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POWER FOR GOOD

# Steeple Renewables Project

## Appendix 15.2: Outline Soil Management Plan

Environmental Statement – Volume 2

January 2026

Document Reference: EN010163/EX/6.3.15

Revision: 2 (Clean)

The Infrastructure Planning (Examination Procedure) Rules 2010

Rule 8(1)(b)

# Outline Soil Management Plan

| Document Properties | | |
|---|---|---|
| **Prepared By** | The Steeple Renewables Project Consultant Team | |
| **Version History** | | |
| **Version** | **Date** | **Version Status** |
| Application Version | April 2025 | Rev 1 (Original) |
| Examination Version | January 2026 | Rev 2 |

# STEEPLE RENEWABLES PROJECT

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## OUTLINE SOIL MANAGEMENT PLAN [REVISED]

**21st January 2026**

KERNON
COUNTRYSIDE
CONSULTANTS
LIMITED

# STEEPLE RENEWABLES PROJECT

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# OUTLINE SOIL MANAGEMENT PLAN [REVISED]

**21st January 2026**



**Authorised By ……….APK 01/26**

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**Appendices**

# 1 INTRODUCTION

**Purpose and Scope of the Document**

1.1 The outline Soil Management Plan (oSMP) sets out the key principles and considerations for the handling of soils for the Proposed Development. It is intended that this is an outline of a Soil Management Plan that will be required under the Development Consent Order (DCO).

1.2 The document therefore needs to be read as one setting out the principles.

1.3 The oSMP has been prepared by Tony Kernon of Kernon Countryside Consultants Ltd. It draws on a detailed Agricultural Land Classification (ALC) and soil survey carried out by Roberts Environmental Ltd. Relevant extracts are reproduced in **Appendix SMP1**.

1.4 This revised oSMP has been revised following the relevant representation of Natural England (NE) dated 28 August 2025, and addresses those comments. NE's comments were that:

(i) pre-commencement soil information for the cable route and enhancement areas should be included. This has been addressed with new sections (now 10 and 14);

(ii) temporary construction compound areas should be measured if possible and recorded pre-entry. Section 7 has been expanded to provide greater details on these areas;

(iii) clarity is required in the text to confirm that all land temporarily affected will be restored to comparable ALC grade. This was always intended, and this has been addressed by amendments to the text to confirm this commitment, with edits to sections 2, 7, 8, 9 and 11.

1.5 A revised oSMP has been submitted to NE for comments and has been amended in response to further comment, in particular in section 14 to clarify the Ecological Enhancement Areas covered by the oSMP.

**Structure of Report**

1.6 This oSMP:

- sets out the key recommendations in section 2;
- describes the soil resource in section 3;
- describes and sets out the key principles of soil management in section 4;
- describes soil suitability tests in section 5;
- summarises the construction phasing and timing in section 6;
- sets out the soil handling methodology for construction compounds in section 7;

- sets out soil methodology for the access tracks and bases in section 8;
- sets out soil methodology for the solar PV arrays in section 9;
- sets out the soil survey and works for inter-area cabling in section 10;
- sets out the substation and BESS in section 11;
- sets out the on-site fencing in section 12;
- sets out drainage in section 13;
- sets out soil survey and works for the ecological enhancement areas in section 14;
- sets out operational phase soil management in section 15;
- and sets out the principles for decommissioning in section 16.

1.7 Implementation of this oSMP, and adherence to its principles, will be the responsibility of the site manager.

1.8 The May 2025 draft oSMP contained many pages of extracts from key documents. In this revision these have been referenced but the extracts have not been appended, to keep the document size down. Full references are at section 17.

## 2 KEY OBJECTIVES AND RECOMMENDATIONS

**Objectives**

2.1 The objectives of the oSMP are to set out the principles for soil handling and management to minimise disturbance to soils and to ensure, and the Applicant commits to, restoration of disturbed land to the same ALC grade following construction works or at decommissioning, whichever is relevant.

**Key Recommendations**

2.2 The soils are generally fairly resilient in this relatively dry part of the country.

2.3 The soils across the site are a mix of Grades 1 and 2 and Subgrades 3a and 3b. Those graded Subgrade 3b are more susceptible to being damaged if moved when wet. Whilst these soils can be recovered and restored easily, it is recommended that the phasing and site works are programmed so far as possible to aim to complete the installation of the panel legs and the fixing of the solar PV arrays to minimise trafficking between November and March.

2.4 Whilst there will be a few periods when they will be too wet to be worked (depending upon the weather), works into the winter will not generally require extensive restoration, as the soils will be resilient, but should be avoided if possible. Therefore whilst this oSMP seeks to minimise trafficking over land in the November to March period, if ground conditions are suitable then works can continue in that period. Adherence to the soil suitability tests described in this oSMP will enable flexibility of construction periods.

2.5 It is recommended that the key managers read and follow the soil suitability tests set out in this report, thus reacting to seasonal variations and providing flexibility. There is also some variation between the soil types as set out in this oSMP.

## 3 THE SOIL RESOURCE

3.1 The soils are described in the Agricultural Land Classification (ALC) report by Roberts Environmental Ltd, the text and plans from which are reproduced in full in **Appendix SMP1**.

3.2 Four soil types have been identified, as described below:

- **Soil Type 1.** Comprised mainly heavy silty clay loam topsoil to typically 20cm with subangular blocky structure. Subsoil was regularly observed as silty clay with a coarse prismatic, defining the Slowly Permeable Layer at 20cm depth. These profiles were assessed as Wetness Class III and are predominantly limited in their agricultural capability by wetness, resulting in ALC Grade 3b for this Soil Type.
- **Soil Type 2.** Typically identified as heavy clay loam topsoil to an average depth of 42cm with subangular blocky structure. Subsoil was typically observed as a coarse prismatic clay, resulting a Slowly Permeable Layer assessed at 42cm. This profile was assessed as Wetness Class II and was limited to ALC Grade 3a due to soil wetness limitations.
- **Soil Type 3.** Soil Type 3 was identified with variable characteristics, but typically having a heavy silty clay loam topsoil of an average 34cm thickness and a subangular blocky structure. The initial subsoil was identified as a subangular blocky clay, which further developed into a well-drained fine sand of single grain structure at 90cm. Soil Type 3 was determined to be well drained (Wetness Class I) which resulted in ALC Grade 2 due to both droughtiness and wetness limitations on this soil type.
- **Soil Type 4.** Typically encountered as a freely draining fine sandy silt loam topsoil of average 39cm thickness, underlain by a fine sand of single grain structure. This soil type was defined as well drained (Wetness Class I) with no limitations relating to the soil physical characteristics.

3.3 These soil types are shown below.

*Insert 1: Type 1*

*Insert 2: Type 2*

*Insert 3: Type 3*

*Insert 4: Type 4*

# 4 KEY PRINCIPLES

**Guidance**

4.1 Soil management principles are set out in a number of documents, but those of most relevance are:

- Code of Practice for the Sustainable Use of Soils on Construction Sites, Defra (March 2011);
- Working with Soil Guidance Note on Benefitting from Soil Management in Development and Construction, British Society of Soil Science (v 3 January 2022);
- Good Practice Guide for Handling Soils in Mineral Workings, The Institute of Quarrying (July 2021);
- Building on Soil Sustainability: principles for soils in planning and construction, Cornwall Council and others (September 2022);
- Planning and aftercare advice for reclaiming land to agricultural use, Natural England (April 2022), especially in respect of soil bund management.

**Overview**

4.2 For much of the installation process there is no requirement to move or disturb soils. Soils will need to be moved and disturbed to create temporary working compounds, and to create the tracks and small fixed infrastructure bases. Soils will need to be disturbed to enable cables to be laid, but the soils will be reinstated shortly after they are lifted out (ie this is a swift process).

4.3 For those areas where soil needs to be disturbed to create the bases for the substation and some fixed equipment, the soil will be stored in suitably-managed areas. The soil needs to be looked after because it will be needed at the decommissioning phase to restore the land under the bases back to agricultural use.

4.4 It is unlikely that subsoil will need to be removed to create the shallow bases, but if subsoil does need to be moved and stored, it should be stored separately to the topsoil, and clearly marked.

4.5 It will be evident where topsoil becomes subsoil. In most places the topsoil is about 30cm – 35cm deep, with a graduation to a lighter-coloured subsoil, as shown in the photographs in section 3 describing the soil resource.

4.6 Purely for illustration the following pit, and soil profile, from some of the Grade 2 land within the Site shows the clear distinction between topsoil and subsoil. Operatives should familiarise themselves with this distinction.

*Photos 1 and 2: Soils in Grade 2 Area*

4.7 For the majority of the proposed development soils do not need to be disturbed. The effects on agricultural land quality and soil structure are therefore limited to the effects of vehicle passage. Therefore the key consideration is to ensure that soils are passed over by vehicles (trafficked) when the soils are in a suitable condition, and that if any localised damage or compaction occurs (which is common with normal farming operations too), it is ameliorated suitably.

4.8 The key principles for successfully avoiding damage to soils are:

- timing;
- retaining soil profiles;
- avoiding compaction;
- ameliorating compaction.

**Timing**

4.9 The most important management decision/action to avoid adverse effects on soils is the timing of works. If the construction work takes place when soil conditions are sufficiently dry, then damage from vehicle trafficking and trenching will be minimal.

4.10 Vehicle travel over soils creating limited impact is shown below. This is good practice and is to be aimed-for, so far as possible.

*Photo 3: Soils Suitable for Trafficking*

4.11 Poor practice is shown below. If this type of soil disturbance occurs it can be rectified, as set out below, but as a point of principle if soils are rutting as shown below they are not well suited to being trafficked. Work should, so far as possible, be delayed until soils dry out.

*Photo 4: Soils not Suitable for Trafficking*

4.12 The heavier silty-clay and clayey soils identified in section 3, which are widespread across the site, will be most susceptible to this type of damage. Minimising travel over those soils from November to March in most years is recommended, but in wet years this period could be extended.

4.13 The lighter Type 4 soils of the eastern area are less prone to damage, and can be worked for much of the year, generally requiring extra care in the December to February period after prolonged rain. However, as these areas are intermixed with heavier soils, separate working practices are not considered to be feasible.

4.14 As a general rule any activity that requires soil to be dug up and moved, such as cabling works, should be minimised during the winter. Soils handled when wet tend to lose some of their structure, and this results in them taking longer to recover after movement, and potentially needing restorative works (eg ripping with tines) to speed recovery of damaged soil structure. The period when soils are most likely to be saturated, and therefore assessing soils before works commence is important (see below), is shown below.

*Table 1: Unsuitable Period for Working with Soils*

| **Soil Type** | **Likely Period When Soil Suitability Tests Are Important** |
|---|---|
| Subgrade 1, 2 and 3a | November to March |
| Subgrade 3b | November to March |

4.15 Works within these periods may be able to take place, but it will be necessary to carry out soil suitability tests more frequently as there will be times within those periods when soils will be too wet to handle.

4.16 Soil handling/assessment guidelines are set out in section 5.

4.17 The equipment used to construct solar farms is generally lightweight, as explained later in section 9. It is unlikely that deep compaction will be caused, even with travel in suboptimal conditions.

4.18 In localised instances where it is not possible to avoid undertaking construction activities when soils are wet and topsoil damage occurs then soils can be recovered by normal agricultural management, using normal agricultural cultivation equipment (subsoiler, harrows, power harrows etc) once soils have dried adequately for this to take place. There may be localised wet areas in otherwise dry fields, for example, which are difficult to avoid.

**Retaining Soil Profiles**

4.19 The successful installation of cabling at depths of >60cm requires a trench to be dug into the ground. Topsoils vary across the site but the coverage is generally about 30cm, with subsoils below that being generally similar to depth. As set out in the BRE Agricultural Good Practice Guidance for Solar Farms at page 3:

> "**When excavating cable trenches, storing and replacing topsoil and subsoil separately and in the right order is important to avoid long-term unsightly impacts on soil and vegetation structure. Good practice at this stage will yield longer-term benefits in terms of productivity and optimal grazing conditions**".

4.20 In those areas where the soil is dug up (trenching and for compounds and access roads), the soils should be returned in as close to the same order, and in similar profiles, as it was removed.

**Avoiding Compaction**

4.21 It is stressed that the objective of the oSMP is to avoid causing compaction. Compaction by normal machinery is very unlikely to affect land quality, but it results in the need for physical ameliorating with consequent cost implications. It should be avoided wherever possible.

4.22 This oSMP sets out when soils should generally be suitable for being trafficked. There may be periods within this window, however, when periodic rainfall events result in soils becoming liable to damage from being trafficked or worked. In these (likely rare) situations, work should only continue with care, to minimise structural effects on the soils, until soils have dried, usually within 48 hours of heavy rain stopping.

**Ameliorating Compaction**

4.23 If localised compaction occurs during construction, it should be ameliorated. This can normally be achieved with standard agricultural cultivation equipment, such as subsoilers (if required), power harrows and rolls.

4.24 The amount of restorative work will vary depending upon the localised impact. Consequently where the surface has become muddy, for example in the photograph below, this can be recovered once the soil has dried, with a tine harrow and, as needed, a roller or crumbler bar.

*Photos 5 and 6: Inter-row Localised Soil Disturbance and Subsequent Restoration*

4.25 If there are any areas where there has been localised damage to the soils due to vehicle passage, for example, a low wet area within a field which despite best efforts could not be avoided, this should be made good and reseeded at the end of the installation stage, when conditions are suitable. This is illustrated below

*Photo 7: Localised Restoration*

4.26 The soils across the site, provided they have dried sufficiently, will readily restore. The ruts need to be harrowed level when the ground is dry, and then they will naturally restore.

4.27 Accordingly the ground surface should be generally levelled prior to any seeding or reseeding.

## 5 SOIL SUITABILITY TESTS

5.1 The soils across the site are generally able to be worked between April and October. Avoiding the November to March period if possible is recommended.

5.2 The heavier clayey soils are most susceptible to traffic damage when wet. They will therefore need to be assessed after prolonged rain, depending upon the activities proposed.

5.3 Guidance on determining soils suitability to be handled is set out in the Good Practice Guide for Handling Soils, **Appendix SMP2**.

5.4 If you can roll soil into a ball or a sausage easily and the soil holds that shape, it is too wet to travel over or move soils. This is illustrated in the photograph below.

*Photo 8: Indication of When Soils are Too Wet (not taken at this site)*

5.5 If the soils once rolled then cannot be held in this manner and break or crumble, as shown below, they are likely to be suitable for being handled. See the test methodology in **Appendix SMP2**.

*Photo 9:  Soils Suitable*

5.6 The following soils, from some of the Grade 2 land within the Site, crumble and are suitable for being moved and handled.

*Photos 10 and 11: Suitably Dry Soils*

# 6 CONSTRUCTION PHASING AND TIMING

6.1 Works will start with the construction of the access bellmouths, then the construction compounds, internal drainage works etc.

6.2 The access tracks will then be laid. It will be possible to construct the tracks from the highway in, minimising the need to travel over surrounding agricultural land, if the soils are damp. There are existing tracks around the site that will facilitate access.

6.3 Works to install and connect the solar PV arrays will then take place. This will be planned, so far as possible, to mostly take place from late spring and should be complete by November. Cable connections will continue thereafter.

6.4 The construction programme obviously involves the potential to slip into winter work, and so care will be taken to minimise soil disturbance as much as possible.

6.5 Restoration of areas that have been trafficked will take place towards the end of the construction period, in about October/early November, prior to seeding with grass. If the programme, or the weather, means that the ground conditions are not suitable then this work will be delayed until ground conditions are suitable the following spring.

6.6 The construction compounds will be removed in suitably dry conditions after the construction is complete, and those areas restored and seeded.

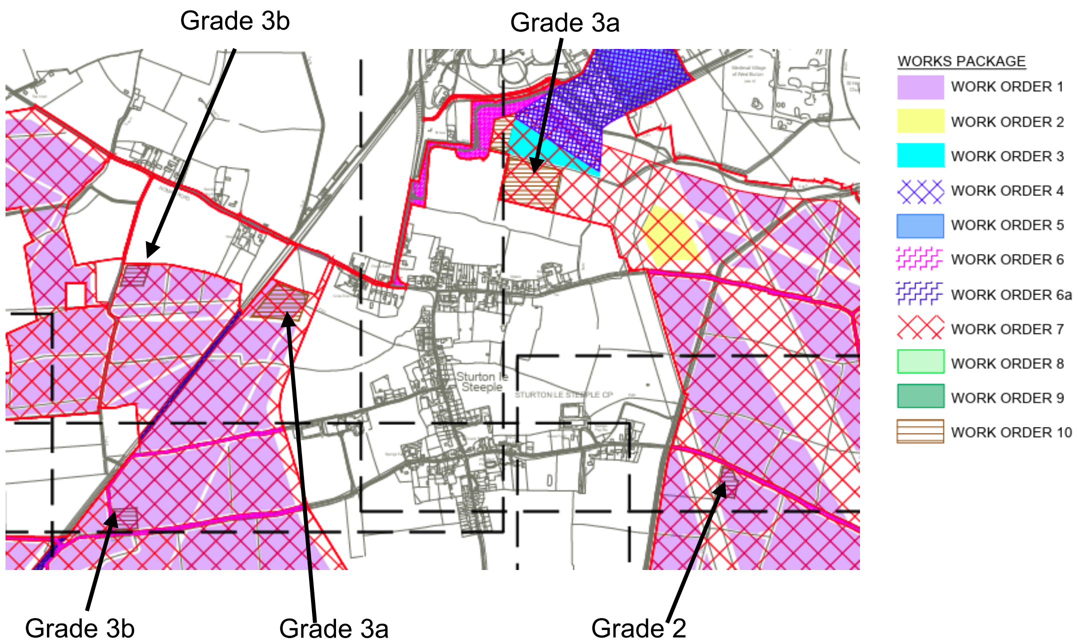
# 7 CONSTRUCTION COMPOUNDS

## Construction Compound Location

7.1 Temporary construction compounds will be created at the start of construction and reinstated at the end. These are Works Order 10.

7.2 The locations are shown as Works Order 10 on the extract from 2.2 Works Plan [**APP-007**] below.

*Insert 5: Extract from Works Plan*




7.3 The two primary construction compounds are shown as being on subgrade 3a quality land. Of the secondary construction compounds, one is on Grade 2 and two are on subgrade 3b.

7.4 The secondary compound on Grade 2 needs to be located south of Littleborough Road, and so the use of Grade 2 was not avoidable.

## Construction Methodology

7.5 Construction compounds are built by either matting over the top of the topsoil, or by stripping topsoil and storing that on the edge of the site. A matting is then laid down, and stone imported and levelled, as shown below.

*Photo 12:  Newly-laid Construction Compound (Elsham-Lincoln Pipeline)*

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

*Photo 13: Matting*

7.7 Topsoil if removed will need to be stored short-term, such as shown below.  If soils are still wet when moved, the storage should be no higher than 1m, but otherwise temporary storage can be up to 3m in height.

*Photo 14: Topsoil Storage Example*

**Movement of Soils**

7.8 The soils need to be sufficiently dry to handle. The works will be scheduled to start when soils should be dry.

7.9 Guidance on determining soils suitability to be handled is set out in the Good Practice Guide for Handling Soils, **Appendix SMP2** and in section 5.

7.10 As described in this oSMP, most of the soils across the site will be suitable for being moved for much of the year. However after prolonged periods of rain, especially in the November to March period, the advice in section 5 on assessing suitability should be followed. Generally the programme seeks to avoid working the soils in this period.

7.11 The topsoils will be stripped to a depth of 30cm, and placed in short-term storage in locations not at risk of flooding.

7.12 Short term storage of soil is shown above. If the soil is likely to be stored for in excess of six months then, depending upon timing, it should be seeded with grass. This binds the soil together and minimises erosion.

7.13 Therefore if the construction compounds are not to be removed before the wet weather in the autumn, the bunds should be seeded with grass, as per the example below, at a suitable time of the year. The compound can then be reinstated after April the following year.

*Photo 15: Grass-seeded Soil Storage*

**Removal**

7.14 The removal of the construction compound should be timed for dry weather. That will be before November or in the following spring.

7.15 At the end of the construction process, the aggregate will be removed. This can be seen in progress below.

*Photo 16: Start of Restoration of Construction Compound*

7.16 The base area should be loosened when soils are dry and the topsoil then spread over the site to the original depth. This should be lightly cultivated.

7.17 Panels can then be installed over the construction compound, or the area returned to agricultural use.

**Land Quality Following Reinstatement**

7.18 The soils will be returned to the same depth. The ALC grade will be unaffected. The Applicant commits to restoration back to comparable ALC grade.

# 8 TRACKS AND INVERTER SUBSTATIONS

**Construction Methodology**

8.1 Track construction involves removing the topsoil, normally to a depth of 30cm, and placing it to the side of the track (therefore enabling easy return to the same place on decommissioning). A geotextile membrane is then spread over the upper subsoil, and the track surface is laid onto this.

8.2 The small areas of fixed equipment will stand on a similarly-constructed hardstanding or concrete foundations, requiring some removal of soil to create the foundation.

**Soil Management**

8.3 Soil should be stripped when the soil is sufficiently dry and does not smear. This is a judgement that is easily made. If the soils can be rolled into a sausage shape in the hand which is not crumbly, or if rubbing a thumb across the surface causes a smudged smooth surface (a smear), the soil is generally too wet to strip or move without risk of structural damage. Topsoil depths are consistent across the site and a stripping depth of 30cm will be a suitable maximum depth for topsoil in most cases, although rarely will it need to be stripped to such a depth. See section 5 for the tests.

8.4 Soil stripping should be carried out in accordance with Defra's "Construction Code of Practice for the Sustainable Use of Soils on Construction Sites" (Defra, 2009). The removed soil should be stored in bunds in accordance with the Construction Code of Practice.

**Replacement**

8.5 The soils will be replaced on decommissioning (see section 16) and the Applicant commits to restoration back to comparable ALC grade.

## 9 SOLAR ARRAYS AND ON-SITE TRENCHING

**The Areas**

9.1 The PV Arrays will be distributed across the Solar PV Site as shown on the application plans.

**Construction Methodology**

9.2 The installation should be carried out so far as is practicable and possible when the ground conditions are suitable (ie the soil is not so wet that vehicles cause tyre marks, such as shown below, deeper than about 10cm when travelling across the land). This will be possible for most of the year, but extra care will be needed between November and March, and this period should be avoided if possible. If conditions are suitable, this stage of the installation should create no soil structural damage or compaction, as shown below.

*Photos 17 and 18: Ground After Construction*

**Soil Management**

9.3 A suitability test, as described in section 5, should be used to determine suitability of the soils for working or access. In simple terms, if the soil is so wet that vehicles cause tyre marks, such as shown below, deeper than about 10cm when travelling across the land, conditions are not yet suitable.

*Photo 19: Track Marks*

9.4 In most years work access to the land is not restricted between March and November. Between those periods the ground conditions will normally be resilient to vehicle trafficking.

9.5 In winter periods the soils are more likely to be saturated, especially to the west, and the propensity to being damaged, albeit in a way capable of rectification, is greatest. As a general rule, vehicular travel in these periods should be limited as much as possible. It is recognised that rainfall is the factor that wets the soils, so a dry spring will offer different conditions to a wet spring, and this may mean that soil structural damage will inevitably result.

9.6 Work in suboptimal conditions should be minimised. The layout includes a network of access tracks and in most cases once legs have been installed, only small numbers of vehicle movements will be needed between each string of panels.

9.7 The machinery normally used is small, lightweight and tracked, and damage to soils will generally be minimal.

*Insert 6 and Photo 20: Example or Leg Piling and Panel Moving Equipment*


9.8 Any surface disturbance will be limited, will not result in deep compaction, and can be ameliorated easily in the spring, as described above.

9.9 It is very unlikely that trafficking during construction when soils are relatively dry will result in compaction sufficient to require amelioration. However, if rutting has resulted the soil should be levelled by standard agricultural cultivation equipment such as tine harrows, once the conditions suit, and prior to seeding. This can be done with standard agricultural machinery, or with small horticultural-grade machinery such as is shown below.

*Photos 21 and 22: Horticultural Machinery*

9.10 The objective is to get the surface to a level tilth for seeding/reseeding as necessary, as was shown earlier.

9.11 Grass growth will then recover or establish rapidly.

**Construction Methodology**

9.12 Cabling is done mostly with either a mini digger or a trenching machine. The cable routing areas are shown on the plans. Trenches will be at varying depths. An example trench, with the topsoil, placed on one side (0-30cm) and subsoil on the other (below 30cm), is shown below, and with the soil put back after cable installation. This methodology should be followed.

*Photos 23 and 24: Cable Installation*

9.13 It is important that topsoils are placed separately to the subsoils, and that they are then put back in reverse order, ie subsoils first.

9.14 The type of machinery used for trenching is shown below, taken from the BRE National Solar Centre “Agricultural Good Practice Guidance for Solar Farms” (2013).

*Insert 7: Machinery Used (extract from BRE Good Practice Guidance)*

Cable trenching, showing topsoil stripped and set to one side, with subsoil placed on the other side ready for reinstatement (photo courtesy of British Solar Renewables)

9.15 The trenches are narrow (mostly 40-70cm). If the topsoil was from grassland the grass will probably recover rapidly without the need to reseed. In bare soils the trench can be cultivated with the wider area for seeding to grass post installation.

*Photo 25: Grass After 4 Weeks (natural recovery)*

*(The photos in this section were taken on heavy, clay soils with poorly draining subsoil, and the work was photographed in July and August 2015)*

**<u>Soil Management</u>**

9.16 All trenching work will be carried out when the topsoil is dry and not plastic (ie it can be moulded into shapes in the hand).

9.17 The top 30cm will be dug off and placed on one side of the trench, for subsequent restoration. There is no need to strip the grass first.

9.18 The subsoils will then be dug out and placed on the other side of the trench, as per the example below.

*Photo 26: Subsoils Dug out of the Trench*


9.19 Once the cable has been laid, the subsoils will be placed back in the trench. Where there is a clear colour difference within the subsoils, so far as practicable the lower subsoil will be put back first and the upper subsoil above that, which is likely to happen anyway as the lower soil is at the top of the pile.

9.20 If dry and lumpy the subsoils will be pressed down by the bucket to speed settlement. If the soils are settling well no pressing-down is required.

9.21 The topsoil will then be returned onto the top of the trench. It is likely, and right, that the topsoil will sit a few centimetres higher than the surrounding level. This should be left to allow it to settle naturally as the soils become wetter.

9.22 If there is a surplus of topsoil this may be because the lower subsoils were dry and blocky and there are considerable gaps in the soil. These will naturally restore once the lower soils become wet again. If the trench backfilling will result in the soil being more than 5-10cm proud of surrounding levels, which is unlikely but possible, the topsoil should not be piled higher. It should be left to the side, and the digger returned to add back the surplus soil once the trench has settled and add the rest of the topsoil onto the trench at that point.

9.23 Any excess topsoil should not be piled higher than 5 – 10cm above ground level.

9.24 If considered appropriate, a suitable grass seed mix could be spread by hand over any parts of the trenches that would seem likely to benefit from extra grass.

**Restoration**

9.25 These works will restore the land without any adverse effects on ALC grade. The Applicant commits to restoration back to comparable ALC grade.

## 10 INTER-AREA CABLING

10.1 Cable infrastructure is required connecting the panel areas, as shown below.

*Insert 8: Area for Cabling*

**<u>Proposed Pre-Entry Soil Survey</u>**

10.2 As part of the preparation of the SMP a soil survey will be completed along the line of the proposed cable using a soil auger and, as needed, a spade, sampling where possible down to 1.2m. The soil survey will sample on a regular 100m grid pattern, along the central line of the proposed cable route.

10.3 The survey will identify the soil resource. In particular it will identify and map:

- topsoil type;
- topsoil depth;
- subsoil type and depth;
- any limitations from poor drainage.

10.4 This detailed survey will be undertaken across all areas where soils will be disturbed.

10.5 The ALC grade along the route will be calculated so as to inform the works and so as to enable the ALC grade to be retained post-installation of the cable.

10.6 The detailed pre-entry survey will be written up recording ALC grade, topsoil depth, subsoil conditions and texture to inform the SRMP.

**<u>Construction Methodology</u>**

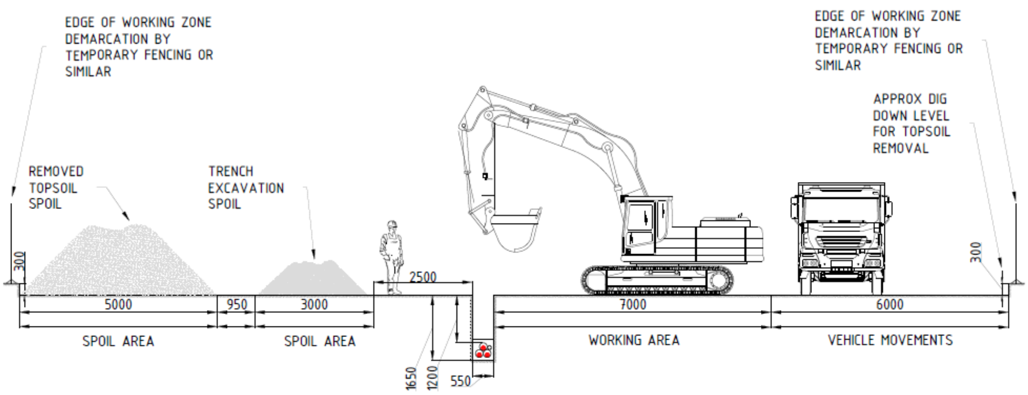
10.7 The works will involve:

(i) the potential stripping of topsoil across the working width, to be stored temporarily in a bund, as per the example below. In some cases the working width may not need to be stripped. The working width in most places is anticipated to be around 30m wide;

*Insert 9: Example of temporary bund (example shown in a water pipeline)*

(ii) the trench will then be dug, with the subsoil placed separately to the topsoil. An example is shown below, but the details will be determined prior to survey works;

*Insert 10: Example of soil storage*




(iii) the cable is then laid into the trench, possibly with some material as protection against stones etc.

(iv) following cable installation, the subsoil will then be replaced in the trench;

(v) subsequently the topsoil will be replaced across the working width, following the soil handling and management principles to be set out in the SRMP, and the land returned to the landowners for continued farming.

10.8 Working widths will vary, narrowing for gaps through hedgerows or widening for deeper excavation areas (eg for boring under transport routes or watercourses). The details will be developed pre-soil survey, and the soil survey will cover the working corridor.

**<u>Soil Suitability Testing</u>**

10.9 Soil suitability testing, as described in section 5, will be essential.

**Restoration**

10.10 The detailed SMP will refine the methodology and timing, following soil survey, and will enable the Applicant to commit to restoration of the land back to comparable ALC grade, so that there is no long-term degradation of agricultural land quality as a result of the works.

## 11 SUBSTATION AND BESS

11.1 The substation and BESS are proposed to the north of the site, in an area of Subgrade 3a land, as shown below.

*Inserts 11 and 12: Proposed Substation, BESS and ALC Plan Extract*


11.2 The works include removing the topsoil, for storage, and in places removal of some of the subsoil. Bases and in places foundations will be built. The water basins will require deeper excavation. The whole area will be restored on decommissioning.

11.3 The key is to remove and store the topsoil when conditions are right, following the principles set out in the oSMP. Long-term storage against the guidance in the Defra Code of Practice for the Sustainable Use of Soils on Construction Sites and IQ guidance Field Tests for Soil Sustainability (an extract is in **Appendix SMP2**) will ensure that soils remain in good condition for the duration of the operational period.

11.4 Subsoil must be stored separately to the topsoil.

11.5 Details of the location and size of the soil storage will be presented in the oSMP, including annual maintenance of the bunds.

**<u>Restoration</u>**

11.6 Further details are provided in section 16. The works will restore the land back to the comparable ALC grade, and the Applicant commits to achieving that.

## 12 SITE FENCING

**The Areas**

12.1 Fence designs can vary, but they all involve a post being inserted into the ground. Pole mounted internal facing closed circuit television (CCTV) systems are also likely to be deployed around the perimeter of the operational areas. Access gates will be of similar construction and height as the perimeter fencing.

**Construction Methodology**

12.2 The site fencing is likely to be metal mesh or deer fencing. This can be erected at any time, if soil conditions allow. The following photographs show fencing installed early in the process.

*Photos 27 and 28: The Fencing*

12.3 Similarly CCTV poles are inserted in the same way.

*Photos 29 and 30: CCTV Poles and Fencing*

**Soil Management**

12.4 If the movement of vehicles is not causing significant rutting (i.e. more than 10cm), then fencing could be erected outside of the key working period.

12.5 Any rutting that results from fencing can be made good with standard agricultural equipment.

## 13 DRAINAGE

**Known Field Drainage**

13.1 There is the potential for parts of the site to have in place underfield drainage schemes. At the outset, prior to construction, all efforts will be made with landowners to identify historic maps and records of any known underfield schemes.

**Key Considerations**

13.2 The extent to which there is the potential for an adverse effect will depend upon a number of factors including:

- the depth of drainage;
- the direction and spacing of any underdrainage;
- the extent to which the underdrainage is operational;
- the type of works being undertaken.

13.3 Further detailed investigation of the drainage will be needed before construction. Scanning for clay and plastic pipe field drainage is not possible, and the depth of drainage is not known.

13.4 The Agricultural and Horticultural Development Board advisory guide "Field Drainage Guide: principles, installations and maintenance" (2024) should be reviewed. This notes that given good maintenance a useful life of a system is at least 20 years, but some systems can last many decades longer (page 4 refers).

13.5 The key consideration in minimising the effects on under-field drainage is to identify the location and depth of the drainage. Page 11 sets out a methodology for identifying the location of field drainage.

**Effects on Land Quality**

13.6 The land classification system (Defra, updated 2025) assumes that "**where limitations can be reduced or removed by normal management operations or improvements, for example cultivations or the installation of an appropriate underdrainage scheme, the land is graded according to the severity of the remaining limitations**".

13.7 Consequently any adverse effects on field drainage will not result in a downgrading or change to the ALC grading of the site.

**Installing Cabling and Repairing Drains**

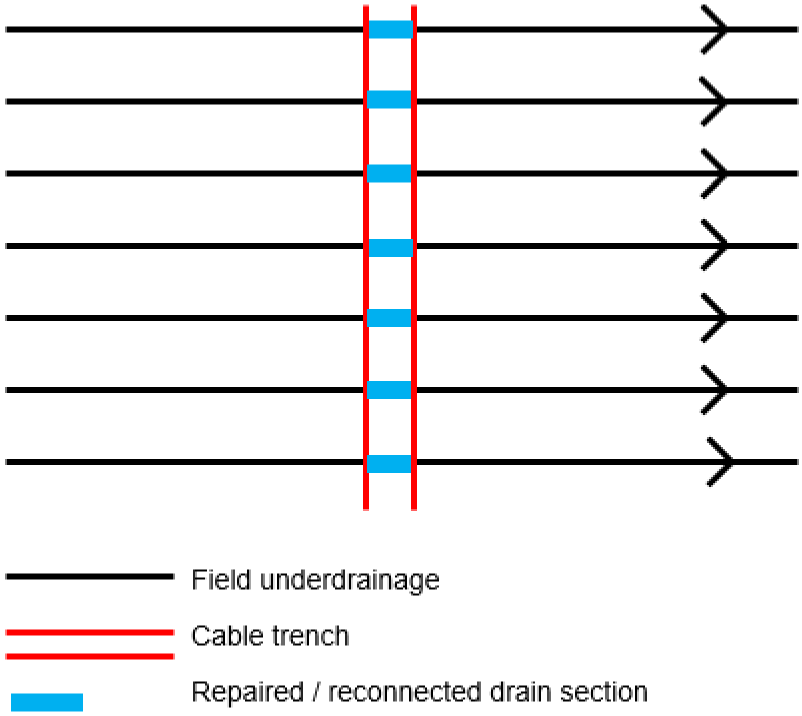
13.8 The installation of cabling will be supervised by an experienced advisor. He or she will know where to expect drainage, and will be able to identify if drainage pipes are broken as either clay pipe fragments or plastic pipe will be evident in the material dug out.

13.9 Those areas affected by cable damage will be repaired in one of two ways:

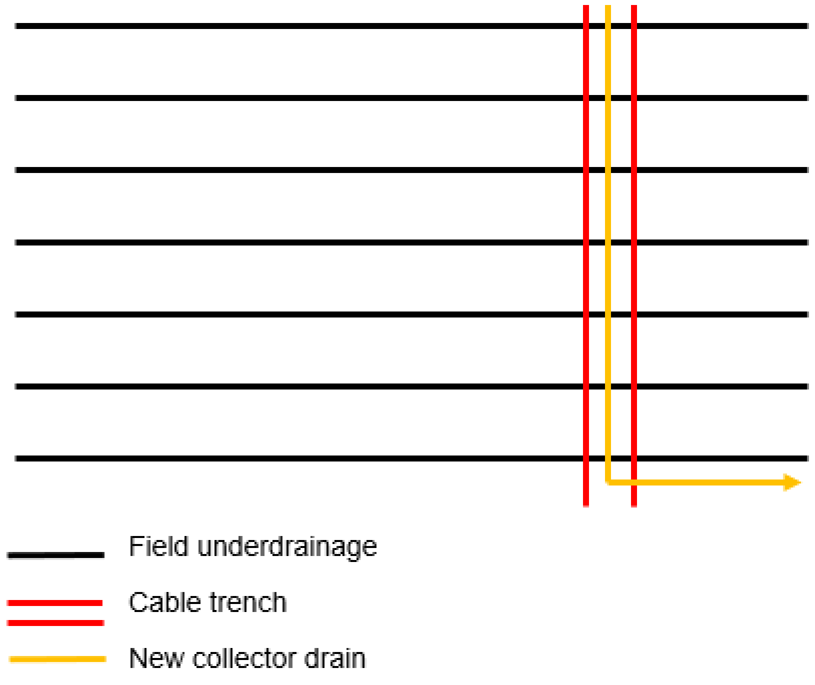
(i) either the individual drains will be reconnected with new sections across the pipe, as illustrated below;

(ii) or a collector drain will be laid along the cable trench and will then connect, at a low point, to a new drainage pipe to take water away.

*Insert 13: Drainage System Repair Option*



*Insert 14: Drainage System Repair Option*




**Drains Affected by Piling**

13.10 Drains affected by piling will be repaired locally, if required.

13.11 The purpose of under-field drainage is to help crop growth and to extend the time that land can be accessed. Drainage allows earlier and later access to the land, and evens out the drainage across the land to help with cultivations etc.

13.12 That is not important for the solar farm. Vehicular access is normally only needed in the summer months, when panels are cleaned. Having under-field drainage working is not, therefore, important unless there are areas of standing water due to broken drainage.

13.13 Localised wet areas where drainage has been impeded such that surface puddling occurs, will be repaired with new sections of plastic drainage pipes dug around the blocked section to connect the old system.

**Monitoring**

13.14 Two winter inspections after heavy rain will be carried out in years 1 and 2 following commissioning. Thereafter works will only be carried out if site engineers report problems.

# 14 ECOLOGICAL MITIGATION AREAS

14.1 Ecological mitigation areas are proposed.

14.2 Across the majority of the areas covered by the landscape and mitigation strategy plans (Sheets 1-6 reproduced in small scale in **Appendix SMP3**) no physical movement of soil is proposed. Physical works (ponds) are limited to two areas, shown on Sheet 3 and Sheet 6.

14.3 Land to the west of the Order Limits is proposed for grassland and arable cropping, with some woodland/copse planting, and some small ponds. This section is shown below.

*Insert 15: Western Area, Planting and Ponds*

14.4 Land to the east will be managed as a mixture of continued arable cropping, grassland mix and species rich grassland seed mix. In addition, new pond creation (intended to be permanent) and scrub planting (also intended to be permanent) are proposed. The details are not fully refined, but are indicated on the extract from the Landscape and Ecological Mitigation Strategy (Sheet 6 of 6) as shown on the insert below.

*Insert 16: Extract from Landscape Plan*

14.5 Whilst the details are not fully refined, the indicative locations in part utilise areas of existing scrub or non-farmed areas, as shown below.

*Insert 17: Extract from Google Earth*

14.6 It is possible that the landowners will require these areas to be returned to comparable grade on decommissioning. Accordingly prior to the construction of any ponds the soils and ALC grade will be determined for that particular area.  Topsoil depths will be recorded, and topsoil and subsoil will be stored near to the ponds, and can therefore be restored on restoration.

## 15 OPERATIONAL PHASE: LAND MANAGEMENT

**Solar PV Arrays**

15.1 The land around the Solar PV Arrays will be managed including potentially by the grazing of sheep.

15.2 Panels grazed by sheep tend to be free of weeds, as shown below.

*Photo 31: Sheep Grazing Under Panels*

15.3 Any localised weed treatment can be carried out at the appropriate time of the year using a quad-mounted sprayer, or by hand using a strimmer or knapsack sprayer.

**Ongoing Maintenance**

15.4 There are many different cleaners on the market, some tractor based and some operated from smaller machines, such as below.

*Photo 32: Cleaning of Solar Arrays*

15.5 The normal cleaning period is early summer, so that panels are clean for the maximum light period, so damage is unlikely.

15.6 If vehicles, including farm vehicles, cause ruts in the soil these will naturally repair in time, especially as the land is grazed by sheep and their feet are excellent at levelling land. Alternatively a light harrow or rolling will restore the ruts, when the soil is still soft enough to roll but hard enough to not rut more.

*Photo 33: Ruts Caused by Vehicles*

15.7 If vehicles have caused rutting it is probably, as per the example above, only localised. In the photograph above this is a wet spot, and on the land either side of the ruts within the row there is no evidence of wheel indentation. If these areas are not levelled they will tend to sit with water in them.

15.8 Localised, small rutting should be repaired by either treading-in the edges with feet, by light rolling or harrowing, or adding a small amount of soil simply to fill-in the depression so that water does not collect there.

15.9 Deeper rutting will require either light harrowing in the drier period, or some soil adding, or both, before reseeding.

**<u>Emergency Repairs</u>**

15.10 For the duration of the operational phase there should be only localised and infrequent need to disturb soils, such as for repair of a cable. Any works involving trenching should be carried out, ideally, when the soils are dry but recognising that any works will be those of emergency repair, that may not be possible.

15.11 Accordingly if new cabling is needed and has to be installed in wet periods, it can be expected that the trench will look unsightly initially, such as the example below.

*Photo 34: Trench During Wet Period*

15.12 Any area disturbed should be harrowed or raked level once the soils have dried, and be reseeded. These areas will be small, and this can probably be done by hand.

## 16 DECOMMISSIONING PRINCIPLES

16.1 Given the length of time before decommissioning it is likely that the ALC methodology will have been amended by then. Further, unless we are successful as a world, climate change may have altered the seasons and rainfall patterns. Therefore this guidance is prefaced with a requirement for a suitably qualified soil scientist to revisit the site prior to decommissioning, and to update the guidance and timing.

16.2 The objective is to remove panels and restore all fixed infrastructure areas to return the land to the same ALC grade and condition as it was when the construction phase commenced.

**Removal of Panels**

16.3 A qualified soil scientist should advise prior to decommissioning time. The effects of climate change in 40 years time may mean that these dates, applicable in 2024, are no longer applicable.

16.4 Once the panels have been unbolted and removed, the framework will then be a series of legs, as shown below.

*Photos 35 and 36: The Framework*

16.5 These will be removed by low-ground pressure machines, in a reverse operation to the installation. These machines will provide a pneumatic tug-tug-tug vertically upwards. This will break the seal between soil and leg, and once that surface tension is released the leg will come out easily.

16.6 The legs will be loaded onto trailers and removed.

16.7 There will be no significant damage to the soils, and no significant compaction.

**Removal of Cables**

16.8 Cables buried less than 1 metre deep will be removed. This is likely to need a trench to be dug. This will be done is done mostly with either a mini digger or a trenching machine. An example trench, with the topsoil placed one side (0-30cm) and subsoil on the other (below 30cm), is shown below, and with the soil put back after cable installation.

*Photo 37: Example Trench*

*Photo 38: Topsoil Replaced*

16.9 The type of machinery used for trenching is shown below, taken from the BRE National Solar Centre "Agricultural Good Practice Guidance for Solar Farms" (2013).

*Insert 18: Machinery Used for Trenching*

Cable trenching, showing topsoil stripped and set to one side, with subsoil placed on the other side ready for reinstatement (photo courtesy of British Solar Renewables)

16.10 Once the trench has been backfilled it can be left for cultivation with the rest of the field post removal of panels.

**Removal of Fixed Infrastructure**

16.11 Switchgear, such as that shown below, will need to be removed.

*Photo 39: Switchgear*

16.12 Low ground pressure vehicles, and cranes, will be needed to lift the decommissioned units onto trailers, and removed from site. An example is shown below.

*Insert 19: Example of Low Ground Vehicles*

Case Steiger Quadtrac used to deliver inverters and other heavy equipment to site under soft ground conditions (photo courtesy of British Solar Renewables)

16.13 Any concrete bases will need to be broken up. This will most likely involve breaking with a pneumatic drill to crack the concrete, after which it can be dug up and loaded onto trailers and removed.

16.14 The ground beneath the base may then benefit from being subsoiled, to break any compaction. This can be done by standard tractor-mounted equipment, such as the following examples.

*Inserts 20 and 21: Example of Tractor Mounted Equipment*

**Tracks**

16.15 The tracks will be the last fixed infrastructure removed. The tracks will have been used for vehicle travel during the decommissioning stage. The tracks will also be used for removal of material from the tracks themselves, which will be removed from the furthest point first.

16.16 The stone will be removed and any matting removal. The base will then be loosened by subsoiler or deep tine cultivators, depending on specific advice given by the soil expert at the time following and analysis of soil compaction and condition.

**Reinstatement of Soils**

16.17 Topsoil from the storage areas will then be returned and spread to the depth removed. The area will then be cultivated, probably in combination with the whole of each field.

**Fences and Gates, and CCTV Cabling**

16.18 The cabling be removed in the summer months, after the panels have been removed. This will involve a tractor and trailer. The CCTV cabling is shallow buried and will probably pull out without the need for trenching, but if required tranches will be dug, as described above, and replaced in order once the cables have been removed.

16.19 Fences and gates will be rocked by machinery and pulled out. The holes are generally small and will fill in easily, but the bucket could be used to loosen the surface so that soil fills the void, if there is a risk of injury from the small holes.

**Cultivation**

16.20 The fields will be handed back to the farmers. Whether they are handed back as grassland or sprayed off and cultivated, will be determined in discussions with each landowner.

## Land Quality Following Decommissioning

16.21 The restoration will enable the land to be restored without loss of quality. The Applicant commits to restoration back to comparable ALC grade.

## 17 REFERENCES


- Defra (2009), Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.
- British Society of Soil Science (2022), Benefitting from Soil Management in Development and Construction.
- Institute of Quarrying (2021), Good Practice Guide for Handling Soils on Mineral Workings.
- Cornwall Council and Others (2022), Building on soil sustainability: principles for soils in planning and construction.
- Natural England (2022), Planning and Aftercare Advice for Reclaiming Land to Agricultural Use.
- BRE National Solar Centre (2014), Agricultural Good Practice Guidance for Solar Farms.
- AHDB (2024), Field Drainage Guide: principles, installations and maintenance.
- Defra (2025), Agricultural Land Classification of England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land (updated 2025).

**Appendix SMP1**

**Excerpts from Roberts Environmental Ltd ALC Report**

# Agricultural Land Classification (ALC) Report

## Steeple Solar Farm

**April 2025**

**Renewable Energy Systems Ltd**

**Reference: 240424.AC.05**

# Agricultural Land Classification (ALC) Report

## Steeple Solar Farm

## Client: Renewable Energy Systems Ltd

| Reference: | Current Version: | Date: |
|---|---|---|
| **240424.AC.05** | Version 5.0 | April 2025 |

| **Reference:** | **Previous Versions** | **Date** |
|---|---|---|
| **240424.AC.01** | Version 1.0 | October 2024 |
| **240424.AC.02** | Version 2.0 | November 2024 |
| **240424.AC.03** | Version 3.0 | November 2024 |
| **240424.AC.04** | Version 4.0 | November 2024 |

| **Author:** | **Checked / Approved by:** |
|---|---|
| Emy Hewett BSc (Hons) MSc | Lauren Manning BSc (Hons) MIEnvSc M.I. Soil Sci |
| [redacted] | [redacted] |
| **Position**: Graduate Consultant | **Position:** Principal Consultant |


| | | |
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## Contents



## Figures



## Tables



## Appendices

# 1. Scope & Objectives

| | | |
|---|---|---|
| **The Services** | Agricultural Land Classification (ALC) Report | |
| **The Client** | Renewable Energy Systems Ltd | |
| **Appointment Details** | The Services have been carried out in accordance with the Proposal dated 17th April 2024 and REL's Terms and Conditions of Engagement, (together "**the Agreement**") as accepted by the Client on 22nd April 2024. | |
| **Site Name** | Steeple Solar Farm | |
| **Site Address** | Steeple-le-Sturton, Nottingham, DN22 9HW ("**the Site**") | |
| **Proposed Development** | It is understood that the site is to be developed for a solar farm with the capacity of up to 400 MW of solar energy generation and a 200 MW Battery Energy Storage System (BESS) with associated infrastructure and equipment. | |
| **Planning Application** | The Proposed Development falls within the definition of a 'Nationally Significant Infrastructure Project' (NSIP) under Section 14(1)(a) and 15(2) of the Planning Act 2008 as the construction of a generating station with a capacity of more than 50MW, with a capacity in the region of 400MW and hence will require a Development Consent Order (DCO) application to be submitted to the Planning Inspectorate (PINS), who will be the Examining Authority on behalf of the Secretary of State (SoS). | |
| **Information Sources** (Where appropriate documents are contained in appendices with data extracts provided and summarised within pertinent sections of this report. List not exhaustive) | **Online Source** | Natural England Provisional Agricultural Land Classification Grade (pre-1988), accessed via Magic Web Mapping Service, DEFRA, 2025. |
| | | Natural England Agricultural Land Classification Grades Post-1988 Surveys (Polygons) Database and Mapping, accessed via Magic Web Mapping Service, DEFRA, 2025. |
| | | British Geological Survey (BGS) Database and Mapping. |
| | | BGS Geoindex Web Mapping Service. |
| | | BGS 1: 50,000 scale Provisional Series, Geological Map, England and Wales, Sheet No.101 (East Retford), available on the BGS map portal. |
| | | Google Historic Satellite Imagery. |
| | | National Library of Scotland Historical Ordnance Survey England and Wales, 1830-1956 Maps. |
| | **Documentation Source** | Soil Classification for Soil Survey, Monographs on Soil Survey, Butler, B E (1980), Clarendon Press, Oxford. |
| | | Hodgson, J.M (ed.) (2022). *Soil Survey Field Handbook*. Soil Survey Technical Monograph No. 5, Cranfield. |
| | | Meteorological Office (Met Office), 1989, Climatological Data for Agricultural Land Classification – Gridpoint Datasets of Climatic Variables, at 5km intervals, for England and Wales. |
| | | MAFF, 1988, Agricultural Land Classification of England and Wales – Revised Guidelines and Criteria for Grading the Quality of Agricultural Land. |
| | | Natural England, Technical Information Note TIN049 Second Edition, 2012. |
| | | Soils and their use in Eastern England, 1984, Soil Survey of England and Wales Memoir and accompanying 1:250,000 scale map. |
| | **Previous Reports** | No previous reports, including Post-1988 ALC surveys, are available for the site. |
| | **Site Works** | The site works were undertaken by REL during July to September 2024. |

# 2. Site Details

| | |
|---|---|
| National Grid Ref. | Approximate centre of the site: 479360, 383238 |
| Ground Level Topography | Range 30-35m AOD, average for site: 32.5m AOD. |
| Site Area | 892 hectares (ha). |
| Survey Area | 722 ha. |
| Location | The subject site is located around the town of Sturton-le-Steeple, adjacent south of West Burton power station, approximately 10km east of Retford and approximately 700m to the west side of the River Trent. |

**Figure 1:** Site Boundary (highlighted in red)

| | |
|---|---|
| Current Site Description and Usage | The subject site comprises mainly agricultural fields which are currently used for arable crop (based on observations made during the site visit). |
| Surrounding Land Uses | Surrounding land uses comprise agricultural fields around the entire site, with West Burton power station located adjacent north. |
| Site History | From the earliest mapping dated 1830, the site is shown as agricultural land. |
| Current Grading | The site is currently mapped as **Grade 3** on the provisional 1: 250,000 scale ALC map (MAFF, 1983) see **Appendix V** for key to the gradings. |

# 3. Methodology

## Desk Study

Using published data sources, an initial desk-based study has been undertaken to provide a reconnaissance of the general site characteristics, including soil type(s) and agricultural classification.

Where available, Post-1988 ALC Surveys (undertaken at varying scales and levels of detail, ranging from 1:5,000 to 1:50,000 scale) have been consulted. Surveys included on this map provide the most detailed and up to date ALC grading following surveys between 1989 and 1999 by MAFF (now part of DEFRA).

Climatological data provided by the Met Office has been used to determine the overriding agroclimatic site limitations, using interpolated values based on the central point of the site.

## Intrusive Soil Survey

The intrusive soil survey comprised at least one hand auger boring per hectare to a depth of 1.20m below ground level (where achievable) in accordance with current guidance. These were undertaken to examine the soil profiles, using standard soil survey methods.

In addition, in order to determine subsoil structure, at least one inspection pit has been excavated for each soil type encountered.

The application boundary has altered since the site survey works were undertaken, therefore the survey area boundary differs to the site boundary and the application boundary.

## ALC Grade Assessment

All potential limiting ALC grade factors (listed in **Appendix V**) have been considered as part of the assessment, including those which pose no limitation on the ALC grading for the site.

Using the information collected during the site survey and the MAFF ALC guidance documents, an ALC grade was then determined for the site, or for each soil type based on the most limiting ALC grade (**Appendix I**). A brief overview of relevant terminology is included in **Appendix V**.

# 4. Desk Based Reconnaissance

Prior to the intrusive site investigation, a review of available desk-based information was undertaken. Pertinent information has been summarised below.

### Climate Data

Using the climatological data set (Met Office, 1989) the following information (**Table 1**) has been calculated for the site. Calculations comprised altitude adjustment and interpolation, using the formula presented within the data set.

**Table 1**: Summary of Agroclimatic Data for the Site

| (Site Centre Grid Reference: 479360, 383238) | | |
|---|---|---|
| Average Annual Rainfall (mm) | AAR | 568.90 |
| Accumulated Temperature (˚C) | ATO | 1392.44 |
| Field Capacity Duration (Days) | FCD | 111.20 |
| Moisture Deficit Wheat (mm) | MDWHT | 115.61 |
| Moisture Deficit Potatoes (mm) | MDPOT | 109.23 |

The site is identified to have an average ATO, with below average AAR and FCD when compared to the mapped values for the area between Lincoln and Worksop (Soils and their Use in Eastern England, 1984).

Using the AAR and ATO values within **Table 1**, the site is not considered to be limited by climate (Figure 1, MAFF 1988).

### Topography

The site was identified to have a gradient between 0˚ and 2˚, therefore topography is identified to not be a limiting factor of the ALC grade of the site (Table 1, MAFF 1988).

### BGS Published Data

A review of BGS information has identified that no Made Ground areas are indicated across the site.

The eastern section of the site is indicated as having superficial deposits of the Holme Pierrepoint Sand and Gravel Member, with some potential discrete areas of Alluvium (Clay, Silt, Sand and Gravel), particularly encroaching onto the northern and southern site boundaries. The remainder of the site is indicated to be free from superficial deposits.

The bedrock geology is indicated as the Mercia Mudstone Group across the whole site.

### Published Soils Data

Soils mapping for the area as shown on *Soils and their use in Eastern England*, 1984, Soil Survey of England and Wales Memoir and accompanying 1:250,000 scale map has been reviewed as part of this assessment. The approximate location of the site is shown in the soils mapping extract below in **Figure 2**.

The soil mapping suggests the soils on site comprise the Worcester Association across the majority of the site, with the potential for soils of the Brockhurst 2 Association and Blackwood Association to encroach on to the east of the site. The soils are described as follows:

- **Worcester Association (431)** - Slowly permeable non-calcareous and calcareous reddish clayey soils over mudstone, shallow on steeper slopes. Associated with similar non-calcareous fine loamy over clayey soils. Slightly risk of water erosion.

- **Brockhurst 2 Association (711c)** – Slowly permeable seasonally waterlogged reddish fine loamy over clayey and clayey soils. Some reddish clayey alluvial soils affected by groundwater.

- **Blackwood Association (821b)** – Deep permeable sandy and coarse loamy soils. Groundwater controlled by ditches.

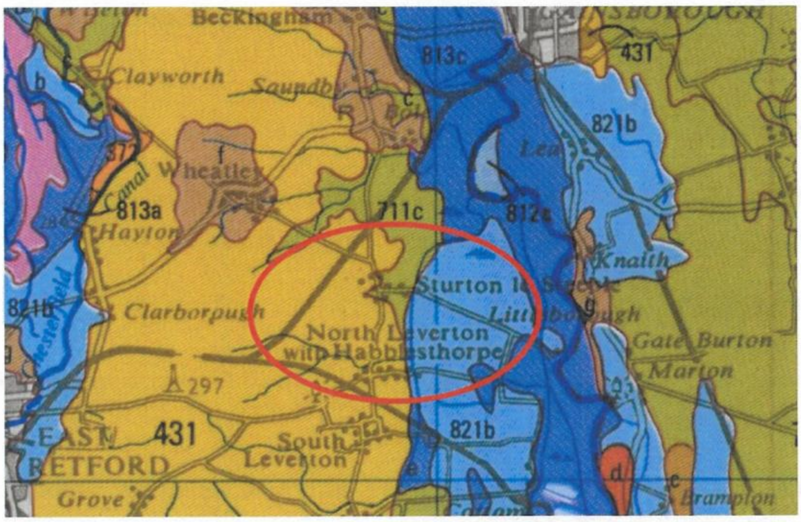



**Figure 2:** Soils Mapping for the Site and Surrounding Area (approximate site location indicated in red)

## Previous Reports

No previous ALC reports are available for the site or adjacent surrounding areas.

## Flood Risk Assessment

Flooding is not anticipated to affect the cultivation potential on site and therefore does not limit the ALC grade.

# 5. Intrusive Survey Findings

The survey identified Four Soil Types across the entire site. Generalised profiles of the soil types encountered have been described as below (**Table 2**) however, please note some localised variations were recorded. Complete soil logs are provided in **Appendix II** and photographs of the surveyed soils are presented in **Appendix III**.

**Table 2:** Summary of Soils Identified on Site

| | Depth (cm) | Texture | Munsell Colour | Stones (%) | Mottles | Structure |
|---|---|---|---|---|---|---|
| Soil Type 1 | 0-20 | Heavy Silty Clay Loam (HZCL) | Dark Brown (7.5YR 3/4) | 5 | No | Subangular Blocky |
| | 20-120 | Silty Clay (ZC) | Reddish Brown (5YR 4/4) | 15 | Many Medium Grey (GLEY 2 7/1 5B) and Ochreous (10YR 6/8) | Coarse Prismatic |
| Soil Type 2 | 0-42 | Heavy Clay Loam (HCL) | Dark Brown (10YR 3/3) | 5 | No | Subangular Blocky |
| | 42-120 | Clay (C) | Dark Reddish Brown (5YR 3/4) | 5 | Few Ochreous (7.5YR 5/8) | Coarse Prismatic |
| Soil Type 3 | 0-34 | Heavy Silty Clay Loam (HZCL) | Dark Brown (7.5 YR 3/3) | 5 | No | Subangular Blocky |
| | 34-90 | Clay (C) | Dark Yellowish Brown (10YR 4/4) | 5 | No | Subangular Blocky |
| | 90-120 | Fine Sand (fS) | Pale Olive (5Y 6/4) | 5 | No | Single Grain |
| Soil Type 4 | 0-39 | Fine Sandy Silt Loam (fSZL) | Dark Brown (7.5YR 3/3) | 5 | No | Subangular Blocky |
| | 39-120 | Fine Sand (fS) | Strong Brown (7.5YR 4/6) | 5 | No | Single Grain |

The general profiles for the soil types identified on the Site has been used to assess the Wetness Class (WC) for the Soil Type (see **Appendix V** for the MAFF decision flow chart). The general profile is reflective of the findings in the soil pit associated with the Soil Type identified on site. The assessment process and results of the in-field wetness assessment is provided within **Table 3** below with a plan of the distribution of the soil types across the site shown in **Appendix I**.

**Table 3:** Wetness Class Assessment for Soil Types Encountered on Site

| Soil Type | Parameters (Figure 6, MAFF) | | | | | | |
|---|---|---|---|---|---|---|---|
| | Disturbed | FCD | SPL (depth cm) Justification | Colour | Gleying (depth cm) Justification | Ref | Wetness Class |
| Type 1 | No | 111.20 | At a depth of 20 cm, the SPL was identified to be present due to the following characteristics: Silty Clay (ZC) coarse prismatic structure less than 0.50% biopores greater then 0.50 mm diameter evidence of wetness in the layer; gleying | Other | Gleyed (<40cm), reddish colours dominant in the matrix with ochreous and grey mottles. | Figure 7 | III |
| Type 2 | No | 111.20 | At a depth of 42 cm, the SPL was identified to be present due to the following characteristics: Clay (C) coarse prismatic structure less than 0.50% biopores greater then 0.50 mm diameter evidence of wetness in the layer; gleying | Other | Gleyed (>40cm), reddish colours dominant in the matrix with ochreous mottles. | Figure 8 | II |
| Type 3 | No | 111.20 | No SPL | Other | Not gleyed. | N/A | I |
| Type 4 | No | 111.20 | No SPL | Other | Not gleyed. | N/A | I |

Notes: This Table follows the flow chart of Figure 6 of the MAFF ALC guidance to identify the wetness classification per Soil Type.

# 6. Conclusions

The ALC grading for the site area is summarised below within **Table 4**, overall findings of this assessment can be found in **Appendix IV**. The table below identifies the grades of the areas of agricultural land present across the site (**Appendix I**).

**Table 4:** ALC Classification

| ALC Grade | Area (Ha) | Percentage |
|---|---|---|
| Grade 1 | 56.36 | 7.81% |
| Grade 2 | 153.57 | 21.27% |
| Subgrade 3a | 430.32 | 59.60% |
| Subgrade 3b | 81.76 | 11.32% |
| Grade 4 | 0.0 | 0.0% |
| Grade 5 | 0.0 | 0.0% |
| Non-Agricultural | 0.0 | 0.0% |
| Total BMV | 640.24 | 88.68% |
| Total Non-BMV | 81.76 | 11.32% |
| **Total Site Area** | **722.0** | **100%** |

### Soil Type 1 – Wetness Limitation

The combination of the topsoil texture (Heavy Silty Clay Loam), Wetness class (III) and the number of Field Capacity Days (111.20) results in **ALC Grade 3b** for Type 1 soils with a Wetness limitation.

### Soil Type 2 – Wetness Limitation

The combination of the topsoil texture (Heavy Clay Loam), Wetness Class (II), and the number of Field Capacity Days (111.20) results in **ALC Grade 3a** for Type 2 soils with a Wetness limitation.

### Soil Type 3 – Wetness Limitation

The combination of the topsoil texture (Heavy Silty Clay Loam), Wetness Class (I), and the number of Field Capacity Days (111.20) results in **ALC Grade 2** for Type 3 soils with a Wetness limitation.

### Soil Type 3 - Droughtiness Limitation

The water availability of the soil type and the local climate results in **ALC Grade 2** for Type 3 soils with a soil Droughtiness limtation with respect to the crop adjusted available water capacity for potatoes.

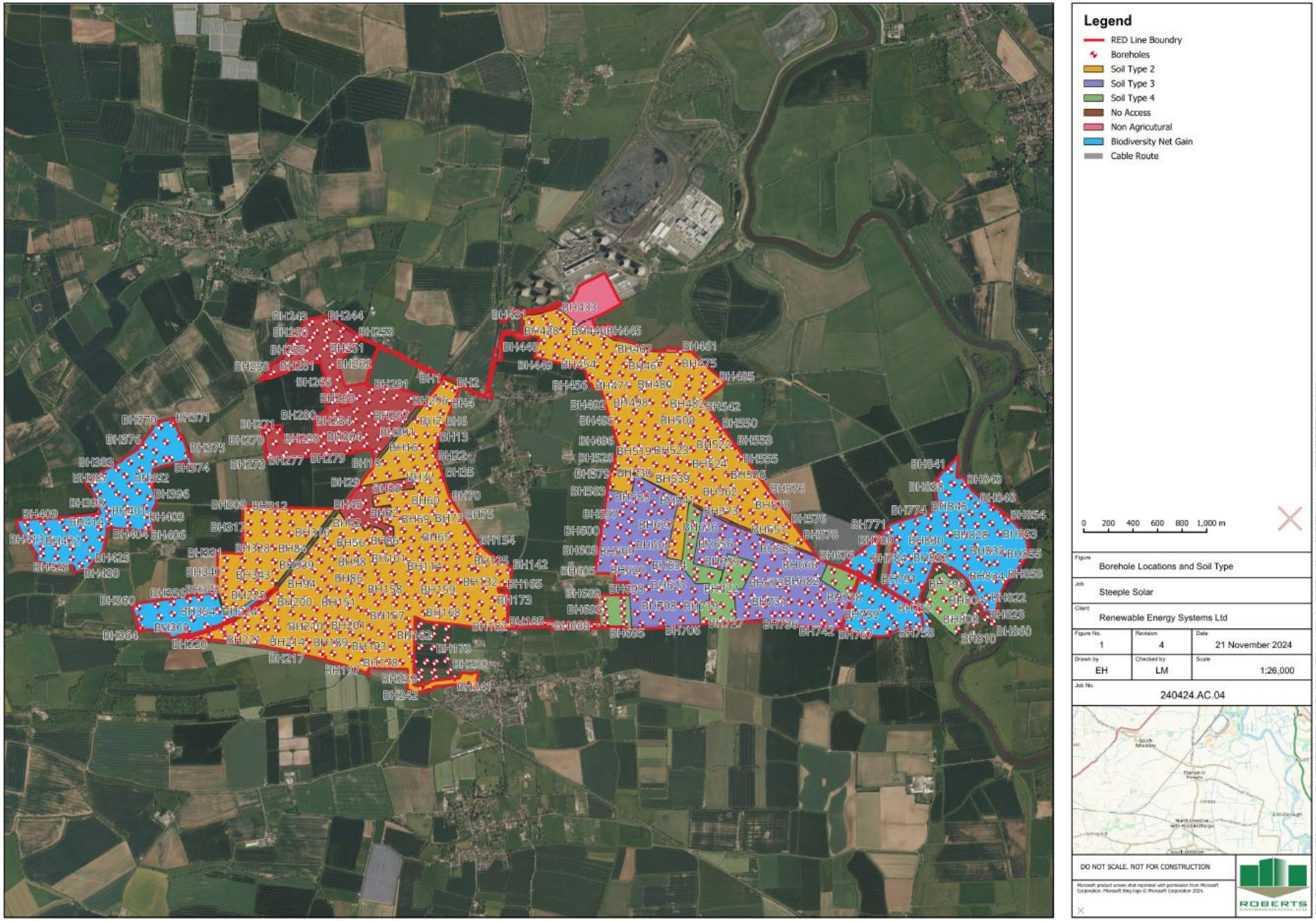
### Soil Type 4 – No Limitation

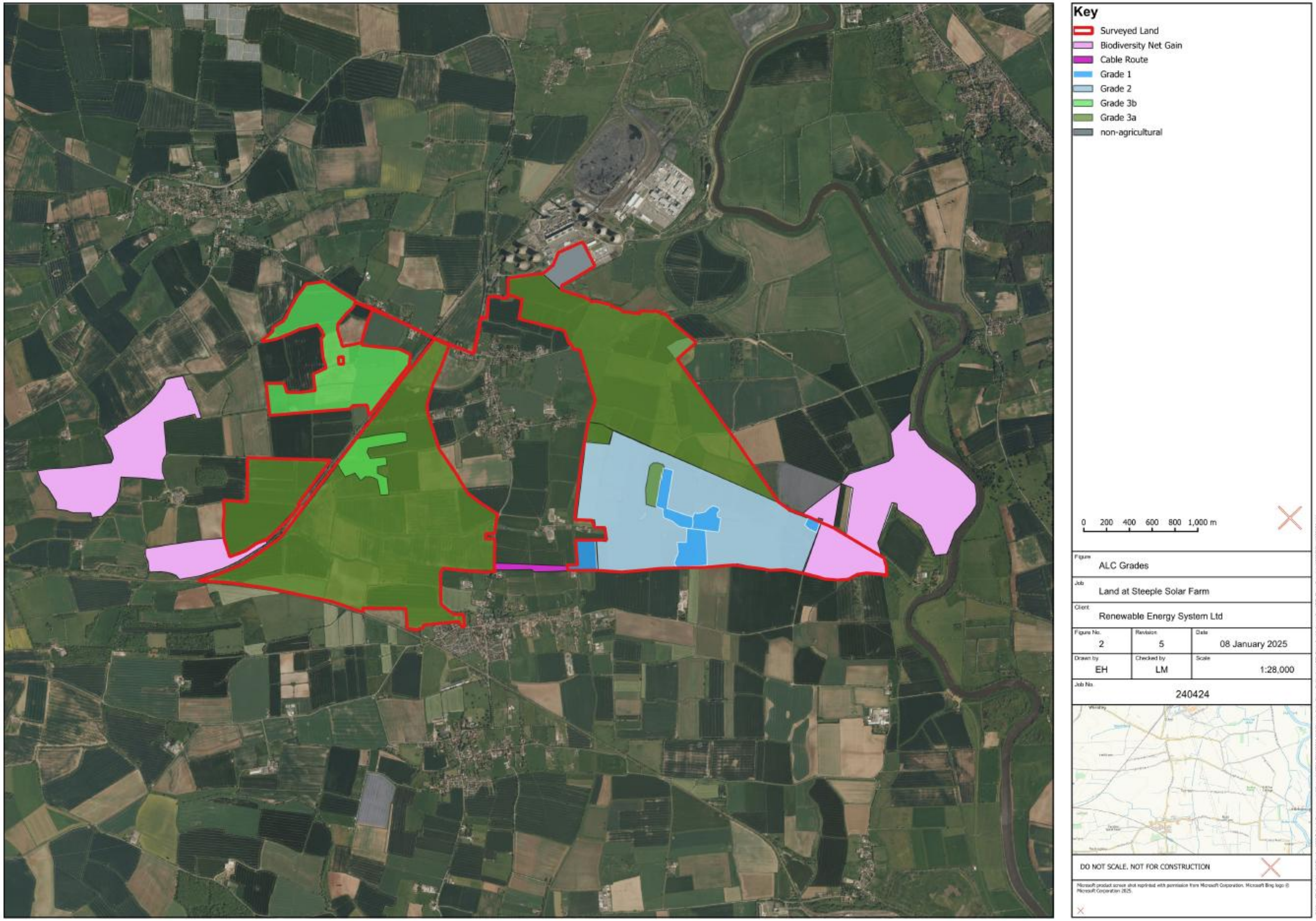
No limitation to the ALC Grade for Type 4 soils have been identified.

### Overall Site ALC Grade and Conclusions

The land surveyed as part of this assessment has been identified as a mixture of **ALC Grades 1, 2, 3a** and **3b**. As such, 640.24ha (88.68%) of the site has been assessed to be BMV land and 81.76ha (11.32%) has been identified as non-BMV land.

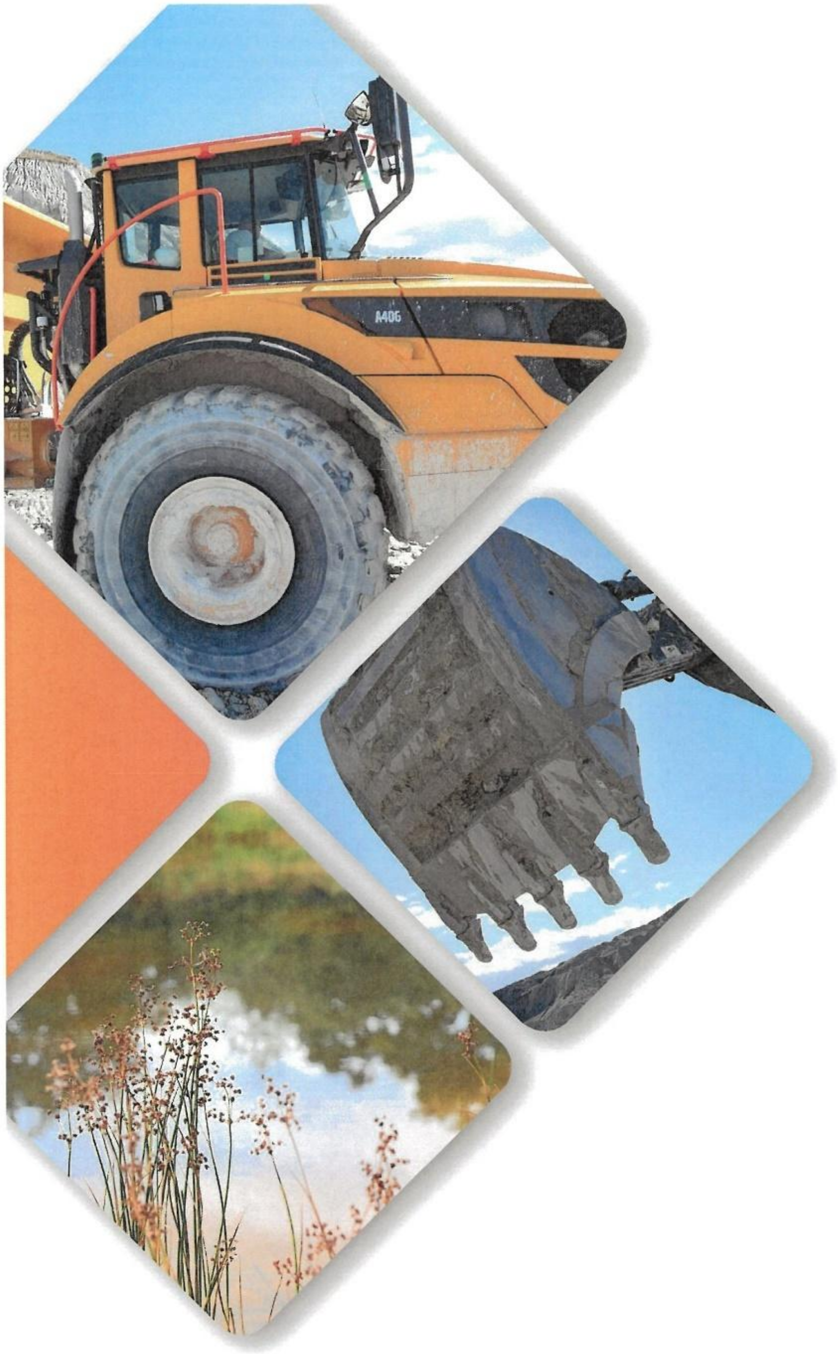
## APPENDIX I SITE PLANS


Legend
RED Line Boundry
Boreholes
Soil Type 2
Soil Type 3
Soil Type 4
No Access
Non Agricutural
Biodiversity Net Gain
Cable Route
0 200 400 600 800 1,000 m
Figure
Borehole Locations and Soil Type
Job
Steeple Solar
Client
Renewable Energy Systems Ltd
Figure No. 1
Revision 4
Date 21 November 2024
Drawn by EH
Checked by LM
Scale 1:26,000
Job No.
240424.AC.04
DO NOT SCALE. NOT FOR CONSTRUCTION
ROBERTS


Key
Surveyed Land
Biodiversity Net Gain
Cable Route
Grade 1
Grade 2
Grade 3b
Grade 3a
non-agricultural
0 200 400 600 800 1,000 m
Figure
ALC Grades
Job
Land at Steeple Solar Farm
Client
Renewable Energy System Ltd
Figure No.
2
Revision
5
Date
08 January 2025
Drawn by
EH
Checked by
LM
Scale
1:28,000
Job No.
240424
DO NOT SCALE. NOT FOR CONSTRUCTION
Microsoft product screen shot reprinted with permission from Microsoft Corporation. Microsoft Bing logo © Microsoft Corporation 2025.

**Appendix SMP2**

**Institute of Quarrying Field Tests for Soils Suitability**



IQ

The Institute of Quarrying

# Good Practice Guide for Handling Soils in Mineral Workings

**Supplementary Note 4**
**Soil Wetness**

Soil wetness is a major determinant of land use, and environmental and ecosystem services in the UK. It is also a factor in the occurrence of significant compaction arising from handling soils with earth-moving machines and the practices used (Duncan & Bransden, 1986).

Relative soil wetness can range from the waterlogged to moist (mesic) or dry (xeric) depending on rainfall distribution and depth to a water-table and duration of waterlogging. In the UK, soil wetness is largely seasonal with higher evapo-transpiration rates potentially exceeding rainfall in the summer resulting in the soil profile becoming drier where there is vegetation. Whilst soil wetness is largely weather system and equinox (climate) driven, it varies with geographical and altitudinal locations, and importantly the physical characteristics of the soil profile, such as texture structure, porosity, and depth to the water-table and topography including flood risk (MAFF, 1988). The Soil Wetness Class is based on the expected average duration of waterlogging at different depths in the soil throughout the year (days per year), and can be determined by reference to soil characteristics and local climate (MAFF, 1988). The likely inherent wetness and resilience status of a soil should be indicated in the SRMP (see **Part 1, Table 2 & Supplementary Note 1**), reflecting potential risks for soil handling such as low permeability, permanently high groundwater, or a wet upland climate.

Wet soils can also be a result of other circumstances. For example, the interception of water courses, drainage ditches and field land drains. Where these occur, the provisions are to be made in the SRMP to protect the soils being handled and the operational area.

Soils, when in a wet condition generally have a lower strength and have less resistance to compression and smearing than when dry. Lower strength when soils are wet also affects the bearing capacity of soils and their ability to support the safe and efficient operation of machines than when in a dry state.

In terms of resilience and susceptibility to soil wetness, the clay content of the soil largely determines the change from a solid to a plastic state (the water content at which this occurs is called the 'plastic limit' (MAFF, 1982)). This is the point at which an increasing soil wetness has reduced the cohesion and strength of the soil and its resistance to compression and smearing.

Whilst coarse textured sandy soils are not inherently plastic when wet, they are still prone to compaction when in a wet condition. Hence, handling all soils when wet will have adverse effects on plant root growth and profile permeability, which may be of significance for the intended land use and the provision of services reliant on soil drainage and plant root growth. It may be less so in other circumstances where wet soil profiles, perched water tables and ponding are the reclamation objectives, though drainage control, for example to control flooding, may still be important in these contexts.

In cases of permanently wet soils, such as riverine sites, upland or deep organic soils where there is a persistent high water-table throughout the seasons within the depth of soil to be stripped and/or the soil profile remains too wet, a strategic decision has to be made to be able to proceed with the development of the mineral resource. This may mean alternative and less favourable soil handling practices have to be agreed with the planning authority.

**Predicting & Determination of Soil Wetness**
There are well established methods to predict and determine soil wetness of undisturbed and restored soil profiles (Reeve, 1994). The challenge has been the prediction of the best time for soil stripping. Models based on soil moisture deficits and field capacity dates for a range of soil textures can provide indicative regional summaries (**Table 4.1**) that can help with planning operations at broad scale but cannot be relied upon in practice for deciding operationally whether to proceed on the ground given the actual variation in weather events from year to year and within years.


| Soil Clay Content | Climatic Zones 1 | 2 | 3 |
|---|---|---|---|
| Soil Depth <30cm | | | |
| <10% | Mid Apr - Early Oct | Late Mar – Early Nov | Late Mar – Early Dec |
| 10 -27% | Late May - Early Oct | Early May – Early Nov | Early Apr – Early Dec |
| Soil Depth 30-60cm | | | |
| <10% | Late Apr - Early Oct | Mid Apr – Early Nov | Early Apr – Early Dec |
| 10-27% | Late May - Early Oct | Early May – Early Nov | Early Apr – Early Dec |
| >27% | Late June – Early Oct | Early June – Early Nov | Late May – Early Dec |
| Soil Depth >60cm | | | |
| <10% | Late Apr - Early Oct | Mid Apr – Early Nov | Early Apr – Early Dec |
| 10-18% | Late May - Early Oct | Early May – Early Nov | Early Apr – Early Dec |
| 18-27% | Late June – Early Oct | Early June – Early Nov | Late May – Early Dec |
| >27 | Mid July – Mid Sept | Early July – Mid Oct | Late June – Mid Oct |

**Table 4.1:** Indicative on-average months when vegetated mineral soils might be in a sufficiently dry condition according to geographic location, depth of soil and clay content

The timing of most soil handling operations takes place between April and September. Although in western (Zone 1) and central (Zone 2) areas it typically can be a later start in May with an earlier termination in August. Whilst the return to climatically 'excess rainfall' is later in the eastern counties (Zone 3) and can be as late as November/early December, there is a need to maintain transpiring vegetation to keep the soils being handled in a dry as possible condition and to establish new vegetation covers as soon as possible (on replaced soils and storage mounds). Hence, soil handling operations generally need to be completed no later than the end of September (Natural England, 2021), unless appropriate provisions can be assured.

Where data is available, more realistic local and real-time predictions can be made, however, because weather patterns and events differ between and within years, and soils can be vary locally in their condition. Experience has shown that the most practical approach for operations is to inspect the site and soils in question near to/ at the time when soil handling is to take place. Professional soil surveyors can advise on the best time for soil handling (stripping, storage & replacement) and carry out site assessments of soil wetness condition prior to the start of operations.

**A Practical Method for Determining Soil Wetness Limitation**

During the soil handling season (see Table 4.1 above), prior to the start or recommencement of soil handling soils should be tested to confirm they are in suitably dry condition (**Table 4.2**). The 'testing' during operations can be done by suitably trained site staff and reviewed periodically by the professional soil surveyors.

The method is simply the ability to roll intact threads (3mm diameter) of soil indicating the soils are in a plastic and wet condition (MAFF, 1982; Natural England, 2021). Representative samples are to be taken through the soil profile and across the area to be stripped. It is the best available indicator of soils being too wet to be handled and operations should be delayed until a thread cannot be formed. For coarse textured soils which do not roll into threads, a professional's view as to soil wetness and the risk of compaction may have to be taken.

**Table 4.2**: Field Tests for Suitably Dry Soils

Soil tests are to be undertaken in the field. Samples shall be taken from at least five locations in the soil handling area and at each soil horizon to the full depth of the profile to be recovered/replaced. The tests shall include visual examination of the soil and physical assessment of the soil consistency.

**i) Examination**

- If the soil is wet, films of water are visible on the surface of soil particles or aggregates (e.g. clods or peds) and/or when a clod or ped is squeezed in the hand it readily deforms into a cohesive 'ball' means **no soil handling to take place.**
- If the samples is moist (i.e. there is a sligh dampness when squeezed in the hand) but it does not significantly change colour (darken) on further wetting, and clods break up/crumble readily when squeezed in the hand rather than forming into a ball means **soil handling can take place.**
- If the sample is dry, it looks dry and changes colour (darkens) if water is added, and it is brittle means **soil handling can take place.**

**ii) Consistency**
**First test**
Attempt to mould soil sample into a ball by hand:

- Impossible because soil is too dry and hard or too loose and dry means **soil handling can take place.**
- Impossible becuase the soil is too loose and wet means no soil handling to take place.
- Possible - Go to second text.

**Second test**
Attempt to roll ball into a 3mm diameter thread by hand:

- Impossible because soil crumbles or collapses means soil handling can take place.
- Possible means no soil handling can take place.

N.B.: It is possible to roll most coarse loamy and sandy soils into a thread even when they are wet. For these soils, the Examination Test alone is to be used.

**A Rainfall Protocol to Suspend & Restart Soil Handling Operations**

Local weather forecasts of possible rainfall events during operations and the occurrence of surface lying water have been used to advise on a day-to-day basis if operations should stop (Natural England, 2021). Single events such as >5mm/day in spring and autumn months, and >10mm/day in the summer have been suggested as more precise triggers for determining soil handling operations (Reeve, 1994). However, in practice the following generic guidelines are often used:

- In light drizzle soil handling may continue for up to four hours unless the soils are already at/near to their moisture limit.
- In light rain soil handling must cease after 15 minutes.
- In heavy rain and intense showers, handling shall cease immediately.

In all of the above it is assumed that soils were in a dry condition. These are only general rules, and it is at the local level decisions to proceed or stop should be based on the actual wetness state of the soils being handled. After the above rain event has ceased, the soil tests in **Table 4.2** above should be applied to determine whether handling may re-start, provided that the ground is free from ponding and ground conditions are safe to do so.There can be extreme instances where soil horizons have become very dry and are difficult to handle resulting in dust and windblown losses. In these conditions the operation should be suspended. The artificial wetting of extremely dry soils is not usually a practice recommended but has been successful in some cases.

**References**

Duncan N A and Bransden B E, 1986. The effects on a restored soil caused by soil moving under different moisture contents. Applied Geography, 6, 3, pp 267-273

MAFF, 1982. Reference Book 441: Techniques for measuring soil physical properties. Her Majesty's Stationery Office, London

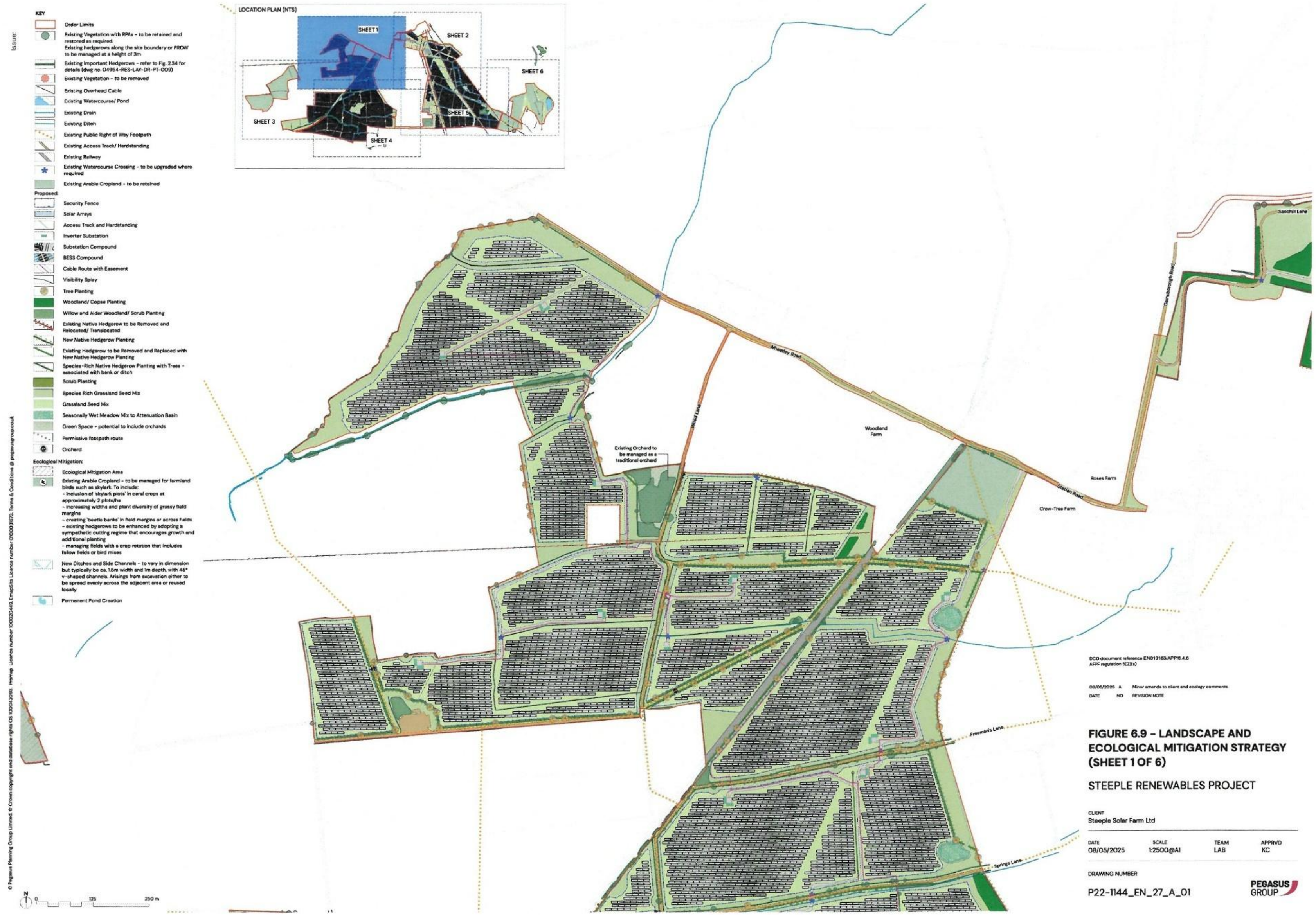
MAFF, 1988. Agricultural Land Classification Of England and Wales

Natural England, 2021. Planning and aftercare advice for reclaiming land to agricultural use

Reeve M J, 1994. Improving land restoration in Britain by better timing of soil movement, pp 28-37. In, Proceedings American Society of Mining and Reclamation. DOI: 10.21000/JASMR94030028

**Appendix SMP3**

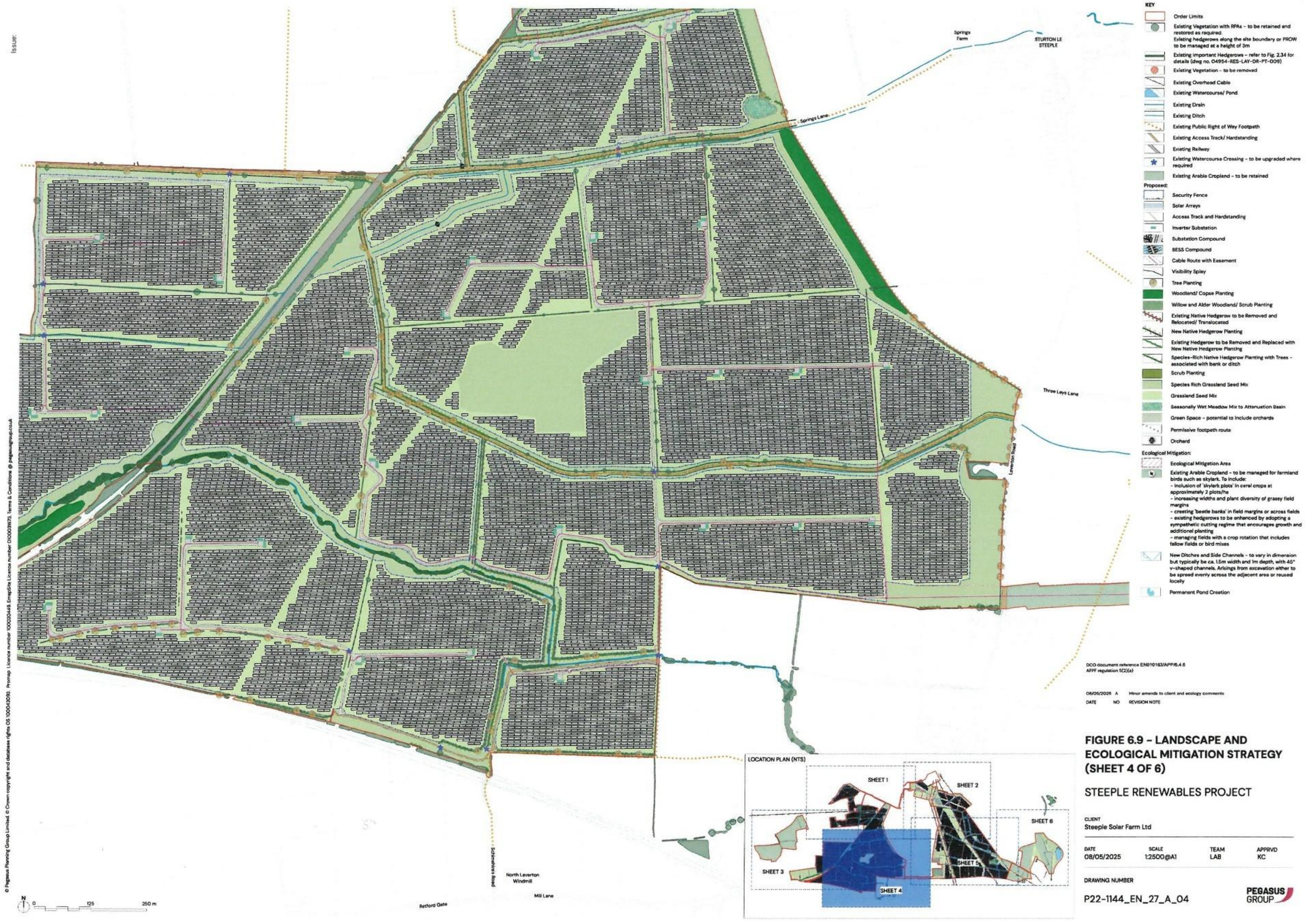
**Reduced Scale Landscape Mitigation Plans (for reference only)**



KEY
Order Limits
Existing Vegetation with RPAs - to be retained and restored as required.
Existing hedgerows along the site boundary or PROW to be managed at a height of 3m
Existing Important Hedgerows - refer to Fig. 2.34 for details (dwg no. 04954-RES-LAY-DR-PT-009)
Existing Vegetation - to be removed
Existing Overhead Cable
Existing Watercourse/ Pond
Existing Drain
Existing Ditch
Existing Public Right of Way Footpath
Existing Access Track/ Hardstanding
Existing Railway
Existing Watercourse Crossing - to be upgraded where required
Existing Arable Cropland - to be retained
Proposed:
Security Fence
Solar Arrays
Access Track and Hardstanding
Inverter Substation
Substation Compound
BESS Compound
Cable Route with Easement
Visibility Splay
Tree Planting
Woodland/ Copse Planting
Willow and Alder Woodland/ Scrub Planting
Existing Native Hedgerow to be Removed and Relocated/ Translocated
New Native Hedgerow Planting
Existing Hedgerow to be Removed and Replaced with New Native Hedgerow Planting
Species-Rich Native Hedgerow Planting with Trees - associated with bank or ditch
Scrub Planting
Species Rich Grassland Seed Mix
Grassland Seed Mix
Seasonally Wet Meadow Mix to Attenuation Basin
Green Space - potential to include orchards
Permissive footpath route
Orchard
Ecological Mitigation:
Ecological Mitigation Area
Existing Arable Cropland - to be managed for farmland birds such as skylark. To include:
- inclusion of 'skylark plots' in ceral crops at approximately 2 plots/ha
- increasing widths and plant diversity of grassy field margins
- creating 'beetle banks' in field margins or across fields
- existing hedgerows to be enhanced by adopting a sympathetic cutting regime that encourages growth and additional planting
- managing fields with a crop rotation that includes fallow fields or bird mixes
New Ditches and Side Channels - to vary in dimension but typically be ca. 1.6m width and 1m depth, with 45° v-shaped channels. Arisings from excavation either to be spread evenly across the adjacent area or reused locally
Permanent Pond Creation
LOCATION PLAN (NTS)
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
Wheatley Road
Wood Lane
Woodland Farm
Existing Orchard to be managed as a traditional orchard
Sandhill Lane
Roses Farm
Crow-Tree Farm
Freeman's Lane
Springs Lane
0
125
250 m
DCO document reference EN010163/APP/6.4.6
APFP regulation 5(2)(a)
08/05/2025 A Minor amends to client and ecology comments
DATE NO REVISION NOTE
FIGURE 6.9 - LANDSCAPE AND ECOLOGICAL MITIGATION STRATEGY (SHEET 1 OF 6)
STEEPLE RENEWABLES PROJECT
CLIENT
Steeple Solar Farm Ltd
DATE 08/05/2025
SCALE 1:2500@A1
TEAM LAB
APPRVD KC
DRAWING NUMBER
P22-1144_EN_27_A_01
PEGASUS GROUP


LOCATION PLAN (NTS)
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
West Burton Power Station
Sandhill Lane
South Road
PROW FP3
Common Lane
Cow Pasture Lane
Low Holland Lane
STURTON LE STEEPLE
Upper Ings Lane
KEY
Order Limits
Existing Vegetation with RPAs - to be retained and restored as required.
Existing hedgerows along the site boundary or PROW to be managed at a height of 3m
Existing Important Hedgerows - refer to Fig. 2.34 for details (dwg no. 04954-RES-LAY-DR-PT-009)
Existing Vegetation - to be removed
Existing Overhead Cable
Existing Watercourse/ Pond
Existing Drain
Existing Ditch
Existing Public Right of Way Footpath
Existing Access Track/ Hardstanding
Existing Railway
Existing Watercourse Crossing - to be upgraded where required
Existing Arable Cropland - to be retained
Proposed:
Security Fence
Solar Arrays
Access Track and Hardstanding
Inverter Substation
Substation Compound
BESS Compound
Cable Route with Easement
Visibility Splay
Tree Planting
Woodland/ Copse Planting
Willow and Alder Woodland/ Scrub Planting
Existing Native Hedgerow to be Removed and Relocated/ Translocated
New Native Hedgerow Planting
Existing Hedgerow to be Removed and Replaced with New Native Hedgerow Planting
Species-Rich Native Hedgerow Planting with Trees - associated with bank or ditch
Scrub Planting
Species Rich Grassland Seed Mix
Grassland Seed Mix
Seasonally Wet Meadow Mix to Attenuation Basin
Green Space - potential to include orchards
Permissive footpath route
Orchard
Ecological Mitigation:
Ecological Mitigation Area
Existing Arable Cropland - to be managed for farmland birds such as skylark. To include:
- inclusion of 'skylark plots' in ceral crops at approximately 2 plots/ha
- increasing widths and plant diversity of grassy field margins
- creating 'beetle banks' in field margins or across fields
- existing hedgerows to be enhanced by adopting a sympathetic cutting regime that encourages growth and additional planting
- managing fields with a crop rotation that includes fallow fields or bird mixes
New Ditches and Side Channels - to vary in dimension but typically be ca. 1.5m width and 1m depth, with 45° v-shaped channels. Arisings from excavation either to be spread evenly across the adjacent area or reused locally
Permanent Pond Creation
DCO document reference EN010163/APP/6.4.6
APFP regulation 5(2)(a)
08/05/2025 A Minor amends to client and ecology comments
DATE NO REVISION NOTE
FIGURE 6.9 - LANDSCAPE AND ECOLOGICAL MITIGATION STRATEGY (SHEET 2 OF 6)
STEEPLE RENEWABLES PROJECT
CLIENT
Steeple Solar Farm Ltd
DATE 08/05/2025
SCALE 1:2500@A1
TEAM LAB
APPRVD KC
DRAWING NUMBER
P22-1144_EN_27_A_02
PEGASUS GROUP
0 125 250 m


Issue:
Arable cropland will be managed for farmland birds (such as skylark). This will include skylark plots in cereal crops, increasing field margin widths and plant diversity, enhancing existing hedgerows, and managing fields with a crop rotation that includes fallow fields or bird mixes.
Existing hedgerows to be enhanced with new tree planting where possible.
Maunhill Wood
LOCATION PLAN (NTS)
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
KEY
Order Limits
Existing Vegetation with RPAs - to be retained and restored as required
Existing hedgerows along the site boundary or PROW to be managed at a height of 3m
Existing Important Hedgerows - refer to Fig. 2.34 for details (dwg no. 04954-RES-LAY-DR-PT-009)
Existing Vegetation - to be removed
Existing Overhead Cable
Existing Watercourse/ Pond
Existing Drain
Existing Ditch
Existing Public Right of Way Footpath
Existing Access Track/ Hardstanding
Existing Railway
Existing Watercourse Crossing - to be upgraded where required
Existing Arable Cropland - to be retained
Proposed:
Security Fence
Solar Arrays
Access Track and Hardstanding
Inverter Substation
Substation Compound
BESS Compound
Cable Route with Easement
Visibility Splay
Tree Planting
Woodland/ Copse Planting
Willow and Alder Woodland/ Scrub Planting
Existing Native Hedgerow to be Removed and Relocated/ Translocated
New Native Hedgerow Planting
Existing Hedgerow to be Removed and Replaced with New Native Hedgerow Planting
Species-Rich Native Hedgerow Planting with Trees - associated with bank or ditch
Scrub Planting
Species Rich Grassland Seed Mix
Grassland Seed Mix
Seasonally Wet Meadow Mix to Attenuation Basin
Green Space - potential to include orchards
Permissive footpath route
Orchard
Ecological Mitigation:
Ecological Mitigation Area
Existing Arable Cropland - to be managed for farmland birds such as skylark. To include:
- inclusion of 'skylark plots' in ceral crops at approximately 2 plots/ha
- increasing widths and plant diversity of grassy field margins
- creating 'beetle banks' in field margins or across fields
- existing hedgerows to be enhanced by adopting a sympathetic cutting regime that encourages growth and additional planting
- managing fields with a crop rotation that includes fallow fields or bird mixes
New Ditches and Side Channels - to vary in dimension but typically be ca. 1.5m width and 1m depth, with 45° v-shaped channels. Arisings from excavation either to be spread evenly across the adjacent area or reused locally
Permanent Pond Creation
DCO document reference EN010163/APP/6.4.6
APFP regulation 5(2)(a)
08/05/2025 A Minor amends to client and ecology comments
DATE NO REVISION NOTE
FIGURE 6.9 - LANDSCAPE AND ECOLOGICAL MITIGATION STRATEGY (SHEET 3 OF 6)
STEEPLE RENEWABLES PROJECT
CLIENT
Steeple Solar Farm Ltd
DATE 08/05/2025
SCALE 1:2500@A1
TEAM LAB
APPRVD KC
DRAWING NUMBER
P22-1144_EN_27_A_03
PEGASUS GROUP
0
125
250 m


Springs Farm
STURTON LE STEEPLE
Springs Lane
Three Leys Lane
Leverton Road
North Leverton Windmill
Mill Lane
Retford Gate
KEY
Order Limits
Existing Vegetation with RPAs - to be retained and restored as required.
Existing hedgerows along the site boundary or PROW to be managed at a height of 3m
Existing Important Hedgerows - refer to Fig. 2.34 for details (dwg no. 04954-RES-LAY-DR-PT-009)
Existing Vegetation - to be removed
Existing Overhead Cable
Existing Watercourse/ Pond
Existing Drain
Existing Ditch
Existing Public Right of Way Footpath
Existing Access Track/ Hardstanding
Existing Railway
Existing Watercourse Crossing - to be upgraded where required
Existing Arable Cropland - to be retained
Proposed:
Security Fence
Solar Arrays
Access Track and Hardstanding
Inverter Substation
Substation Compound
BESS Compound
Cable Route with Easement
Visibility Splay
Tree Planting
Woodland/ Copse Planting
Willow and Alder Woodland/ Scrub Planting
Existing Native Hedgerow to be Removed and Relocated/ Translocated
New Native Hedgerow Planting
Existing Hedgerow to be Removed and Replaced with New Native Hedgerow Planting
Species-Rich Native Hedgerow Planting with Trees - associated with bank or ditch
Scrub Planting
Species Rich Grassland Seed Mix
Grassland Seed Mix
Seasonally Wet Meadow Mix to Attenuation Basin
Green Space - potential to include orchards
Permissive footpath route
Orchard
Ecological Mitigation:
Ecological Mitigation Area
Existing Arable Cropland - to be managed for farmland birds such as skylark. To include:
- inclusion of 'skylark plots' in cereal crops at approximately 2 plots/ha
- increasing widths and plant diversity of grassy field margins
- creating 'beetle banks' in field margins or across fields
- existing hedgerows to be enhanced by adopting a sympathetic cutting regime that encourages growth and additional planting
- managing fields with a crop rotation that includes fallow fields or bird mixes
New Ditches and Side Channels - to vary in dimension but typically be ca. 1.5m width and 1m depth, with 45° v-shaped channels. Arisings from excavation either to be spread evenly across the adjacent area or reused locally
Permanent Pond Creation
DCO document reference EN010163/APP/6.4.6
APFP regulation 5(2)(a)
08/05/2025 A Minor amends to client and ecology comments
DATE NO REVISION NOTE
LOCATION PLAN (NTS)
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
FIGURE 6.9 - LANDSCAPE AND ECOLOGICAL MITIGATION STRATEGY (SHEET 4 OF 6)
STEEPLE RENEWABLES PROJECT
CLIENT
Steeple Solar Farm Ltd
DATE 08/05/2025
SCALE 1:2500@A1
TEAM LAB
APPRVD KC
DRAWING NUMBER
P22-1144_EN_27_A_04
PEGASUS GROUP
0 125 250 m


Issue:
KEY
Order Limits
Existing Vegetation with RPAs - to be retained and restored as required.
Existing hedgerows along the site boundary or PROW to be managed at a height of 3m
Existing Important Hedgerows - refer to Fig. 2.34 for details (dwg no. 04954-RES-LAY-DR-PT-009)
Existing Vegetation - to be removed
Existing Overhead Cable
Existing Watercourse/ Pond
Existing Drain
Existing Ditch
Existing Public Right of Way Footpath
Existing Access Track/ Hardstanding
Existing Railway
Existing Watercourse Crossing - to be upgraded where required
Existing Arable Cropland - to be retained
Proposed:
Security Fence
Solar Arrays
Access Track and Hardstanding
Inverter Substation
Substation Compound
BESS Compound
Cable Route with Easement
Visibility Splay
Tree Planting
Woodland/ Copse Planting
Willow and Alder Woodland/ Scrub Planting
Existing Native Hedgerow to be Removed and Relocated/ Translocated
New Native Hedgerow Planting
Existing Hedgerow to be Removed and Replaced with New Native Hedgerow Planting
Species-Rich Native Hedgerow Planting with Trees - associated with bank or ditch
Scrub Planting
Species Rich Grassland Seed Mix
Grassland Seed Mix
Seasonally Wet Meadow Mix to Attenuation Basin
Green Space - potential to include orchards
Permissive footpath route
Orchard
Ecological Mitigation:
Ecological Mitigation Area
Existing Arable Cropland - to be managed for farmland birds such as skylark. To include:
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- increasing widths and plant diversity of grassy field margins
- creating 'beetle banks' in field margins or across fields
- existing hedgerows to be enhanced by adopting a sympathetic cutting regime that encourages growth and additional planting
- managing fields with a crop rotation that includes fallow fields or bird mixes
New Ditches and Side Channels - to very in dimension but typically be ca. 1.5m width and 1m depth, with 45° v-shaped channels. Arisings from excavation either to be spread evenly across the adjacent area or reused locally
Permanent Pond Creation
Low Holland Lane
Upper Ings Lane
Long Farm Lane
Littleborough Road
Fenton Lane
Fenton Gorse
Historical orchard to be restored through tree planting (outside of cable easement) and grassland seeding
Potential area for woodland planting to compliment Fenton Gorse. The surrounding grassy margins will be retained and enhanced as grassy rides/ edges under the overhead line.
LOCATION PLAN (NTS)
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
DCO document reference EN010163/APP/6.4.6
APFP regulation 5(2)(a)
08/05/2025 A Minor amends to client and ecology comments
DATE NO REVISION NOTE
FIGURE 6.9 - LANDSCAPE AND ECOLOGICAL MITIGATION STRATEGY (SHEET 5 OF 6)
STEEPLE RENEWABLES PROJECT
CLIENT
Steeple Solar Farm Ltd
DATE 08/05/2025
SCALE 1:2500@A1
TEAM LAB
APPRVD KC
DRAWING NUMBER
P22-1144_EN_27_A_05
N
0 125 250 m
PEGASUS GROUP


LOCATION PLAN (NTS)
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
KEY
Order Limits
Existing Vegetation with RPAs - to be retained and restored as required
Existing hedgerows along the site boundary or PROW to be managed at a height of 3m
Existing Important Hedgerows - refer to Fig. 2.34 for details (dwg no. 04954-RES-LAY-DR-PT-009)
Existing Vegetation - to be removed
Existing Overhead Cable
Existing Watercourse/ Pond
Existing Drain
Existing Ditch
Existing Public Right of Way Footpath
Existing Access Track/ Hardstanding
Existing Railway
Existing Watercourse Crossing - to be upgraded where required
Existing Arable Cropland - to be retained
Proposed:
Security Fence
Solar Arrays
Access Track and Hardstanding
Inverter Substation
Substation Compound
BESS Compound
Cable Route with Easement
Visibility Splay
Tree Planting
Woodland/ Copse Planting
Willow and Alder Woodland/ Scrub Planting
Existing Native Hedgerow to be Removed and Relocated/ Translocated
New Native Hedgerow Planting
Existing Hedgerow to be Removed and Replaced with New Native Hedgerow Planting
Species-Rich Native Hedgerow Planting with Trees - associated with bank or ditch
Scrub Planting
Species Rich Grassland Seed Mix
Grassland Seed Mix
Seasonally Wet Meadow Mix to Attenuation Basin
Green Space - potential to include orchards
Permissive footpath route
Orchard
Ecological Mitigation:
Ecological Mitigation Area
Existing Arable Cropland - to be managed for farmland birds such as skylark. To include:
- inclusion of 'skylark plots' in ceral crops at approximately 2 plots/ha
- increasing widths and plant diversity of grassy field margins
- creating 'beetle banks' in field margins or across fields
- existing hedgerows to be enhanced by adopting a sympathetic cutting regime that encourages growth and additional planting
- managing fields with a crop rotation that includes fallow fields or bird mixes
New Ditches and Side Channels - to vary in dimension but typically be ca. 1.5m width and 1m depth, with 45° v-shaped channels. Arisings from excavation either to be spread evenly across the adjacent area or reused locally
Permanent Pond Creation
Planting with the existing ditches will be enhanced/ managed on rotation.
Ponds to be created within the naturally wet area (ca. 500sqm), with planting condusive to creating lead litter for aquatic beetles. Smaller satelite ponds will be created nearby.
Coastal and floodplain grazing marsh
Potential area for woodland planting to compliment Fenton Gorse. The surrounding grassy margins will be retained and enhanced as grassy rides/ edges under the overhead line.
Littleborough Road
Lagoon margins to be enhanced with aquatic/ marginal planting and new willow and alder woodland./ scrub planting
LITTLEBOROUGH
A minimum 15m width buffer will be created between the Local Wildlife Site ditch and arable cropland. Banks and shallow wet scrapes will be created for Agabus spp. (diving beetles) associated with the LWS.
N
0
125
250 m
DCO document reference EN010163/APP/6.4.8
APFP regulation 5(2)(a)
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FIGURE 6.9 - LANDSCAPE AND ECOLOGICAL MITIGATION STRATEGY (SHEET 6 OF 6)
STEEPLE RENEWABLES PROJECT
CLIENT
Steeple Solar Farm Ltd
DATE 08/05/2025
SCALE 1:2500@A1
TEAM LAB
APPRVD KC
DRAWING NUMBER
P22-1144_EN_27_A_06
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