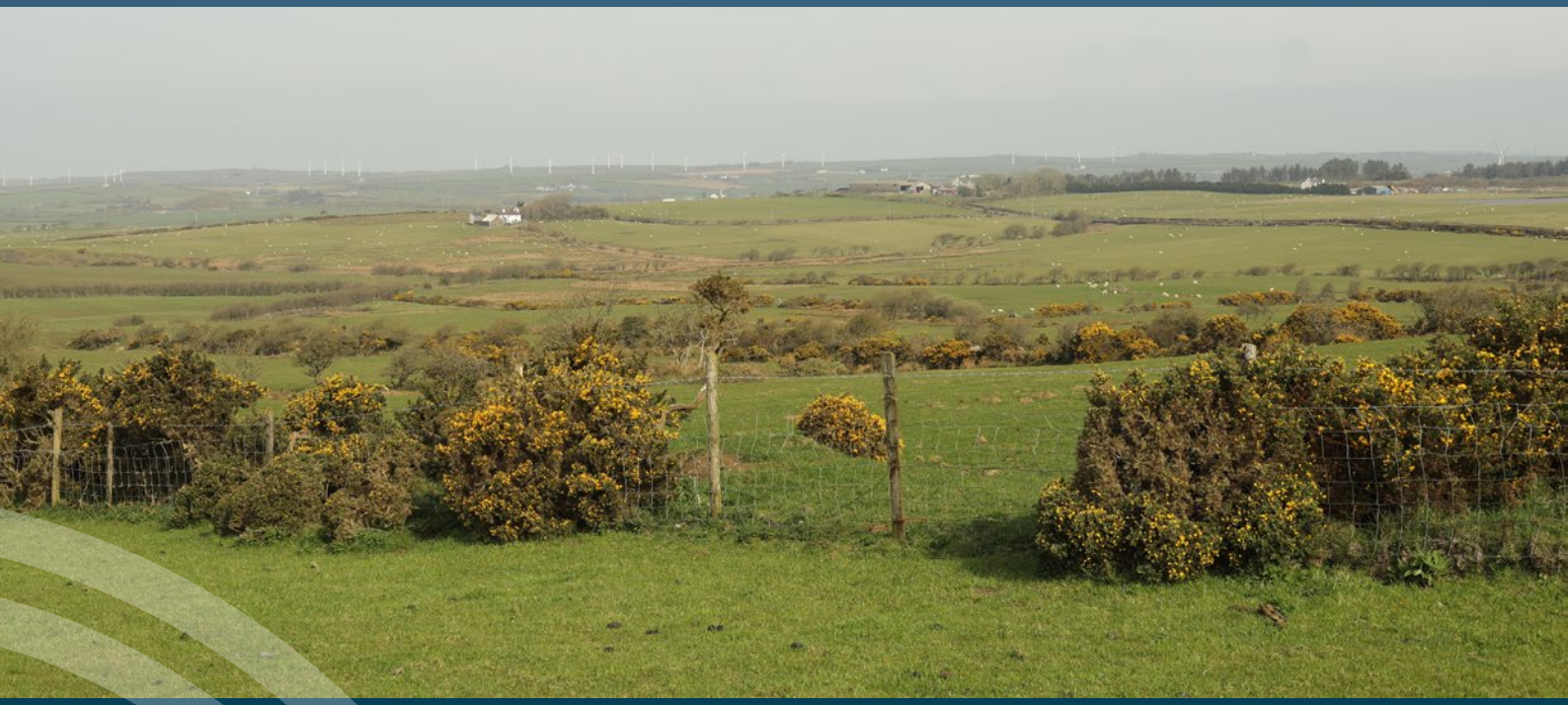
Environmental Statement: Chapter 13 – Agricultural Land

Development of National Significance Pre-Application Consultation

Alaw Môn Solar Farm

Land west of the B5112, 415m south of Llyn Alaw, 500m east of Llantrisant and 1.5km west of Llannerch-y-Medd, Anglesey

October 2023



13 Agricultural Land

Introduction

13.1 This chapter of the ES assesses the likely significant effects of the Development on the environment with respect to Agricultural Land.

13.2 Specifically, this chapter addresses the inherent resources of agricultural land and soils, and the land management and operational effects of the Development on affected farm holdings.

13.3 A detailed Agricultural Land Classification ('ALC') of agricultural land at the Site was carried out by Askew Land & Soil Limited over five days between 19th and 23rd April 2021. This chapter should be read in conjunction with a detailed technical report '*Agricultural Land Classification: Alaw Mon, Anglesey*' (Askew Land & Soil Project C772_v2, dated 15th June 2021) (refer to Appendix 13.1). This covers a wider area than the Site.

13.4 The ALC survey and grading at the Site has been validated by the Welsh Government's Land Quality Advisory Service ('LQAS') as set out in Appendix 13.2.

13.5 The farm impacts were assessed by Kernon Countryside Consultants Ltd with interviews and site visits held between 29th November and 1st December 2021, and have been updated by telephone in October 2023.

Planning Policy Context

National Planning Policy

Future Wales - The National Plan 2040 (2021)i

13.6 Future Wales - The National Plan 2040 ('Future Wales') sets the direction for development in Wales to 2040. It has development plan status and sets out a strategy for addressing key national priorities through the planning system, including achieving decarbonisation, climate-resilience and achieving net zero. It constitutes the highest tier of the development plan in Wales and provides the policy context against which applications for Development of National Significance ('DNS') are determined.

13.7 Future Wales defines the "best and most versatile agricultural land" ('BMV') as that in Grades 1, 2 and 3a of the Agricultural Land Classification. The map on page 27 shows where across Wales land is predicted to be of BMV quality. Future Wales does not, however, set a policy on protection of agricultural land. Policy 17 identifies that large scale solar will not be permitted in National Parks or Areas of Outstanding Natural Beauty ('AONB'). Policy 18, specifically dealing with DNS, lists the 11 criteria against which DNS development will be assessed, but none of those include agricultural land.

Planning Policy Wales (2021)ii

13.8 National planning policy guidance on development involving agricultural land is set out in paragraphs 3.58 and 3.59 of Planning Policy Wales ('PPW') as follows:

> ***'3.58 Agricultural land of grades 1, 2 and 3a of the Agricultural Land Classification system (ALC) is the best and most versatile, and should be conserved as a finite resource for the future.'***
>
> ***'3.59 When considering the search sequence and in development plan policies and development management decisions considerable weight should be given to protecting such land from development, because of its special importance. Land in grades 1, 2 and 3a should only be developed if there is an overriding need for the development, and either previously developed land or land in lower agricultural grades is unavailable, or available lower grade land has an environmental value recognised by a landscape, wildlife, historic or archaeological designation which outweighs the agricultural considerations. If land in grades 1, 2 or 3a does***

> ***need to be developed, and there is a choice between sites of different grades, development should be directed to land of the lowest grade.'***

Technical Advice Notes

13.9 Planning policy regarding development involving agricultural land which is set out in PPW11 (see above) is supplemented by Technical Advice Note ('TAN') 6 'Planning for Sustainable Rural Communities' (July, 2010)[iii]. TAN6 provides advice on sustainable agriculture. Specific advice for development involving agricultural land is provided at Section 6.2 of TAN6. Paragraph 6.2.1 states that:

> ***'When preparing development plans and considering planning applications, planning authorities should consider the quality of agricultural land and other agricultural factors and seek to minimise any adverse effects on the environment.'***

Local Planning Policy

Anglesey and Gwynedd Joint Local Development Plan (2011 – 2026) (2017)[iv]

13.10 In the Anglesey and Gwynedd Joint Local Development Plan (2011 – 2026), policy PS5 "Sustainable Development" notes that all proposals should, inter alia, protect soil quality (criterion 7).

13.11 Policy PS6 "Alleviating and Adapting to the Effects of Climate Change" requires proposals to demonstrate that they have fully taken into account and responded to a list of criteria. Criterion 6 is *'safeguarding the best and most versatile agricultural land, promoting allotments, support opportunities for local food production and farming in order to reduce the area's contribution to food miles*.'

Guidance and Best Practice

13.12 On 1st March 2022, the Minister for Climate Change issued a letter to Chief Planning Officers regarding the use of BMV agricultural land. This referred to Future Wales, PPW and TAN 6 as referenced above. The letter noted that *'Should solar PV array applications on BMV agricultural land come before the Department for Climate Change, the Department will object to the loss of BMV agricultural land unless other significant material considerations outweigh the need to protect such land in accordance with Welsh Government policy and guidance outlined above*'.

13.13 This assessment has also taken into account the Institute of Environmental Management and Assessment ('IEMA') guidance document *'A New Perspective on Land and Soil in Environmental Impact Assessment*' (February 2022)[v] ('the IEMA Guidance'), Wales National Application Annex to LA109 *'Geology and Soils*'[vi], and the Institute of Civil Engineering's (2020) *'Environmental Impact Assessment Handbook, Third Edition*.'[vii]

Assessment Methodology

Consultation

13.14 The chapter has been prepared in accordance with the requirements of the EIA Regulations and Planning Inspectorate Wales' ('PINS Wales') (now Planning and Environmental Decisions Wales ('PEDW')) adopted Scoping Direction (refer to Appendix 2.2 of the ES). The Scoping Direction stated *'It is agreed that the nature of the proposed development is such that effects on the land itself will be largely reversible. The intention to produce a standalone ALC Report is noted. However, given the size of the site, its agricultural classification, and the proposed 40 year lifespan of the development, it is considered that significant effects cannot be ruled out at this stage. Effects on agricultural land are therefore scoped in to the ES'*.

13.15 Consultation has taken place with Welsh Government in terms of validating the ALC (refer to Appendix 13.2).

Study Area

13.16 The study area for most of the assessment is the Site. For the farm business effects, the assessment covers other land farmed beyond the boundaries of the Site, but this does not need to be recorded on a plan.

Assessment of Significance

13.17 The assessment of the significance of the effects from the Development has been assessed for agricultural land and soils, and for occupying farm businesses, for both its construction and operational phases. The long-term effects including after the decommissioning phase have also been assessed.

13.18 The significance of the effect has been assessed based on the magnitude of the impact, and the sensitivity of the receptor. The assessments are based on the following magnitude and sensitivity criteria. These have taken account of the IEMA Guidance (2022)[v], Wales National Application Annex to LA109 *'Geology and Soils'*[vi], and the Institute of Civil Engineering's (2020) *'Environmental Impact Assessment Handbook, Third Edition*. These criteria have been developed further to reflect local circumstances, and land business impacts have been incorporated into the tables below.

13.19 Table 13.1 below sets out the criteria for assessing the magnitude of the impacts from the Development that have been applied to the assessment.

Table 13.1. Criteria for Assessing Magnitude of Impact on Agricultural Receptors

Magnitude of Effect	Definition	
	Effects on Agricultural Land (soils)	**Effects on Farm Businesses (agricultural businesses)**
Major	The Development would directly lead to the loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of over 20 hectares ('ha') of soil-related features; or potential for improvement in one or more soil functions over an area of more than 20 ha.	The impact of the Development would render a full-time agricultural business non-viable.
Moderate	The Development would directly lead to the loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of between 5 ha and 20 ha of soil-related features; or potential for improvement in one or more soil functions over an area of between 5 ha and 20 ha.	The impact of the Development would require significant changes in the day-to-day management of a full-time agricultural business, or closure of a part-time agricultural business. Loss of buildings or impacts on drainage or water supplies affecting the potential for at least 5 ha of adjacent land to be farmed fully.
Minor	The Development would directly lead to loss (including permanent sealing or land quality downgrading) of one or more soil functions or soil volumes over an area of less than 5 ha of soil-related functions; or potential for improvement in one or more soil functions over an area of less than 5 ha.	Land take would require only minor changes in the day-to-day management/structure of a full-time agricultural business or land take would have a significant effect on a part-time business. Minor effects, direct or indirect, on surrounding land beyond the boundary of the Site.
Negligible	No discernible loss or reduction or improvement of soil functions or volumes.	Land take would require only negligible changes in the day-to-day management of a full-time agricultural business or land take would require only minor changes to a part-time farm business.

13.20 Under the IEMA Guidance, land in Grades 1, 2 and 3a is defined as "very high" sensitivity. Land of Subgrade 3b is defined as "moderate" sensitivity. That leaves the table unpopulated for "high" sensitivity.

13.21 Of the order of 19% of agricultural land in Wales is of BMV quality, based on the predictive ALC maps.

13.22 The assessment table has been designed so that all BMV land (high and very high) falls into one category, and that any losses of in excess of 5 ha of BMV would be a moderate adverse impact, which would be significant in EIA terms.

13.23 The matrix for determining the sensitivity of agricultural land and farm businesses is set out in Table 13.2 below.

Table 13.2: Matrix for Determining Sensitivity

Sensitivity	ALC/biomass production*	Sensitivity of topsoil and subsoil**	Agricultural businesses
High	Land of ALC Grades 1, 2 and 3a	High clay soils where the field capacity days ('FCD')*** is >150, or medium textured soils where the FCD is >225	-
Medium	Land of ALC Subgrade 3b	High clay soils where the FCD is <150, or medium textured soils where the FCD is <225	Full-time businesses, and farm businesses where the location of land is particularly important, such as dairy farms.
Low	Land of ALC Grades 4 and 5	Soils with a high sand fraction where the FCD is <225	Part-time farms or farms with low sensitivity to change, e.g. arable land held on short-term arrangements.
Negligible	Land of ALC Grades 4 and 5 with only indirect links	-	Agricultural land that is not farmed or does not form part of a farm business.

* IEMA Guidance Table 2
** IEMA Guidance Table 4. For the full list. refer to the IEMA Guidance Table 4
*** Field Capacity Days i.e. days when the soil is replete with water

13.24 The significance of the effect can then be assessed based on the magnitude and sensitivity, as set out in the matrix at Table 13.3. Effects can be beneficial, adverse or negligible.

Table 13.3: Matrix for Determining Significance

Sensitivity	Magnitude			
	Major	Moderate	Minor	Negligible
High	Major	Moderate	Minor	Negligible
Medium	Moderate	Minor	Minor	Negligible
Low	Minor	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Limitations and Assumptions

13.25 There are no limitations to the assessment of the Development's likely significant effects on agricultural land quality or on farm businesses. Land quality at the Site is mapped to the nearest 0.1ha, reflecting the ALC system.

13.26 Soil is regarded as a finite resource, as it forms slowly at the rate of approximately 1cm depth per 500 years. For the purposes of this assessment, it is assumed that the baseline soil resources identified on-Site as part of this assessment are unlikely to change significantly over the mid-term (i.e., to 2050) under natural conditions, where the land is undeveloped.

13.27 However, research has been undertaken by Cranfield University and ADAS to predict '*The Impact of climate change on the capability of land for agriculture as defined by the Agricultural Land Classification*'[viii]. In this research, 12 UKCP09 climate change scenarios were investigated, namely the medium, high and low emissions scenarios for 2020 (2010-2039), 2030 (2020-2049), 2050 (2040-2069) and 2080 (2070-2099) time periods. The report concludes, *inter alia*, that:

> ***'Climate change is likely to have an impact on arable production in the UK in the coming decades. While warmer temperatures and increased CO2 concentrations may result in improvements in wheat and potato yields; it is likely crops will suffer from adverse effects of climate change, especially related to water stress and crop heat stress. It is likely that the agricultural sector will have to adapt to the changing conditions, in order to stay profitable. It is currently unclear what the combined effect of environmental change, as well as any adaptations, will have on crop production.'***

13.28 Amongst the 'Potential Further Work' (Section 10), the report recommends, *inter alia*, that:

> ***'The ALC system should be reviewed using contemporary weather and crop yield statistics to determine the significance of the droughtiness factor in the grading of agricultural land in England and Wales. The analyses presented in this report do suggest that some arable areas in lowland England are likely to suffer from increased droughtiness which would significantly reduce the yields of cereal crops. Under current conditions this deficiency could not be alleviated by management techniques (e.g., the areas are in regions where water supply is limited for irrigation). This is an important issue which needs to be addressed in the near future.'***

13.29 Most of the significant effects of climate change occur in the longer term, i.e., 2080 time period, when areas of the UK are likely to experience similar climatic conditions to those in present-day Mainland Europe. Therefore, for the purposes of this assessment, it is assumed that the baseline ALC grades determined on-Site as part of this assessment are unlikely to change significantly over the mid-term (i.e., to 2050 to 2080) under natural conditions.

13.30 For the purposes of this assessment, the Development is assessed as being 'reversible'. The Development has a modelled operational lifespan of up to 40 years and its equipment will be removed from the Site at the end of its operational lifespan. Following the Development's decommissioning, the quality and quantity of agricultural land will not change from the current baseline conditions summarised in Table 13.4.

13.31 It is also assumed that the decommissioning phase can be carried out without any significant damage to soil, and without any adverse effect on the agricultural land quality grade. Consequently, other than any areas identified within this assessment as permanently affected, the land quality under the areas covered by the solar photovoltaic ('PV') panels is assumed to remain of the same ALC grade as has been identified in the baseline conditions assessment.

13.32 It is assumed that it will not be possible to graze larger agricultural animals such as cattle around the solar PV panels, but that it will be possible to use the panel areas for the grazing of sheep.

Baseline Conditions

Agricultural Land Quality

13.33 A detailed ALC survey of the Site, including relevant information on climate, site (gradient, micro-relief, flooding), geology and soils, is provided at Appendix 13.1. A summary of its main findings is set out below.

13.34 An assessment of agricultural land quality, involving a desktop study and a detailed ALC field survey, has been undertaken to determine the quality of agricultural land within an approximately 300ha survey area, which is a slightly larger overall area than the Site, which extends to 268.77ha. The assessment is made in accordance with the ALC system for England and Wales. The Site is located to the west of Llanerchymedd. The approximate centre of the Site is located at National Grid Reference ('NGR') reference SH 38530 84028. The location and boundary of the Site is shown on Figure 1.1 of the ES.

13.35 British Geological Survey ('BGS') information (1:50,000) indicates that land at the Site is underlain entirely by Ordovician Rocks, comprising interbedded mudstone, sandstone and conglomerate. Most of the bedrock has a superficial covering of glacial till (Devensian, diamicton), with smaller regions of Alluvium

(clay, silt, sand and gravel) in the west. Parts of the Site are not covered by any superficial deposits and here the soil is developed directly from the Ordovician rocks.

13.36 The National Soil Map for Wales held by the National Soil Resources Institute ('NSRI') at Cranfield University shows that land at the Site is covered by soils grouped mainly in the Cegin Association (713d). A small area of land around higher, sloping ground to the north of Carmel in the south of the survey area is covered by soils grouped in the East Keswick association (541x). Land within the northwest of the Site is mapped as containing peaty soils belonging to the Crowdy 2 Association (1031b).

13.37 As shown in Figure 13.1, the Welsh Government's Predictive ALC map[ix] of Anglesey shows there is a predominance of Subgrade 3a agricultural land in the central-northern part of the island around Llyn Alaw, with a high proportion of Grade 2 agricultural land in the centre of Anglesey, between Llanefni and Llyn Alaw. Therefore, the presence of mainly Subgrade 3a and some Grade 2 agricultural land at the Site is expected, as there is a high likelihood of encountering these grades of land on the Isle of Anglesey.

13.38 For the Isle of Anglesey, the predictive proportion of ALC grades from this map is set out in Table 13.4. This shows that 53.2% of agricultural land in Anglesey is predicted to be of BMV quality.

Table 13.4: Proportion of Land Grades in Anglesey

ALC Grade	Description	Area (ha)	Proportion of All Land in Anglesey (%)	Proportion of the Agricultural Land Present in Anglesey (%) (65,088ha)
1	Excellent	0	0.0	0.0
2	Very Good	18,478	26.0	28.4
3a	Good	16,137	22.7	24.8
3b	Moderate	22,317	31.4	34.3
4	Poor	2,240	3.1	3.4
5	Very Poor	5,916	8.3	9.1
NA	Non-agricultural	3,708	5.2	-
Urban	Urban	2,388	3.4	-
Total		71,184	100.1[1]	100

[1] This is a true representation of the published statistic, presumably due to rounding

13.39 The predictive ALC map shows the Site as mostly containing Subgrade 3a agricultural land with areas of Grade 2 agricultural land, as shown on the extract at Figure 13.2.

13.40 The detailed ALC survey was carried out in April 2021, using the MAFF methodology. This covered a slightly larger area overall than is now included within the Site, but it did not include the land within the adopted highway of local roads for the underground cabling route to the National Grid Substation at Wylfa, which comprises part of the Site. The detailed results are set out in Appendix 13.1. The detailed survey determined that approximately half of the area surveyed (45.5% of the area) is classified as Subgrade 3a agricultural land. Approximately one-third (32.6% of the area) of the area surveyed is classified as Subgrade 3b agricultural land. There are smaller proportions of Grade 2 (13.7% of the area) and Grade 4 (2.4% of the area) agricultural land also present.

13.41 The land within the Site within the adopted highway of local roads for the underground cabling route to the National Grid Substation at Wylfa comprises mostly verges and is classified as non-agricultural land. There are also small areas of non-agricultural land within the rest of the Site, as shown on the plan in Appendix 13.1. The ALC results are as shown below.

Table 13.5: Agricultural Land Classification of Land within the Site

ALC Grade/Sensitivity of Receptor	Total Area Identified in Survey (Ha)	Total (% of the Site)
Grade 1 (Excellent) – Very High Sensitivity	0	0
Grade 2 (Very Good) – Very High Sensitivity	36.7	13.7%
Subgrade 3a (Good) – High Sensitivity	122.3	45.5%
Subgrade 3b (Moderate) – Medium Sensitivity	87.5	32.6%
Grade 4 (Poor) – Low Sensitivity	6.5	2.4%
Grade 5 (Very Poor) low Sensitivity	0	0
Other Land / Disturbed Land	7.2	2.7%
Grid Corridor (consisting of non-agricultural/temporary reversible)	8.6	3.2%
Total	268.8	100

13.42 Grade 2 agricultural land (high sensitivity) is limited by (i) an overall climate limitation, (ii) exposure to wind in the western parts of the Site, and by (iii) soil wetness where well drained soil profiles (Wetness Class) have medium clay loam or medium silty clay loam topsoils. This grade of land generally occurs at higher elevations in the western, southern and eastern parts of the Site.

13.43 Subgrade 3a agricultural land (high sensitivity) is limited by soil wetness, where soil profiles with medium clay loam or medium silty clay loam topsoils are slightly seasonally waterlogged (Wetness Class II) or seasonally waterlogged (Wetness Class III). This grade of land generally occurs on upper and middle slopes across the Solar PV Site.

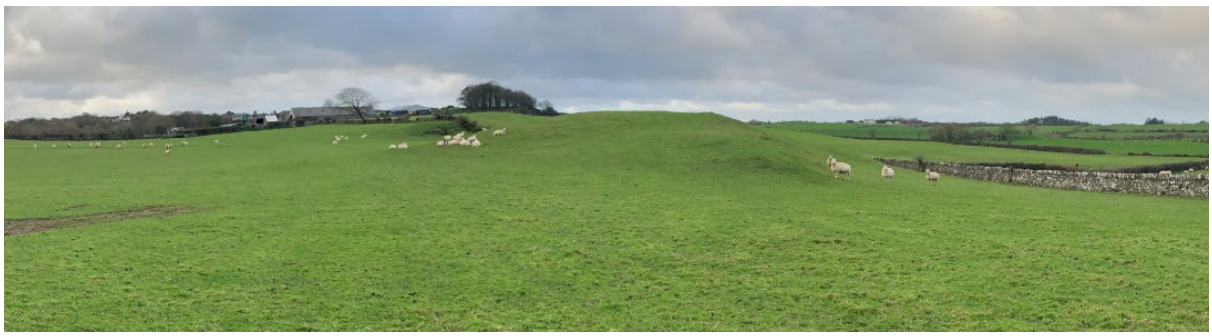
13.44 Subgrade 3b agricultural land (medium sensitivity) is limited by (i) slopes with gradients between 7° and 11°, and (ii) soil wetness, where soil profiles with medium clay loam or medium silty clay loam topsoils are slowly permeable and seasonally waterlogged for long periods over the winter (Wetness Class IV). This grade of land tends to occur at the base of slopes and in the bottom of valleys. It is readily identified on the Site by the presence of many soft rushes in the grassland.

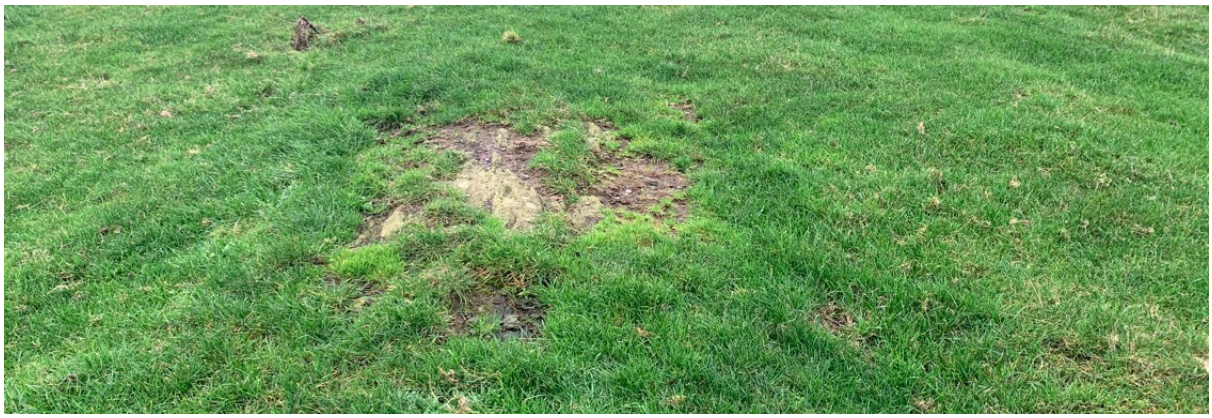
13.45 Grade 4 agricultural land (low sensitivity) is limited by (i) soil wetness in the western end of the Site, where there are some soil profiles with heavy silty clay loam topsoil in Wetness Class IV, and (ii) by slopes with gradients between 11° and 18° in the south-western part of the Site.

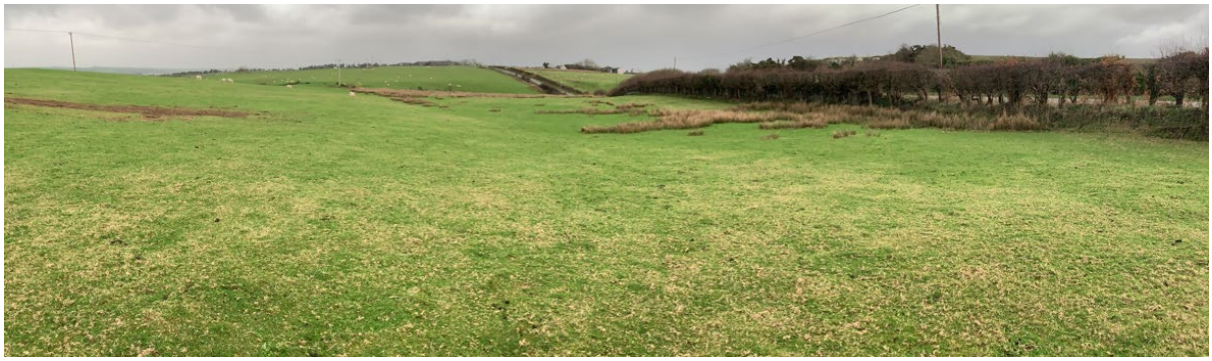
13.46 The distribution of land quality across the Site is shown on the plan in Appendix 13.1.

13.47 The terrain, despite the ALC grade, is suited to grassland and grazing rather than to arable production. Rock outcrops, rocks close to the surface, steep slopes and small gateways all provide challenges to mechanical activity, such as the examples below shown in photographs 1 to 4.

Photographs 1 – 4: Difficult Terrain and Surface Rocks







13.48 Many fields have a variety of land classifications within each field, reflecting limitations. There are many areas where surface rocks will significantly limit mechanical use.

Farm Businesses

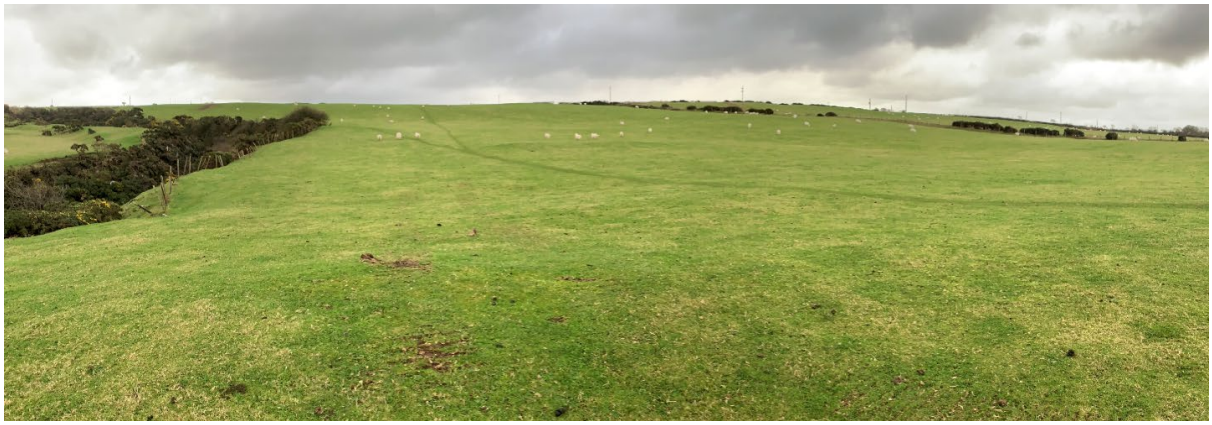
13.49 There are four farm businesses farming land within the Site.

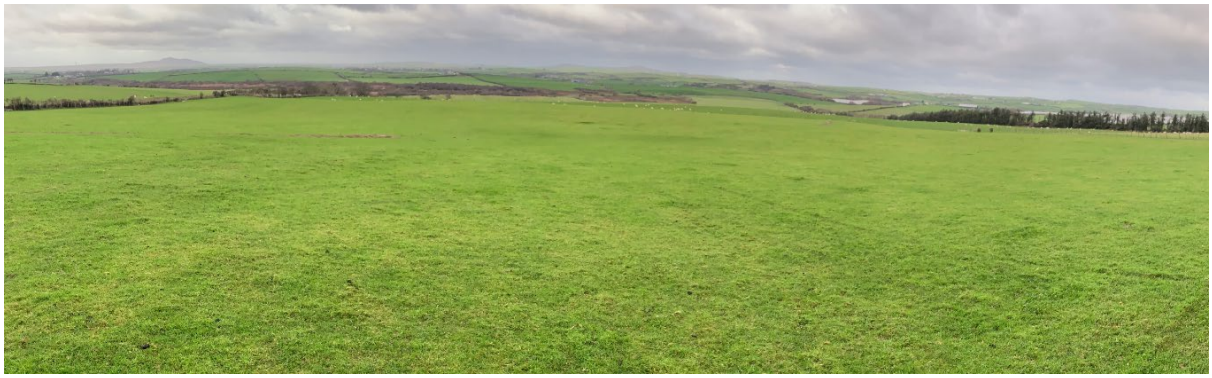
Nantannog

13.50 Nantannog was a dairy farm in the 1950s and 1960s, but dairy farming ceased in 1965. The farm has, since then, been a livestock holding. The farm extends to approximately 197ha. Since 2000, the land has been let on short-term arrangements to other farmers, and is used for silage and grazing livestock. The farmhouse has fallen into disrepair, as have the traditional buildings, and it is intended that income from the solar PV panels could be used for their restoration. The large agricultural building is still in agricultural use in connection with the grazier's agricultural activities.

13.51 Photographs (5 and 6) of this farm are shown below.

Photographs 5 and 6: Nantannog



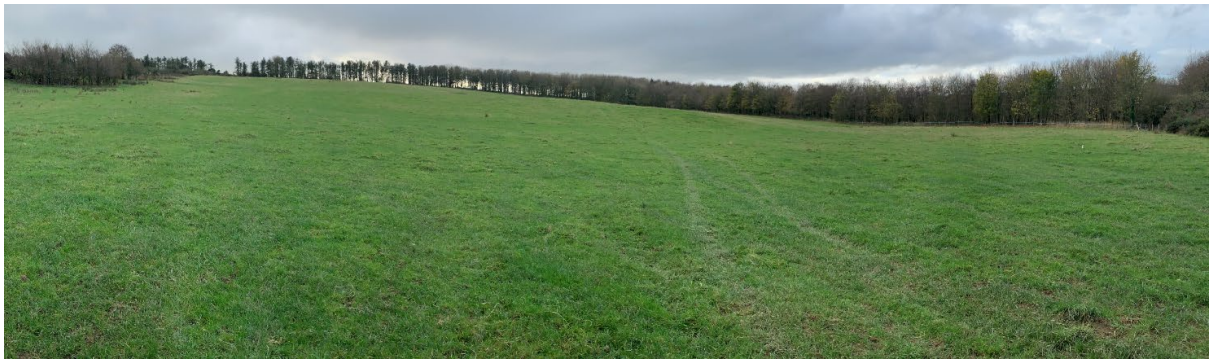


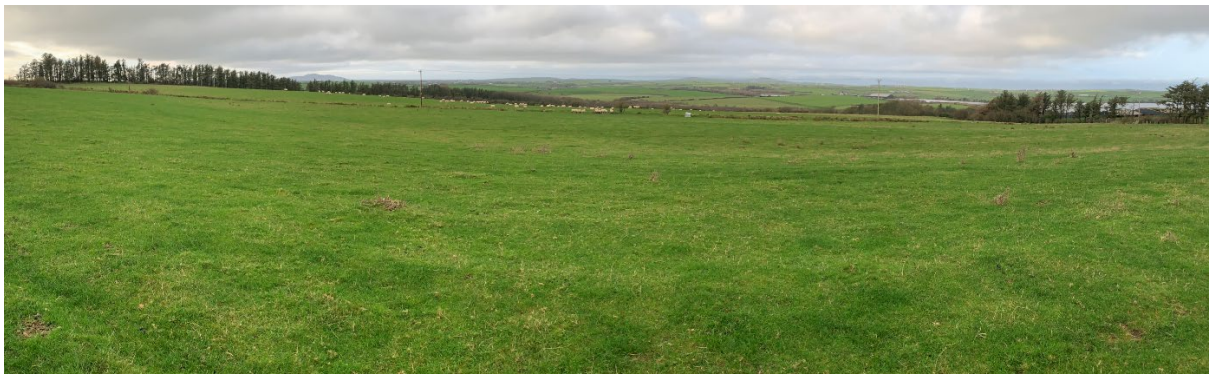
Chwaen Goch

13.52 The principal holding extends to 152ha, and the farm rents a further 144ha in three parcels. The farm is run by two generations of the same family. The normal stocking involves about 100 suckler cows, with offspring in-wintered at the different holdings and offspring finished in the spring. There are about 300-350 head of cattle. The farm normally runs a breeding flock of about 400 breeding ewes, finishing most at grass, although numbers are currently down for non-farming reasons. In some years, 15ha of arable crops are grown, principally for the straw, but the arable land is not within the Site.

13.53 Photographs (7 and 8) of this farm are shown below.

Photos 7 and 8: Chwaen Goch



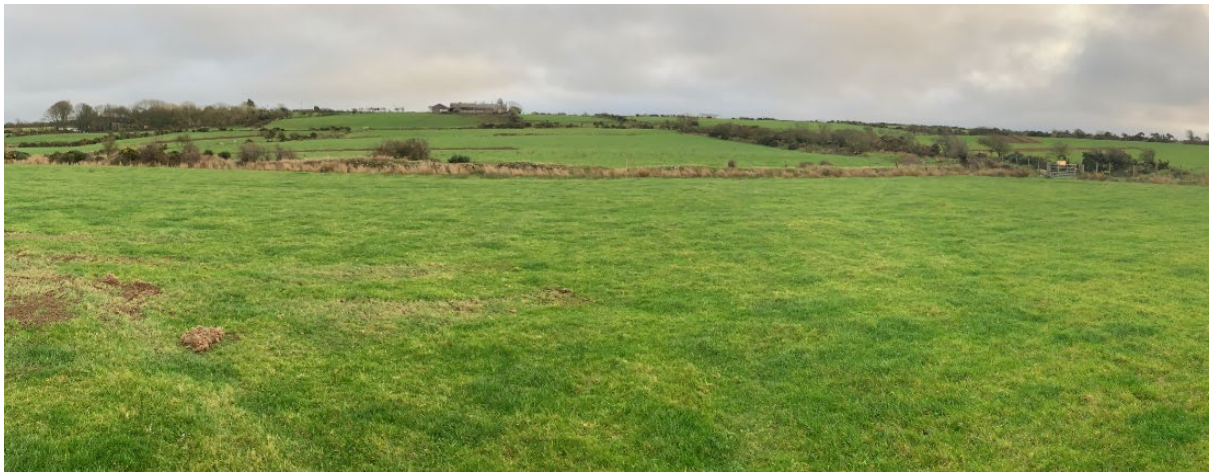


Tan Rallt

13.54 Tan Rallt is a small farm of approximately 36ha in area. The farm is run on an extensive-stocking agreement, and is let for summer mowing or grazing. The farm buildings are now used only infrequently.

13.55 Parts of Tan Ralt are shown in photograph 9 below.

Photo 9: Tan Ralt

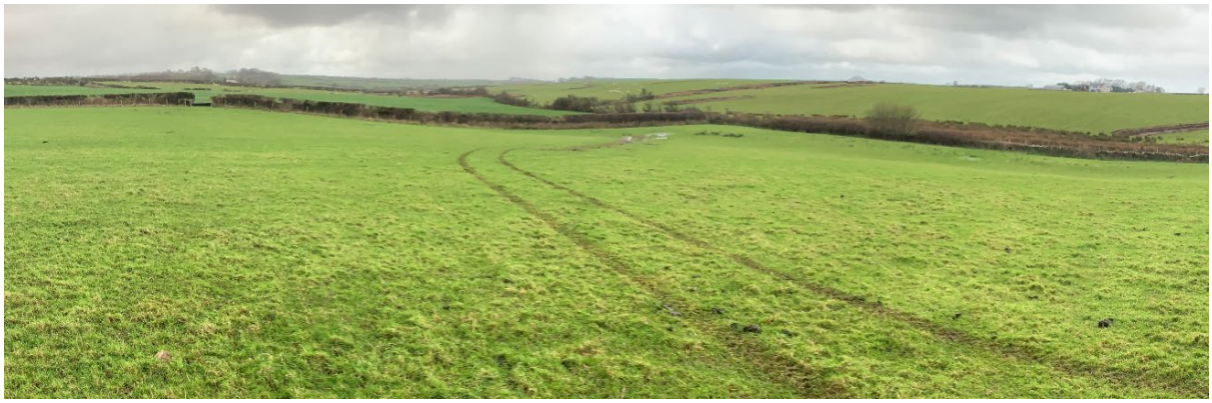


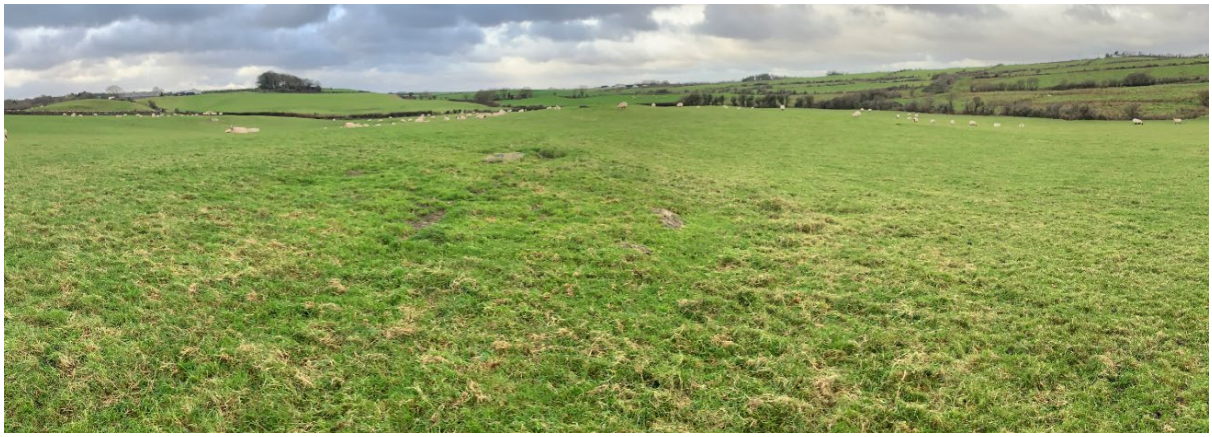
Chwaen Bach

13.56 Chwaen Bach is a grassland holding of 78ha, with a further 16ha rented. The farm runs a breeding flock of usually 600-650 crossbred ewes, finishing most lambs. Lambing takes place indoors. A small number of calves or store cattle are often reared, depending upon the market at the time. Part of the farm is used for the production of silage, and (if weather permits) some hay.

13.57 Parts of this farm are shown in photographs 10 and 11 below.

Photographs 10 and 11: Chwaen Bach





Future Baseline

13.58 The future baseline conditions at the Site are not expected to change from the existing baseline conditions.

Likely Significant Effects

Construction Phase

13.59 The key to minimising damage to soils, and potentially adversely affecting the agricultural land quality, lies in timing of work on the land. It is important that soils are not moved, and that vehicular activity across soils, does not take place when the soils are replete with water, as they can result in structural damage which will be difficult to rectify easily once the solar PV panels are in position.

13.60 It is assumed for this assessment that:

- good working practices are implemented which will ensure that soil structure is not damaged as a result of trafficking or trenching works;
- good working practices will mean that disturbance to the soil profile is limited only to those areas where trenching for cabling is needed, and they will be replaced in the order they were removed, such that even localised works do not affect agricultural land quality;
- access to all farmed areas not within the Site are maintained throughout the construction period.

13.61 Construction work at the Site will result in the temporary suspension of the agricultural management of the land, and forms the start of a period of altered agricultural use or practices for the occupying farms. Three of these are full-time units (albeit forming part of large farms in two cases).

Agricultural Land

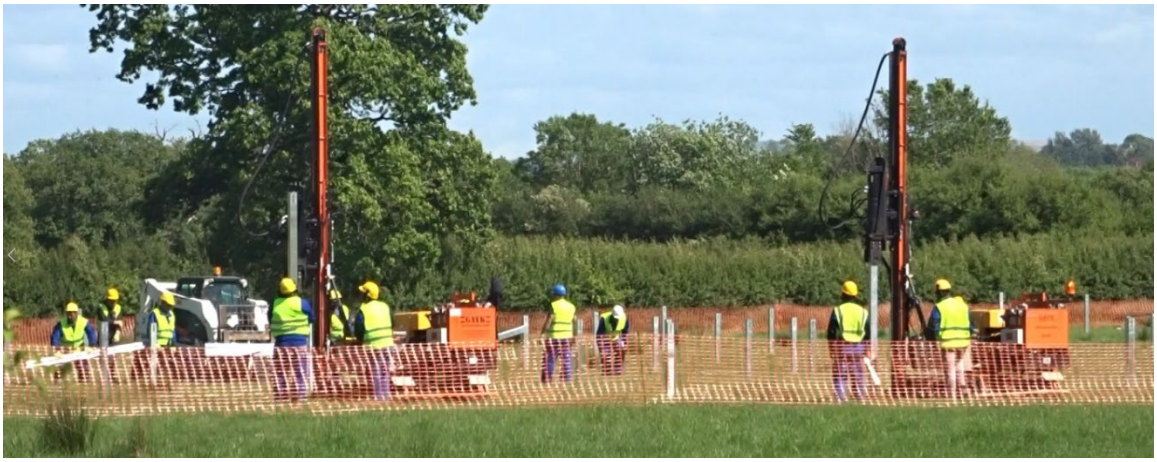
13.62 The construction effects on agricultural land are generally low. Construction activities will only take place over agricultural land when the conditions of the soils are suitable. The installation of the panel legs, pneumatically inserted, does not disturb the underlying profile or properties of the soil.

13.63 The first stage is the marking out of the Site. This is done on foot, inserting marker flags. This does not disturb the land.

13.64 The panel legs are then delivered, usually by a tractor and trailer, and lifted off by hand or with a small loadall.

13.65 The next stage is to install the legs. There is a potential impact from trafficking associated with the delivery of materials and their distribution around the Site. The delivery and distribution vehicles are often smaller than typical agricultural vehicles, as shown below. These cause minimal damage when ground conditions are suitable. The legs are knocked in with small machines, often taking less than a minute to insert each leg. This is a swift process, with small and lightweight machinery, and is usually not disruptive to the soils.

Photograph 12: Example of Legs Being Delivered and Installed



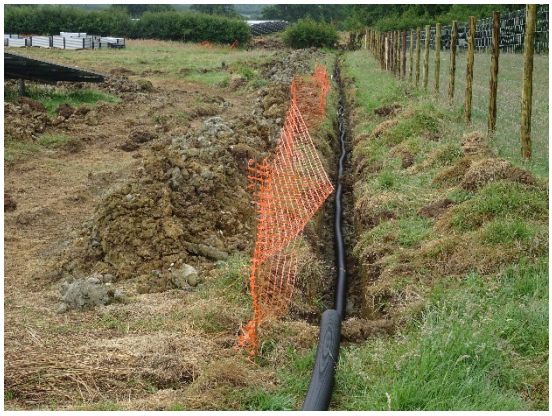
13.66 Installed when the soil is dry, the installation of the solar PV panels should similarly have a minimal impact on soils, as per the example below.

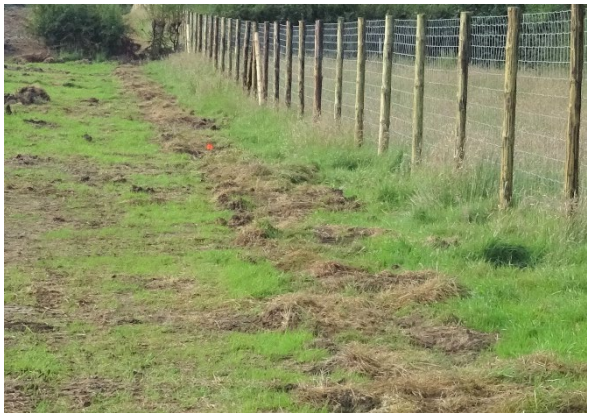
Photograph 13: Example of Minimal Damage After Panel Installation

13.67 Construction trenches to bury cables within the Site will involve digging out the soil to a suitable depth to bury cables. This would be a similar process to that involved in installing a new waterpipe around a farm.

An open trench, with subsoil to one side and topsoil to the other, is shown below when the trench is open and subsequently when the trench has been restored. This results in no long-term disturbance to the soil profile, and does not affect the ALC grade.

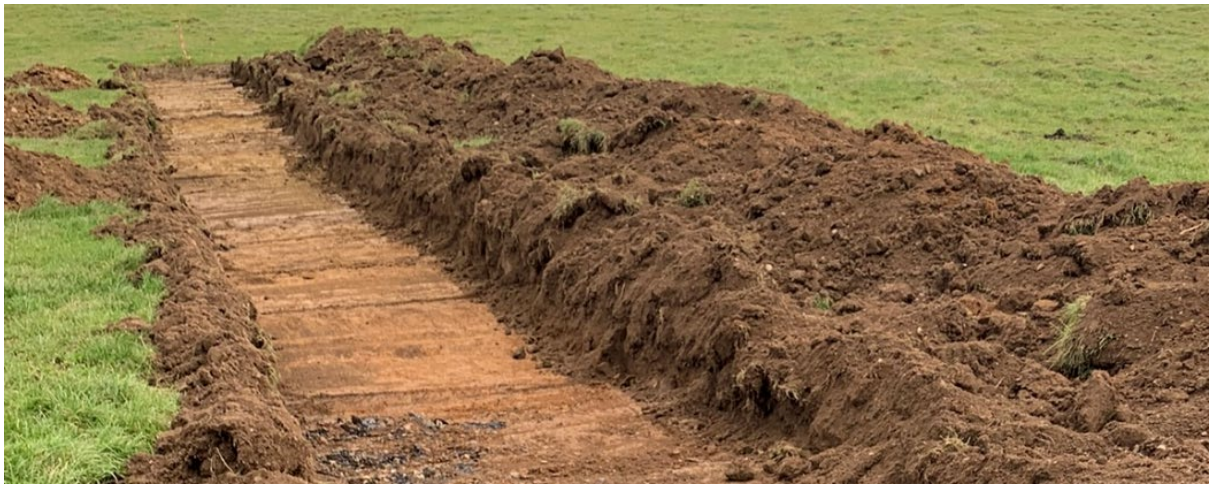
Photographs 14 and 15: Example of Cabling Being Installed





13.68 A photograph (16) showing the colour difference between topsoil and subsoil, taken during archaeological investigation at the Site, is shown below.

Photograph 16: Topsoil and Subsoil



13.69 There will be modest areas where construction compounds need to be erected. These will result in a construction-phase disturbance to soils, but the areas will be capable of full restoration, and to the same ALC grade.

13.70 Tracks will need to be constructed around the Site. The construction process will involve removing the topsoil, which will be stored near to the track from where the soil was removed, in low, managed bunds so that the soil can be replaced on decommissioning. These areas will be fully restorable to comparable ALC grade, and are not therefore permanently sealed over or downgraded.

13.71 There will be inverters and storage containers as part of the Development. These will normally stand on a stone base, which is stripped beforehand in the same way as the tracks, and which will be fully restored on decommissioning.

13.72 A substation and battery energy storage system ('BESS') area is proposed near the centre of the Site. This is proposed on land classified as Subgrade 3b. The topsoil will be stripped and stored in managed bunds not exceeding 3-4m in height, which will be shaped and sown to grassland. The vegetation will be managed at least once per annum by mechanical means. This area will be restored on decommissioning.

13.73 The underground cable connecting the Development to the National Grid Substation at Wylfa will be within the adopted highway of local roads (within the road or roadside verges) and will not affect agricultural land.

13.74 The construction will require the use of the following areas of land for tracks, inverters, substation/battery storage etc, by ALC grade as set out in Table 13.6.

Table 13.6: Area in ha used for Tracks, Inverters and Substation

ALC Grade	Area in ha (rounded nearest 0.1ha)		
	Tracks	Inverters/Containers	Substation and BESS
2	0.3	0	0
3a	1.4	0.1	0
3b	1.0	0.1	1.5
4	0	0	0
Total	2.7	0.2	1.5

13.75 The construction will, therefore, affect 1.8ha of land of Grades 2 and 3a, which is BMV agricultural land. This will, temporarily, involve the disturbance of a minor magnitude impact on a resource of high sensitivity, which will result in an effect of minor adverse significance (refer to Table 13.3). This is not significant.

13.76 The effect of tracks and transformer bases will be reversed at the decommissioning phase, and the land will be restored to its current ALC grade. There will, therefore, be no long term loss or permanent downgrading of this land, and the construction phase effect will reduce to a negligible effect for those areas, which is not significant.

Agricultural Businesses

13.77 Farm businesses will need to adjust the scale, and to a limited extent also the nature, of their farming enterprises. This will be a temporary impact during the construction phase.

13.78 The enterprises affected are all beef and sheep breeding enterprises, and two of the units are let to others. In all cases, the grazing livestock enterprises are not area-sensitive, and so could be moved to alternative grazing, or their winter supplementary fodder could be produced on other land, without any significant effect on the enterprise. As such, the enterprises are full or part-time and of medium or low sensitivity.

13.79 The effects on farm businesses during the construction phase of the Development are assessed as follows.

- all the effects are considered to be of moderate or minor magnitude;
- the businesses are full or part-time, and so of medium or low sensitivity;
- leading to effects that are minor adverse or negligible, which is not significant.

Operational Phase

Agricultural Land

13.80 The construction phase will not have adversely affected the underlying quality of the land or its ALC grade. There will be no additional adverse effect on the soil resource, or the ALC grade, during the operational phase. The area around the solar PV panels will be managed, by grazing or mowing or a combination of the two, and the soil will not be adversely affected.

13.81 Consequently, the effect is the potential reduced income from a different form or intensity of agricultural use. It is not an adverse effect on agricultural land of BMV or poorer quality, as the land is not adversely affected.

13.82 Evidence suggests that reducing the intensity of management, such as grassland under solar PV arrays, has substantial benefits in terms of long-term soil structure and storage of organic carbon.

13.83 The long-term low-intensity use of the land will therefore have modest benefits for soil structure and carbon capture, for the majority of the areas within the Site.

13.84 The BESS Facility compound area to the west of Nantannog is proposed. This will involve the irreversible development of approximately 1.5ha of Subgrade 3b agricultural land.

13.85 Whilst the BESS Facility compound area will be removed after 40 years, the cut and fill earthworks will remain. This will therefore be a permanent adverse impact. This will be a minor magnitude of loss (less than 5ha) on a resource of medium sensitivity, leading to a minor adverse significant effect, which is not significant.

13.86 The Development will involve the use of agricultural land, being the areas affected by the fixed infrastructure, in different ALC grades as follows. Those will go from sheep grazing to a mix of solar energy and sheep grazing.

Table 13.7: Area of Agricultural Land under Solar Panels and Other Infrastructure

ALC Grade/Sensitivity of Receptor	Total (Ha)	Total (% of the Site)
Grade 1 (Excellent) – Very High Sensitivity	0	0
Grade 2 (Very Good) – Very High Sensitivity	36.7	14.5
Subgrade 3a (Good) – High Sensitivity	122.3	48.3
Subgrade 3b (Moderate) – Medium Sensitivity	87.5	34.6
Grade 4 (Poor) – Low Sensitivity	6.5	2.6
Grade 5 (Very Poor) low Sensitivity	0	0
Total	253	100

13.87 The land within the Site (excluding the land within the adopted highway of local roads for the cable route) is currently all grassland, and mostly grazed by sheep. For the duration of the Development's operational phase, the land will remain grassland and mostly grazed by sheep. There will be no significant change in land use, and therefore the effect will be negligible, which is not significant.

Farm Businesses

13.88 The impacts on farm businesses will be a mix of adverse and beneficial effects.

13.89 There will be a reduced income for the affected farmers as a consequence of a reduced stocking rate across the holdings. Conversely, the farm businesses will experience an enhanced income per hectare from the rental from the solar PV panels coupled with the potential continued agricultural income.

13.90 The farm businesses will be affected as follows.

Nantannog

13.91 The farm has been let to others, on short-term agreements, for over 20 years. The Development will not result in the cessation of any farm businesses. As the tenure of the tenants is non-secure, there will be a limited adverse effect on their business, which farms over a considerable area. They currently run large numbers of sheep over the holding, and this will be able to be continued. Accordingly, the impact is assessed as of minor magnitude on a full-time business, which is of medium sensitivity. Therefore, this is an effect of minor adverse significance.

13.92 Conversely, the additional rental income will enable the landowners to carry out repairs to the farm buildings and farmhouse, which will be a moderate or minor magnitude of impact on a farm business of medium sensitivity, which is an effect of minor beneficial significance. Overall, the effect is considered to be negligible, which is not significant.

Chwaen Goch

13.93 The Development will affect only part of the farm, which farms a total of 296ha in a number of parcels. As a result of the Development, it will no longer be possible to graze cattle within the Site, but the farm normally runs a substantial breeding flock of sheep, and the overall effect will be a minor magnitude impact on a farm of medium sensitivity, which will result in a minor adverse significance of effect.

13.94 The farm will, however, receive income from the solar PV panels and this will likely exceed the agricultural potential of the land. This will counter the adverse effect, and overall therefore, the effect on this holding will be negligible, which is not significant.

Tan Rallt

13.95 This small farm is let for grazing by other farmers, which can continue during the Development's operational phase. There will be an impact of minor magnitude on the occupying farm business (of medium sensitivity), coupled with the beneficial consequence of increased income. Overall, the effect is negligible, which is not significant.

Chwaen Bach

13.96 The farm runs a fairly substantial breeding flock of sheep. As a result of the operational phase of the Development, there will be a reduction in stock numbers, but this will be an impact of minor magnitude on a business of medium sensitivity, and accounting for the impact being balanced by enhanced income from the solar PV panels, an effect of negligible significance is anticipated, which is not significant.

Mitigation Measures

Agricultural Land

13.97 By following best practice set out in the CEMP and the Framework Soil Management Plan ('FSMP') (Appendix 13.3), there will be no requirement for additional mitigation measures other than those embedded in the Development.

Farm Businesses

13.98 Mitigation is embedded in the Development, and no additional mitigation measures are required.

Residual Effects

Construction Phase

13.99 With effective implementation of appropriate mitigation/best practice measures to safeguard the soil resources on the Site during the construction phase, it is predicted that the significance of the effect of the Development on agricultural land will be minor adverse, which is not significant, i.e., the impact on agricultural land is limited to 1.5ha of Subgrade 3b non-BMV agricultural land. This is not significant.

Operational Phase

13.100 There will be no further effect on soils or land quality during the operational phase. The four affected farm businesses will experience slight to moderate changes in their day-to-day operations, but these will result in minor adverse impacts. There will, conversely, be economic benefits and overall, the effects are considered negligible, which is not significant.

Cumulative Effects

13.101 The available information about agricultural land quality of the sites where the other schemes set out in Chapter 2 EIA Methodology of the ES are proposed is limited. Many of these sites contain no agricultural land.

13.102 Those schemes involving agricultural land are set out below.

Table 13.8: Cumulative Effects

Scheme	Land Quality Information (ha)	Source
Holyhead Waterfront Development	Non-agricultural.	Predictive ALC map.
Holyhead Waterfront Development	Grade 3b/non-agricultural.	Predictive ALC map.
Penrhos Leisure Village	The ALC for the development areas is understood to be Grade 4.	Report - Chapter 3: Site Description, report by Cranfield University.
Morlais Demonstration Zone	Grade 3b/4.	Predictive ALC map.
Port of Holyhead Expansion	Grade 3b.	Predictive ALC map.
Holyhead Great Breakwater Improvements	Non-agricultural.	Predictive ALC map.
Traffwll Solar Farm	6.1ha of Grade 2, 17.2ha of Subgrade 3a, 8ha of Subgrade 3b and 19.4ha of Grade 4.	KCC Assessment of Impact on Agricultural Land Report.
Mon Solar	Grade 2, 3a, 3b.	Predictive ALC map.
Porth Wen Solar Farm	Grade 3b.	Predictive ALC map.
Menter Morn, Parc Cybi, Holyhead	Grade 3b.	Predictive ALC map.
Awel Y Mor Offshore Wind Farm	Agriculture scoped out.	Scoping opinion from Awel y Mor Offshore Wind Farm
Mona Offshore Wind Farm	Non-agricultural.	Predictive ALC map.
Morgan Offshore Wind Farm	Non-agricultural.	Predictive ALC map.
Carrog, Cemaes	Grade 3b.	Predictive ALC map.
Potential New Nuclear Plant at Wylfa	Grade 2 and 3a.	Predictive ALC map.

13.103 As set out in Chapter 2 EIA Methodology, the Development is not anticipated to result in likely significant cumulative effects with other schemes. Therefore, no likely significant cumulative effects on soils and agricultural land are anticipated.

Decommissioning

Agricultural Land

13.104 The decommissioning phase should not adversely affect soil resources or agricultural land quality, but as with the construction phase that is dependent upon the works being carried out when the soil conditions are suitable. It is important that vehicles do not traffic the land when soil conditions are not suitable.

13.105 Overall, the decommissioning phase should, subject to compliance with appropriate / best practice, result in a negligible impact on soils and agricultural land quality. This is an effect of negligible magnitude on resources of medium or high sensitivity, which is a negligible effect and not significant.

Farm Businesses

13.106 The farm businesses will not be affected during decommissioning other than short-term loss of access to grazing areas. Post-decommissioning, the businesses will experience an overall slight adverse effect as a result of the cessation of the diversified form of income. The overall effect will be negligible on a resource of medium sensitivity, which is a negligible significance effect and not significant.

Summary

13.107 An assessment of agricultural land quality, involving a desktop study and a detailed ALC survey, has been undertaken to determine the quality of agricultural land at the Site. The assessment has been undertaken in accordance with the ALC system for England and Wales. The Site, which extends to approximately 268ha is located to the west of Llanerchymedd.

13.108 BGS information (1:50,000) indicates that the land at the Site is underlain entirely by Ordovician Rocks, comprising interbedded mudstone, sandstone and conglomerate. Most of the bedrock has a superficial covering of glacial till (Devensian, diamicton), with smaller regions of Alluvium (clay, silt, sand and gravel) in the west. Parts of the Site are not covered by any superficial deposits and here the soil is developed directly from the Ordovician rocks.

13.109 The National Soil Map for Wales held by the NSRI at Cranfield University shows that land at the Site is covered by soils grouped mainly in the Cegin Association (713d). A small area of land around higher, sloping ground to the north of Carmel in the south of the study area is covered by soils grouped in the East Keswick association (541x). Land within the northwest of the Site is mapped with peaty soils belonging to the Crowdy 2 Association (1031b).

13.110 A detailed ALC survey carried out in April 2021 has determined that approximately half of the land within the Site (122.3 ha or 45.5% of the Site area) is classified as Subgrade 3a agricultural land. Approximately one-third (87.5 ha or 32.6% of the Site area) of the land is classified as Subgrade 3b agricultural land. There are smaller proportions of Grade 2 (36.7 ha or 13.7% of the Site area) and Grade 4 (6.5 ha or 2.4% of the Site area) agricultural land within the Site. The remainder of the land is classified as non-agricultural, i.e., woodland, roads, buildings (7.2ha or 2.7% of the Site area). The land within the Site for the underground cabling route to the National Grid Substation at Wylfa is within the adopted highway of local roads and is mostly in verges and non-agricultural land.

13.111 With effective implementation of appropriate mitigation/best practice measures to safeguard the soil resources on the Site during construction, operation, and decommissioning, it is predicted the significance of the effect of the Development on agricultural land will be minor adverse, being limited to the permanent loss of 1.5ha of Subgrade 3b land, which is not significant, i.e., the quality and quantity of agricultural land will not change from the current baseline.

13.112 It is considered that the construction of the Development at the Site is reversible development, i.e., the solar PV panels will be removed following the operational life of the Development. This is consistent with national planning policy for conserving BMV agricultural land in Future Wales, Planning Policy Wales, Technical Advice Note 6, and Anglesey and Gwynedd Joint Local Development Plan (2011 – 2026).

13.113 None of the farm businesses are adversely affected to a significant extent, and will be beneficially affected by the diversified form of income.

13.114 Table 13.9 contains a summary of the likely significant effects of the Development.

Table 13.9: Table of Significance – Agricultural Land

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Beneficial/ Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	W	R	C	B	L	
Construction, Operational and Decommissioning Phases											
Effects on Grade 2 agricultural land (very high sensitivity)	Temporary/Reversible	Negligible (Not significant)	Implementation of sustainable use of soil on the Site as set out in CEMP and FSMP		X						Negligible (Not significant)
Effects on Subgrade 3a agricultural land (high sensitivity)	Temporary/Reversible	Negligible (Not significant)	Implementation of mitigation for sustainable use of soil on the Site in as set out in CEMP and FSMP		X						Negligible (Not significant)
Effects on Subgrade 3b agricultural land (medium sensitivity)	Temporary/Reversible but permanent over 1.5 ha	Minor Adverse (Not significant)	Implementation of mitigation for sustainable use of soil on the Site as set out in CEMP and FSMP		X						Minor adverse (Not significant)
Effects on Grade 4 agricultural land (low sensitivity)	Temporary/Reversible	Negligible (Not significant)	Implementation of mitigation for sustainable use of soil on the Site as set out in CEMP and FSMP		X						Negligible (Not significant)
Effects on full-time farm businesses	Temporary/Reversible	Negligible (Not significant)	None required							X	Negligible (Not significant)
Effects on part-time farm businesses	Temporary/Reversible	Negligible (Not significant)	None required							X	Negligible (Not significant)
Cumulative Effects											
No significant cumulative effects identified.											

* Geographical Level of Importance

I = International; UK = United Kingdom; W = Wales; R = Regional; C = County; B = Borough; L = Local

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