

# **XLINKS MORROCO-UK POWER PROJECT**

## **Preliminary Environmental Information Report**

**Volume 2, Appendix 8.1: Agricultural Land Classification**



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## Glossary

Term	Meaning
Agricultural Land Classification	Agricultural Land Classification is a grading system used to assess and compare the quality of agricultural land in England and Wales. ALC agricultural land is graded from 1, the highest quality land to 5, the lowest quality land.
Converter Site	The Converter Site is proposed to be located to the immediate west of the existing Alverdiscott Substation site in north Devon. The Converter Site would contain two converter stations (known as Bipole 1 and Bipole 2) and associated infrastructure, buildings and landscaping.
Environmental Impact Assessment	The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.
Onshore HVDC Cable Corridor	The proposed corridor within which the onshore High Voltage Direct Current cables would be located.
Preliminary Environmental Information Report	A report that provides preliminary environmental information in accordance with the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. This is information that enables consultees to understand the likely significant environmental effects of a project, and which helps to inform consultation responses.
Proposed Development	The element of the Xlinks Morocco-UK Power Project within the UK, which includes the offshore cables (from the UK Exclusive Economic Zone to landfall), landfall site, onshore Direct Current and Alternating Current cables, converter stations, road upgrade works and, based on current assumptions, the Alverdiscott Substation Connection Development.
Xlinks Morocco-UK Power Project	The overall scheme from Morocco to the national grid, including all onshore and offshore elements of the transmission network and the generation site in Morocco (referred to as the 'Project').

## Acronyms

Acronym	Meaning
ALC	Agricultural Land Classification
EIA	Environmental Impact Assessment
HVDC	High Voltage Direct Current
PEIR	Preliminary Environmental Information Report

Units	Meaning
cm	Centimetre

# 1 AGRICULTURAL LAND CLASSIFICATION

## 1.1 Introduction

- 1.1.1 This document forms Volume 2, Appendix 8.1 of the Preliminary Environmental Information Report (PEIR) prepared for the UK elements of the Xlinks Morocco-UK Power Project (referred to hereafter as ‘the Proposed Development’). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the Proposed Development.
- 1.1.2 This document provides the Summary of Soil Types and Auger Borings from surveys done for the Atlantic Array Offshore Wind Farm in 2013. As a result of the overlap of the survey area with the Onshore High Voltage Direct Current (HVDC) Cable Corridor and Converter Site, the results can provide an indicative idea of the soil types for the proposed Onshore HVDC Cable Corridor and Converter Site and the likely distribution of ALC grades. This data remains relevant as the survey work considers the physical characteristics of soil profiles that would still remain *in-situ* today, except where land may have been subject to permanent disturbance.

## 1.2 Summary of Soil Types and Auger Borings

- 1.2.1 The following tables provide the summary data from the Atlantic Array Offshore Wind Farm Surveys.

**Table 1.1: Atlantic Array Offshore Wind Farm survey results near Proposed Development Converter Site**

Converter Site		
Number	Soil Type	ALC Grade and Limitation
S1	Hallsworth	3b Wetness
S2	Hallsworth	3b Wetness
S3	Hallsworth	3b Wetness
S4	Hallsworth	3b Wetness
S5	Hallsworth	3b wetness
S6	Denbigh	3a Stone/depth
S7	Denbigh	3a stone/depth
S8	Denbigh(s)	3b stone/depth
S9	Denbigh(s)	3b stone/depth
S10	Denbigh(s)	3b stone/depth
S11	Denbigh(s)	3b stone/depth
S12	Denbigh(s)	3b stone/depth
S13	Denbigh	3a stone/depth
S14	Denbigh(s)	3b stone/depth
S15	Hallsworth	4 wetness
S16	Hallsworth	3b wetness
S17	Hallsworth	3b wetness

<b>Converter Site</b>		
<b>Number</b>	<b>Soil Type</b>	<b>ALC Grade and Limitation</b>
S18	Hallsworth	3b/4 wetness
S19	Denbigh	3a stone/wetness
S20	Denbigh	3a stone/depth
S21	Denbigh	3a stone/depth
S22	Denbigh(s)	3ab stone/depth
S23	Hallsworth	4 wetness
S24	Hallsworth	3b wetness
S25	Hallsworth	3b wetness
S26	Hallsworth	3b wetness
S27	Hallsworth	3b wetness
S28	Hallsworth	3b wetness
S29	Hallsworth	3b/4 wetness
S30	Hallsworth	4 wetness
S31	Hallsworth	4 wetness
S32	Hallsworth	3b wetness
S33	Hallsworth	3b wetness
S34	Hallsworth	4 wetness
S35	Hallsworth	4 wetness
S36	Denbigh	3a stone/depth
S37	Denbigh	3a stone/depth
S38	Denbigh	3a stone/depth
S38	Denbigh	3a stone/depth

**Table 1.2: Atlantic Array Offshore Wind Farm Auger Boring results West**

<b>Auger Boring Results West</b>		
<b>Auger Boring Number</b>	<b>Soil Type</b>	<b>ALC Grade and Limitation</b>
W1	Powys	3b depth/stone/slope
W2	Denbigh	3b slope
W3	Powys	3b slope
W4	Powys	3b stone
W5	Hallsworth	3b wetness
W5a,5b	Powys	3b depth/stone
W6	Powys	3b slope
W7	Powys	3b/4 slope
W8	Powys	3b slope/depth
W9	Powys	3b stone/depth
W10	Powys	3b stone/depth
W11	Powys	3b stone/depth
W12	Powys	3b stone/depth
W13	Powys	3a stone/depth
W14	Denbigh	3a depth

<b>Auger Boring Results West</b>		
<b>Auger Boring Number</b>	<b>Soil Type</b>	<b>ALC Grade and Limitation</b>
W15	Nercwys	3b wetness
W16	Powys	3a stone/depth
W17	Powys	3b stone/depth
W18	Neath(s)	3b stone/depth
W19	Powys	3b stone/depth/slope
W20	Powys	3b/4 slope
W21	Powys	3b depth
W22	Powys	3b stone/depth
W23	Powys	3a depth
W24	Powys	3a depth
W25	Powys	3b depth/stone
W26	Powys	3a depth/stone
W27	NON	AGRIC
W28	Neath	3a depth/stone
W29	Denbigh	3a depth/stone
W30	Denbigh	3a depth/stone
W31	Neath	2
W32	Powys	3a depth/stone
W33	Neath(s)	3a stone/depth
W34	Neath	2
W35	Neath	2
W36	Nercwys	3b wetness
W37	Neath(s)	3a stone/depth
W38	Nercwys	3a wetness
W39	Hallsworth	3b wetness
W40	Hallsworth	3b wetness
W41	Hallsworth	3b wetness
W42	Hallsworth	3b wetness
W43	Hallsworth	3b wetness
W44	Hallsworth	3b wetness
W45	Hallsworth	3b wetness
W46	Nercwys	3b wetness
W47	Hallsworth	3b wetness
W48	Hallsworth	3b wetness
W49	Hallsworth	3b wetness
W50	Hallsworth	3b wetness
W51	Hallsworth	3b wetness
W52	Neath	3a stone/depth
W53	Neath	3a stone/depth
W54	Hallsworth	3b wetness
W55	Neath(s)	3a stone/depth

<b>Auger Boring Results West</b>		
<b>Auger Boring Number</b>	<b>Soil Type</b>	<b>ALC Grade and Limitation</b>
W56	Neath(s)	3b stone/depth
W57	Neath(s)	3a stone/depth
W58	Neath(s)	3a stone/depth
W59	Neath(s)	3a stone/depth
W60	Neath(s)	3a stone/depth
W61	Neath(s)	3b depth
W62	Neath(s)	3b depth
W63	Neath(s)	3a stone/depth
W64	Neath(s)	3a stone/depth
W65	Neath(s)	3b stone/depth
W66	Neath	3a depth/stone
W67	Powys	3a depth/stone
W68	Neath	3a depth/stone
W69	Neath	3a stone/depth
W70	Neath	2 depth/stone
W71	Powys	3a depth/stone
W72	Denbigh	3a depth
W73	Neath(s)	3b stone/depth
W74	Nercwys	3a wetness
W75	Neath(s)	3b stone/depth
W76	Neath(s)	3a stone/depth
W77W	Neath(s)	3b depth/stone
W78	Neath	3a
W79	Neath(s)	3a stone/depth
W80	Neath(s)	3b stone/depth
W81	Neath(s)	3a stone/depth
W82	Neath	3a depth
W83	Neath	3a depth
W84	Neath	2
W85	Neath(s)	3b stone/depth
W86	Denbigh	3a stone
W87	Denbigh	2 depth/stone
W88	Denbigh	2
W89	Denbigh	2
W90	Neath(s)	3a depth
W91	Neath(s)	3a stone/depth
W92	Neath(s)	3a stone/depth
W93	Neath(s)	3a stone/depth
W94	Neath(s)	3a stone/depth
W95	Neath(s)	3a stone/depth
W96	Neath(s)	3a stone/depth

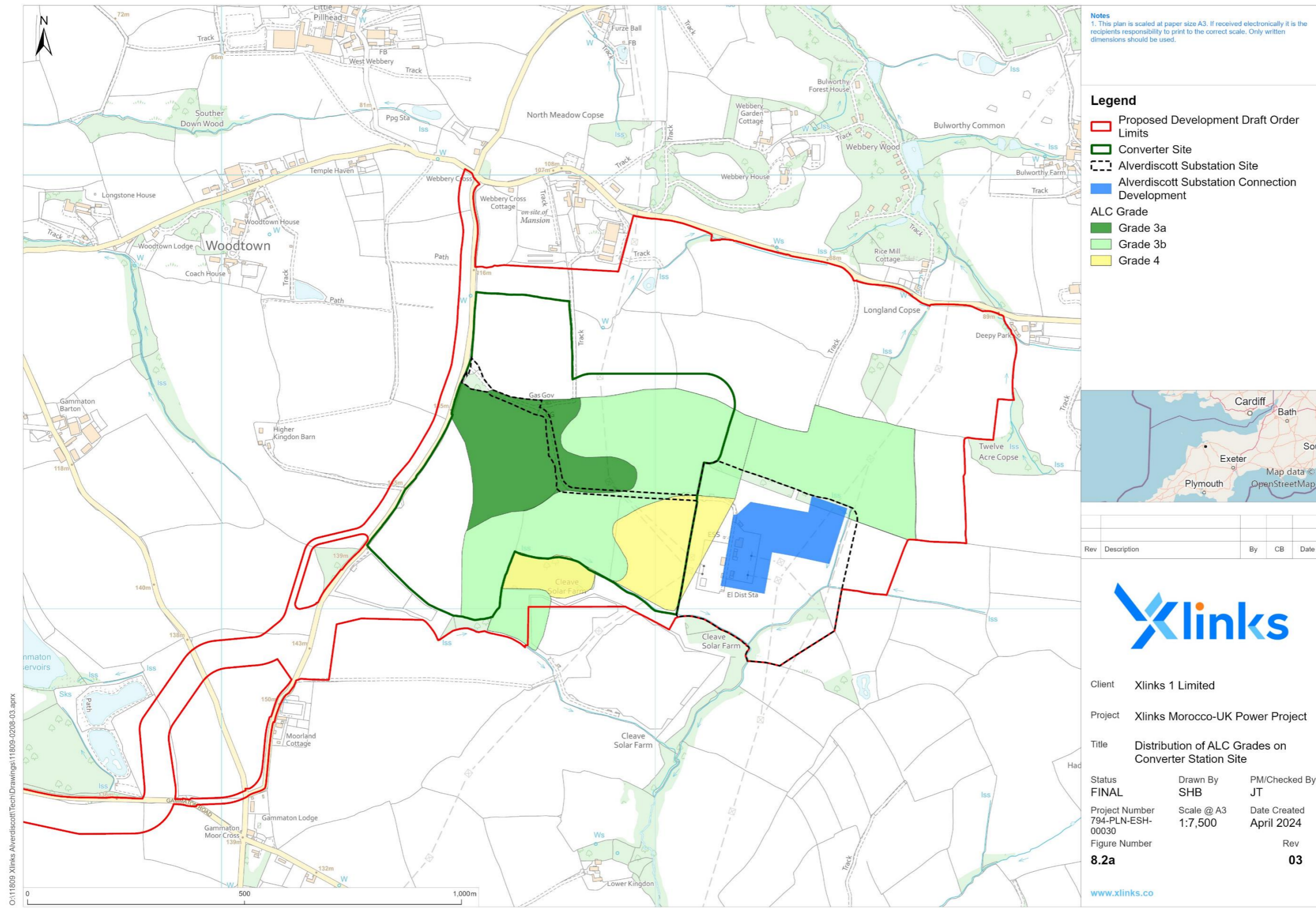
<b>Auger Boring Results West</b>		
<b>Auger Boring Number</b>	<b>Soil Type</b>	<b>ALC Grade and Limitation</b>
W97	Neath(s)	3a stone/depth
W98	Neath(s)	3b depth/stone
W99	Neath	(s) 3a
W100	Neath(s)	3a depth/stone
W101	Hallsworth	3b wetness
W102	Hallsworth	4 wetness
W103	Hallsworth	4 wetness
W104	Neath(s)	3a stone/depth
W105	Neath(s)	3a stone/depth
W106	Neath(s)	3a stone/depth
W107	Hallsworth	3b wetness
W108	Neath	3a stone/depth
W109	Neath(s)	3a stone/depth
W110	Neath(s)	3b depth/stone
W111	Neath(s)	3b depth/stone
W112	Neath(s)	3a stone/depth
W113	Neath(s)	3a stone/depth
W114	Neath	3a depth/stone
W115	Neath	3a depth
W116	Neath	3a depth
W117	Neath	3a depth (3b slope closeby)
W118	Denbigh	3a depth
W119	Neath(s)	3b depth/stone
W120	Neath	3a depth
W121	Neath(s)	3b depth/stone
W122	Neath(s)	3b depth/stone
W123	Neath	3b stone
W124	Nercyws	3a wetness
W125	Denbigh	3a stone
W126	Nercwys	3a wetness
W127	Nercwys	3a wetness
W128	Neath	3a stone/depth
W129	Powys	3b stone
W130	Powys	3b stone
W131	Powys	3b/stone/depth/slope
W132	Powys	3b stone/depth/slope
W133	Powys	3b stone/depth
W134	Powys	3b/4 slope
W135	Powys	3b stone/depth
W136	Powys	3b slope
W137	Neath	3a depth



**Table 1.3: Atlantic Array Offshore Wind Farm Auger Boring results West**

Auger Boring Results East		
Auger Boring Number	Soil Type	ALC Grade and Limitation
E1	Denbigh	3a depth/stone
E2	Denbigh	3a depth/stone
E3	Nercwys	3b wetness
E4	Hallsworth	3b/4 wetness
E5	Hallsworth	3b/4 wetness
E6	Nercwys	3b wetness
E7	Neath	3a stone/depth
E8	Neath(s)	3b depth
E9	Neath(s)	3b depth
E10	Denbigh	3a Depth
E11	Neath	3a stone/depth
E12	Neath	3a stone/depth
E13	Neath	3a stone/depth
E14	Powys	3a stone/depth
E15	Hallsworth	3b wetness
E16	Hallsworth	3b wetness
E17	Powys	3a stone/depth
E18	Neath(s)	3b stone/depth
E19	Hallsworth	3b wetness
E20	Neath(s)	3b stone/depth
E21	Hallsworth	3b wetness
E22	Neath(s)	3a stone/depth
E23	Neath(s)	3b depth
E24	Neath(s)	3b depth
E25	Powys	3a depth
E26	Denbigh	3a stone/depth
E27	Denbigh	2
E28	Neath	3a stone
E29	Powys	3a stone/depth
E30	Neath(s)	3a stone/depth
E31	Neath	3a stone
E32	Neath(s)	3a stone/depth
E33	Neath(s)	3a stone/depth
E34	Neath(s)	3a stone/depth
E35	Neath	3a depth
E35(a)	Disturbed	
E36	Neath(s)	3a stone/depth
E37	Neath(s)	3b depth/stone
E38	Powys	3b/4 slope/stone
E39	Powys	3b/4 slope/stone

<b>Auger Boring Results East</b>		
<b>Auger Boring Number</b>	<b>Soil Type</b>	<b>ALC Grade and Limitation</b>
E40	Powys	3b depth
E41	Powys	3b depth
E42	Nercwys	3b wetness
E43	Powys	3b depth
E44	Neath	3a depth
E45	Nercwys	3b wetness
E46	Powys	3b depth
E47	Neath(s)	3a depth/stone
E48	Neath(s)	3a depth
E49	Neath(s)	3a depth
E50	Neath(s)	3a stone/depth
E51	Neath(s)	3b stone/depth
E52	Neath	3a stone
E53	Neath	3a stone
E54	Denbigh	3a depth
E55	Neath(s)	3b depth
E56	Powys	3b depth/stone
E57	Denbigh	3a
E58	Powys	3a depth/stone
E59	Powys	3a depth/stone
E60	Powys	4 slope
E61	Powys	3b/4 slope
E62	Powys	3b slope
E63	Powys	3b/4 slope
E64	Powys	3b/4 slope
E65	Powys	4 slope
E66	Powys	4 slope



**Figure 1.1: Distribution of ALC Grades on Converter Site**

## 1.3 Results from Soil Pits and Archaeological Trial Trenching

### Pit 1 – Close to Auger Boring W8 – Identified as Powys series

- 1.3.1 0 – 19 cm Dark brown (Munsell Code 7.5YR 4/2); medium clay loam; abundant small and medium fragments of shale and mudstone; well-developed medium granular structure; moist; friable; occasional worms; abundant grass roots (Topsoil).
- 1.3.2 19 – 25 cm Brown (Munsell Code 7.5YR 4/3); medium clay loam; in pockets in extremely stony material (fragmented shale and mudstone); indeterminate structure; moist; friable; no worms observed; common grass roots concentrated in the clay loam pockets and exploiting fissures in the fragmented rock (Subsoil/Parent Material).
- 1.3.3 25+ cm Rubble of fragmented angular shale and mudstone, showing signs of bedding at depth, and with a small amount of interstitial clay loam similar to above in approximately the top 10cm; occasional grass roots exploiting fissures in the fragmented rock (Parent Material).

### Archaeological Trench 18 – Identified as Denbigh series

- 1.3.4 0 – 23 cm Dark brown (Munsell Code 7.5YR 4/2); medium clay loam; common small soft fragments of shale, siltstone or fine sandstone; well-developed medium granular structure; moist; friable; occasional worms; abundant grass roots (Topsoil).
- 1.3.5 23 – 50 cm Brown (Munsell Code 7.5YR 4/3); medium clay loam; common small soft fragments of rock similar to those in topsoil, becoming more abundant with depth; well-developed fine and medium subangular blocky structure; moist; friable; no worms observed; common grass roots (Subsoil).
- 1.3.6 50-75 cm Fragmented grey shale and siltstone with about 10% brown interstitial material similar to horizon above (Parent Material).
- 1.3.7 75+ cm Bedded hard shale and siltstone (Parent Material).

### Soil Pit 2 – Close to Boring W93 – Identified as Neath Series

- 1.3.8 0 – 26 cm Dark brown (Munsell Code 10YR 4/3); heavy clay loam; common hard, rounded medium stones; moderately developed fine subangular blocky structure; moist; friable to firm; common worms; abundant roots (Topsoil).
- 1.3.9 26 – 55 cm Brown (Munsell Code 10YR 5/3); heavy clay loam; stones as above, becoming stonier with depth; weakly developed fine subangular blocky structure; moist; friable; no worms observed; occasional roots (Subsoil).

- 1.3.10 55 – 75 cm Brown (Munsell Code 10YR 5/3); heavy clay loam; very stony, with many hard stones larger than 2cm diameter and a few larger than 6cm diameter; indeterminate structure; moist; firm; no worms or roots observed (Subsoil continued).
- 1.3.11 75+ cm Pit abandoned (too rocky) Wetness Class I.

### **Archaeological Trench 22 – Identified as Neath Series (stony phase)**

- 1.3.12 0 – 22 cm Dark brown (Munsell Code 10YR 4/3); heavy clay loam; common to abundant hard, rounded and angular medium stones (greyish sandstone); weakly developed fine subangular blocky structure; moist; friable to firm; common worms; abundant roots (Topsoil).
- 1.3.13 22 – 35 cm Brown (Munsell Code 10YR 5/3); heavy clay loam; abundant stones as above, becoming stonier with depth; weakly developed fine subangular blocky structure; moist; friable; no worms observed; occasional grass roots (Subsoil).
- 1.3.14 35+ cm Pit abandoned (too rocky).

### **Soil Pit Close to Boring E5 - Hallsworth series**

- 1.3.15 0 – 24 cm Dark greyish brown (Munsell Code 10YR 4/2); heavy clay loam; common hard, rounded medium stones; moderately developed fine subangular blocky structure; moist; friable to firm; common worms; abundant roots (Topsoil).
- 1.3.16 24 – 55 cm Yellowish brown (Munsell Code 10YR 5/4) with many fine and medium ochreous and light grey mottles; clay; common to abundant stones as above; moderately developed coarse prismatic structure; moist; firm; no worms observed; occasional roots, mainly restricted to fissures between peds; slowly permeable layer (Subsoil).
- 1.3.17 55+ cm Greyish brown (Munsell Code 10YR 5/2) with many fine medium and large ochreous and grey mottles; clay; common to abundant stones as above; massive structure; moist; very firm; no worms or roots observed; slowly permeable layer (Subsoil continued) Wetness Class IV.