

**AGRICULTURAL QUALITY
OF LAND OFF BARNSLEY ROAD
UPPER CUMBERWORTH**

Report 2870/2

18th June 2026

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**AGRICULTURAL QUALITY
OF LAND OFF BARNSLEY ROAD, UPPER CUMBERWORTH**

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Report 2870/2
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SUMMARY

An agricultural land quality study has been undertaken of 5.6 ha of land off Barnsley Road, Upper Cumberworth during June 2026.

The soils are a mixture of well drained loams over sandstone and deeper soils with drainage restrictions over siltstone or mudstone. The cool moist climate at this locality limits land quality of the whole site to a maximum of Subgrade 3b. Some areas are equally limited by wetness.

1.0 Introduction

- 1.1 This report provides information on the agricultural quality of 5.6 ha of land south of Barnsley Road, Upper Cumberworth, West Yorkshire. The report is based on a survey of the land in June 2026.

SITE ENVIRONMENT

- 1.2 The study area comprises two fields, bordered to the north by Barnsley Road and Carr Hill Road, to the west by Park Lane, to the east and south-east by woodland, and to the south-west by agricultural grassland.
- 1.3 The land slopes gently from north-west to south-east. Average elevation is approximately 240 m AOD.
- 1.4 At the time of survey the land was under a maize crop.

PUBLISHED INFORMATION

- 1.5 British Geological Survey 1:50,000 scale information records the underlying geology as Pennine Lower Coal Measures. No drift cover is recorded.
- 1.6 The National Soil Map (published at 1:250,000 scale) records Rivington 1 Association¹ at the Site: mainly well drained coarse loams over sandstone, with some similar soils affected by shallow groundwater².

¹ A group of soils found in a predictable repeated pattern within particular landscapes. Association level mapping is used on small scale reconnaissance detail soil maps, where mapping of individual soil types is not possible.

² Jarvis, R.A., et al., 1984. *Soils and their use in Northern England*. Soil Survey of England and Wales Bulletin No. 10, Harpenden.

2.0 Soils

2.1 A soils and agricultural quality survey was carried out in June 2026 in accordance with Defra/Welsh Government (2025) Agricultural Land Classification Guidelines³. It was based on observations at intersects of a 100 m grid, giving a density of one observation per hectare. 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 of were found to vary in depth and drainage, as described below

SHALLOW SOILS

2.3 These soils comprise sandy clay loam, clay loam or sandy loam topsoil, over similarly-textured subsoil. The subsoils become increasingly stony with depth and grade to broken sandstone. These soils are freely-drained, Soil Wetness Class I. An example soil profile is described from observation point 4 in an appendix to this report.

DEEPER SOILS

In other places the soils are deeper and less stony, apparently where mudstone or siltstone bands outcrop. These soils show gleying⁴ as evidence of seasonal waterlogging to shallow depth, although slowly permeable subsoil layers were only encountered at observation point 3. These soils and are judged imperfectly to poorly-draining (Soil Wetness Class III to IV) under the local climate. An example poorly-drained profile is described from observation point 3 in an appendix to this report.

³Defra/Welsh Government, (2025). *Joint Publication 069: Agricultural Land Classification of England and Wales: Guidelines for Grading the Quality of Agricultural Land*.

⁴Gleying – greyish and pale soil colours with ochreous mottles, resulting from reduction and mobilisation of iron compounds under anaerobic conditions

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 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, revised in 1988 and updated in 2025.
- 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 Classification⁵.
- 3.3 The relevant site data for an average elevation of 240 m and a central point at grid reference SE 210,086 is given below.
- Average annual rainfall: 922 mm
 - January-June accumulated temperature >0°C 1157 day°
 - Field capacity period 220 days
 - Summer moisture deficits for: wheat: 62 mm
potatoes: 41 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 Guidelines for ALC issued in 2025 by Defra/Welsh Government⁶.

SURVEY RESULTS

- 3.5 The agricultural quality of the land is variably determined by adverse climate and wetness. Other factors have been assessed but do not affect the land grade. Land of Grade 3 has been identified.

Subgrade 3b

- 3.6 All of the land is limited to a maximum of Subgrade 3b by adverse climate. At this elevation in The Pennines the climate is cool and moist. From an agricultural perspective this means a shortened growing season and a relatively late risk of frost.
- 3.7 The land in the north-east of the Site is equally limited by wetness. It has moderately high topsoil clay content and poor drainage (Soil Wetness Class IV). Under the local climate this combination means that the land is usually too wet for spring machinery land access, and arable cropping would therefore largely limited to autumn sowings.

⁵Meteorological Office, (1989). *Climatological Data for Agricultural Land Classification*.

⁶Defra/Welsh Government, (2025). *Joint Publication 069: Agricultural Land Classification of England and Wales: Guidelines for Grading the Quality of Agricultural Land*.

Other land (non-agricultural)

- 3.8 This comprises farm buildings and hard standings.

Grade areas

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

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

<i>Grade/subgrade</i>	<i>Area (ha)</i>	<i>% of the land</i>
Subgrade 3b	5.4	96
Other land	0.2	4
Total	5.6	100

APPENDICES:

1. SOIL AUGER LOG

2. SOIL PIT DESCRIPTIONS

3. MAPS

Land off Barnsley Road, Upper Cumberworth: Soil auger log (see Map 1 for locations)

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	0-29	vslst MCL	<5	29-56	MCL/SCL	o	56+	Stopped on stones		4	I	3b	C
2	0-25	MCL	<5	25-36	MCL	x	36-62 62+	MCL/ZCL Siltstone	xxx	4	III	3b	C
3	0-30	vslst MCL	<5	30-43	MCL	xxx	43-55 55-100+	ZC C	xxx xxx	3	IV	3b	C/W
4	0-28	MSL	5-10 >60 mm	28-43	vst MSL	o	43+	Stopped on stones		4	I	3b	C
5	0-25	vslst MSL	<5	25-50	slst SCL/MSL	xxx	50+	soft SST		5	III/II	3b	C
6	0-29	slst MSL	5-10 >60 mm	29+	Stopped on stones					4	I	3b	C

Soil log key

Gley indicators¹

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), grey below organic topsoil or reddish matrix and >2% greyish, brownish or ochreous mottles and pale ped faces
xxxx	mottles or f-m concentrations (gleyed horizon) dominantly blueish/greenish matrix, often with some reddish mottles (gleyed horizon)

Slowly permeable layers⁴

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

Texture²

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

Wetness Class⁵

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

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, v, x)**ca**
(very slightly, slightly,
very, extremely) **calcareous**⁷

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

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

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

³ Occasionally recorded in the texture box

⁴Permeability 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)

⁵Soil Wetness Classes are defined in Hodgson (1997)

⁶stoniness classes as defined in Hodgson (1997)

⁷calcareous 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 3

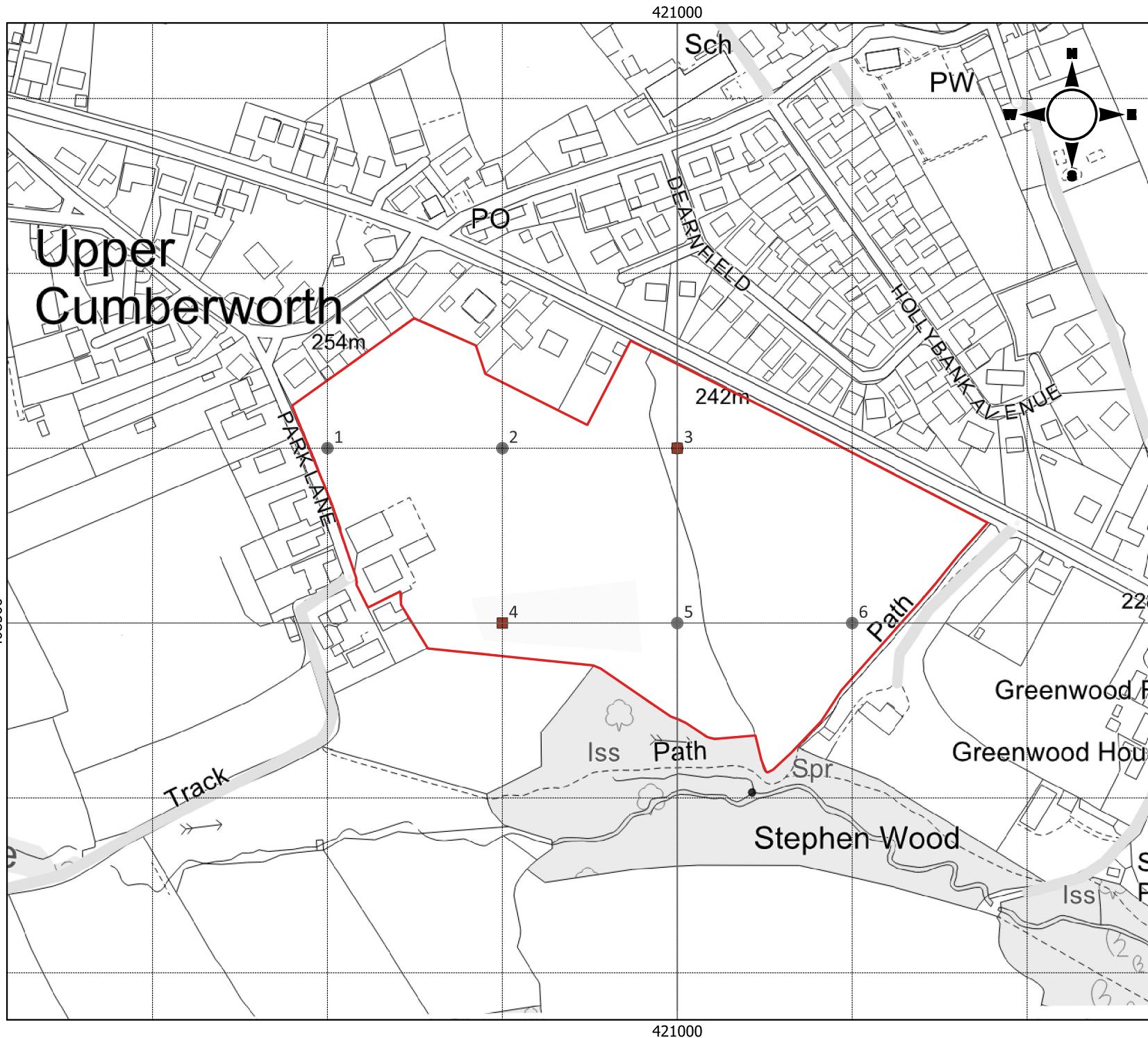
Land use: Maize

0-30 cm	Dark greyish brown (10YR 4/2) medium clay loam; 2-3% small and medium hard sandstone fragments; moderately developed coarse sub-angular blocky structure friable; clear smooth boundary to:
30-43 cm	Grey (10YR 5/1) medium clay loam with 10% fine strong brown (7.5YR 5/6) mottles; very slightly stony; moderately developed coarse sub-angular blocky structure; friable; porous; discontinuous reddish sandy loam inclusions 50-65 cm; gradual smooth boundary to:
43-55 cm	Grey (10YR 5/1) silty clay with 30% fine and medium strong brown (7.5YR 5/6) and reddish yellow (7.5YR 6/8) mottles; stoneless; weakly developed very coarse angular blocky structure; very firm; <0.5% macropores; common fine very dark brown (7.5YR 2.5/2) ferri-manganiferous concentrations; diffuse smooth boundary to:
55-100 cm+	Grey (7.5YR 6/1) clay with 40% medium reddish yellow (7.5YR 6/8) mottles; stoneless; structureless (massive); very firm; <0.5% macropores; Soil Wetness Class: IV ALC: Subgrade 3b (Climate/Wetness)

Observation 4

Land use: Maize

0-28 cm	Brown (7.5YR 4/2) medium sandy loam; 10% hard platy sandstone fragments, 5-10% >60 mm; moderately developed fine sub-angular blocky structure friable; clear smooth boundary to:
28-43 cm	Yellowish brown (10YR 5/4) medium sandy loam; 40% hard and soft weathered sandstone fragments; moderately developed medium sub-angular blocky structure; friable:
43 cm+	Impenetrable with hand tools. Soil Wetness Class: I ALC: Subgrade 3b (Climate)



Key

- Auger observations
- Pits
- Survey area

Site:

Upper Cumberworth

Map:

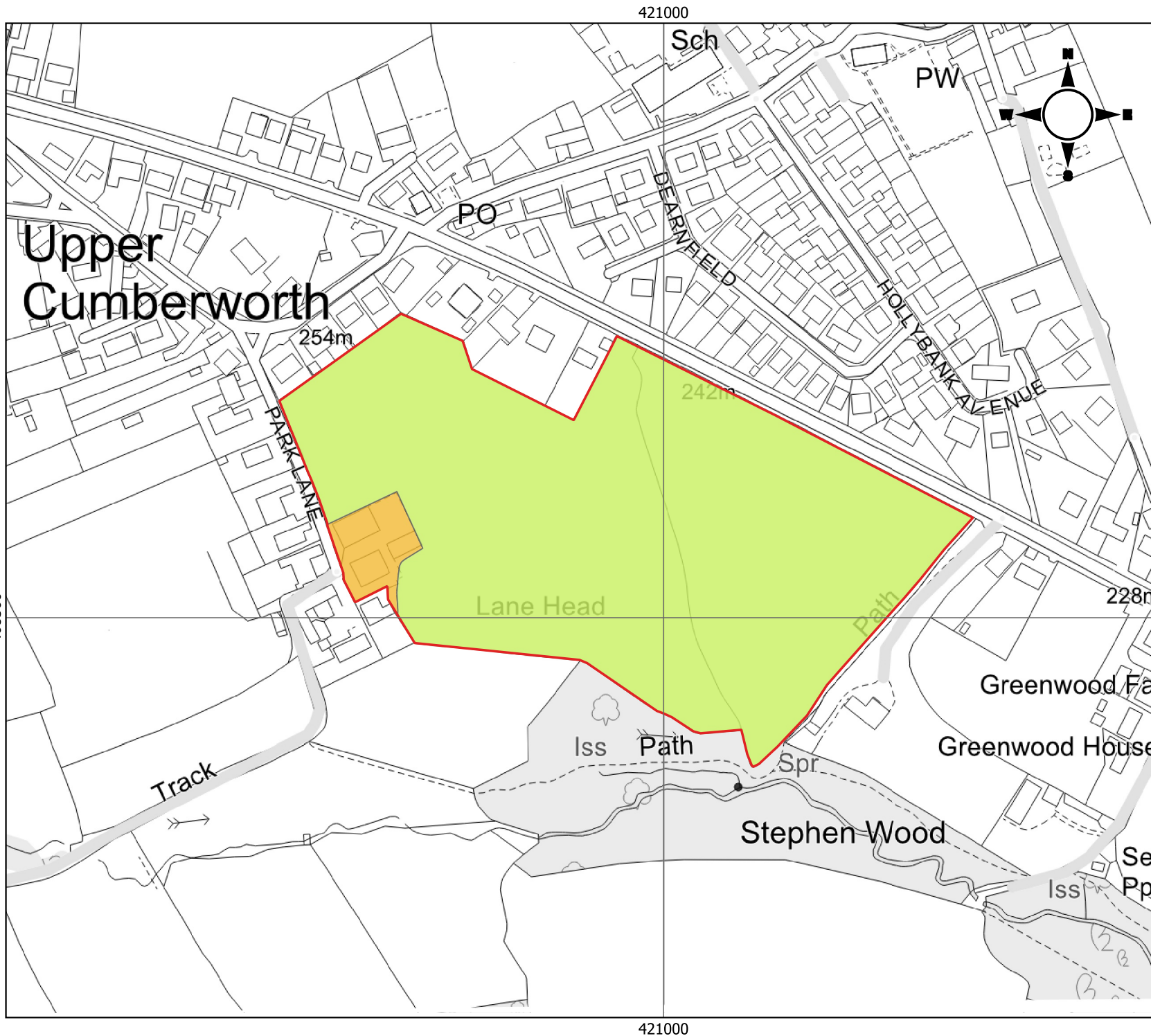
Map 1 - Observations

Date: 18/06/2026

Scale: 1 : 3,000 at A4

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Key

-  Subgrade 3b
-  Other land
-  Survey area

Site:

Upper Cumberworth

Map:

Map 2
Agricultural Land Classification

Date: 18/06/2026

Scale: 1 : 3,000 at A4

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