



Tween Bridge Solar Farm

A Nationally Significant Infrastructure Project in the Energy Sector

Preliminary Environmental Information Report

Chapter 15 – Agricultural Circumstances

March 2025



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15. Agricultural Circumstances

15.1. Introduction

15.1.1. This chapter of the working draft PEIR assesses the likely significant effects of the Scheme on agricultural land, soils and agricultural businesses.

15.1.2. This assessment reports on the baseline and Scheme design information available at the time of writing this working draft PEIR. The PEIR will be updated as further assessments become available and any updates to the baseline will be reported in the next iteration of the PEIR which will be presented as part of the statutory pre-application consultation. The responses from the Scoping Opinion issued by the Planning Inspectorate on 13 March 2023 have been taken into account during the preparation of this chapter and this is discussed in detail below.

15.1.3. The assessment has been carried out by Tony Kernon BSc (Hons) MRICS, FBIAC of Kernon Countryside Consultants Ltd.

15.1.4. The Draft Order Limits comprise the main solar generation works area, and an area of search which it is assumed will accommodate the underground export cable corridor and the location of the National Grid Substation (described within Chapter 3: Methodology as the National Grid Substation and RWE Underground Export Cable Route Assessment Area). The assessment set out in this Chapter is applicable and relevant to both areas. It is noted that in reality, only a portion of land assigned to the export cable corridor will be taken forward for the final design, whilst the rest will not be subject to construction works.

15.1.5. This chapter is supported by the following figures which are included within the chapter:

- **Figure 15.1 – Provisional ALC of the Wider Area;**
- **Figure 15.2 – Provisional ALC of the Site Area;**
- **Figure 15.3 – Extract from Likelihood of BMV Agricultural Land Quality Maps;**
- **Figure 15.4 – Agricultural Land Classification Results**
- **Figure 15.5 – Extract from National Soil Map;**
- **Figure 15.6 – Landownership Plan.**

15.1.6. This chapter is supported by the following appendix:-

- **Appendix 15.1 – Assessment Methodology;**
- **Appendix 15.2 – ALC Report for Part of the Site.**

15.2. Consultation

15.2.1. A summary of consultation responses received to date is provided in Table 15.1.

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Table 15.1: Summary of Consultation

CONSULTEE	SUMMARY OF CONSULTEE RESPONSE	HOW RESPONSE HAS BEEN ADDRESSED BY APPLICANT
<p>Natural England 18th April 2023</p>	<p>Natural England is unable to accommodate a DAS request for this scheme on soil issues at this time because of a lack of capacity to take on more cases.</p>	<p>In the absence of detailed engagement from Natural England at this stage, the applicant has continued with the baseline data collection (1 sample per 200m) as proposed in its consultation letter to Natural England. The applicant considers this a reasonable and proportionate approach and is aware that Natural England has accepted a semi-detailed survey level supplemented by targeted detailed survey in a number of similar cases – for example a similar approach has been carried out following consultation at Heckington Fen NSIP and Mallard Pass NSIP, and has been accepted with non-NSIP applications. The applicant will continue to try and agree this approach with Natural England.</p>

15.3. Assessment Approach

Methodology

15.3.1. The methodology follows the methodology presented in the applicant’s EIA Scoping Report, January 2023, and modified as set out below following responses set out in the adopted Scoping Opinion (13th March 2023).

15.3.2. Three key assets are considered in this Chapter:

- agricultural land, and in particular the quality of agricultural land as measured through the Agricultural Land Classification (ALC), which is a methodology developed for determining the long-term physical limitations of land for agricultural use, principally based on climate, site and soil factors and their interaction;
- soil as an entity separate to its ALC grade. Soil has many important functions, and is considered as a resource in its own right;
- local farm businesses. The way land is farmed can change over short periods of time, but the economic and other implications of land use and farming activities can influence the way the land and soil resource is managed and used.

- 15.3.3. The assessment methodology is set out in **Appendix 15.1**. The assessment considers land loss as an irreversible sealing-over of agricultural land or a permanent downgrading of agricultural land quality. This is where one or more of the soil functions is permanently affected.
- 15.3.4. The assessment of baseline circumstances is based on a combination of desk-based research and in-the-field soil surveys and other surveys. The land quality is assessed by field survey, the soils are assessed in parallel with the ALC surveys, and farming and land-use factors are assessed by interviews and field surveys.

Assessment of Significance

- 15.3.5. The methodology for assessing significance is described in **Appendix 15.1**. It follows the IEMA Guide¹ (2022) and established industry approaches, but has been amended as described to follow the approach described in section 13 of the Scoping Report.
- 15.3.6. In respect of **agricultural land quality**, under the IEMA Guide land of Grades 1 and 2, which Natural England² estimates represents about 21% of agricultural land in England and Wales, is categorised as of very high sensitivity. Land of subgrade 3a, which also accounts for about 21% of agricultural land in England, is classified as of high sensitivity. To accord with the Scoping Report, both are considered as of High sensitivity.
- 15.3.7. The magnitude of effects is based on the thresholds set out by IEMA. These are lower than have typically been used in Environmental Assessments (EA) for many years, and set a major magnitude effect at over 20 ha of land sealed or where the land quality is irreversibly affected. Minor magnitude effects involve losses of 5 ha or less.
- 15.3.8. **Soils** have been more specifically brought into the EA process by the IEMA Guide. Soils that are particularly susceptible to being damaged when handled, for example high clay fraction soils in wet climates, are considered more sensitive than those less susceptible to damage, such as sandy soils in drier climate areas.
- 15.3.9. **Farm businesses** can be affected. These are generally considered to be of no greater than medium sensitivity since farms can change significantly over short periods of time due to many other factors, such as change of ownership, world and local commodity prices, agri-environmental opportunities, the health of the farmer, weather, disease and disaster (e.g., fire).
- 15.3.10. The assessment tables are set out in **Appendix 15.1**.

Legislative and Policy Framework

Legislation

- 15.3.11. There is no legislation of direct relevance to the assessment.

¹ IEMA "A New Perspective on Land and Soils in Environmental Impact Assessment" (February 2022).

² Natural England Technical Information Note "TINO49" (December 2012).

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National Planning Policy

- 15.3.12. **Overarching National Policy Statement for Energy (EN-1)** (November 2023)³ paragraph 5.11.3 notes that undeveloped greenfield land may need to be used for many forms of energy infrastructure. Paragraph 5.11.12 advises that the use of BMV land should be minimised, with a preference for use of poorer quality land. Paragraph 5.11.13 advises that applicants should seek to minimise effects on soils.
- 15.3.13. **The National Policy Statement for Renewable Energy Infrastructure NPS EN-3** (November 2023)⁴ section 2.10 “Solar Photovoltaic Generation” sets out at paragraph 2.10.29 that while land type should not be a predominating factor in determining the suitability of the site’s location for renewable energy development, where the use of agricultural land has been shown to be necessary, poorer quality land should be preferred to higher quality land, avoiding BMV agricultural land where possible.
- 15.3.14. Further advice is provided as follows:
- Biodiversity relative to intensive agricultural use (paragraph 2.10.89): noting that solar farms have the potential to increase the biodiversity value of a site, especially if the land was previously intensively managed; and
 - Mitigation and soil preservation (paragraph 2.10.127): cross-referencing Defra’s Construction Code of Practice for the Sustainable use of Soils (2009)⁵ and advising on mitigation measures to minimise soil carbon loss and maximise soil biodiversity.
- 15.3.15. Paragraph 2.10.145 advises that the Secretary of State (‘SoS’) should take into account the economic and other benefits of BMV agricultural land. The SoS should ensure that the applicant has put forward appropriate mitigation measures to minimise the impacts on soils or soil resources.
- 15.3.16. **The National Planning Policy Framework (‘NPPF’)** (December 2024)⁶ defines BMV land at Annex 2. The National Planning Policy Framework, to the extent that it is relevant, sets out in paragraph 187(b) that the economic and other benefits of BMV agricultural land should be recognised in planning decisions.

³ Department for Energy and Net Zero (2024), Overarching National Policy Statement for Energy (‘EN-1’, 2024)

⁴ Department for Energy and Net Zero (2024), National Policy Statement on Renewable Energy Infrastructure (‘EN-3’, 2024)

⁵ Department for Environment, Food and Rural Affairs (2009), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites

⁶ Ministry of Housing, Communities and Local Government (formerly the Department for Levelling Up, Housing and Communities) (2024) National Planning Policy Framework (NPPF)

The Development Plan

- 15.3.17. **Doncaster MBC.** The Doncaster Local Plan 2015–2035 (September 2021) Policy 58 on Low Carbon and Renewable Energy supports low-carbon energy generation. Criterion B) 6) requires reclamation to a suitable use such as agriculture or nature conservation.
- 15.3.18. Policy 60 protects soil resources. The significant loss of BMV will only be supported where there are no alternative sites available and where possible, reinstatement is possible. Soil resources must be conserved, and high environmental soils (e.g., peats) should not normally be disturbed.
- 15.3.19. **North Lincolnshire Council.** The Core Strategy (June 2011) does not contain any policy specific to agricultural land.

Scoping Criteria

- 15.3.20. The following comments relating to soil and agricultural land were provided in the Planning Inspectorate’s Scoping Opinion dated 14 March 2023.

Table 15.2 Extract of aspect based scoping table from Scoping Opinion for Tween Bridge Solar Farm

ID	REF	MATTER	PLANNING INSPECTORATE COMMENTS	APPLICANT RESPONSE
3.14.2	13.7 and 13.17	Impacts on BMV	The long term effects on BMV land should be considered, including the effects of the operational phase.	The extent and soil type of BMV and non-BMV land is being assessed. The long term effects will be considered, and a soil management plan (SMP) will be provided once surveys are complete, likely September 2023.
3.14.3	13.4	Methodology	The ES should explain the relevance of the Welsh Government predictive map.	Reference to the Welsh Predictive Map in the Scoping Report is assumed to have been in error.
3.14.4	n/a	Guidance	Reference should be made to Defra’s Construction Code of Practice and the BSSS Guidance Note.	Both are referred to in this Chapter and both will be referenced in the SMP, which will be provided once surveys are complete, likely September.
3.14.1	13.20	Cumulative Schemes	The cumulative assessment may need to include schemes under 20 ha. The list should be agreed with the host local planning authorities.	The response is noted and will be actioned.

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Limitations to the Assessment

- 15.3.21. There are no significant limitations to this assessment.
- 15.3.22. Field survey has provided the data for an assessment of the ALC of the Draft Order Limits. 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 extensive 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 TINO49⁷.

15.4. Baseline Conditions

Site Description and Context

- 15.4.1. The Draft Order Limits is mostly level, agricultural land in arable farming use. This is illustrated in the following photographs.

Photo 1: Some of the land in the southeast of the Site



Photo 2: Some of the land in the central part of the Site



⁷ (ibid) This can be found via <https://publications.naturalengland.org.uk/publication/35012>

Photo 3: Some of the land in the northern part of the Site



15.4.2. The level nature of the Site means that in wet periods water can stand on the site, as shown below.

Photos 4 -6: Water Retention in Winter



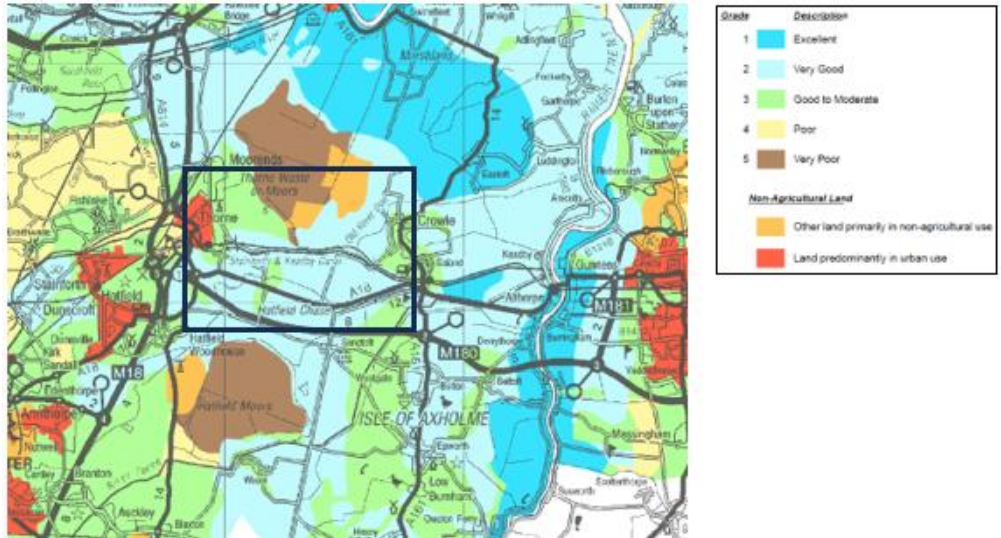
Site Description in Context

15.4.3. The Draft Order Limits is shown on the "provisional" ALC maps from the 1970s as being of Grade 2 "very good" agricultural land quality and undifferentiated Grade 3 "good to moderate" quality. As can be seen on Figure 15.1 Extract from Provisional ALC Map below, much of the wider area in

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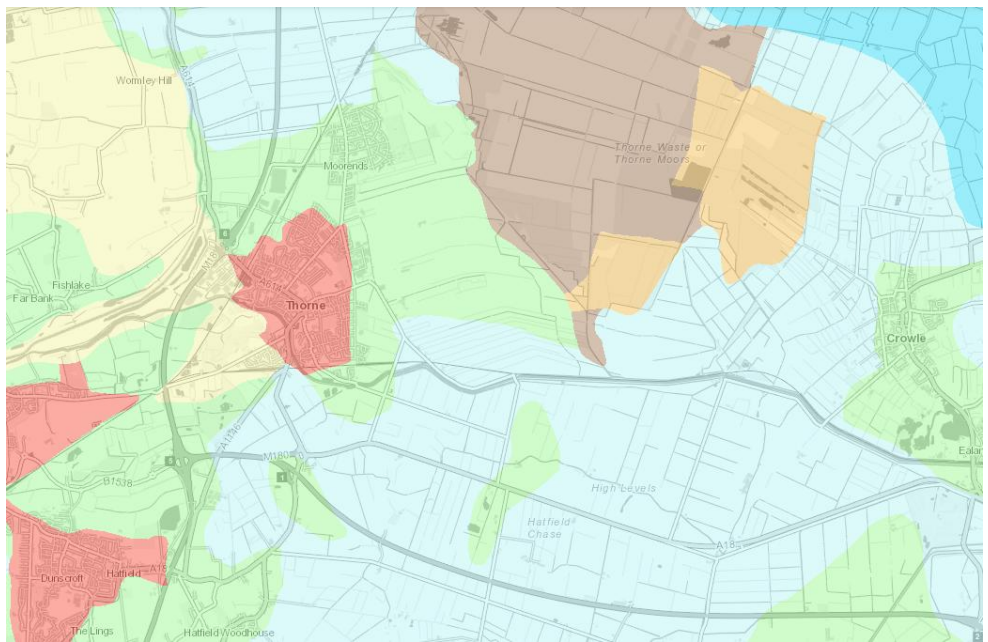
the vicinity of the Draft Order Limits is similarly shown to be of Grade 2 agricultural land quality. The general area of the Draft Order Limits area is within the black-edged box.

Figure 15.1: Provisional ALC of the Wider Area



15.4.4. In 2020 Natural England digitised these maps. The detail for the Draft Order Limits is shown below. As described in Natural England's Technical Information Note 049⁸, these maps are not suitable for use for site specific analysis, but are for strategic purposes only, having been produced at a 1:250,000 scale only.

Figure 15.2: Provisional ALC of Draft Order Limits Area



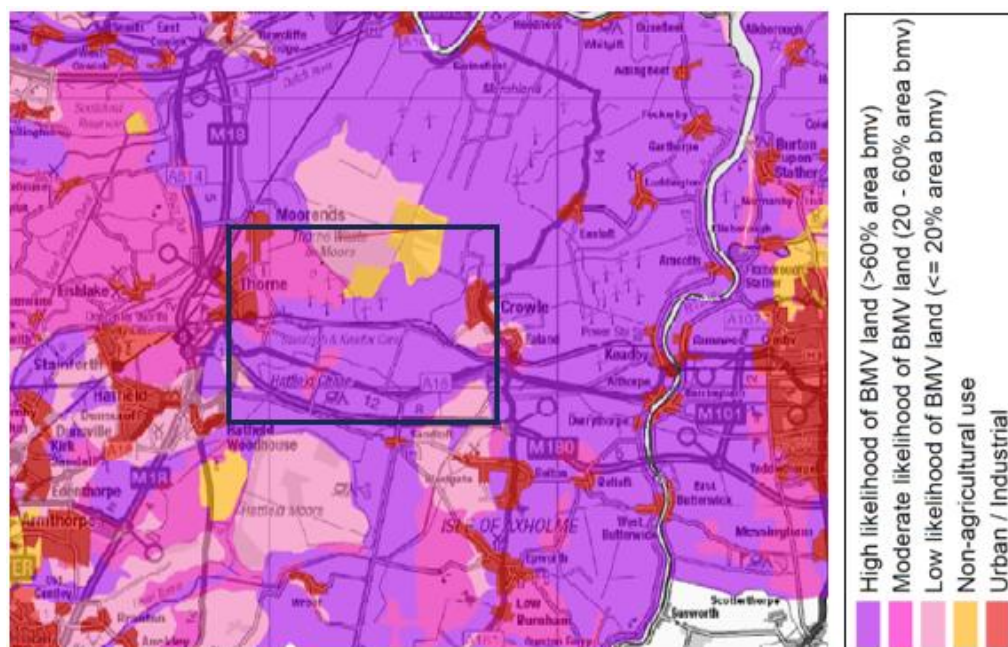
⁸ Natural England Technical Information Note TIN049, December 2012.

15.4.5. 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).

15.4.6. The Draft Order Limits is shown as being mostly in the high likelihood of comprising BMV agricultural land, as is much of the wider area in the vicinity, as shown on Figure 15.3⁹. Parts of the Draft Order Limits, particularly the northern part, are shown as falling into the moderate likelihood of BMV. As set out in the key, the dark purple areas are >60% area BMV.

Figure 15.3: Extract from Likelihood of BMV Agricultural Land Quality Maps



Baseline Survey Information

15.4.7. **Agricultural Land Quality.** To date, ALC surveys have taken place over 1,260 ha. Some of the land surveyed is not within the Draft Order Limits. Additional surveys are programmed to assess the land quality of the areas not yet surveyed. Samples were taken on a regular 200m grid, such that the survey is described as a “semi-detailed” survey.

15.4.8. There are no climatic limitations to ALC grade. The Field Capacity Days for the site, important for assessing the potential sensitivity of soils (see **Appendix 15.1**) is 125 days. The soils are

⁹ The map and the guidance note can be found at <https://publications.naturalengland.org.uk/category/5208993007403008>

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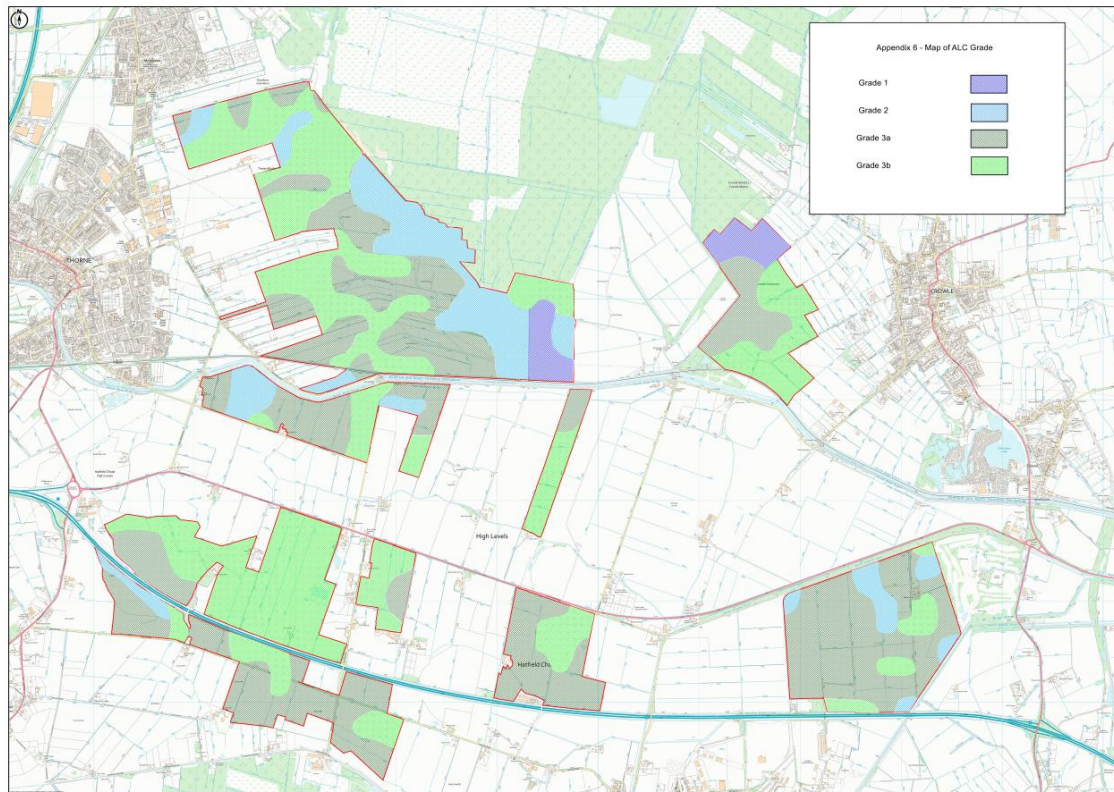
generally stoneless or contain less than 5% stones. The topography is flat, and there are no micro-relief limitations.

15.4.9. The soils across the site include some sandy and loamy medium sands, and areas where soils are clayey. The ALC classification has identified soils limited by droughtiness and soils limited by wetness. The ALC of the areas surveyed to date is set out in the table, and shown in **Figure 15.4**.

Table 15.3: Provisional ALC of Draft Order Limits Area

ALC Grade	Area (ha)	Proportion (%)
1 excellent	49	4
2 very good	174	14
3a good	492	39
3b moderate	546	43
Total	1,261	100

Figure 15.4: Part-Site ALC Results



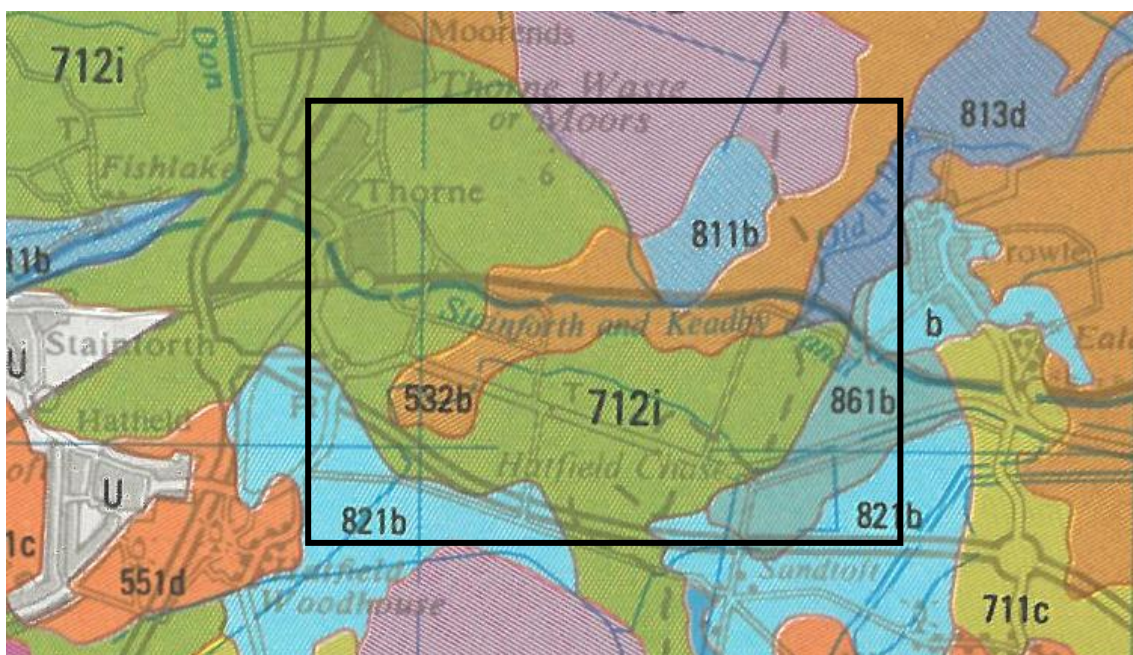
15.4.10. The ALC data is set out in **Appendix 15.2**.

15.4.11. **Soils.** The soils across the Draft Order Limits are shown on the 1:250,000 scale Soil Survey of England and Wales map as a mix of different soils, mostly in the following three Associations:

- 532b: Romney, deep stoneless permeable calcareous coarse and fine silty soils;
- 712i: Foggathorpe 2, slowly permeable seasonally waterlogged stoneless clayey and fine loamy over clayey soils;
- 811b: Conway, deep stoneless fine silty and clayey soils variably affected by groundwater;
- 813b: Fladbury 3, stoneless, clayey, fine silty and fine loamy soils affected by groundwater;
- 821b: Blackwood, deep permeable sandy and coarse loamy soils;
- 861b: Isleham 2, deep permeable sandy and peaty soils affected by groundwater;

15.4.12. The Site lies within the area edged black on the plan below. The distribution of soils across the site is being examined as part of the ALC and will be reported once surveys are complete.

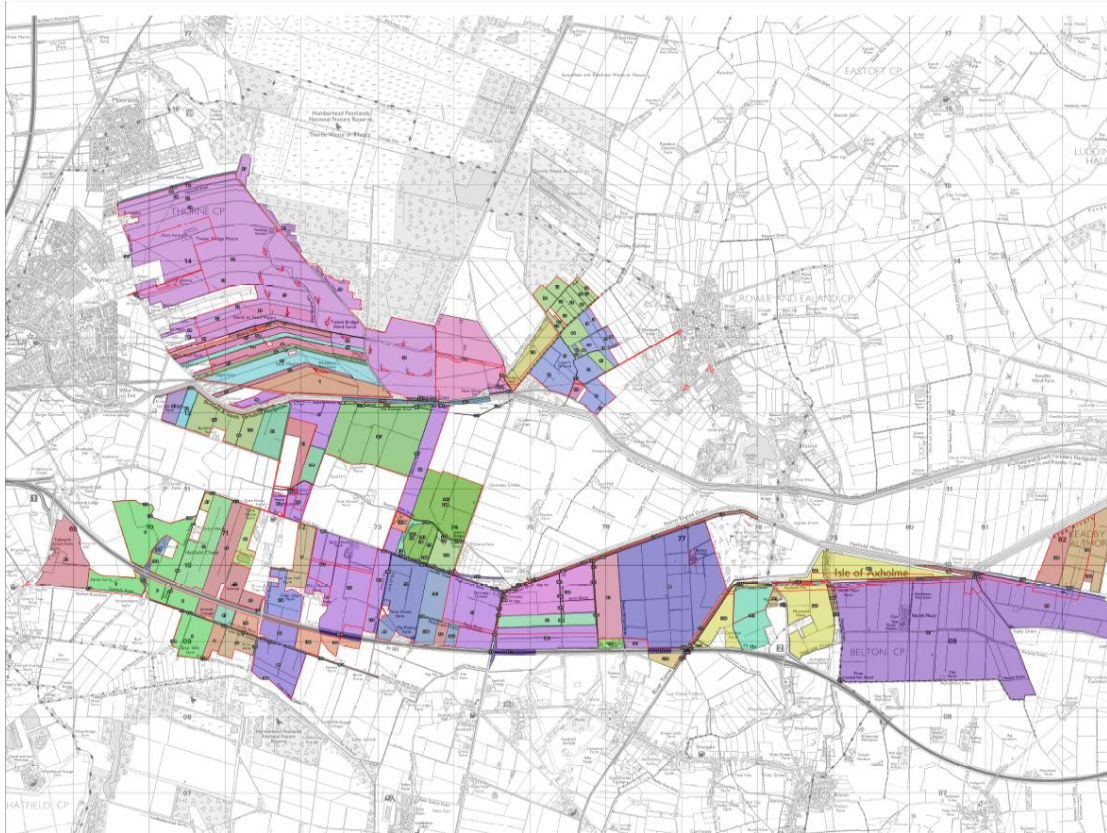
Figure 15.5: Extract from National Soil Map



15.4.13. **Farm Businesses.** There are a number of holdings farming land within the Draft Order Limits, as shown on the plan below.

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Figure 15.6: Landownership Plan



- 15.4.14. There are a number of landowners with land within the Draft Order Limits. Almost all of the land is in arable farming use, by a mixture of tenures and management methods. Preliminary assessment has identified that the land within the Draft Order Limits is all of low sensitivity. There are no farm businesses that are likely to be rendered non-viable as a consequence of the proposals. Accordingly there are no particularly sensitive receptors.
- 15.4.15. It is not proposed that any farm buildings will be demolished as part of the Scheme.

15.5. Construction

- 15.5.1. The Scheme’s construction phase effects have been considered in terms of the solar PV arrays, tracks, fixed equipment, fencing, cabling, substation, battery storage, and landscaping.
- 15.5.2. The process of installing the solar PV arrays involves marking out the grid on the ground and laying out the steel stanchions. This stage is non-intrusive and should take place when soils are suitably dry. A tractor and trailer will be used to transport the framework posts to the fields, then each framework post is lifted off by hand.
- 15.5.3. Construction workers then knock the stanchions / framework posts into the ground. This is a swift process and has very little impact on the soil because the framework posts are inserted into the soil with no removal of soil and the soil is simply pushed aside by the post. An example of this construction activity from another project is shown in photograph 15.7 below, which shows the installation of framework posts into a clay soil.

Photograph 15.7: Framework Posts being Installed



15.5.4. The design of the PV array varies between sites, but the framework posts are all similar. The limited impact of installing the framework posts on the underlying land is illustrated below. The purpose of the photographs is to show that there is little disturbance to the soils. The design above ground does not affect soils and the design may therefore vary from the following examples. The purpose of these photographs is to show the framework posts as they enter the ground and the effects of construction traffic.

Photograph 15.8: Framework Posts Installed (taken at Bentham Farm, Purton 2015)



Photo 15.9: Framework Posts being Installed (taken at Tilm Farm, Retford, in January 2023)



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15.5.5. There is minimal damage caused by the next stage of the construction process, the bolting-on of panels, if carried out in dry conditions. This is evident in photograph 15.10 below of a development similar in nature to the Scheme, after the solar PV panels have been added to the mounting frames.

Photograph 15.10: After Solar PV Panels Bolted-on (Bentham Farm, Purton)



15.5.6. For the Scheme, 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. In all cases the work involves 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. This looks disruptive but the disturbance of the 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.

15.5.7. 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. This is illustrated in Photograph 15.9, which was taken at a solar development site 14 days after the trench was first dug, for a development similar in nature to the Scheme but with lower panel heights. The photograph is included to illustrate the effects on the soils.

Photographs 15.11 and 15.12: Cabling Channels during Cable Installation

Photograph 15.11



Photograph 15.12



- 15.5.8. Overall, the Scheme's solar PV module installation will result in very low magnitude effects on soils. The soils are expected to be of medium or low sensitivity (Table 1 in **Appendix 15.1**), and the effect is therefore expected to be of negligible significance.
- 15.5.9. Fixed equipment will include:
- access tracks. These will be laid around and across the Scheme, using existing tracks so far as possible. The topsoil will be removed and stored nearby for restoration, a membrane will be laid, and a surface material added. These areas are restorable;
 - central inverters. These are containerised equipment that will sit on a foundation or stone base, with a membrane laid after the topsoil has been removed (in a similar manner to the tracks). These areas are restorable;
 - substations. A main substation plus five subsidiary substation areas are proposed, each involving of the order of 2.0 - 2.5 ha. These may be restorable, but there could be a permanent effect on land quality;
 - BESS. The BESS could include an area of up to 6 ha. This is likely to be restorable.
- 15.5.10. The land quality of these areas, and the areas involved, will be ascertained and quantified once surveys have been completed and will be reported in the next iteration of the PEIR. The effect is not yet quantified but the effect is expected to involve the temporary loss of in excess of 20ha of BMV, which would be **significant**.
- 15.5.11. The effects on the occupying farm businesses are still to be assessed. There are many different landowners and occupiers, and almost all of the land is off-lying from the principal farming bases. There is unlikely to be consequential closure of farm businesses, and most impacts are likely to be medium or low magnitude impacts (Table 2 in Appendix 15.1), which will lead to minor to moderate adverse effects. This will be reported in the next iteration of the PEIR. The effect is expected to be **not significant**.
- 15.5.12. **Summary of Effects.** The land quality is not yet known in detail, but the land is expected to comprise a mix of Grade 2 and subgrades 3a and 3b. There will be six substations, each involving up to 3 ha, so there is potential for the fixed equipment areas (substations, BESS, tracks and central inverters) to exceed 20 ha of BMV land. There is therefore the potential for in excess of 20 ha of BMV to be affected, albeit capable of restoration which would be a **major adverse (significant)** effect.
- 15.5.13. The soils are mostly medium or low sensitivity (their resilience to structural damage), and the effect is expected to be a **moderate or minor adverse effect (not significant)**.
- 15.5.14. The effects on farm businesses are expected to be no more than **minor to moderate adverse, and not significant**.
- Operation**
- 15.5.15. There will be no further disturbance to soils during the operational phase of the Scheme; therefore, the agricultural land quality within the Draft Order Limits will not be affected during this phase of the Scheme.

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- 15.5.16. The operational effects considered are:
- effects during the operational phase, on agricultural land quality;
 - effects on soils from long-term grassland uses and the effects from site maintenance activities;
 - effects on the operation of the farm businesses;
 - food production implications. This is generally an economic/ land use consideration.
- 15.5.17. The agricultural land quality at the Site will not be affected during the operational phase.
- 15.5.18. 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 Draft Order Limits.
- 15.5.19. Maintenance and cleaning machinery is normally a van or small tractor, and generally lighter than most farm machinery. If the soils are wet when access is taken, there is the potential for slight indentations to be made, but such effects on soils are not significant.
- 15.5.20. The effect on agricultural land quality during the operational phase is therefore negligible, which even on some very high sensitivity land potentially is a negligible effect (**not significant**).
- 15.5.21. There will be potential for benefits to soil health and quality.
- 15.5.22. The land is currently 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 will be generally low.
- 15.5.23. 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.
- 15.5.24. Carbon is held in two principal ways: soil organic carbon ('SOC'), being organic matter levels in the soil, and soil inorganic carbon ('SIC') mostly held in weathering rocks within the soil. In most agricultural soils, the SOC is less than 5%.
- 15.5.25. The role of SOC in soils is complex, as described in the British Society of Soil Science Note "Soil Carbon" (2021)¹⁰ (the 'BSSS Note'). As described under the heading "Soil Carbon Functions" on page 4:
- 'In general therefore, a soil with a greater SOC content has a more stable structure, is less prone to runoff and erosion, has greater water infiltration and retention, increased biological activity*

¹⁰ Science Note: Soil Carbon, BSSS (November 2021)

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'.

- 15.5.26. It is noted 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'.*
- 15.5.27. It is widely recognised that a pasture use of land will increase the SOC within the soil, with multiple benefits. The SOC level can be increased in other ways, and regenerative farming and minimal tillage practices are being trialled around the country. There is a clear potential benefit for the soils from the conversion of arable land to grassland, however, which will result from the Scheme.
- 15.5.28. As set out in the BSSS Note, research shows that organic matter levels will increase once land is put into a grassland mix. This will result in benefits to the soils during the operational phase.
- 15.5.29. As noted above, 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.
- 15.5.30. There is therefore the potential for improvements in one or more soil functions over an area of all the land within the Site Area in grassland use, and hence in excess of 20 ha. Based on the methodology in Appendix 15.1, 20 ha is the threshold for a high magnitude effect. This would therefore be a high magnitude effect, including on soils of mostly low sensitivity but including areas of sandy clay loam (medium sensitivity in IEMA Table 4). The effect will therefore be a moderate beneficial effect, which is **not significant**.
- 15.5.31. Farm business impacts have yet to be assessed, but it is not expected that any significant effects will be identified, based on the survey analysis completed to date.
- 15.5.32. Food production is not a planning or environmental matter. There are no planning policies or other initiatives to seek to utilise agricultural land for food production, or at any particular level of intensity. In the regional and local context the effect, the above notwithstanding, is anticipated to be **minor or negligible**, which is **not significant**.

Decommissioning

- 15.5.33. As described below, the decommissioning phase will not have any significant effects on agricultural land or soils, or on farm businesses.
- 15.5.34. The cabling connecting the solar PV modules will be disconnected, the solar PV panels will be dismantled and removed and the framework unbolted. The framework posts will then be pulled out using machinery not dissimilar to that which installed the framework posts. This machinery will likely have tracks to dissipate ground pressure and will be operated in dry conditions.
- 15.5.35. Deeply-buried cables will be left in situ or removed, and shallow-buried cables which might be caught by subsoilers will be removed by digging a narrow trench, removing topsoil to one pile, subsoil to another, removing the cable then reinstalling the soils.

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- 15.5.36. The soils across the solar PV module areas will then be loosened with normal agricultural machinery, and returned to the farmers for continued agricultural use.
- 15.5.37. 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.
- 15.5.38. Decommissioning can be timed to be carried out when soil conditions are suitable, which will be set out in an outline Soil Management Plan (oSMP), which can be prepared once field surveys are complete. Decommissioning will therefore not have any adverse agricultural effects. Thereafter, the land will be available for continued agricultural use. Therefore, the decommissioning effects are negligible, which is **not significant**.

15.6. Mitigation, Enhancement and Residual Effects

Mitigation by Design

- 15.6.1. A Soil Management Plan (SMP) will be provided to ensure that effects on soils and land quality are minimised. The SMP will identify the soil types across the Site, and any sensitivities to being worked in wet weather. The SMP will provide guidance on the handling of soils, and the trafficking across soils, for all parts of the construction and operational works, and provide guidance for decommissioning works. It is intended that the SMP will be secured through a requirement in the DCO.

Additional Mitigation.

- 15.6.2. No further mitigation is considered to be necessary.

Table 15.3: Mitigation

Ref	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measure would be secured		
		By Design	By S.106	By Requirements
1	Soil Management Plan	✓		✓

Enhancements.

- 15.6.3. There will be an enhancement of the soil from the Scheme. There are indications that soil health and, to a lesser degree, soil structure will be enhanced by a 40-year period, which is the operational lifespan of the scheme, of permanent grassland cover.

Residual Effects

- 15.6.4. The construction phase effects are anticipated as follows:

- A major adverse impact due to loss of >20 ha of Grade 2 and 3a agricultural land from substations, the BESS, tracks and fixed infrastructure, although following restoration this impact will revert to negligible;
- Minor adverse effect on soils from construction activities;
- A moderate to minor adverse effect from the need to change enterprises on the farms involved, but overall a beneficial effect on farm business.

Operational Phase

15.6.5. The operational phase effects remain as described in section 15.5, namely:

- No adverse effects on agricultural land;
- Benefits to soils from long-term grassland use;
- The environmental effects of changes from arable to grassland uses are negligible.

Decommissioning Phase

15.6.6. The decommissioning phase effects remain as described in section 14.5 above, namely:

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

15.7. Cumulative and In-Combination Effects

15.7.1. Not yet assessed.

15.8. Summary

Introduction

15.8.1. This chapter of the PEIR considers agricultural land, soils and agricultural businesses.

Baseline Conditions

15.8.2. Survey work is currently underway, but the expectation is that the Site will involve a mixture of lands of Grades 3, 3a and 3b. Soils are loamy or sandy. There are 19 farm businesses with land in the Scheme.

Likely Significant Effects

15.8.3. There will be a main substation plus five subsidiary substations and a Battery Storage area, and whilst these areas will be restored at the decommissioning phase, there is the potential for the operational phase for the loss of Grades 2 and 3a land to be adversely affected. There is the potential for in excess of 20 ha of such land to be involved, which would be a major adverse effect, albeit reduced to negligible on decommissioning.

Agricultural Circumstances

15.8.4. There are no other significant agricultural effects anticipated.

Mitigation and Enhancement

15.8.5. A Soil Management Plan will be required to minimise damage to soils and ensure that any damage is ameliorated. The restoring of arable soils with grassland for the duration of the operation phase will produce benefits for the soil resource.

Conclusion

15.8.6. A major adverse effect from the loss of BMV soils for the duration, is expected, but that can be fully restored at decommissioning.

15.8.7. Table 15.4 provides a summary of effects, mitigation and residual effects.

Table 15.4: Summary of Effects, Mitigation and Residual Effects

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Construction								
Agricultural land	Loss or downgrading	Temporary	Potentially some very high	Potentially high	UK	Major	None	Major
Soils	Damage to soil structure	Temporary	Medium or low	Negligible	Local	Negligible	Soil Management Plan	Negligible
Farm businesses	Effect on viability	Permanent	Medium or low	Medium or low	Local	Moderate to minor	None	Moderate to minor
Operation								
Agricultural land	Effect on ALC grade	Permanent	Potentially some very high	Potentially high	UK	Negligible	SMP	Negligible

Agricultural Circumstances

Agricultural economy and food	Harm to farm viability	Permanent	Medium or low	Negligible	Local	Negligible	None	Negligible
Cumulative and In-Combination								
Not yet undertaken								

