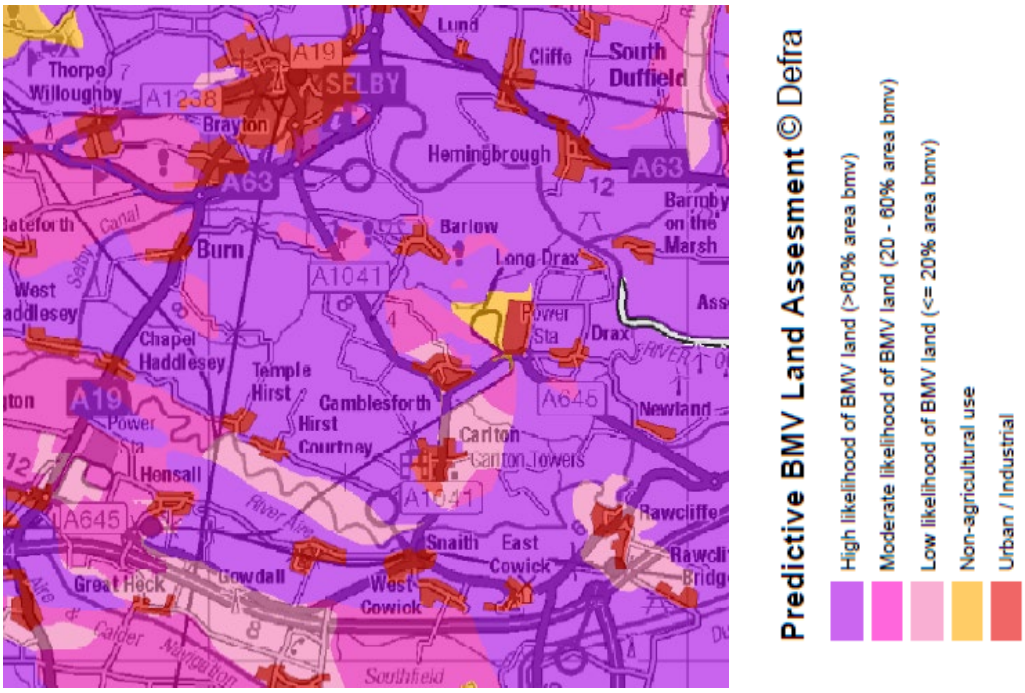
14.4.3. In 2017, Natural England published plans showing the likelihood of the proportion of BMV agricultural land. These maps divide the agricultural land across England into three categories of proportions:

- High (>60% area of BMV agricultural land);
- Moderate (20 - 60% area of BMV agricultural land); and
- Low (<20% area of BMV agricultural land).

14.4.4. The Site is shown as being wholly of high likelihood of comprising BMV agricultural land, as is much of the wider area in the vicinity of the Site, as shown on **Figure 14.2.**[19]

[19] The map and the guidance note can be found at https://publications.naturalengland.org.uk/category/5208993007403008

Figure 14.2: Extract from Likelihood of BMV Agricultural Land Quality Maps



14.4.5. The Site has been the subject of a detailed ALC survey. This was undertaken by Amet Property Ltd in March 2022.

14.4.6. The ALC survey results are reported at **Appendix 14.1 [EN010140/APP/6.3.14.1]**.

14.4.7. The ALC of the Solar Farm Zone (which does not include the Underground Cable Corridor), is described below and shown on Figures 14.3, 14.4 and 14.5. The cable route will comprise installation of a trench of maximum 1.5 m width; the temporary movement and replacement of soils across an anticipated 20m width but this will not alter the ALC grade, and accordingly an ALC survey is not necessary for the assessment. The cable route is assessed in paragraphs 14.5.25 to 14.5.27 of this chapter..

14.4.8. The ALC of the Solar Farm Zone is summarised in Table 14.5. This includes the non-agricultural areas.

Table 14.5: Summary of ALC within the Solar Farm Zone (rounded to nearest ha)

Grade	Description	Area (ha)	Area (%)
1	Excellent	15	3.7
2	Very good	162	40.5
3a	Good	207	51.8
3b	Moderate	11	2.8
NA	Non-agricultural/not surveyed	5	1.2
Total		400	100.0

14.4.9. The ALC report (refer to Appendix 14.1) describes the soils identified. The northern part of the Site consists of loamy sand with areas of slightly lighter (sand) topsoil and areas of heavier (sandy loam) topsoil. The ALC report sets out photographs of soils identified during the survey. The following photographs complement those photos, to show the sandy soils of the northern part of the Site. Reference is made to the fields shown on **Figure 3.1 Field Boundaries Plan [EN010140/APP/6/2/3/1]** of the ES.

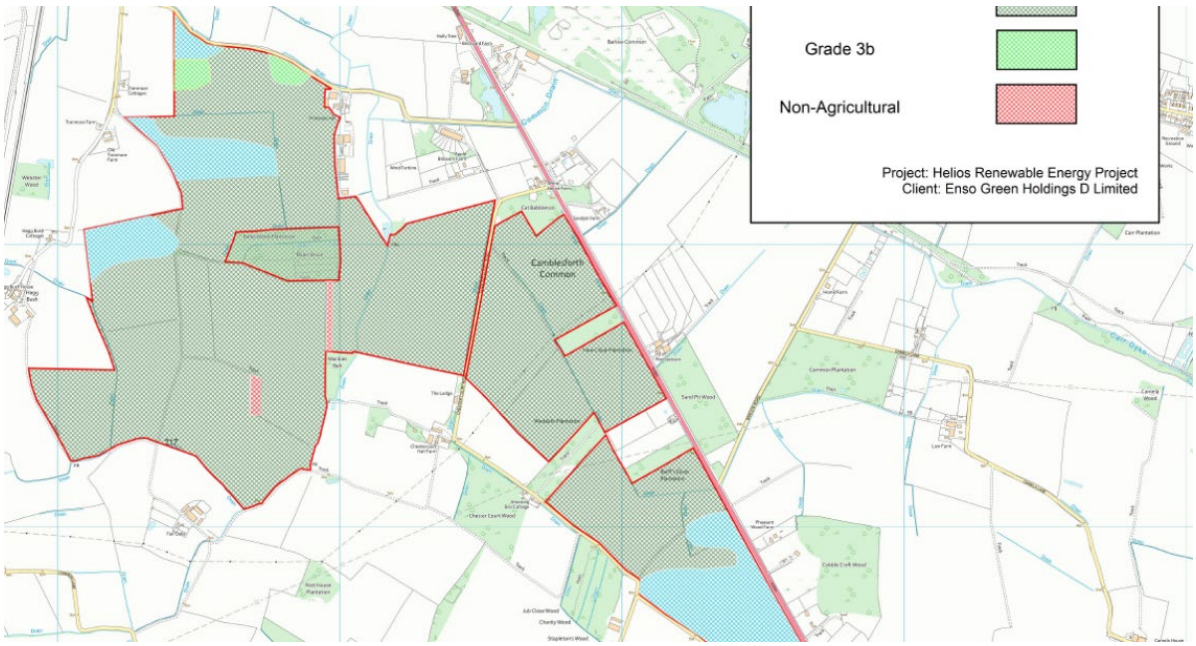
Photographs 14.1 and 14.2: Pits Showing Soil in the Northern Block

Example pit in Field 8

Example pit in Field 16

14.4.10. The land in the northern part of the Site (fields 1, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17) (see Figure 14.3) is mostly of Subgrade 3a quality as shown below on an extract from the ALC plan of the Site included in the ALC report (refer to Appendix 14.1). There are some areas of Grade 2 in parts of fields 1, 2 and 4, and patches of Subgrade 3b in field 1.

Figure 14.3: Extract from the ALC Plan



14.4.11. The eastern part of the Site shown on Figure 14.4 is similarly sandy loam soils but in a more variable pattern. Near Stockshill Farm is an area of sandy clay loam topsoil and clay subsoils. The grading of that part of the Site is shown on Figure 14.4. Grade 2, mixed with Subgrade 3a, has been identified in fields 19, 20, 21, 22, 25 and 29, with Subgrade 3a in field 24 and Subgrade 3b in field 23.

14.4.12. The southern part of the Site consists of soils of sandy clay loam or sandy loamy soils, occasionally loamy sand. The subsoils are more variable than elsewhere within the Site, but are mainly of medium to well-structured clay loam and sandy loam with loamy sand and sand at deeper horizons. The ALC identifies patches of Grade 1 mixed with Grade 2 in fields 34, 35, 36, 38 and 44. The other fields (37, 39, 40, 41, 42, 43) are identified as Grade 2.

14.4.13. A soil profile and soil pit from this general area are shown in Photos 14.3 and 14.4 below.

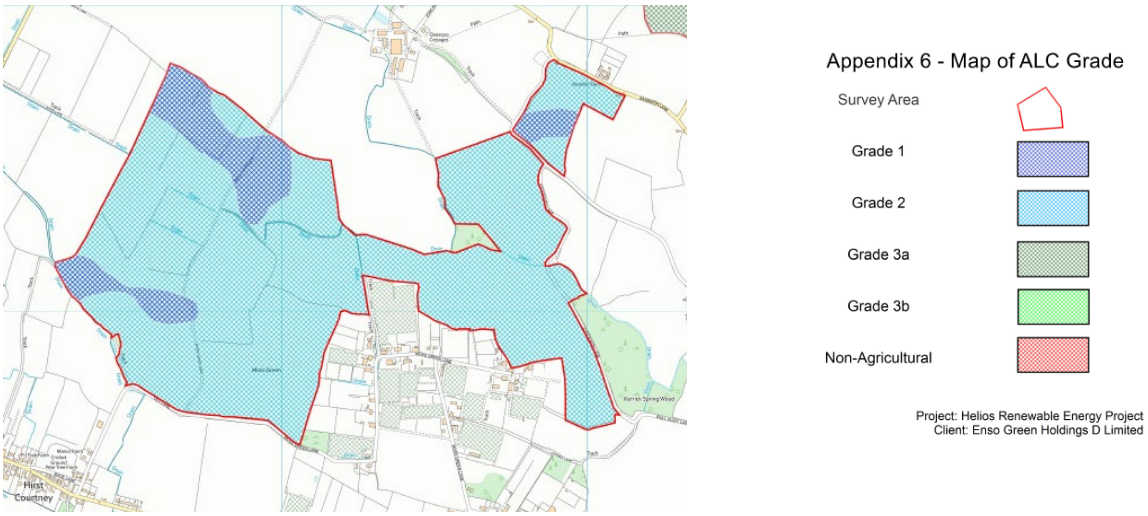
Photographs 14.3 and 14.4: Soil Profile and Pit in the Southern Area

Soils from Field 34

Soils from Field 40

14.4.14. As shown in Figure 14.5 these soils give rise to an ALC grading of Grades 1 and 2.

Figure 14.5: Extract from the ALC Plan



Soils

14.4.15. The soils have been described above and are almost all sandy soils with sandy subsoils. The pits show the sandy nature of the soils.

14.4.16. Soils with a high sand fraction are identified as of low sensitivity to damage from being handled in Table 14.1 above. These soils are well-drained and consequently capable of being driven across in vehicles ('trafficked') for a large part of the year. For example, the following sprayer was operating in February 2023 and the limited impact on the soils is clear in photograph 14.7. These soils are already trafficked numerous times per year as part of normal agricultural husbandry. Conditions vary across the year and season to season. The oSMP (**Appendix 14.3 [EN010140/APP/6.3.14.3]**) sets out parameters and conditions when soils are suitable for being trafficked. There are times in winter, and very occasionally short periods at other times of the year, when the land is not suitable for being trafficked, as set out in the oSMP.

Photographs 14.5 - 14.7: Sprayer and Its Impact on Soils

Photograph 14.5: Sprayer Operating in the Site Area

Photograph 14.6: Sprayer in Operation (February 2023)

Photograph 14.7: Limited Indentation Following Passage of Sprayer

Farm Businesses

14.4.17. There are five farm businesses that farm land within the Site Boundary (excluding the Underground Cable Corridor) shown on **Figure 3.2 Parameter Plan [EN010140/APP/6.2.3.2]**). Their distribution is shown on plans in the farm reports set out in **Appendix 14.2 [EN010140/APP/6.3.14.2]**.

14.4.18. 'Unit A' is part of an arable farm operated from Quosquo Farm. The total holding extends to 570ha, with the base and all the buildings at the central farmyard. Approximately 40%. is within the boundary of the Site.

14.4.19. Quosquo Farm operates an arable rotation, with the crops and rotations varying across the holding. On the sandier land to the north (within and north of the Site) potatoes and carrots are included in the rotation (carrots usually one year in seven, potatoes on one year in ten). Root cropping is a specialist enterprise and a small

number of fields are let out annually to tenant farmers for that purpose.

14.4.20. A grassland ley was introduced into the rotation in 2022/2023, but the main rotation is cereals with a 'break' crop (the typical rotation over four years is winter wheat, winter barley, winter oats, oilseed rape). The farming practices minimum tillage as much as possible. Subsoiling is carried out as needed.

14.4.21. Organic matter levels in the soils are generally low (<2.5%).

14.4.22. 'Unit B' is part of Stocks Hill Farm. Stocks Hill Farm is a mixed-tenure holding of 1,012ha. The land within the Site was added to the farm in 2022 and extends to approximately 3% of the holding.

14.4.23. The farm operates an arable enterprise with a rotation of wheat, barley, oats and oilseed rape. The farm also has 100ha of grazing land for a beef breeding herd and a sheep breeding flock, but not within the Site. The land affected is currently arable but would have grassland in the rotation at times.

14.4.24. 'Unit C' is part of Fair Oaks Farm. Fair Oaks Farm holding extends to 271ha, of which approximately 251ha is farmed. The principal block extends to about 142ha around the farmyard, with the rest of the land to the west of the railway line which runs to the west of the Site. approximately 34% of the farm falls within the Site.

14.4.25. Fair Oaks Farm is mostly in an arable use, with the normal rotation consisting of spring and winter barley, winter wheat and oilseed rape grown by the farmers, and periodic root crops (comprising sugar beet, carrots and parsnips) grown by other farmers periodically within the Site. Occasionally small fields within the farm are rented out to others for growing maize or potatoes.

14.4.26. There is irrigation available for part of the farm. Typically, only carrots are irrigated, when grown, and the other periodic crops, as well as cereals and 'break' crops are not irrigated.

14.4.27. Unit D is part of Primrose Hill Farm, which extends to 730ha of owned or contract farmed arable land. The area within the Site extends to approximately 3% of the farm.

14.4.28. The cropping on the land within 'Unit D' includes cereals and 'break' crops, plus

sugar beet, carrots and potatoes on rotation. The produce is used for a mix of animal feed, industrial use and human consumption.

14.4.29. 'Unit E' is a block of 34ha and is farmed on a share-farming agreement with other farmers. approximately 58% of the block is within the Site. The land is usually in a cereal and break crop (eg beans, oilseed rape) rotation.

Future Baseline Conditions

14.4.30. It is anticipated that there would be no change to the baseline conditions outlined above for the future baseline year of 2027. There may be variations in cropping including agri-environmental land management, but continued agricultural use of the land is expected over which the land conditions would remain, and the soil quality would not be expected to degrade.

14.5. Likely Significant Effects

Measures to be Adopted by the Project

14.5.1. In accordance with best practice, soils will be handled so far as possible when the soils are dry and in a suitable state for being trafficked or handled. An outline Soil Management Plan ('oSMP') which sets out the appropriate measures to be implemented is provided at **Appendix 14.3 [EN010140/APP/6.3.14.3]**. The detailed SMP will be secured by DCO requirement.

Construction Phase Effects

14.5.2. **Chapter 5 Construction and Decommissioning Methodology and Programme [EN010140/APP/6.1.5]** discusses the proposed construction phase activities. The potential construction phase effects relevant to the assessment of soils and agricultural land are described in this section. These will be assessed for their impact to loss of BMV land and impacts to the quality of soils:

- Effects from the erection of construction compounds;
- Effects from the installation of the solar PV arrays;
- Effects from the installation of infrastructure;

- Effects from the installation of access tracks;
- Effects from the installation of the BESS compound;
- Effects from the installation of the main cable connection;
- Effects to farm businesses; and
- Land take as a result of landscaping.

Effects to Soil Quality and Availability of BMV Land

Construction Compounds

14.5.3. In line with the oSMP, construction compounds are built by stripping topsoil and storing that in a bund on the edge of the Site. A matting is then laid down, and stone imported and levelled, as demonstrated below in photograph 14.8.

Photograph 14.8: Newly-laid Construction Compound (Elsham-Lincoln Pipeline)

14.5.4. The matting prevents the stone from mixing with the subsoil, as shown below.

Photograph 14.9: Matting

14.5.5. Topsoil will need to be stored in a bund, as shown below. If soils are still wet when moved, the bund should be no higher than 1m, but otherwise temporary bunds can be up to 3m in height. Advice on this is set out in the detailed oSMP and the Construction Code of Practice for the Sustainable Use of Soils on Construction Site.

Photograph 14.10: Topsoil Storage Bund

Solar PV Arrays

14.5.6. The solar PV element of the Proposed Development is installed in the following key stages:

- 1. Setting out and laying-out of posts;
- 2. Piling and installation of posts and foundations;
- 3. Bolting together of mounting structures;

- 4. Bolting-on of panels; and
- 5. Cabling and trenching.

14.5.7. The first process involves marking out the grid on the ground by persons on foot, then laying out the mounting structures. This stage is non-instrusive. It involves machinery carrying the mounting structures, and should ideally take place when soils are suitably dry. A tractor and trailer will be used to transport the mounting structures to the fields, then each mounting structure is lifted off by hand and laid out ready for insertion.

14.5.8. Construction workers then knock the mounting structures into the ground. This process is anticipated to have very little impact on the soil because the mounting structures are inserted mechanically into the soil with no removal of soil. The soil is simply pushed aside by the post. An example of this construction activity from another project is shown in photograph 14.11 below, which shows the installation of mounting structures into a clay soil. A person holds the post up at the right position, and the machine uses a hammer action to drive the post down to the correct depth. The machinery involved in the installation process is generally small, and typically smaller than most farm machinery that is currently used on the Site. This is demonstrated in the following photograph.

Photograph 14.11: Mounting structures being Installed (Bentham Farm, July 2015)

14.5.9. That this process involves no digging or physical disturbance to the soils beyond the insertion of the posts is evident in the following photograph 14.12, which was a late

autumn installation into sandy soils.

Photograph 14.12: Recently Installed Mounting structures (Tiln Farm, Retford, January 2023)

14.5.10. The design of the panels varies between sites, but the limited impact that installing mounting structures has on the underlying land and soil is illustrated below. These are different designs above ground but with similar mounting structures, and therefore relevant. The purpose of the photograph is to show that the physical process of installing the mounting structures has resulted in little disturbance to the soils. The design above ground is not important. The photograph shows the mounting structures after installation and the minimal effects of construction traffic are evident by the lack of damage to the grassland or soil surface.

Photograph 14.13: Mounting structures Installed (taken at Bentham Farm, July 2015)

14.5.11. The Proposed Development will implement a single mounting structures tracker unit, as shown in **Figure 3.4 Solar Panel Elevations [EN010140/APP/6.2.3.4]**.

14.5.12. The next stage is to bolt together the panels, then bolt the panels to the tracker units. The framework and panels are delivered typically by tractor and trailer. They are lifted off by hand or mechanically, and bolted to the framework. The minimal damage caused by the construction process, carried out in dry conditions, of bolting-on the solar PV panels is evident in photograph 14.14 below of a development similar in nature to the Proposed Development, after the solar PV panels have been added to the mounting frames. It can be seen that the soil and grassland have been very little affected. The amount of impact on the soil and any vegetation cover will depend upon soil conditions at the time of delivery and assembly. Note that the Proposed Development will implement a tracker system, therefore photograph 14.14 is included to illustrate the effect on soils and land cover from installations generally.

Photograph 14.14: After Solar PV Panels Bolted-on (Bentham Farm, August 2015)

14.5.13. For the Proposed Development, it will be necessary to connect electrical cables between the solar PV modules and to run the cables to the on-Site substation. This will involve trenches, dug with a machine. The trench width will depend upon the size of cable. The cables connecting the arrays generally require narrow trenches, as illustrated below. In all cases the works involve removing the topsoil and placing it to one side of the trench. The subsoil is then removed and placed on the other side of the trench. The movement of soil is limited to the width of the trench. Once the cable has been inserted the subsoil is then replaced, with the topsoil put back on the top.

Photographs 14.15 and 14:16: Cabling Channels during Cable Installation

14.5.14. The installation of cables for the Proposed Development involves digging whereby the soil structure could potentially be affected. In England, it has been standard practice to bury services (such as for water, oil, gas and telecommunications) for many years, and many farms have fields with buried field drainage inserted in a similar manner.

14.5.15. There is a clear subsoil and topsoil distinction, so the topsoil would be placed on one side of the trench, and the subsoil on the other. Subsequently, once the cable has been laid, the subsoil will be added back first, followed by the topsoil, to reinstate the soil structure to its original order and state. This will be secured through the SMP.

14.5.16. The clear distinction in soil colour is demonstrated in the photograph 14.17 below.

Photograph 14.17: Example Topsoil and Subsoil Colours (Photograph taken of soil examination in Field 34 of the Site)

14.5.17. This approach is used to ensure that soils are restored and settle within days, and return to grass growth rapidly, or are suitable for being sown.

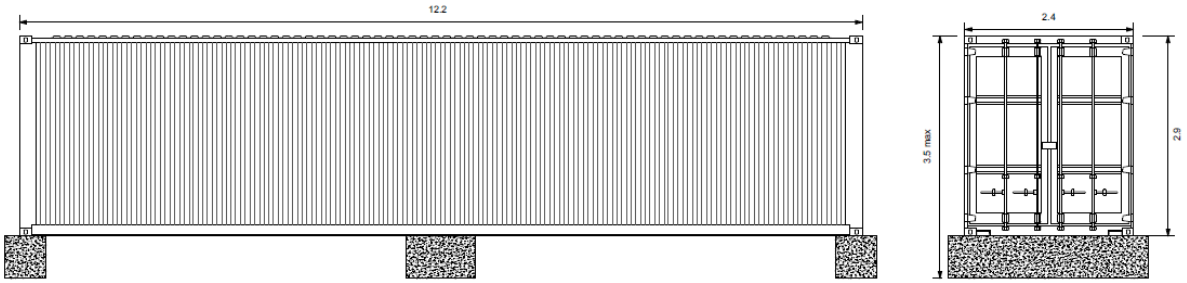
14.5.18. The following photograph 14.18 shows grassland from an operational solar farm in Monmouthshire. The cabling from each string can be seen entering the ground, but there is no evidence of any difference in the soil above the cabling running to the transformer unit.

Photograph 14.18: Example of Buried Cables, Monmouthshire

Installation of Fixed Equipment

14.5.19. The fixed equipment comprises field stations (as discussed in **Chapter 3 Site and Development Description [EN010140/APP/6.1.3]** of this ES.The design is shown below in the extract from **Figure 3.5 Inverter Stations [EN010140/APP/6.2.3.5]**.

Insert 14.1: Inverter Extract (side and rear elevation)



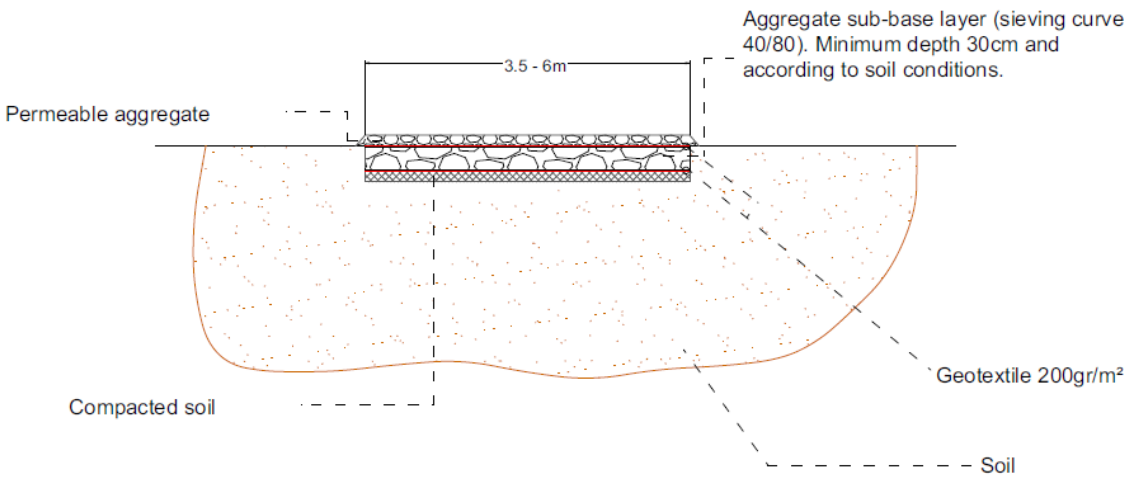
14.5.20. Implementation of these stations will involve the removal of topsoil for small areas, to enable the concrete foundation pads to be placed on the level. There is normally then an area around the transformer where matting has been laid down and stone added, to keep the area dry and clean for staff, such as the example shown below.

Photograph 14.19: Typical Inverter Container

Installation of Internal Tracks

14.5.21. The proposed access tracks will, so far as possible, be installed at the outset of the construction phase to aid distribution of items around the Site. Topsoil is removed, up to a depth of 30cm, and is stored locally for restoration at the decommissioning phase. A geotextile matting is then placed across the width of the track, in a similar manner to the construction compounds above. Aggregate is then added to create the surface, as demonstrated in the extract below from **Figure 3.16 Internal Access Road Detail [EN010140/APP/6.2.3.16].**

Insert 14.2: Track Design (excerpt from Plan DX-01-P05)



14.5.22. The internal tracks are permeable, such as the example below.

Photograph 14.20: Example of an Internal Track

BESS Compound

14.5.23. The proposed BESS compound is shown in **Figure 3.19 BESS Block plan [EN010140/APP/6.2.3.19]**. It involves one area where soils will be disturbed that measures of the order of 6 ha of land of Grade 2 (5 ha) and 3a (1 ha), measured to the hedge line (ie also measuring-in areas that whilst not disturbed will not be farmable for the duration of the Proposed Development). The area is shown in Figure 14.6, alongside an extract from the ALC plan.

14.5.24. The construction process requires that the Site is levelled, and the works will potentially result in the loss or downgrading of the land quality. Soil will be stored for subsequent restoration, as per the example below.

Figure 14.6: Proposed BESS Alongside Excerpt from the ALC Map

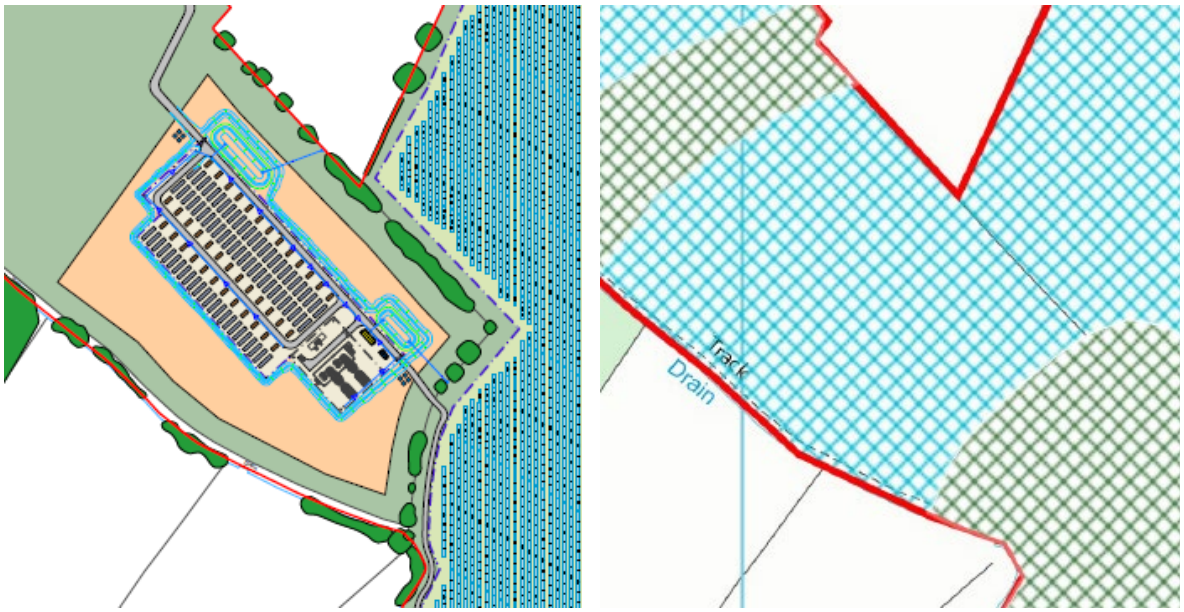


Photo 14.21: Typical BESS

Interconnecting Cable Installation

14.5.25. The route of the main connection cable will be within the Underground Cable Corridor area as shown on **Figure 3.2 Parameter Plan [EN010140/APP/6.2.3.2]**; the refined route will be determined at the detailed design phase, and therefore no soil survey has been carried out of the route. The soils will, however, be similar to those from the extensive area surveyed for the solar PV array area.

14.5.26. The construction process will involve a trench. It is anticipated that a construction

width will be stripped before the trench is dug, and topsoil will be stored to one side, such as the example below (a water pipeline working area). Subsoil will be placed on the same side, and the area restored in the same order after the cable is laid.

Photo 14.22: Example of Topsoil Stripped Before Trenching Starts

14.5.27. Following installation, the topsoil will be spread back across the working area.

Summary of Potential Effects to Soil Quality and availability of BMV Agricultural Land

14.5.28. There will be temporary disturbance of soils, and land quality, in the areas in which the construction compounds are erected. These areas are, however, short-term and are therefore not measured for the assessment. These areas will be installed inline with best practice, secured through the detailed SMP, to ensure there are no significant effects to quality of soils during that time, and will be remediated, if required, after removal of compounds.

14.5.29. Areas affected during construction, that will continue to be affected for the operational phase involve the agricultural land required for construction of the base areas for fixed equipment, the internal access tracks, and the BESS compound. These areas are estimated below by ALC grade.

Table 14.6: Estimate of Land Affected By Fixed Equipment

Component	No/length	Area per unit	Area (ha)
Tracks (approx.)	10,800m	3.5 sqm/m	3.8
Field stations	29	60	0.2
On-Site substation and energy compound	1	6.0	6.0
Total	**-**	**-**	**10.0**

14.5.30. By ALC grade, the areas of fixed equipment are divided approximately as follows.

Table 14.7: Land Loss by Grade

	Areas in ha by ALC Grade				
Component	Grade 1	Grade 2	Subgrade 3a	Subgrade 3b	Total
Tracks	0.1	1.8	1.8	0.1	3.8
Field stations	0	0.1	0.1	<0.1	0.2
On-Site substation and energy compound	0	5.0	1.0	0	6.0
Totals	**0.1**	**7.0**	**2.9**	**0.1**	**10.0**

14.5.31. These areas are all capable of being restored at the decommissioning phase of the Proposed Development. The works require the removal of topsoil, its storage in suitable conditions, and its replacement following the removal of the fixed equipment. None of the fixed equipment requires deep foundations, and mostly only topsoil requires to be stripped off and stored. There is extensive advice available, for example in the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra (2009). The reinstatement to comparable soil properties and land grade would be undertaken in accordance with a DEMP secured through the DCO requirement.

14.5.32. The oSMP sets out the principles, but the appropriate controls will be provided through a detailed SMP delivered through DCO requirement. With the exception of the substation area, the other works involve small areas and soil will be stored close to the area from where it was moved, so that the same soil can be returned. There is an effect for the duration of the operational phase, because these areas will not be in agricultural use and topsoil will have been removed, but no long term loss. The effect after decommissioning will be negligible **(not significant)**. The works do not, therefore, involve the "*permanent, irreversible loss … (including permanent sealing or land quality downgrading)*" as defines "*loss*" in the IEMA Guide.

14.5.33. Consequently, the Proposed Development will result in the temporary disturbance of approximately 10.0ha of BMV agricultural land. This land will not be lost, in that it is all capable of restoration to a comparable grade at the decommissioning phase.

14.5.34. Over the duration of the Proposed Development (as a 'worst-case' assessment

scenario), these areas are considered to be taken out of productive food use and are therefore "lost" for a temporary duration to the installation of fixed equipment for the modelled 40-year operational lifespan of the Proposed Development.

14.5.35. Temporary, reversible losses of soil related features (including biomass production) are low magnitude of impact changes in the IEMA Guide (Table 14.2). Low magnitude impacts on resources of high or very high sensitivity equate to moderate adverse significance (Table 14.3). The overall impact is therefore moderate adverse for the 40 year duration of the operational lifespan of the Proposed, which is **not significant** at a national level. All of these areas are capable of full restoration back to the current status.

14.5.36. The temporary loss of 7.0 ha of Grades 1 and 2 should be seen in context. In England there is an estimated 1.85 million hectares of Grades 1 and 2 (see 14.3.7 above), and a further 1.85m ha of Subgrade 3a. The land quality in the area is generally high (see Figures 14.1 and 14.2 above). The land will be restored fully on decommissioning.

14.5.37. The figures for the North Yorkshire Council area, derived from the MAFF Provisional maps (and therefore for strategic decision rather than individual applications) are shown below. If the national statistic is applied, 40% of Grade 3 will be Subgrade 3a. The figure for BMV land is shown. The Site lies within the former Selby District, which as a significantly higher proportion of BMV than the England and NYC administrative areas, with an estimated 76.7% of agricultural land potentially of BMV quality.

Table 14.8: Proportion of Land by ALC Grade

ALC Grade	England (%)	NYC (%)	Selby (%)
1 excellent	3.1	0.5	4.7
2 very good	16.2	13.3	57.4
3 good to moderate	55.0	39.9	36.5
4 poor	16.1	17.9	1.0
5 very poor	9.6	28.4	0.4
Total	100.0	100.0	100.0
BMV Estimate[(1)]	41.3	29.8	76.7

[(1)] Grades 1, 2 and 40% of Grade 3

Effects on Farm Businesses

14.5.38. Effects on the occupying farm businesses will commence and change during the construction phase. The effects on farm size and structure, and long-term operation, being the effects once the Proposed Development is constructed, are described under the operational phase below.

14.5.39. Construction activity will be carefully controlled so that the use of the local highway network is not significantly affected, so travel between farmyards and agricultural land in the area will continue unhindered, as described in the **Chapter 10 Transport and Access [EN010140/APP/6.1.10]**. There are no internal tracks within the area of the Proposed Development that serve other farmland, so the development will not affect any existing accesses.

Green Infrastructure

14.5.40. None of the green infrastructure requires the soils to be disturbed (beyond ordinary cultivation and management), and accordingly none of the green infrastructure is considered likely to have any construction effects on land quality or soils.

Summary of Construction Phase Effects

14.5.41. In respect of direct effects during construction, it is concluded as follows:

- the effect on soils from the installation of the Solar PV Panels is negligible. The installation process will not irreversibly damage soils, and any adverse effects will be short-term and capable of easy restoration. The effect of construction on soils is negligible (not significant) at a local level;

- the installation of Solar PV Panels will not result in any sealing or irreversible downgrading of agricultural land quality. Whilst there is high quality land within the Site, the land will not be lost, and the ALC grade will not be affected. Therefore, there will be no loss of ALC grade land and the effect is therefore negligible (not significant) at a local level;

- the approximate area of agricultural land affected temporarily by the installation of fixed equipment amounts to 10.0 ha of Grades 1, 2 and 3a. Grades 1 and 2 are of very high sensitivity, and 7.0 ha is affected. The effect is a low magnitude effect

on a resource of very high sensitivity (Grades 1 and 2), which is a moderate adverse (**not** significant) effect, where the land to be "lost" or "sealed over", as per Table 14.3. This is a temporary effect, capable of being fully restored to the current status at decommissioning;

- the soils are of moderate or low sensitivity. By careful management and by implementing the measures set out in the oSMP, there will be only a very low magnitude of effect on soils of a moderate or low sensitivity, which is a negligible adverse (not significant) effect at a local level;

- there will be a minor, short-term effect which will be a negligible effect from the installation of the underground electrical cables (not significant) at a local level; and

- there will be no indirect effects on surrounding land, or farms, during construction, and that effect is therefore neutral or minor adverse (not significant) at a local level.

Operational Phase

14.5.42. The assessment of the Proposed Development's operational phase effects is based on the Proposed Development as outlined in **Chapter 3 Site and Development Description of the ES [EN010140/APP/6.1.3].**

14.5.43. The potential effects during the operational phase of the Proposed Development are:

- effects on soils from long-term grassland uses and the effects from site maintenance activities;

- effects on the operation of the farm businesses and local agricultural labour needs;

- food production implications. This is generally an economic/ land use consideration; and

- the economic and other considerations of the use of BMV agricultural land, as required in NPS EN-3.

Agricultural Land Quality

14.5.44. There will be no further disturbance to soils during the operational phase of the Proposed Development; therefore, the agricultural land quality at the Site will not be affected during this phase of the Proposed Development.

14.5.45. There will be no requirement for heavy machinery to traffic soils during the operational phase. Accordingly, there will be no disturbance of soils affecting land quality. The combination of increasing organic matter levels (see below) and lack of machinery activity will allow a natural enhancement of the soil. This will not, however, alter the ALC grade of land within the Site.

14.5.46. Maintenance and cleaning machinery will be transported via a van or small tractor, and generally lighter than standard machinery. If the soils are wet when access is taken, there is the potential for slight indentations to be made (such as shown in photograph 14.23 below for a development similar in nature to the Proposed Development), but such effects on soils are not significant and will not alter ALC grade. Typically, the machinery such as the following is used, which is no heavier than a small tractor. Cleaning takes place in late spring, to clean the panels before the main solar generation period, when soils are normally dry.

Photograph 14.23: Cleaning of Solar Arrays

14.5.47. There may occasionally be small rutting caused by agricultural vehicles (for example quads) or vans used by engineers. Typical light impacts are illustrated below. These will normally be levelled by grazing sheep, but if there are deeper ruts they could be

repaired by a lightweight roller in the spring.

Photograph 14.24: Example of Minor Ruts Caused by Vehicles

14.5.48. There may be occasional need for works of repair which might disturb soils. These will be infrequent. If possible, any works requiring soils to be moved should be timed for the summer period, following the guidance in the oSMP. Any trenching, whether carried out in ideal conditions or not, looks unsightly initially, but rapidly recovers and is indistinguishable once grass cover has returned. These effects will be of negligible magnitude.

Photograph 14.25: Trench During Wet Period

14.5.49. Therefore, there are no physical works required during the operational phase which will adversely affect soils or agricultural land quality. The effects are of negligible magnitude, and accordingly of negligible significance, which is not significant.

14.5.50. In terms of land use, there will be a change from arable (cereals and root crops mostly). Once the solar PV arrays have been installed, the land will be used by sheep for grazing. Both land uses fall within the definition of agriculture[20]. The change of agricultural land management from arable to mixed solar PV arrays and grassland uses is a land management consideration. It does not result in an adverse effect on agricultural land quality.

14.5.51. The effect on agricultural land quality during the operational phase is therefore neutral (**not significant**).

Effect on Soils

14.5.52. There will be potential for benefits to soil health and quality.

14.5.53. The land is currently mostly arable land fertilised with inorganic fertiliser, as well as spread with farmyard manure and liquid slurry. Grass is not generally grown in rotation currently and organic matter levels within the soil are generally low.

14.5.54. The land will be sown to grassland and managed, including by being grazed with sheep, for the duration of the operational phase. This is expected to have a positive benefit for the soils.

14.5.55. Information about soils, and some of the expected benefits, are as follows:

(i) soils are an important natural capital resource, but our understanding of soils is hindered by a lack of data. In the Environment Agency's "*Summary of the State of the Environment: Soil" report of January 2023*[21] (the 'EA 2023 Report'), they note that UK soils currently store about 10 billion tonnes of carbon, equal to 80 years of annual greenhouse gas emissions;

(ii) the EA 2023 Report notes that soil biodiversity and the many biological processes and soil functions that it supports "*are thought to be under threat*". The statistics are:

[20] Town and Country Planning Act 1990, s336.
[21] Research and analysis: Summary of the state of the environment: soils, Environment Agency (26 January 2023)

- almost 4 million hectares of soil are at risk of compaction; and
- over 2 million hectares of soil are at risk of erosion.

(iii) the state of soil biology is poorly researched, but the EA 2023 Report identifies that intensive agriculture reduces soil biodiversity. A recent study referenced in that report identified 42% of fields may be overworked, as evidenced by an absence or rarity of earthworms. It is noted that "*tillage had a negative impact on earthworm populations, and organic matter management did not mitigate tillage impacts*" (page 11).

(iv) the UK Food Security Report 2021 notes that, whilst grain is generally the most efficient form of production in terms of calories per hectare, it has a significant environmental impact "*due to the lack of biodiversity in conventional grain fields, damage to soil through ploughing, environmental harms caused by fertilisers and pesticides, and the oil use embedded in fertilisers and field operations*".

(v) the EA 2023 Report notes that bare soils, reduced hedgerows and increased field sizes mean that, in England and Wales, an estimated 2.9 million tonnes of topsoil are lost to erosion every year. Erosion regularly exceeds the rate of formation of new soils (which is at about 1 tonne per hectare per year) on many soils, with 40% of arable soils at risk, especially lighter soils on hillslopes and peats in upland areas. "*Significant decreases in erosion risk occurred when fields changed from winter cereal use to permanent grassland*", the EA reported. Management practices in arable land can make a big difference, but the constant vegetation cover of grassland reduces erosion significantly.

(vi) organic matter in soil acts like a sponge and can hold up to 20 times its weight in water. Most arable soils have lost 40 to 60% of their organic carbon[22]. The British Society of Soil Science records (Science Note: Soil Carbon, BSSS (2021))[23] the declining state of soil carbon (soil organic carbon and soil inorganic carbon), and notes that the greatest and most rapid soil carbon gains can be achieved through land use change, such as converting arable land to grassland. Sustainable soil management practices are needed for all soils.

(vii) the role of soil organic carbon in soils is complex, as described in the British Society of Soil Science Note "Soil Carbon" (2021). As described under the heading "Soil Carbon Functions" on page 4, "*a soil with a greater SOC content has a more stable structure,*

[22] EA, ibid, page 8.
[23] BSSS (2021) Science Note: Soil Carbon

is less prone to runoff and erosion, has greater water infiltration and retention, increased biological activity and improved nutrient supply compared to the same soils with a smaller SOC content. Even small increases in SOC can markedly influence and improve these properties".

(viii) it is noted in that same report at the top of page 5 that "*significant long-term land use change (e.g. conversion of arable land to grassland or woodland) has by far the biggest impact on SOC, but is unrealistic on a large scale because of the continued need to meet food security challenges*".

(ix) The 2019 State of Nature Report (The State of Nature 2019, The State of Nature Partnership (2019))24 reports that biodiversity across farms is also in a poor state. The report recorded increases and decreases in different species, but overall a decline in the abundance and distribution of the UK's species since 1970. There is generally agreement across these sources that grassland is good for soil carbon, results in increased organic matter compared to arable land, reduces the risk of erosion, and soil biodiversity (including earthworms) will improve. There is no reason why grassland growth below panels should not be strong. The UK and this Site receives plentiful rain, which will keep soils moist, and with the Site's temperate climate there are no reasons to anticipate differential soil temperatures affecting biological activity or biodiversity enhancement potential.

14.5.56. There will be no requirement for heavy machinery to traffic soils during the operational phase. Accordingly, there will be no compacting of soils and the combination of increasing organic matter levels and lack of machinery activity will allow a natural enhancement of the soil.

14.5.57. There is therefore the potential for improvements in one or more soil functions over an area of in excess of 20 ha. This would be high magnitude effect (Table 14.1), including on soils of mostly low sensitivity (Table 14.1) but including areas of sandy clay loam (medium sensitivity in IEMA[25] Table 4). The effect will therefore be a moderate beneficial effect (Table 14.3), which is **not significant**.

Farm Business Implications

[24] The State of Nature Partnership (2019) The State of Nature Report
[25] Institute of Environmental Management and Assessment (IEMA) (February 2022). Guide: a new perspective on land and soil in Environmental Impact Assessment

14.5.58. None of the five farm businesses will be significantly affected by the operational phase of the Proposed Development. Four of the affected farms are full-time farm businesses, and accordingly of medium sensitivity, none will be affected to the extent that a continued viable farm business cannot continue, notwithstanding the economic benefit of rental income from the panels.

14.5.59. This is assessed for each of the farm businesses as follows.

14.5.60. Individual farm reports are set out in **Appendix 14.2 [EN010140/APP/6.3.14.2]**.

14.5.61. Unit A Quosquo Farm extends to approximately 570 ha, centred on the farm buildings at Quosquo Farm. The farm operates an arable rotation of cereals and arable break crops, with occasional root crops.

14.5.62. Approximately 226 ha is included in the Proposed Development, representing 40% of the farm area. This will have an effect on the farming enterprises and will reduce the cropping areas. However the cropping areas will remain considerable, at over 340 ha (845 acres), which will remain full-time and economically viable.

14.5.63. There will be no severance or fragmentation. The effect is therefore a medium magnitude impact and accordingly moderate adverse which is **not significant** at a local level.

14.5.64. Unit B Stocks Hill Farm extends to over 1,000 ha (2,500 acres) with approximately 3% of the farm included within the Proposed Development. The land within the Site is arable land.

14.5.65. There will be only a minor reduction in farmed area and no severance. The effect is minor adverse (**not significant**) at a local level.

14.5.66. Unit C Fair Oaks Farm is a mixed tenure holding of 271 ha. The farm operates an arable rotation, which includes carrots and potatoes. There is grassland near to the farmhouse but not within the Site. There are two sets of farm buildings, also not within the Site.

14.5.67. The Proposed Development involves approximately 34% of the holding, leaving an arable (mostly) unit of about 180 ha (440 acres). This will continue as an arable farm. The farmers anticipate taking on the sheep enterprise under and around the

solar PV panels. Overall, the farm size will remain unchanged.

14.5.68. The effect is therefore of medium magnitude and moderate significance, which is **not significant** at a local level.

14.5.69. Unit D Primrose Hill Farm is a holding of approximately 728 ha which is operated as an arable farm with carrots and sugar beet in the rotation. The farm is based outside of the Proposed Development.

14.5.70. The land within the Proposed Development amounts to approximately 3% of the farm. It will not result in any severance or fragmentation. The effect is therefore of low magnitude and of minor significance, which is **not significant** at a local level.

14.5.71. Unit E is a small block of land let to others to farm. It does not form a farm unit on its own, therefore. Approximately 58% of the parcel is included in the Proposed Development. The remaining land will continue to be leased.

14.5.72. There is therefore only a minor adverse significance effect, which is **not significant** at a local level.

14.5.73. The areas by farm unit are shown in the following table.

Table 14.9: Farm Impacts (%)

Unit	Area farmed (ha)	Proportion of the Farm Within Proposed Development
A	570	40%
B	1,012	3%
C	271	34%
D	730	3%
E	34	58%

14.5.74. The areas identified in Table 14.9 are within the Proposed Development will not be lost to the farms. These areas will be grazed with sheep and their management will remain under the control of the current farmers. Whether they choose to manage the sheep themselves, or let others manage the sheep (as they do with some of the root crops currently), the farming enterprises will not be reduced in size and only the enterprise mix will change.

14.5.75. There will be benefits for the local labour market, because sheep production requires

greater labour input than arable farming. The Pocketbook for Farm Management[26] estimates of labour required for cereals and lowland sheep production are compared in Table 14.10 below. This shows that sheep production requires more labour per hectare than cereals. Therefore, overall agricultural labour needs will not reduce.

Table 14.10: Labour Estimates

Crop	Hours/ha/year
Winter cereals, including hauling straw	14
Winter oilseed rape	9
Sheep – 4 hours per ewe at 9 ewes/ha	36

14.5.76. Therefore, the effects on farm businesses are minor or moderate adverse (in terms of farm structure). The farms will benefit from income from the energy generated by the solar PV panels, together with income from farming sheep. Coupled with these benefits, the overall impact from this diversification is considered to be **not significant** at a local level.

Food Production Implications

14.5.77. There is no specific Government policy for producing food from agricultural land. The use of land for food production is referenced in the WMS (15th May 2024) and therefore is included in this assessment.

14.5.78. The use of land for "agriculture", which is defined in the Town and Country Planning Act 1990 (s336), is not "development" (as defined in s55 (2) (e). Planning consent is not required to use land for agriculture, or to change between any different agricultural enterprises.

14.5.79. The definition allows a wide range of agricultural uses. Some relate to food production, others do not. There is no requirement to use land for food production, or to use it for any particular intensity of use. It follows that a landowner can do what they wish with their land within the definition of agriculture. For example, the landowner could rewild and graze it at a low intensity, or graze it with horses, or plant short-rotation coppice, or plant ancillary woodland, or fallow it. Food production is not an obligation.

14.5.80. Food production or non-food crop production is not encouraged in Government policy

[26] John Nix Pocketbook for Farm Management 2023, The Andersons Centre (September 2022)

or incentives. The Sustainable Farming Incentive ('SFI'), the full guidance for which was updated on 21st April 2023[27], is one of three new environmental schemes post-Brexit. The SFI aims to improve water quality, biodiversity, climate change mitigation and animal health and welfare. There is no mention of food production. The SFI, the guide advises, aims to:

- encourage actions to improve soil health;
- recognise how moorland provides benefits to the public; and
- improve animal health and welfare by helping farmers with the costs of veterinary advice for livestock.

14.5.81. The Site is suited to the production of arable crops and the growing of grass. An analysis of the UK's self-sufficiency in these crops is set out in **Appendix 14.4 [EN010140/APP/6.3.14.4]**.

14.5.82. The Government Food Strategy (June 2022)[28] does not seek to increase food production. The "Foreword" recognises near self-sufficiency in wheat, most meat, eggs and some vegetables, but not in soft fruit although the trend is favourable. But the strategy does not seek to alter that in the main commodities. The Strategy states: *'Overall, for the foods that we can produce in the UK, we produce around 75% of what we consume. That has been broadly stable for the past 20 years and in this food strategy we commit to keep it at broadly the same level in future.'*

14.5.83. Therefore, there is no current policy regarding food production. There is current policy regarding the need for renewable energy to tackle climate change, increase energy security and increase biodiversity, and food production is one consideration alongside those others.

14.5.84. In respect of the crops that can be grown, the UK is self-sufficient or near self-sufficient in cereals, oilseeds, other non-vegetable arable crops, milk and sheep meat. The UK produced approximately 22 million tonnes of cereals in 2023, for example[29].

[27] Sustainable Farming Incentive: Full guidance, Defra (April 2023)
[28] Government Food Strategy, Defra (13 June 2022)
[29] https//www.gov.uk/government/statistics/cereal-and-oilseed-rape-production/cereal-and-oilseeed-production-in-the-united-kingdom-2023 Accessed January 2024

14.5.85. A Government Statement at the end of 2022[30] confirmed that there are no food security concerns at the present time.

14.5.86. This can be illustrated by reference to the UK Food Security Report 2021 (latest update December 2022[31]), which set out the following:

> '*However, from a purely calorific perspective, the (below average) grain yield in 2020 of 19 million tonnes would be sufficient to sustain the population. It is equivalent to 283kg per person, 0.8 kilos per day. A kilo of wheat provides 3,400 calories (and barley slightly more at 3520 calories), making 0.8 kilos of grain over 2,600 calories, compared to recommended calorie intake of 2 to 2,500 for adults. From these figures it is easy to demonstrate that, even without accounting for other domestic products like potatoes, vegetables, grass-fed meat and dairy, and fisheries, current UK grain production alone could meet domestic calorie requirements if it was consumed directly by humans in a limited choice scenario.*'

14.5.87. There is no concern from Government about food security, and no requirements or incentives to manage land for food production. The land use change from agriculture (only some of which is for food) to a mix of energy production and agriculture will not result in any significant adverse environmental or economic effects.

Economic and Other Considerations

14.5.88. NPS EN-3 and the NPPF (2023) advise that the economic and other considerations of the use of BMV land should be considered.

14.5.89. The Utilised Agricultural Area of England is 8.8 million hectares, and as noted about 3.7 million ha of BMV is estimated to be utilised.

14.5.90. To assess the economic benefits of BMV land, one methodology is to compare the economics of BMV land to poorer quality land, assuming that such land is used for solar panels as an alternative.

14.5.91. There is no statistical data that provides yields or economic performance of BMV compared to non-BMV land. Accordingly, only an assessment based on professional

[30] Food Supply and Food Security, Defra (9 December 2023)
[31] United Kingdom Food Security Report 2021, Defra (22 December 2022)

judgement is possible, assuming that BMV land falls into the "high" performance, and non-BMV land falls into the "average" performance, in agricultural budget books. On this basis, the incremental increase in food production if BMV land is used is shown below. This assumes a wheat and barley production, rather than the grassland/maize/cereals production currently grown over the farms.

Table 14.11: Crop Production Budgets

Crop	Average yield	High yield	Difference
Winter feed wheat	8.6 t/ha	10.0 t/ha	1.4 t/ha
Winter feed barley	7.3 t/ha	8.5 t/ha	1.2 t/ha
Winter oilseed rape	3.5 t/ha	4.0 t/ha	0.5 t/ha
Lowland sheep ewes	9 ewes/ha	10 ewes/ha	1 ewe/ha

Nix Pocketbook for Farm Management 54th Edition[32]

14.5.92. Across the BMV agricultural land within the Site this would, if the area was all used for food production, have the following implications for cereal/ oilseed production. This assumes 50% wheat, 25% barley, 25% oilseed rape.

Table 14.12: Difference in Production (assuming total area 383 ha and rotational cropping)

Crop	Change in yield	Area (ha)	Change (t)
Winter feed wheat	1.4 t/ha	192	269
Winter feed barley	1.2 t/ha	96	115
Winter oilseed rape	0.5 t/ha	96	48

14.5.93. The use of agricultural land for the deployment of solar PV arrays is assumed to be accepted. Consequently, the assessment focuses not on the absolute production, but on the incremental production were poorer quality land to be used elsewhere rather than the BMV land within the site. On that measure the incremental reduction in production should the Proposed Development be moved to poorer quality land elsewhere would be circa 269 tonnes of wheat, 115 tonnes of barley and 48 tonnes of oilseed rape.

14.5.94. If all 383ha was wheat, which has the biggest differential, the drop in production

[32] John Nix Pocketbook for Farm Management, The Andersons Centre (September 2023)

would be 536 tonnes.

14.5.95. The implications for food production are limited. Indeed, because the output is mostly destined for animal feed or industrial use, the increased use of land for growing sheep, the meat from which will directly go to human food, will be a benefit.

14.5.96. The reduction in production of circa 500 tonnes of cereals can be compared to the UK cereal production in 2023 of just under 22 million tonnes (14mt wheat, 7mt barley, 0.83mt oats) plus 1.2mt oilseed rape[33].

14.5.97. The economic considerations for the farmers involved in the Proposed Development are beneficial, in that the diversified income coupled with continued income from sheep production will enhance overall farm income.

Summary of Operational Phase Effects

14.5.98. Therefore, it can be concluded that in respect of operational effects:

- The effects on occupying farm businesses are of medium or low magnitude, on holdings of moderate or low sensitivity, leading to overall effects of minor or moderate significance, which is **not significant** at a local level;
- There will be no adverse effect on agricultural land quality, therefore no change which is a neutral significance effect, which is **not significant** at a national level;
- There will be a benefit on soil health and its carbon-holding benefits, and this will be moderate beneficial, which is **not significant** at a national level;
- There will be decreased arable crop production, but increased sheep. The use of land will remain agricultural. These are economic considerations and the environmental effect is neutral, which is **not significant** at a local level.

Decommissioning Phase

14.5.99. The decommissioning phase will not have any significant effects on agricultural land or soils, nor on farm businesses.

14.5.100. Measures to mitigate potential effects to land and soil quality will be secured

[33] Cereal and oilseed rape production in the UK 2023, Defra (21 December 2023)

through the SMP and the detailed Decommissioning Environmental Management Plan, as discussed in **Chapter 5 Construction & Decommissioning Methodology and Phasing [EN010140/APP/6.1.5]**, secured via DCO requirement.

14.5.101. Deeply-buried cables will be left in situ or removed, and shallow-buried cables which might be caught by subsoilers will be removed by removing topsoil to one pile, subsoil to another, removing the cable then reinstalling the soils. Shallower cables will be dug up with the trenches dug and restored in the same order, in a manner similar to the installation process as described in the oSMP.

14.5.102. The soils across the Solar Farm Zone will then be loosened with normal agricultural machinery, and returned to the farmers for continued agricultural use.

14.5.103. Once the solar PV modules have been removed the bases for the infrastructure can be removed. This will involve removing the crushed stone bases and matting, loosening the soil to remove compaction, then returning topsoil to the areas. The topsoil will then be worked with normal agricultural machinery to create a tilth suitable for return to the landowner.

Summary of Decommissioning Phase Effects

14.5.104. Decommissioning can be timed to be carried out when soil conditions are suitable, as set out in the oSMP which will be replicated in a detailed DEMP, and will not have any adverse agricultural effects. Thereafter, the land will be available for continued agricultural use; therefore the decommissioning effects are neutral, which is **not significant** at a local level.

14.6. Mitigation Measures

Construction Phase

14.6.1. The measures included in the oSMP (**Appendix 14.3 [EN010140/APP/6.3.14.3]**) will be implemented, secured through the detailed SMP by DCO requirement. Subject to this, it has been identified that construction activities will not result in any significant adverse effects on agricultural land or soils.

14.6.2. No further mitigation is required.

Operational Phase

14.6.3. It has been identified that operational activities will not result in any significant adverse effects and there will be benefits.

14.6.4. No additional mitigation is therefore considered necessary.

Decommissioning Phase

14.6.5. It has been identified that decommissioning will not result in any significant adverse effects. The measures included in the oDEMP (**Appendix 5.3 [EN010140/APP/6.3.5.3]**) will be implemented, secured through the detailed SMP by DCO requirement.

14.6.6. No additional mitigation is therefore considered necessary.

14.7. Residual Effects

Construction Phase

14.7.1. The construction phase effects remain as described in section 14.5, as follows:

- A major adverse impact to agricultural land due to loss of 7.0 ha of Grade 1 and 2 agricultural land from tracks and fixed infrastructure, although following restoration this impact will revert to negligible;
- Negligible effect on soils from construction activities.

Operational Phase

14.7.2. The operational phase effects remain as described in section 14.5,:

- Neutral effect to agricultural land;
- A moderate adverse effect from the need to change enterprises on the farms involved, but overall a beneficial effect on farm business;
- Moderate beneficial effect to soils from long-term grassland use; and
- The environmental effects of changes from arable to grassland uses are neutral.

Decommissioning Phase

14.7.3. The decommissioning phase effects remain as described in section 14.5 above:

- No significant effects on agricultural land. Areas used for fixed equipment will be restored;
- No adverse effects on soils.

14.8. Cumulative Effects

Baseline Conditions

14.8.1. The available or estimated information about the baseline land quality of the various cumulative sites is set out in the table below.

Table 14.13: Baseline ALC Information

Scheme Address	Land Quality Information (ha)	Source
Schemes with Permanent ALC Effects		
Power Station: Drax Bioenergy with Carbon Capture and Storage Project NSIP (PINS Ref: EN10120)	Grade 2: 4.9 ha Subgrade 3b: 7.6 ha	ALC report submitted with the application
Power Station: Drax Power Station, Drax (Ref: 2022/0107/NYSCO)	Believed to be non-agricultural	Google Earth
Construction of Converter Station and Underground Cables: Land to the East of New Road, Drax (Ref: 2022/0711/EIA	Grade 2: 93.2 ha Subgrade 3a: 111.4 ha Subgrade 3b: 5.8 ha Grade 4: 2 ha Non-agricultural: 9.1 ha Total: 221.5 ha	Environmental Statement submitted with the application
Part demolition and redevelopment: Eggborough Power Station, Selby Road, Eggborough (Ref: 2019/1343/EIA)	Believed to be non-agricultural	Google Earth
Employment Park: Former Kellingley Colliery, Turvers Lane, Kellingley, Knottingley (Ref: 2016/1343/OUTM)	Not known. 57 ha, former colliery.	Officer's report for the application
Employment Space: Bradholme Farm, High Levels Bank, Thorne, Doncaster	Subgrade 3a: 15 ha Subgrade 3b: 88 ha	Planning and Sequential Statement

(Ref: 21/00500/OUTA)		submitted with the application
Scheme with Temporary ALC Effects		
Solar: Land South of A645, Wade House Lane, Drax (Ref: 2023/0128/EIA)	Grade 2: 13.8 ha Subgrade 3a: 77.4 ha Subgrade 3b: 58.2 ha Other land: 7.5 ha	ALC report submitted with the application
Solar: East Yorkshire Solar Farm NSIP (PINS Ref: EN010143)	Combination of Grades 1, 2, 3a and 3b (Provisional)	Acknowledgement of S46 Notification
Energy Storage Facility: Land off New Road, Drax (Ref: 2020/1357/FULM)	Subgrade 3b: 3 ha	ALC report submitted with the application
Battery Storage: Land off Hales Lane, Drax (Ref: 2021/1089/FULM)	Subgrade 3a: 0.53 ha Subgrade 3b: 0.99 ha	ALC report submitted with the application
Solar: Land North and South of Camela Lane, Camblesforth (Ref: 2021/0788/EIA)	Grade 1: 0.9 ha Grade 2: 30.5 ha Subgrade 3a: 20.7 ha Subgrade 3b: 53.2 ha Non-agricultural 7.43 ha Total: 112.73 ha	ALC report submitted with the application
Battery Storage: Land adjacent to Barlow Common Road, Barlow, Selby (Ref: 2022/0287/SCN)	Grade 3 (desk-top research)	Screening Opinion
Wind Turbines: Newlands Farm, Turnham Lane, Cliffe, Selby (Ref: 2021/0348/SCN)	Not known. Scoping response references loss of Grade 1.	Scoping response
Solar: Land near Osgodby Grange, South Duffield Road, Osgodby, Selby (Ref: 2021/0978/FULM)	Grade 2: 8 ha Subgrade 3a: 12 ha Subgrade 3b: 46 ha Total: 66 ha	ALC report submitted with the application

Construction Phase

14.8.2. A number of these proposals will affect agricultural land. A number will affect such land irreversibly. As not all the information is available to enable the loss to be quantified, assessing the significance of the cumulative effect of these proposals is not possible. However, as the Proposed Development will not result in a permanent loss of agricultural land, there will be no increased cumulative impact as a result.

14.8.3. A number of these developments are of a very different nature, and propose sealing or irreversible loss of agricultural land or land quality. Table 14.12 distinguishes between those schemes that give rise to a permanent loss of agricultural land and those with only temporary effects. The Proposed Development only gives rise to

temporary effects and therefore the cumulative effects assessment is undertaken on that basis, The effects therefore are no permanent loss and a temporary change from food production to renewable energy and food production.

14.8.4. Whilst the collective total of BMV land sealed or irreversibly developed by the schemes shown in Table 14.2 will exceed 20ha, and will amount to a major adverse effect, which is significant, the Proposed Development does not contribute to that effect due to its temporary nature. The cumulative effect of the Proposed Development therefore is negligible, which is **not significant**, but the combined effect remains major adverse.

14.8.5. The collective total of land being used temporarily exceeds 20 ha of Grades 1 and 2. This is a low magnitude impact on a receptor of very high sensitivity, which is a moderate adverse significance, which is **not significant** at a national level.

Operational Phase

14.8.6. There are not expected to be any significant cumulative adverse effects during operation, so the cumulative impact is **neutral** at a local level .

Decommissioning Phase

14.8.7. The impacts of the Proposed Development will be reversed at the decommissioning phase, so that the cumulative effect is **neutral** at a local level.

14.9. Summary

14.9.1. **Methodology**. The Soils and Agricultural Land chapter has involved a detailed Agricultural Land Classification (ALC) across the site, coupled with interviews with the farmers and walkover survey.

14.9.2. **Baseline Conditions**. The agricultural land quality of the Site is a mixture of land in Grades 1, 2, 3a and 3b. The majority of the Site falls within the definition of "**best and most versatile**" agricultural land (BMV), as defined in the NPPF (2021).

14.9.3. **Construction Effects**. The construction of a solar farm causes limited damage to agricultural land. The mounting structures are pushed into the ground with minimal disturbance to the soils. Only modest areas are disturbed, for tracks, inverter stations and substation. The overall area disturbed by these elements or sterilised

for the duration of the operational phase involves 7.0 ha of Grades 1 and 2, and less than 5 ha of Subgrade 3a. These areas will be fully restored at decommissioning. The effect is, overall, **significant** because of the effect on Grades 1 and 2 agricultural land.

14.9.4. **Operational Effects**. There are no adverse effects during the operational phase. There will be benefits for the soil. The overall effect, whilst beneficial, is **not significant**.

14.9.5. **Decommissioning**. The decommissioning phase will restore the Site to the current baseline position. Therefore, the effect is neutral and **not significant**.

Table 14.14: Table of Significance – Soils and Agricultural Land

Potential Effect	Nature of Effect*	Significance **	Mitigation Measures	Geographical Importance ***							Residual Effects ****
				I	UK	E	R	C	B	L	
Construction Phase (accounting for measures to be adopted by the project)											
Loss of BMV land	Temporary long-term	Moderate	Implementation of the SMP to enable restoration			X					Moderate adverse (not significant)
Effects on soils	Temporary short-term	Negligible	None required							X	Negligible
Operational Phase (accounting for measures to be adopted by the project)											
Effects on farm business	Temporary long-term	Moderate or minor adverse	Income from the Proposed Development							X	Moderate or minor adverse (not significant)
Effects on BMV	Temporary long-term	Neutral	None required			X					Neutral
Effects on soils	Temporary long-term	Moderate beneficial	None required							X	Moderate beneficial (not significant)
Decommissioning Phase (accounting for measures to be adopted by the project)											
Effect on soils	Temporary short-term	Neutral	None required							X	None
Cumulative Effects											

Table 14.14: Table of Significance – Soils and Agricultural Land

Potential Effect	Nature of Effect*	Significance **	Mitigation Measures	Geographical Importance ***							Residual Effects ****
				I	UK	E	R	C	B	L	
Construction Phase (accounting for measures to be adopted by the project)											
Loss of BMV	Temporary long-term	Major adverse	None required			X					Moderate adverse (not significant)
Operational Phase(accounting for measures to be adopted by the project)											
Effect on soils	Temporary long-term	Neutral	None required							X	None
Decommissioning Phase (accounting for measures to be adopted by the project)											
Effect on soils	Temporary short-term	Neutral	None required							X	None
Nature of Effect *	Permanent or Temporary Short-term, Medium-term, or Long-term										
Significance**	Major/ Moderate/ Minor/ Negligible Beneficial/ Adverse										
Geographical Importance ***	I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local										
Residual Effects ****	Major / Moderate / Minor / Negligible Beneficial / Adverse										