AGRICULTURAL QUALITY
OF LAND AT DYFFRYN FARM
LLANTRISANT

Report 2601/1

16th May 2025

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Report 2601/1
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SUMMARY

An agricultural land quality survey has been undertaken of 20.5 ha of land at Dyffryn Farm, Llantrisant in April 2025.

The land has loamy soils with variable drainage. Agricultural quality is mainly limited to Subgrade 3b by adverse climate, wetness and gradient, with steeper gradients in the north limiting some areas to Grades 4 and 5.

1.0 Introduction

1.1 This report provides information on the agricultural quality of 20.5 ha of land at Dyffryn Farm Avenue, Rhondda Cynon Taf. The report is based on a survey of the land in April 2025.

SITE ENVIRONMENT

1.2 The survey area comprises a number of small fields, bordered by adjoining grassland and blocks of woodland. The land is located on south facing valley slopes, very steep in the north, with moderate and gentle slopes in the south. Elevation ranges from 155 m to 80 m AOD.

1.3 The land is under grass, partially grazed by sheep at the time of survey.

PUBLISHED INFORMATION

1.4 British Geological Survey 1:50,000 scale information records the underlying geology as sandstone of the Hughes and Brithdir Members, mainly with a cover of Devensian glacial till (absent in the north).

1.5 The National Soil Map (published at 1:250,000 scale) records most of the land as Wilcocks 1 Association: slowly permeable fine loams and fine loams over clay with a peaty topsoil[1]. An area in the north-west is recorded as Withnell 1 Association (well drained soils over sandstone) and an area in the south-east as Wick 1 Association (mainly well drained coarse loams and sands formed in sand and gravel deposits).

1.6 The Welsh Government Predictive Agricultural Land Classification map[2] shows most of the land as Subgrade 3b, with areas of Grades 4 and 5 in the north.

[1] Rudeforth, C. C., *et al*., 1984. *Soils and their use in Wales.* Soil survey of England and Wales, Bulletin No. 11, Harpenden.

[2] New map | DataMapWales (gov.wales)

2.0 Soils

2.1 A soils and agricultural land quality survey was carried out in April 2025 in accordance with MAFF (1988) Agricultural Land Classification guidelines[3]. It was based on observations at intersects of a 100 m grid, giving a density of one observation per hectare.

2.2 During the survey, soils were examined by hand augerings and pits to a maximum depth of 1.2 m A log of the sampling points and a map (Map 1) showing their location is in an appendix to this report. Example soil profiles are attached to this report as an appendix.

2.3 Slope gradient was measured in the field with a sighting clinometer, with additional information provided by a detailed topographic site survey.

2.4 The soils were found to mainly comprise sandy clay loams, sandy loams or sandy silt loams, with evidence of waterlogging (greyish colours with ochreous mottles) within the subsoil. In places slowly permeable lower subsoil was encountered. Soils are mainly judged moderately freely to imperfectly draining (Soil Wetness Class II to III). An area in the north is severely rush infested and judged very poorly draining (Soil Wetness Class V).

2.5 Some areas of freely-drained coarse loamy soils occur in places, particularly on steeper slopes. These soils are judged freely draining (Soil Wetness Class I).

[3]MAFF, (1988).*Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land*.

3.0 Agricultural land quality

3.1 To assist in assessing land quality, the Ministry of Agriculture, Fisheries and Food (MAFF) developed a method for classifying agricultural land by grade according to the extent to which physical or chemical characteristics impose long-term limitations on agricultural use for food production. The MAFF ALC system classifies land into five grades numbered 1 to 5, with grade 3 divided into two subgrades (3a and 3b). The system was devised and introduced in the 1960s and revised in 1988.

3.2 The agricultural climate is an important factor in assessing the agricultural quality of land and has been calculated using the Climatological Data for Agricultural Land Classification[4].

3.3 The relevant site data for an average elevation of 108 m and a central point at grid reference ST 032,852 is given below.

- Average annual rainfall: 1471 mm
- January-June accumulated temperature >0°C 1433 day°
- Field capacity period 282 days
- Summer moisture deficits for: wheat: 52 mm
potatoes: 34 mm

3.4 The survey described in the previous section was used in conjunction with the agro-climatic data above to classify the site using the revised guidelines for ALC issued in 1988 by MAFF[5]. The wet local climate limits land quality to a maximum of Subgrade 3b.

SURVEY RESULTS

3.5 The agricultural quality of the land is primarily determined by adverse climate, wetness and gradient limitations. Other factors have been assessed but do not affect the land grade. Land of Grades 3, 4 and 5 has been identified.

Subgrade 3b

3.6 This land is limited by the wet local climate, which means that wet conditions are likely to cause restrictions to crop growth. Soil wetness caused by drainage restrictions is mainly an equally limiting factor, meaning opportunities for spring cultivations are rare. Large areas are also limited by slopes between 7 and 11 degrees which present limitations to the use of some farm machinery.

[4]Meteorological Office, (1989).*Climatological Data for Agricultural Land Classification*.
[5]MAFF, (1988).*Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land*.

Grade 4

3.7 This land mainly occurs on slopes between 11 and 18 degrees in the north. These gradients limit the use of most farm machinery and land use is largely restricted to grassland.

3.8 A less steeply sloping area in the north with severe rush infestation is also included. This land is too wet for regular machinery access.

Grade 5

3.9 This comprises a small area with slope gradients over 18 degrees. This land is limited to use as rough grazing.

Other land (non-agricultural)

3.10 This comprises tracks, hard standings and woodland and scrub areas.

Grade areas

3.1 The land grades are shown on Map 2 and the areas occupied shown below.

Table 1: Areas occupied by the different land grades (ha)

Grade/subgrade	*Area (ha)*	*% of the land*
Subgrade 3b	16.5	81
Grade 4	3.2	16
Grade 5	0.3	1
Other land	0.5	2
Total	20.5	100

APPENDIX

DETAILS OF OBSERVATIONS

MAPS

Land at Dyffryn Farm: Soils and ALC survey – Details of observations at each sampling point

Obs	Topsoil			Upper subsoil			Lower subsoil			Slope	Wetness	Agricultural quality	
No	Depth (cm)	Texture	Stones >20 mm (%)	Depth (cm)	Texture	Mottling	Depth (cm)	Texture	Mottling	(°)	Class	Grade	Main limitation
1	0-24	slstMSL	<5	24-34	mstMSL	o	34+	Stopped on stones		14	-	4	G
2	0-36	slstSCL	<5	36-100+	slstSCL	o				9	I	3b	C/G
3	0-22	slstMSL	<5	22-73	slstSCL	xxx	73+	Stopped on stones		8	III	3b	C/G/W
4	0-28	slstSCL	<5	28-49	slstSCL	xxx	49+	Stopped on stones		12	III	4	G
5	0-32	slstMSL	<5	32-45	slstMSL	xx	45-100+	slstMSL	xxx	20	II	5	G
6	0-15	vstMSL(org)	<5	15+	Stopped on stones					3	-	-	-
7	0-22	SCL	<5	22-46	SCL	xxx	46+	Stopped on stones		5	III	3b	C/W
8	0-28	SCL	<5	28-48	slstSCL	xx	48-76 76+	MCL Stopped on stones	o	8	I	3b	C/G
9	0-24	MSL	<5	24-46	MSL	o	46-78 78-100+	SCL SCL	xxx xxx	5	III	3b	C/W
10	0-29	slstMSL/SZL	<5	29-73	MSL/SZL	o	73-93 93+	SCL Stopped on stones	xxx	7	I/II	3b	C/G
11	0-31	SCL	<5	31-68	SCL	o	68+	Stopped on stones		6	I	3b	C
12	0-18	slstMSL	<5	28-43	slstMSL	xxx	43+	Stopped on stones		6	II	3b	C
13	0-25	SCL	<5	25-55	SCL	xxx	55-75 75+	MSL Stopped on stones	xxx	3	II/III	3b	C/W
14	0-27	MSZL/SCL	<5	27-62	MSZL/SCL	xx	62+	Stopped on stones		8	I/II	3b	C/G
15	0-24	slstSCL	<5	24-57	vstSCL	xxx	57+	Stopped on stones		8	III	3b	C/G/W
16	0-25	SCL	<5	25-70	SCL	xxx	70-90+	SCL	xxx	6	IV	3b	C/W
17	0-32	MSZL	<5	32-61	slstMSZL	o	61-90+	slstMSZL	xxx	4	II	3b	C
18	0-25	MSZL	<5	25-50	MSZL	o	50-100+	SCL	xxx	3	II	3b	C

Soil log key

Gley indicators[1]

o	unmottled
x	1-2% ochreous mottles and brownish matrix (or a few to common root mottles (topsoils))[3]
xx	>2% ochreous mottles and brownish matrix and/or dull structure faces (slightly gleyed horizon)
xxx	>2% ochreous mottles and greyish or pale matrix (gleyed horizon) or reddish matrix and >2% greyish, brownish or ochreous mottles and pale ped faces mottles or fmn concentrations (gleyed horizon)
xxxx	dominantly blueish/greenish matrix, often with some reddish mottles (gleyed horizon)

Texture[2]

C – clay
ZC - silty clay
SC - sandy clay
CL - clay loam (H-heavy, M-medium)
ZCL - silty clay loam (H-heavy, M-medium)
SZL - sandy silt loam (F-fine, M-medium,C-coarse)
LS - loamy sand (F-fine, M-medium, C-coarse)
SL - sandy loam (F-fine, M-medium, C-coarse)
S - sand (F-fine, M-medium, C-coarse)
SCL - sandy clay loam
P - peat (H-humified, SF-semi-fibrous, F-fibrous)
LP - loamy peat; PL - peaty loam

Limitations:

W - wetness/workability
D - droughtiness
De - depth
F - flooding
St – stoniness
G - gradient
T – topography/microrelief
C - Climate

Suffixes & prefixes:

o - organic

(vsl, sl, m, v, x)**st** – (very slightly, slightly, moderately, very, extremely) **stony**[6]

(vsl, sl, m, v, x)**ca**
(very slightly, slightly, moderately, very, extremely) **calcareous**[7]

Slowly permeable layers[4]

a depth underlined (e.g. <u>50</u>) indicates the top of a slowly permeable layer

A wavy underline (e.g. <u>50</u> indicates the top of a layer borderline to slowly permeable

Wetness Class[5]

I (freely drained) to VI (very poorly drained)

Other abbreviations

fmn - ferri-manganiferous concentrations
dist - disturbed soil layer; chky - chalky
R – bedrock (CH – chalk, SST – sandstone LST – limestone, MST – Mudstone)
r-reddish, gn – greenish

[1]Gley indicators in accordance with Hodgson, J.M., 1997. Soil Survey Field Handbook (third edition). Soil survey technical monograph No. 5

[2]Texture in accordance with particle size classes in Hodgson (1997)

[3] Occasionally recorded in the texture box

[4]Permeability is estimated for auger borings and must be confirmed by full pit observations in accordance with the definitions in: Revised Guidelines for grading the quality of Agricultural Land (Maff 1988)

[5]Soil Wetness Classes are defined in Hodgson (1997)

[6]stoniness classes as defined in Hodgson (1997)

[7]calcareous classes as defined in Hodgson (1997)

Grades shown as intergrade e.g. **3a**/3b are close to the grade boundary. The estimate of which side of the boundary the grading falls is the shown first (in bold here)
grades in brackets eg. (3a) raised by one grade due to calcareous topsoil

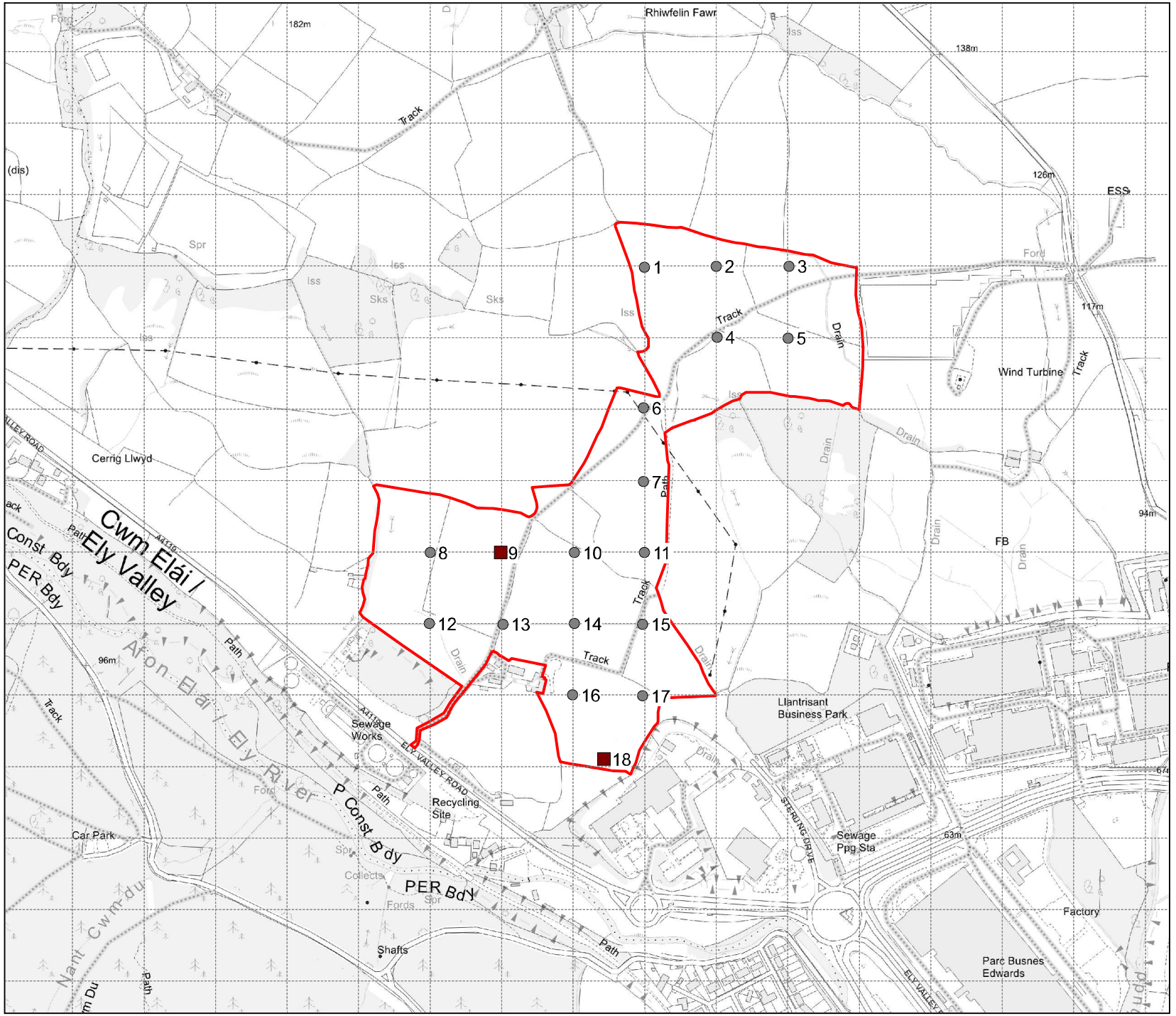
SOIL PIT DESCRIPTIONS

Observation 9

0-24 cm	Brown (7.5YR 3/2) medium sandy loam; 2-3% small mixed hard stones; moderately developed fine sub-angular blocky structure; friable; many fine fibrous roots; gradual smooth boundary to:
24-46 cm	Brown (7.5YR 5/4) medium sandy loam; very slightly stony; moderately developed medium sub-angular blocky structure; friable; few fine fibrous roots; gradual smooth boundary to:
46-78 cm	Pale brown (10YR 6/3) sandy clay loam with 5% fine and medium brownish yellow (10YR 6/8) mottles; 20% platy sandstone and small and medium mixed stones; weakly developed coarse sub-angular blocky structure; friable; gradual smooth boundary to:
78-100 cm+	Grey (7.5YR 5/1) sandy clay loam with 5% fine strong brown (10YR 5/8) mottles; moderately stony; weakly developed very coarse sub-angular blocky structure; firm; <0.5% visible macropores.
	Soil Wetness Class: III
	ALC: Subgrade 3b (Wetness, Climate)

Observation 18

0-25 cm	Brown (7.5YR 3/2) medium sandy silt loam; 2% hard sandstone fragments; moderately developed fine sub-angular blocky structure; friable; many fine fibrous roots; gradual smooth boundary to:
25-50 cm	Brown (7.5YR 5/4) medium sandy silt loam; 20% hard sandstone fragments; moderately developed medium and coarse sub-angular blocky structure; friable; common fine fibrous roots; gradual smooth boundary to:
50-100 cm+	Pale brown (10YR 6/3) sandy clay loam with 5% fine strong brown (10YR 5/8) mottles; moderately stony; weakly developed medium sub-angular blocky structure; friable; porous.
	Soil Wetness Class: II
	ALC: Subgrade 3b (Climate)



KEY

- Auger observations
- Pits
- Site boundary

Site:

Ely Valley Solar Farm

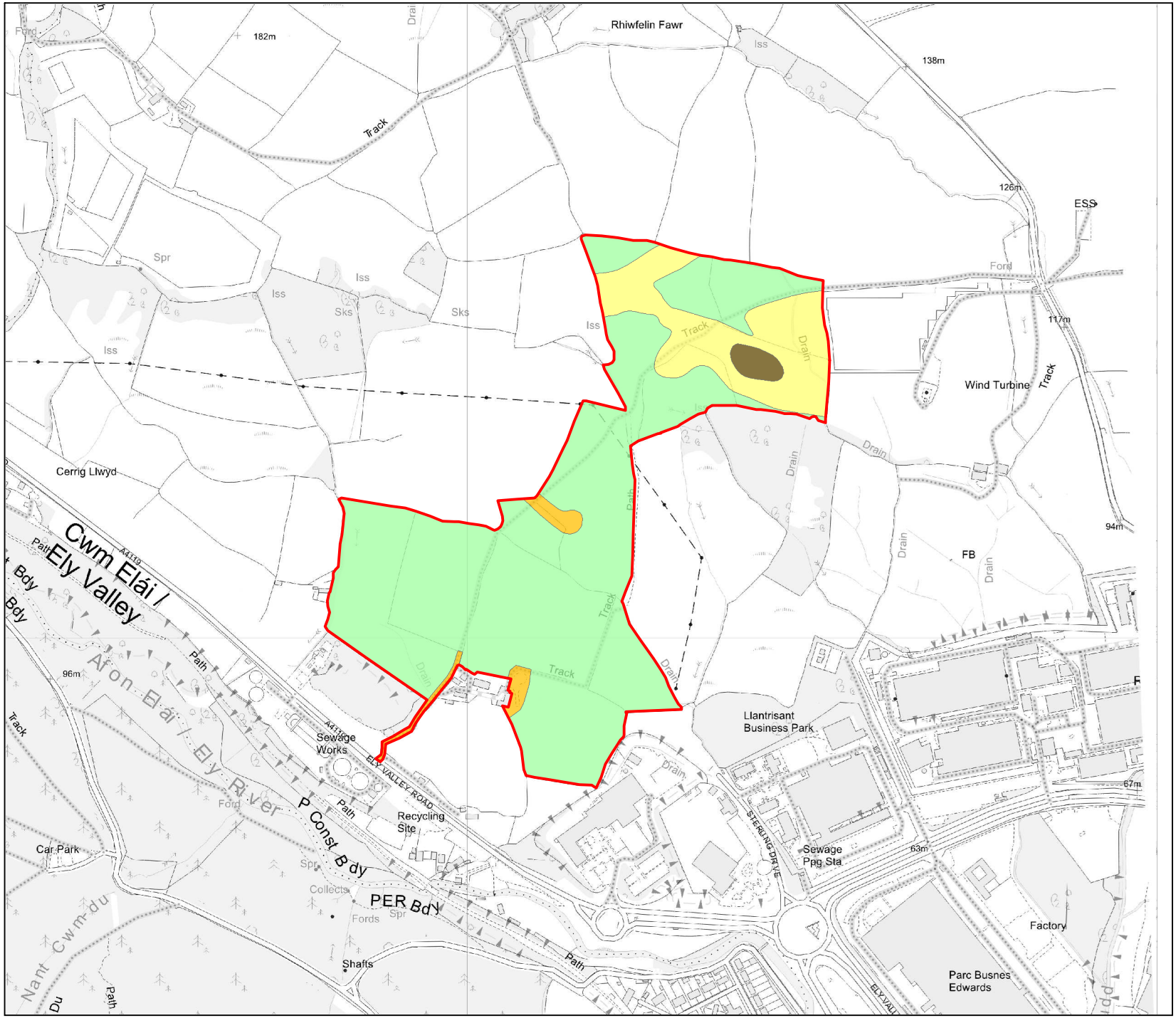
Map title:

MAP 1
Observations

Land Research ASSOCIATES
Tapton Innovation Centre
Brimington Road
Chesterfield
S41 0TZ
www.lra.co.uk

Date: 16/05/2025

Scale: 1:7,500



KEY

- Subgrade 3b
- Grade 4
- Grade 5
- Other land
- Site boundary

Site:

Ely Valley Solar Farm

Map title:

MAP 2
Agricultural Land Classification

Land Research Associates
Tapton Innovation Centre
Brimington Road
Chesterfield
S41 0TZ
www.lra.co.uk

Date: 16/05/2025

Scale: 1:7,500