Fferm Solar Larnog

Environmental Statement

Volume IV, Appendix 5C: Outline Soil Management Plan

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Volume IV, Appendix 5C: Outline Soil Management Plan

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1. Introduction

1.1. Introduction

1.1.1. This Outline Soil Management Plan (OSMP) has been produced for the proposed Larnog Solar Farm (hereafter the 'Proposed Development'). The Proposed Development would be located on land approximately 500m south-west of Penarth and 550m east of Sully (hereafter 'the Site').

1.1.2. This OSMP sets out measures to protect soils during the construction phase of the Proposed Development. The same measures could also be applied during the decommissioning phase, where soil disturbance is required.

1.1.3. This OSMP sets out soil management measures that can be developed as required in a detailed Soil Management Plan (SMP). The detailed SMP would be developed by the Applicant and its appointed contractors in accordance with the OSMP and submitted prior to construction for approval by the relevant Local Planning Authority.

1.2. Relevant Policy and Guidance

1.2.1. Relevant policy and guidance for soil protection and management during construction work includes:

- Defra (2018) 'Guidance: Code of practice for the sustainable use of soils on construction sites'[1]: sets out detailed measures and working methods for protecting soils at all stages of construction.
- Institute of Civil Engineering (2019) 'Environmental Impact Assessment Handbook'[2]: Table 7.2 in the ICE Environmental Impact Assessment Handbook sets out the relative sensitivity of topsoil and subsoil for handling based on the soil texture, wetness class, and other criteria.
- Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings[3]: includes measures to check soil wetness and suitability for handling.
- Institute of Sustainability and Environmental Professionals (ISEP), formerly Institute of Environmental Management and Assessment (IEMA) (2022). A New Perspective

[1] Defra (2018) Guidance: Code of practice for the sustainable use of soils on construction sites. Available at: https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites.
[2] Institute of Civil Engineering (2019) Environmental Impact Assessment Handbook – A Practical Guide for Planners, Developers and Communities (3rd Edition).
[3] Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings. Available at: https://www.quarrying.org/soils-guidance.

on Land and Soil in Environmental Impact Assessment[4]: the guidelines and their annexes seek to improve planning for the sustainable use of soils; as well as the delivery of soil handling mitigation measures aimed at conserving soils displaced by development. The guidance aims to develop, improve, and standardise the approach to soils and land use in EIA developments to ensure sustainable outcomes from development.

- Welsh Government (2023) The impact of solar photovoltaic sites on agricultural soils and land: Work Package Three – Review of Impacts[5]: The report identifies the principal soil risks arising during the construction, operation and decommissioning of solar PV developments, including compaction caused by construction traffic, localised disturbance from piles and cabling, disruption of field drainage, erosion associated with concentrated runoff from PV modules and disturbance during removal of infrastructure.
- Building on soil sustainability: Principles for soils in planning and construction[6].

1.3. Summary of works

1.3.1. The Proposed Development includes the following key components:

- Ground mounted Solar Photovoltaic (PV) modules with a total installed capacity of approximately 35 MW.
- Project Substation, situated within the Project Substation Compound.
- Battery Energy Storage Systems (BESS), situated within the Project Substation compound.
- Balance of Solar System (BoSS) which comprises: inverters, transformers and switchgear.
- Ancillary infrastructure works including underground cables, boundary treatments, security equipment, weather stations, landscaping, biodiversity enhancement, access tracks, earthworks, surface water management, and any other works identified as necessary to enable the development.
- Permanent diversion of Public Footpath L1/5/2; and
- Associated safety and security infrastructure required for the construction, operation and decommissioning of the Proposed Development.

[4] Stapleton, C., Reed, E., Gemmell, L., Adams, K. (Eds.) (2022). IEMA (now ISEP) Guide: A New Perspective on Land and Soil in Environmental Impact Assessment. Available at: https://www.isepglobal.org/media/3xejdu0u/2022-iema_land_and_soils_guidance.pdf.

[5] Welsh Government (2023) 2020/21 Soil Policy Evidence Programme: The impact of solar photovoltaic (PV) sites on agricultural soils and land quality

[6] Soils in Planning and Construction Task Force (2022) Building on soil sustainability: Principles for soils in planning and construction, Available at: https://www.soilstaskforce.com/reports

1.3.2. During the construction of the access tracks, Project Substation Compound, Solar PV arrays, fencing, underground cabling and temporary construction compounds, topsoil stripping will be required.

Access Tracks

1.3.3. Approximately 2.4 km of new internal access tracks will be constructed across the Site. These tracks will comprise permeable stone surfacing formed from compacted crushed stone to a depth of approximately 300–500 mm, with a typical width of around 4 m (up to 6 m in places). Construction of these tracks would require removal and storage of the existing topsoil along the track alignment prior to installation of the stone sub-base and surfacing.

Project Substation Compound

1.3.4. The Project Substation and BESS compound, covering an area of approximately 60 m × 54 m, will contain areas of hardstanding, internal access roads, maintenance areas, firewater storage tank and associated infrastructure, substation equipment and battery storage facilities. Construction will also require foundations extending to depths of up to approximately 1.7 m below ground level. Topsoil stripping would therefore be required across the compound footprint before excavation and construction of the permanent infrastructure.

Temporary Construction Compounds

1.3.5. Temporary construction compounds will be established during the construction phase to provide areas for material storage, laydown, plant parking, welfare facilities and other construction activities. There will be three compounds across the Site; the Main Site Compound (approximately 2,600m^2), the western Satellite Compound (approximately 3,250m^2), and the eastern Satellite Compound (approximately 900m^2).

1.3.6. These compounds would require localised topsoil stripping to create suitable temporary working areas. Following completion of construction, these areas would be reinstated and returned to their previous condition.

1.3.7. Construction vehicles and plant will be required throughout the Site to install the access tracks, Project Substation and BESS Compound, temporary construction compounds, PV modules, supporting structures, piles, cabling, fencing and associated electrical infrastructure. Although permanent topsoil stripping is not anticipated across the full extent of the solar arrays, the unstripped soils within these areas may still be affected by trafficking, particularly where repeated vehicle movements occur or where soils are wet or have a low bearing capacity.

1.3.8. Prior to construction, the detailed SMP will identify the intended access arrangements and working methods for each solar field. This will include permanent access tracks,

temporary installation routes, crossing points, plant operating areas and any areas requiring temporary ground protection. Uncontrolled trafficking between PV rows will be avoided. The detailed arrangements for construction traffic management, site access, vehicle routing will be set out within the Construction Traffic Management Plan (CTMP). An Outline CTMP has been prepared as part of the Environmental Statement (see **Appendix 5B**).

Solar PV Modules and Mounting Structures

1.3.9. The solar PV modules would be installed on supporting frames secured to the ground using driven piles or other foundation systems confirmed through the detailed design. Installation would require the movement of delivery vehicles and plant across the solar field areas. Although widespread topsoil stripping is not anticipated within the array areas, the installation works have the potential to cause localised displacement and compaction of soil around the supporting piles, together with wider compaction and rutting where plant traffics over unstripped soils.

1.3.10. The type, dimensions, installation depth and density of the proposed foundations will be confirmed through detailed design. The detailed SMP will assess the soil implications of the selected foundation system, taking account of the soil types and drainage conditions encountered within each construction area. Where reasonably practicable, foundation systems that minimise soil displacement and the requirement for excavation will be used.

Cabling and Electrical infrastructure

1.3.11. Trenches will be required for high-voltage, low-voltage, string, communications and earthing cables. Cable installation will result in localised disturbance of topsoil and subsoil and may interact with existing field drainage. Topsoil and subsoil excavated from cable trenches will be stored in separate stockpiles, located as close as reasonably practicable to the point of excavation, and will be kept separate throughout the construction phase. The soils will be replaced in their original sequence as soon as reasonably practicable following cable installation.

1.3.12. Inverters, transformers and other electrical equipment may be installed on piles, aggregate bases or concrete foundations. Where excavation or topsoil stripping is required, the soil management measures set out in this OSMP will apply. The detailed SMP will identify the foundation type, excavation depth, soil volume and proposed reuse or storage arrangements for each permanent infrastructure area.

Fencing and Gates

1.3.13. Installation of perimeter and internal fencing will result in localised ground penetration and may require limited excavation or concrete foundations at gates, corners or other load-bearing locations. Excavated soil will be retained and reused locally where

suitable. Vehicle movements associated with fencing installation will follow defined working routes and will be subject to the soil trafficking controls set out in this OSMP.

Risks to soil resources during construction

1.3.14. The movement, storage, and reinstatement or reuse of soils displaced during construction, and the vehicles and plant trafficking over soils will inevitably result in at least a temporary degradation in soil physical characteristics. Temporary works can also result in permanent impacts on soil resources and functions, if good soil management measures are not implemented.

1.3.15. This OSMP is intended to set out measures to avoid or minimise the following potential impacts on soil resources:

- Soil resource contamination with other material or mixing of topsoil and subsoil;
- Soil compaction: loss of soil structure and porosity, increased flood risk downstream;
- Increases in profile stone content;
- Leeching of nutrients, loss of soil organic matter (SOM);
- Misplacement of soil horizons; and
- Soil erosion: loss of surface soil and changes in the microtopography, impacts on water environment receptors due to sediment discharge.

1.3.16. Each of these impacts could prove difficult and costly to rectify and could have long term implications for soil management at the site, in addition to rendering any surplus soils unsuitable for reuse offsite.

1.3.17. Given the nature of the development, some excavated soils from the access tracks, Project Substation Compound, and the temporary construction compounds are likely to be surplus (i.e. with no identified use within the Proposed Development) and in order for them to be suitable for offsite reuse these will need to be protected using the measures outlined the OSMP to avoid them becoming unsuitable and requiring disposal to landfill as a waste.

1.4. Site-specific Information

Agricultural Land Classification

1.4.1. A review of the Welsh Government's ALC Map[7] indicates that the Site comprises predominantly Grade 3b and Grade 4 agricultural land, neither of which is classified as Best and Most Versatile (BMV) land. The Site is currently in agricultural use, predominantly for arable farming. No Grade 1, Grade 2 or Grade 3a agricultural land is

[7] Welsh Government, (2025) Data Map Wales: Predictive Agricultural Land Classification (ALC) Map 2. Available online at: https://datamap.gov.wales/layers/inspire-wg:wg_predictive_alc2

identified within the Site. Grade 4 land is predominantly located within the eastern extent of the Site, whilst Grade 3b land is concentrated within the western extent of the Site.

1.4.2. Welsh Government guidance[8] states that an ALC survey is not required where land is predicted to comprise Grades 3b, 4 and 5. On this basis, a site-specific ALC survey has not been undertaken.

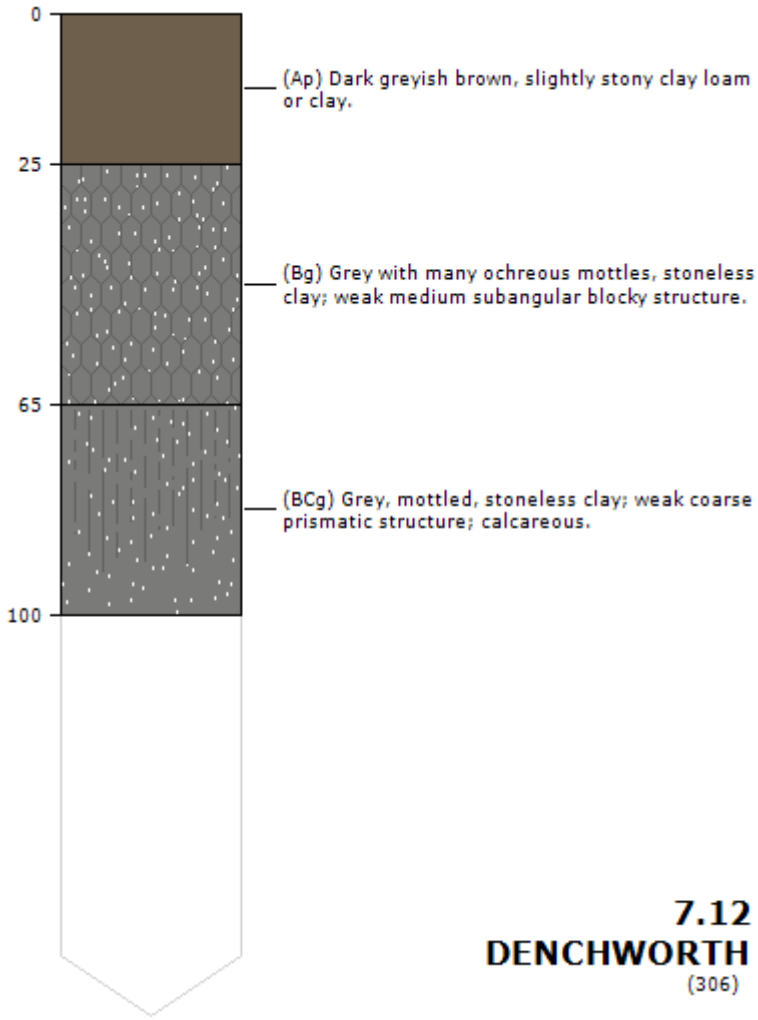
Soil Resources

1.4.3. A review of the Cranfield University LandIS Portal[9] indicates that the majority of the Site is underlain by the Denchworth soil type, which accounts for approximately 38% of the Site area. The remaining soils comprise the Wickham (19%), Lawford (15%), Evesham (14%) and Oxpasture (14%) soil types. Land parcels located west of Bay Caravan Park are predominantly characterised by the Malham 2 soil type (70%), with the Crwbin soil type representing a secondary component (15%).

1.4.4. The Denchworth soil type is characterised by seasonally waterlogged, slowly permeable soils, typically occurring above 3 m AOD. These soils exhibit prominent mottling within the upper 40 cm of the profile and do not contain relatively permeable material extending below 1 m from the ground surface. A summary profile description of the Denchworth soil type is provided in **Figure 1**.

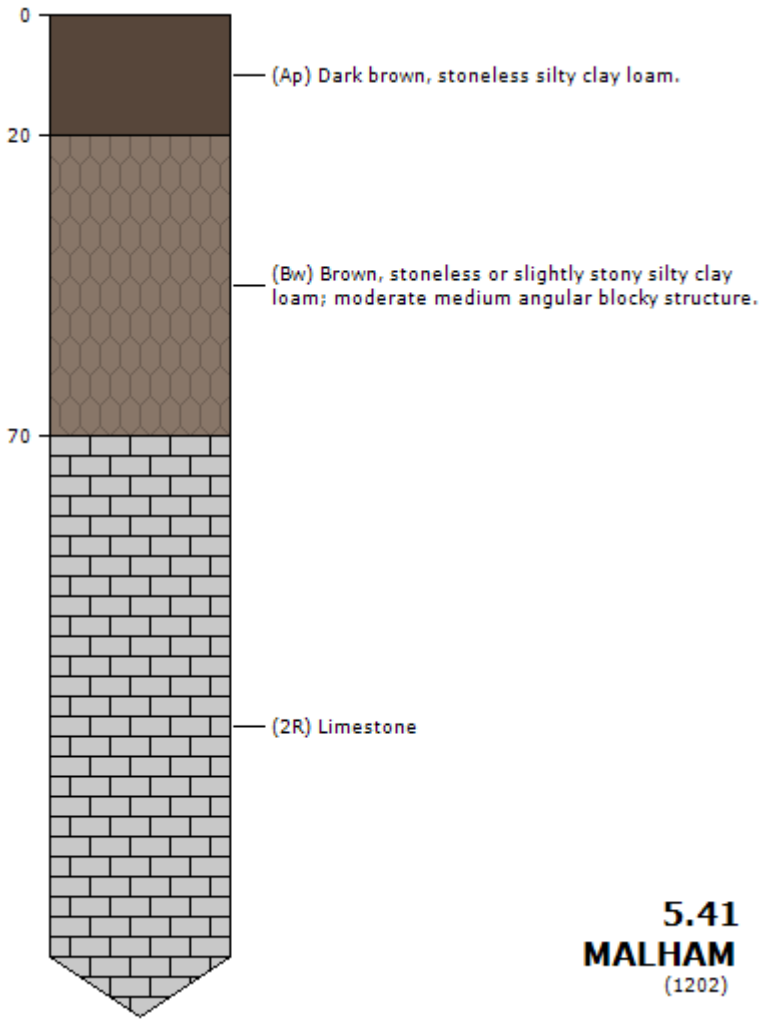
[8] Welsh Government, (2025). Agricultural land classification: predictive map guidance. Available online at: https://www.gov.wales/agricultural-land-classification-predictive-map-guidance
[9] Cranfield University (2026) LandIS Portal. Available online at: https://portal.landis.org.uk/signin

Figure 1 - Denchworth Profile Description



1.4.5. The Malham soil type is characterised by predominantly brown or reddish subsoils and does not typically exhibit prominent mottling or gleying within the upper 40 cm of the soil profile. These soils generally develop on permeable parent materials at elevations below approximately 300 m AOD and are commonly used for agricultural purposes. A summary profile description of the Malham soil type is provided in **Figure 2**.

Figure 2 - Malham Profile Description



1.4.6. The Denchworth soil type has a very small water erosion risk, and the Malham soil type has small water erosion risk[10].

1.4.7. Based on the Good Practice Guide for Handling Soils in Mineral Workings[11], Denchworth soils are generally considered to have a high risk of structural damage during handling under dry conditions, while Malham soils are considered to have a moderate risk.

Soil Resource Plan

1.4.8. A soil resource plan will be developed as part of the detailed SMP to provide the framework for the identification, management and reuse of the soil resources affected by the construction of the Proposed Development. This will be produced in conjunction

[10] JW Knox (2015) Research to develop the evidence base on soil erosion and water use in agriculture (Cranfield University)
[11] The Institute of Quarrying (2021) Good Practice Guide for Handling Soils in Mineral Workings.

with other relevant plans such as the Construction Environmental Management Plan (CEMP) (see **Section 3.1**).

2. Soil Management

2.1. Objectives

2.1.1. The principal objectives of good soil management during construction are to minimise disturbance to soil resources, maintain the physical structure and hydrological function of soils, prevent unnecessary losses of soil carbon, avoid mixing of soil horizons, maximise the beneficial reuse of excavated soils and avoid or minimise soil waste. Soil handling operation shall be planned and supervised to ensure that soil resources are protected throughout all phases of the works.

2.2. General Principles of Soil Handling

2.2.1. The main threats to soil resources on construction sites are trafficking of vehicles / plant and incorrect handling, resulting in damage to soil structure through compaction and smearing (both effects are referred to as deformation). Damaged soils will lose key functions, such as providing adequate amounts of water, air, and nutrients to plant roots, and may not be suitable for reuse without costly and time-consuming remediation.

2.2.2. The risk of compaction and smearing increases with soil wetness. Susceptibility to structural damage during construction is also determined by soil texture; e.g., peaty soils and heavy clay soils are prone to structural damage if not handled in appropriate conditions and are more difficult to remediate if structural damage does occur.

Soil Conditions – Suitability for Handling

2.2.3. Soils must not be handled if they are in a 'plastic' state, this is when moisture content exceeds their lower plastic limit. Soil in plastic states are vulnerable to handling damage as they lose their pores as they deform under pressure. As a general rule, soils should be as dry as reasonably practicable when handled.

2.2.4. If soils are excavated and placed in stockpiles when wet (above their plastic limit), they can be over-compacted by the machinery handling them, or by the weight of the soil above them in the stockpile. As well as this structural damage, compacting soils within a stockpile leads to the core of the stockpile remaining anaerobic throughout the storage period. This results in soils being difficult to re-use elsewhere on site and the degradation of precious topsoil.

2.2.5. The Denchworth and Malham soils, coupled with moderately high excess winter rainfall will mean that generally, soil stripping and re-instatement should be restricted to drier periods of the year, notionally Mid-April to Mid-October, where reasonably practicable. The field testing of soil moisture should be undertaken if these works are required outside of these months.

Field Testing of Soil Conditions

2.2.6. The following sections detail a two-stage methodology for the field assessment of soil plasticity and suitability for handling. The method is comprised of a moisture state test and a consistency test.

2.2.7. A field soil moisture test should first be carried out as per **Table 2.1**.

Table 2.1 - Field Testing of Soil Moisture

Assessment / Test	Suitability for handling
If soil sample is wet, films of water are visible on the surfaces of grains and aggregates; or if soil sample readily deforms into a cohesive 'ball' when squeezed.	Soil should not be handled.
Soil peds break up/crumble readily when squeezed in the hand. Sample does not form a cohesive ball.	Soils can be handled.
If the sample is moist, there is a slight dampness when squeezed between the fingers, but it does not significantly change colour (darken) on further wetting.	No handling by dozers but may be handled by excavators if the consistency test is passed.
Sample is dry and brittle. Sample looks dry and changes colour (darkens) on wetting.	Soils can be handled if the consistency test is passed.
Test to be completed daily during soil stripping operations and the results recorded.	

2.2.8. The assessment of soil suitability for handling will use a staged methodology as outlined in **Table 2.1** and **Table 2.2** to determine whether soils are suitable for handling. Stage 1 comprises a field moisture test and Stage 2 a consistency test based on an assessment of lower plastic limit (LPL).

2.2.9. Where required, and as per **Table 2.1**, samples should be further tested for consistency as per **Table 2.2**.

Table 2.2 - Field Testing of Soil Consistency

Step A: Attempt to roll sample into a ball by hand	Suitability for handling
It is impossible because the soil is too hard (dry).	Soils can be handled.
It is impossible because the soil is too loose (dry).	Soils can be handled.
It is impossible because the soil is too loose (wet).	Soils should not be handled.
It is possible to roll the sample into a ball by hand.	See Step B.
Step B: Lower Plastic Limit (LPL) Attempt to roll sample into a thread of 3 mm diameter by 75 mm length flat on a non-adhesive surface (e.g. ceramic or glass tile) using light pressure from the flat of a hand, avoiding drying the sample with the hand.	**Suitability for handling**
It is impossible as the soil crumbles or disintegrates.	Soils can be handled.
It is possible to roll a 3 mm diameter thread.	Soils should not be handled.
Test to be completed daily during soil stripping operations and the results recorded.	

2.3. Stop Conditions

Adverse Weather

2.3.1. The handling of soil must be effectively managed to prevent damage. Therefore, local weather forecasts should be monitored closely during the construction phase of the Proposed Development, at least once a day during dry conditions and twice a day during wet conditions. Long term forecasts should also be monitored closely as well as flood alerts and maps.

2.3.2. An on-site weather gauge should be installed at the beginning of works. The following criteria must be applied during operation to determine if conditions are suitable for topsoil and subsoil handling:

- In drizzle and/or intermittent light rain, handling can continue for up to four hours or until the soils enter a plastic state at which point operation must cease.
- If there is heavy rain, (e.g. heavy showers, slow-moving depressions) handling must stop immediately;
- In the event of sustained heavy rainfall of more than 10 mm in 24 hours, soil handling must be suspended and not restarted until the ground has had at least one full dry day or an agreed soil moisture limit can be met; and
- Soil shall not be handled or trafficked over / driven on immediately after heavy rainfall (or snow/hail) in a waterlogged condition, or if there is standing water.

2.3.3. If the works are interrupted by a rainfall event, soil stripping will be suspended. Anywhere the soil profile has already been disturbed, the works will be completed to the base level in that location.

2.3.4. Before recommencing work, soil moisture content must be tested. Work can only recommence if the soil moisture is below the LPL. The weather forecast must also be checked and works only recommenced if there is no rain forecast for at least a day, regardless of soil moisture conditions.

2.3.5. Additionally, soil will not be handled or trafficked over / driven on when the ground is frozen or covered by snow.

2.3.6. These criteria must be clearly understood by all personnel (see **Section 3**).

2.4. Soil Management Methodology

Site Preparation

2.4.1. The Site is currently under agricultural management. All areas within the construction boundary should be fenced prior to construction taking place. Defined crossing points should be established to minimise uncontrolled trafficking across soil resources.

2.4.2. Stripping and storing topsoil can lead to weeds becoming an issue during storage and an appropriate herbicide spraying programme should be agreed with the landowner in advance on stripping. This programme may need to be included during the storage of the topsoil if they are due to be in stockpile for a prolonged period of time (>12 months) or if the land has an existing weed issue.

2.4.3. Bare or fallow land should be avoided over winter to allow the land to remain drained and to dry more quickly in the following spring, to maximise the opportunity for soils to dry quickly in advance of handling.

Installation of PV Modules and Associated Infrastructure

2.4.4. Prior to works commencing in each solar field, the Contractor will prepare a field-specific PV module installation and trafficking plan. The plan will identify the intended entry point, delivery route, piling rig route, module installation route, turning areas and any temporary materials storage areas. The plan will also identify areas that are to be avoided during construction, including any environmentally sensitive areas, areas requiring soil protection, and locations where access is restricted. Such areas will be clearly demarcated and, where necessary, temporarily fenced to prevent inadvertent access by construction vehicles and plant.

2.4.5. Vehicle movements will be restricted to designated routes and the number of passes over unstripped soil will be minimised. Where practicable, installation will progress sequentially from the established access route to avoid repeated trafficking over completed areas. Plant will be selected having regard to ground pressure, axle loading, soil type, soil moisture and prevailing ground conditions.

2.4.6. Where ground conditions are unsuitable, works will stop or temporary ground protection will be installed. Ground protection will be removed carefully following completion of the relevant works so that it does not result in mixing of aggregate or imported materials with the underlying soil. Any visible rutting, ponding, smearing or deterioration in soil structure will be inspected by the Soil Scientist or suitably experienced soil specialist and remediated at an appropriate time and under suitable soil conditions.

Cable Trenching

2.4.7. Cable trenching will proceed in discrete sections to minimise the period for which soil remains exposed. Topsoil and subsoil will be excavated and stored separately alongside the trench, without spreading soils so thinly that they cannot subsequently be recovered. Excavated soil will be replaced in its original sequence as soon as practicable following installation of the cables.

2.4.8. Trench backfill will avoid excessive compaction but will be sufficiently consolidated to minimise subsequent settlement. Following reinstatement, cable routes will be

inspected for settlement, ponding, erosion and evidence that the trench is acting as a preferential drainage pathway. Remedial works will be undertaken where required.

Selection of Soil Handling Machinery and Method

2.4.9. The machinery combination and handling method used for soil stripping, movement and placement will be selected having regard to the soil type, soil moisture condition and susceptibility to structural damage. The suitability of soils for handling will first be determined through the field assessments set out in Table 2.1 and Table 2.2. Where soils are suitable for handling, the machinery combination and handling method will be selected in accordance with the soil types.

As Denchworth soils have low dry soil condition, excavators and dump trucks using bedstrip practice, and windrow/peninsular practice are most appropriate. For areas of the Site identified to be Malham soils, bulldozers, hybrid excavators, and dump trucks using the windrow/peninsular practice and modified layer by layer practice may be appropriate[3].

Soil Stripping

2.4.10. Topsoil should be stripped under the driest practicable conditions considering the field assessments in **Table 2.1** and **Table 2.2**. This will ensure that soil smearing and compaction are minimised and will enable soil resources to be recovered both accurately and entirely. Depending on the time of year that construction works commence, flexibility should be built into the programme to cater for wet weather especially when working on soils with low or medium resilience to structural damage during handling.

2.4.11. Tracking of topsoil with heavy machinery prior to stripping should be kept to an absolute minimum, any operations that need to happen before topsoil is stripped should be done using low ground pressure equipment. All operatives involved in soil handling should receive an appropriate toolbox talk detailing best practice in soil handling to be provided by a Soil Scientist or suitably qualified soil specialist.

2.4.12. Preferred plant for soil stripping, to minimise damage to soils, is a tracked excavator with toothed bucket. The excavator should not be larger than is required for the work. Examples of best practice methods for soil handling are set out in the Defra Code of practice for the sustainable use of soils on construction sites[12].

[12] Defra (2018) Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. Available at: Construction Code of Practice for the Sustainable Use of Soils on Construction Sites

Creation of Stockpiles

2.4.13. Topsoil and subsoil should always be stored separately as well as any different subsoil horizons; this will avoid cross contamination and mixing of soil materials. These separate stockpiles of soil should be clearly identified and labelled.

2.4.14. Excavated topsoil should be stored on top of topsoil that has had vegetation cleared, not directly onto bare subsoil. Subsoil should be stored separately and not directly on top of topsoil.

2.4.15. Where possible, and particularly where soils can be replaced, they should be stored close to where they came from, if this is not possible, soils should be stored by type and a record kept of where they came from.

2.4.16. Topsoil that has been stripped should be stored in stockpiles; these stockpiles should ideally be stored alongside the edge of the working area and the duration of soil storage should be minimised.

2.4.17. Topsoil stockpile locations should be planned so as to avoid any excess surface water flow to lower lying areas.

2.4.18. Topsoil stockpile height should not exceed 3 m and should ideally be less than this, to maximise aeration of the stored soil and to try and prevent soil becoming anaerobic. The sides of soil stockpiles should be around 30° to minimise the risk of slumping.

2.4.19. Topsoil stockpiles should be kept weed free through an appropriate herbicide programme and storage times limited where possible to less than a vegetative season; this will minimise the effects of off-site seed dispersal through wind blow and prevent a seed bank of weeds being kept in the soil. All soil stockpiles should be sprayed off at least two weeks before topsoil reinstatement.

2.4.20. For longer storage periods (e.g., >6 months), topsoil should be seeded with an appropriate grass lay mix, this is especially important if the topsoil is to be stored for more than one winter. This will reduce erosion, increase and speed up aeration and drying of the soil and assist with weed control. The grass mix should be chosen with care and discussed with the landowner.

2.4.21. Where it is identified that soils will be surplus to requirements for the Proposed Development, testing of topsoil and subsoil should be carried out at the earliest opportunity to the relevant British Standards (BS): BS3882 for topsoil and BS8601 for subsoil to support their potential reuse offsite.

Drainage and Hydrological Protection

2.4.22. The hydration of organic soils is fundamental to maintaining both their physical integrity and ecological function.

2.4.23. Temporary drainage measures should only be installed where necessary for construction. Existing drainage pathways should be maintained where practicable and all temporary drainage works should be removed or appropriately reinstated at the end of the works for that area.

2.4.24. Surface water should be managed to prevent erosion, excessive ponding and uncontrolled runoff from disturbed soil surfaces and stockpiles.

Erosion Control

2.4.25. Disturbed soils, particularly organic soils, are susceptible to erosion by surface water runoff and wind. Measures shall therefore be implemented throughout construction to minimise soil losses.

2.4.26. Where required, temporary erosion control measures may include silt fencing, sediment traps, straw bales, bio-degradable erosion control matting and temporary seeding of exposed soil surfaces.

2.4.27. Where soils can be replaced within the Proposed Development, this should happen at the earliest suitable opportunity, and soils should be revegetated as soon as reasonably practicable following completion of construction activities.

3. Monitoring, Responsibilities and Aftercare

3.1. Soil Handing and Storage Monitoring

Construction Soil Management

3.1.1. Records of all works involving soil handling and storage shall be kept by the Contractor.

3.1.2. A Soil Scientist or suitably experienced soil specialist should be present as required during construction. Key stages include at the start of excavation works, following a change of location or change in soil type(s), and during reinstatement of soil.

3.1.3. The Soil Scientist or suitably experienced soil specialist will undertake inspections of soil storage stockpiles, or placement of soils for training, watching brief, reference, and auditing purposes.

3.1.4. A Soil Scientist or suitably experienced soil specialist will provide training and toolbox talks for the Contractor on the importance of soil protection and good soil handling practice prior to construction commencing, and as needed during the work e.g., in response to any issues observed during the above site visits / inspections.

3.1.5. Disposal of excavated uncontaminated soil as waste should be avoided by aiming for the appropriate reuse of excavated soils within the Site wherever possible, in accordance with the waste hierarchy. Any excavated soils that cannot be reused within the Site must be handled in accordance with the legal requirements for waste duty of care. Waste exemptions can be applied for reuse if the necessary conditions are met. Offsite reuse of excavated soils can be facilitated through compliance with the CL:AIRE Definition of Waste Development Industry Code of Practice (DoW CoP)[13] and use of a materials management plan (MMP).

Operational Soil Management

3.1.6. During operation, the condition of soils beneath and between the PV module rows will be inspected as part of routine Site management. Inspections will consider:

- erosion, rilling or gullying beneath the trailing edges or drainage points of PV modules;
- areas of bare or poorly established vegetation;
- localised ponding, waterlogging or changes in drainage;
- rutting or compaction caused by maintenance vehicles;
- erosion or compaction around inverter, transformer and fencing infrastructure; and
- poaching or compaction associated with grazing, where grazing is undertaken.

[13] CL:AIRE (2011) The Definition of Waste: Development Industry Code of Practice, Version 2 (ISBN: 978-1-905046-23-2): https://staging.claire.co.uk/projects-and-initiatives/dow-cop.

3.1.7. Maintenance vehicles will use the established access tracks wherever practicable. Access across solar field areas will be avoided during waterlogged conditions or where vehicle movements would cause rutting or structural damage.

3.1.8. Where concentrated runoff from PV modules causes erosion, appropriate remedial measures will be implemented. These may include vegetation repair, localised erosion protection or measures to disperse concentrated runoff, subject to compatibility with the drainage strategy and ecological management requirements.

3.2. Aftercare

3.2.1. The successful reuse and replacement of soils should be monitored by a Soil Scientist or suitably experienced soil specialist or a dedicated person (e.g., an ecological clerk of works) with support from a Soil Scientist or suitably experienced soil specialist, as required. This is to provide a record of compliance with the measures in the OSMP and to identify if any additional mitigation measures are needed.