AGRICULTURAL QUALITY OF LAND EAST OF DALZELL STREET, NEAR WOODEND CA24 3LF

Report 2561/1

28th March 2025

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AGRICULTURAL QUALITY

OF LAND EAST OF DALZELL STREET, NEAR WOODEND

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Report 2561/1
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SUMMARY

An agricultural land quality survey has been undertaken of approximately 0.9 ha of land at east of Dalzell Street, Woodend in March 2025.

The land mainly has soils with restricted drainage, with land quality limited to Subgrade 3b by wetness. A very small freely-draining area in the west is of Subgrade 3a quality.

1.0 Introduction

1.1 This report provides information on the agricultural quality of approximately 0.9 ha of land east of Dalzell Street, Woodend, Cumbria. The report is based on a survey of the land in March 2025.

SITE ENVIRONMENT

1.2 The Site is under grass, which has most recently been used for the grazing of livestock (ungrazed at the time of the survey). The Site is split across two fields, separated by an access track. The Site boundaries are demarcated by hedgerow and scattered trees.

1.2 The Site comprises land to the east of Dalzell Street between the villages of Bigrigg, Cleator and Moor Row (NGR: E: 300842, N: 513769). The larger settlements of Egremont, Cleator Moor and Whitehaven are all located within a 5km radius of the Site. The Lake District National Park boundary lies approximately 2.7km to the north-east. The Site is wholly located within the administrative boundary of Cumberland Council.

1.3 The Site boundary including the underground cable route to the point of connection at Woodend substation measures 1.18ha. The proposed cable route will follow Dalzell Street southwards to the point of connection at Woodend substation.

1.4 The Site is gently undulating, at an average elevation of approximately 75 m AOD.

PUBLISHED INFORMATION

1.5 British Geological Survey 1:50,000 scale information records the underlying geology as Eskett Formation limestone with Orebank Sandstone in the east. Devensian drift cover is recorded across the whole site: glacial till in the south, and glacio-fluvial sands and gravels in the north.

1.6 The National Soil Map (published at 1:250,000 scale) records the site as Brickfield 3 Association: mainly seasonally waterlogged fine loamy soils formed in glacial till[1].

[1]Ragg, J.M., *et al*., (1984). *Soils and their Use in Midland and Western England*. Soil Survey of England and Wales Bulletin No. 12, Harpenden.

2.0 Soils

2.1 A soils and agricultural quality survey was carried out in March 2025 in accordance with MAFF (1988) Agricultural Land Classification guidelines[2]. It was based on observations at intersects of a 50 m grid, giving a density of four observations per hectare. Additional observations were added where needed. 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.

2.2 The soils mainly comprise medium loamy topsoil over similar-textured subsoil. The subsoils show evidence of seasonal waterlogging (greyish colouration and ochreous mottles) and in places (in the east of the site) are weakly structured and slowly permeable. These soils have variable drainage restrictions depending on their topographic position and the presence or absence of slowly permeable layers: they range from moderately-freely to very poorly draining under the local climate (Soil Wetness Class II to V).

2.3 On the upper slopes in the west the soils are freely-draining (Soil Wetness Class I). An example wetter profile is described from a pit excavation at observation points 2 (see Map 1) in an appendix to this report.

2.4 One point in the north (Observation 1) had coarse loamy over sandy soils formed in sand and gravel deposits. The subsoils are greyish and mottled indicating drainage restrictions. These soils are judged imperfectly-draining (Soil Wetness Class III) under the local climate. An example profile is described from a very poorly draining profile (Soil Wetness Class V) from a pit excavation at observation point 2 (see Map 1) in an appendix to this report.

[2]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[3].

The relevant site data for an average elevation of 75 m and a central point at grid reference NY 008,138 is given below.

- Average annual rainfall: 1174 mm
- January-June accumulated temperature >0°C 1327 day°
- Field capacity period 258 days
- Summer moisture deficits for: wheat: 60 mm
potatoes: 40 mm

3.3 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[4]. The wet climate at this locality limits land quality to a maximum of Subgrade 3a.

SURVEY RESULTS

3.4 The agricultural quality of the land is determined by wetness. Other factors have been assessed but do not affect the land grade. Land of Grade 3 has been identified.

Subgrade 3a

3.5 A limited area in the west has moderately high topsoil clay content and free drainage (Soil Wetness Class I). This land is moderately flexible as the free drainage means arable crops can usually be sown in late spring as well as autumn. This is very unlikely to be considered given the extremely limited land area however.

3.6 The cool moist climate is an equally limiting factor, likely to present a shortened growing season and a relatively late risk of frost.

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

Subgrade 3b

3.7 This land has restricted drainage (Soil Wetness Class II to IV). This land will normally be too wet to cultivate in winter and spring: arable cropping of the land would be restricted to autumn-sown combinable crops in most years. One point appears to have very poor drainage (observation 2 of Map 1) which would limit the land to grassland uses. However this land could not be mapped separately and the grading given is an average for the land type.

Other land (non-agricultural)

3.8 This comprises a farm access track.

Grade areas

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

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

Grade/subgrade	*Area (ha)*	*% of the land*
Subgrade 3a	0.09	11
Subgrade 3b	0.73	84
Other land	0.04	5
Total	0.87	100

APPENDIX

DETAILS OF OBSERVATIONS

MAPS

Land east of Dalzell Street, Moor Row: 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	0-30	slstMSL	5-10	30-64	slstSCL	xxx	64-120	slstLMS	xxx	3	III	3b	W
2	0-23	slstSCL(org)	5-10	23-40	mstSCL	xxx	40-60 60-100+	mstSCL slstMSL	xxx xxx	2	V	4	W
3	0-23	slstSCL	5-10	23-100+	slstSCL	o				4	I	3a	W/C
4	0-27	slstSCL	5-10	27-55	mstSCL	xxx	55-90+	slstSCL	xxx	4	IV	3b	W
5	0-30	SCL	<5	30-45	SCL	xx	45-90+	SCL	xxx	5	II	3b	W
6	0-34	SCL	<5	34-51	SCL	xxx	51-90+	SCL	xxx	4	IV	3b	W

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 f-m 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. 50) indicates the top of a slowly permeable layer

A wavy underline (e.g. 50 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

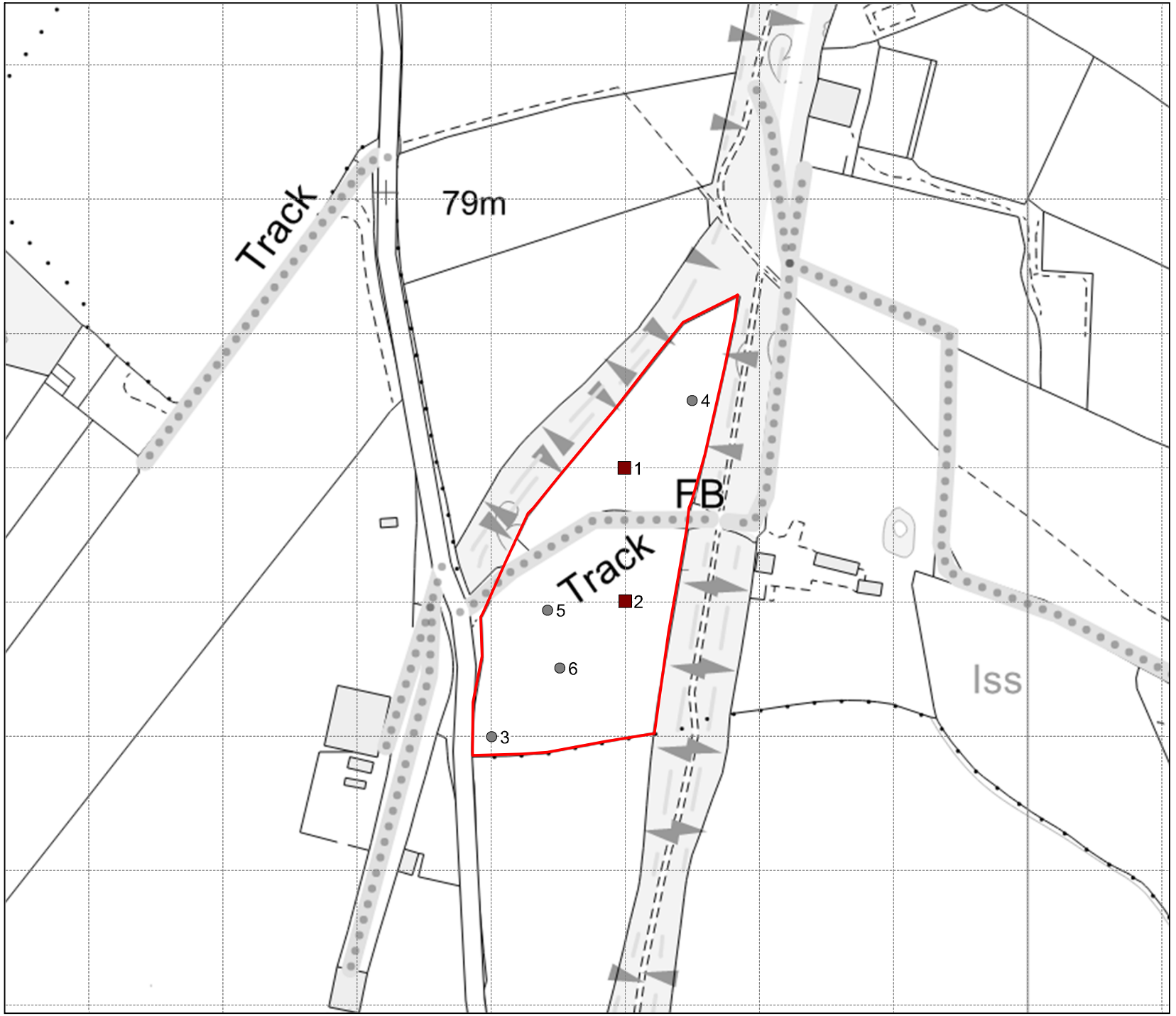
SOIL PIT DESCRIPTIONS

Observation 1

0-30 cm	Brown (7.5YR 3/2) medium sandy loam; 10% small and medium mixed rounded hard stones; moderately developed medium sub-angular blocky structure; friable; common fine fibrous roots; wavy gradual boundary to:
30-64 cm	Brown (7.5YR 5/1) sandy clay loam with 5% fine strong brown (7.5YR 5/6) mottles; slightly stony; weakly developed very coarse sub-angular blocky structure; friable; porous; common fine fibrous roots; gradual smooth boundary to:
64-120 cm+	Reddish grey (5YR 5/2) loamy medium sand with 10% fine yellowish red (5YR 5/8) mottles; slightly stony; weakly developed fine sub-angular blocky structure; very friable; few roots.
	Soil Wetness Class: III
	ALC: Subgrade 3b (wetness)

Observation 2

0-23 cm	Very dark greyish brown (10YR 3/2) organic sandy clay loam; 5-10% medium mixed rounded hard stones; moderately developed coarse sub-angular blocky structure; friable; many fine fibrous roots; clear smooth boundary to:
23-40 cm	Grey (10YR 6/1) sandy clay loam with 30% medium yellowish brown (10YR 5/8) mottles; moderately stony (large granite boulders); moderately developed medium sub-angular blocky structure; friable; porous; common fine fibrous roots; gradual smooth boundary to:
40-60 cm	Grey (10YR 6/1) sandy clay loam with 40% medium and coarse strong brown (7.5YR 5/8) mottles; moderately stony; weakly developed very coarse sub-angular blocky structure; firm; <0.5% macropores; few fine fibrous roots; gradual smooth boundary to:
60-100 cm+	Weak red (2.5/2) medium sandy loam with 10% medium strong brown (7.5YR 5/8) mottles; slightly stony; weakly developed coarse angular blocky structure; friable few fine fibrous roots; waterlogged.
	Soil Wetness Class: V
	ALC: Grade 4 (wetness)



KEY

- Auger observations
- Pits
- Site boundary

Site:

Dalzell Street

Map title:

MAP 1
Observations

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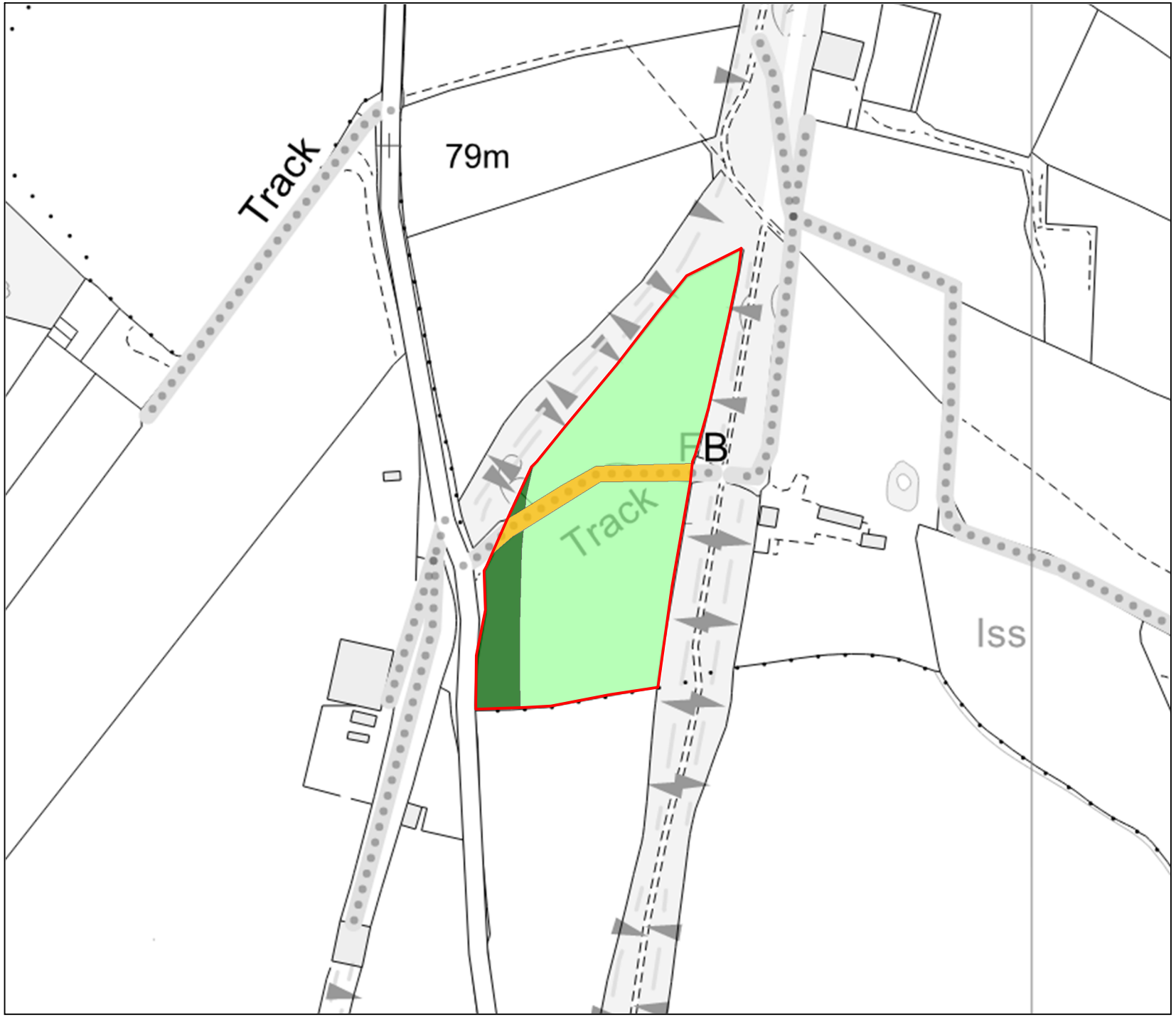
Date: 28/03/2025

Scale: 1:2,000



KEY

- Subgrade 3a
- Subgrade 3b
- Other land
- Site boundary

Site:

Dalzell Street

Map title:

MAP 2
Agricultural Land
Classification

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Date: 28/03/2025

Scale: 1:2,000