

**AGRICULTURAL QUALITY
OF LAND AT COLNEY HEATH
HERTFORDSHIRE**

Report 2012/1

26th May 2022

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OF LAND AT COLNEY HEATH, HERTFORDSHIRE**

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Report 2012/1
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SUMMARY

An agricultural land quality survey has been undertaken of 1.8 ha of land at Colney Heath, Hertfordshire in May 2022.

The soils comprise deep permeable loams, giving land of grade 2 agricultural quality, limited by slight wetness and droughtiness.

1.0 Introduction

- 1.1 This report provides information on the soils and agricultural quality of 1.8 ha of land at Colney Heath, Hertfordshire. The report is based on a survey of the land in May 2022.

SITE ENVIRONMENT

- 1.2 The survey area comprises the eastern part of a larger arable field. The site is bordered to the west by residential housing, to the north by Colney Heath Football Club, to the south by a pub and to the east by adjoining agricultural land. The land is level, at an elevation of approximately 70 m AOD.
- 1.3 At the time of survey the land was under cereal cropping.

PUBLISHED INFORMATION

- 1.4 1:50,000 scale BGS information records the geology of the survey area as Lowestoft Formation glacial till, over Lewes Nodular Chalk Formation and Seaford Chalk Formation (undifferentiated).
- 1.5 The National Soil Map (published at 1:250,000 scale) records the whole of the survey area as Hamble 2 Association: typically deep stoneless well drained silty soils, similar soils affected by groundwater and locally over gravel¹.

¹Hodge, C.A.H., *et al.*, (1984). *Soils and their Use in Eastern England*, Soil Survey of England and Wales Bulletin No. 12, Harpenden.

2.0 Soils

- 2.1 A detailed soils and agricultural quality survey was carried out in May 2022 in accordance with MAFF (1988) guidelines¹. It was based on observations at alternative intersects of a 50 m grid, giving a density of two observations per hectare. During the survey, soils were examined by a combination of pits and augerings to a maximum depth of 1.2 m. A log of the sampling points and a map (Map 1) showing their locations are in an appendix to this report.
- 2.2 The soils were found to be deep permeable loams comprising medium clay loam topsoils over fine loamy subsoils that are often gleyed (greyish and pale colours with ochreous mottles), but not usually to shallow depth. The soils are judged freely to moderately freely-draining (Soil Wetness Class I to II).
- 2.3 An example profile is described below from a pit at observation 1 (Map 1).
- | | |
|------------|--|
| 0-29 cm | Brown (7.5YR 4/2) medium clay loam; slightly stony (10-15% small and medium flints and hard subrounded stones); well developed medium subangular blocky structure; friable; 2-5% pores and worm channels; common fine fibrous roots; smooth clear boundary to: |
| 29-42 cm | Light brown (7.5YR 6/3) medium clay loam with few fine reddish yellow (7.5YR 6/6) mottles and fine ferri-manganiferous mottles; slightly stony (10% small and medium hard flints and subrounded hard stones); moderately developed medium subangular blocky structure; friable; medium packing density; few very fine roots; 2% pores; smooth diffuse boundary to: |
| 42-71 cm | Light brown (7.5YR 6/3) heavy clay loam with abundant reddish yellow (7.5YR 6/8) and pink (7.5YR 7/3) mottles; slightly stony (10% small and medium flints and subrounded hard stones); moderately developed medium and coarse subangular blocky structure; friable; medium packing density; no roots; 1% pores; smooth diffuse boundary to: |
| 71-110 cm+ | Light brown (7.5YR 6/3) medium silty clay loam with large white (7.5YR 8/1), reddish yellow (7.5YR 6/8) and grey (7.5YR 6/1) mottles; stoneless; weakly developed medium angular blocky structure; friable; medium packing density; 1% pores; no roots. |

¹MAFF, (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. This report describes the main limitations affecting ALC grades at this site. Other factors (e.g. soil depth, micro-relief etc.) were assessed but did not affect the overall grading of the site.

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 Classification². The relevant site data for an average elevation of 70 m AOD is given below.

- Average annual rainfall: 655 mm
- January-June accumulated temperature >0°C 1418 day°
- Field capacity period 137 days
(when the soils are fully replete with water) mid Nov-early Apr
- Summer moisture deficits for: wheat: 112 mm
potatoes: 105 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 MAFF³. There are no climatic limitations at this locality.

SURVEY RESULTS

3.4 The agricultural quality of the land is determined by wetness and droughtiness and stoniness. Land of grade 2 has been identified.

Grade 2

3.5 This land grade makes up the entire site. The deep loamy soils have slight topsoil stoniness limitations as their presence can lead to reduction in crop quality, reduced nutrient storage and increase wear on machinery.

²Meteorological Office, (1989). *Climatological Data for Agricultural Land Classification*.

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

- 3.6 Land with gleyed subsoil within 40 cm depth is also limited by wetness. The combination of medium-textured topsoils and slightly impeded drainage (Soil Wetness Class II) is likely to lead to slight restrictions to land access in winter and early spring due to wetness.
- 3.7 Parts of the site with moderately structured subsoils within 50 cm depth are also limited by droughtiness: these subsoils supply below optimum moisture for crop uptake in dry summers under the local climate.

Grade areas

- 3.8 The land grade is shown on Map 2 and the area occupied shown below.

Table 1: Areas occupied by the different land grades

<i>Grade/subgrade</i>	<i>Area (ha)</i>	<i>% of the land</i>
Grade 2	1.8	100
Total	1.8	100

**APPENDIX
DETAILS OF OBSERVATIONS
MAPS**

Land at Colney Heath: Soils and ALC survey – Details of observations at each sampling point

Obs No	Topsoil			Upper subsoil			Lower subsoil			Slope (°)	Wetness Class	Agricultural quality	
	Depth (cm)	Texture	Stones (%)	Depth (cm)	Texture	Mottling	Depth (cm)	Texture	Mottling			Grade	Main limitation
1	0-29	MCL	5-10	29-42	MCL	x	42-71 71-110+	HCL MZCL	xxx xxx	0	I	2	D/St
2	0-30	MCL	5-10	30-50	MCL	xxx	50-76 76+	HCL Stopped on stones	xxx	0	II	2	W/St
3	0-31	MCL	5-10	31-44	MCL	x	44-61 61-100+	HCL HCL	xxx xxx	0	I	2	D/St
4	0-30	MCL	5-10	30-75	MCL	x	75-100+	HCL	x	0	I	2	St

Survey 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) or reddish matrix and >2% greyish, brownish or ochreous mottles and pale ped faces
- xxxx dominantly blueish matrix often with some ochreous 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
- SI – slope
- T – topography/microrelief

Suffixes & prefixes:

- r-reddish, gn – greenish
- o - organic
- (m, v, x)st – (moderately, very, extremely) stony, chky-chalky
- (vsl, sl, m, v, x)(very slightly, slightly, moderately very, extremely) calcareous

Other abbreviations

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

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)

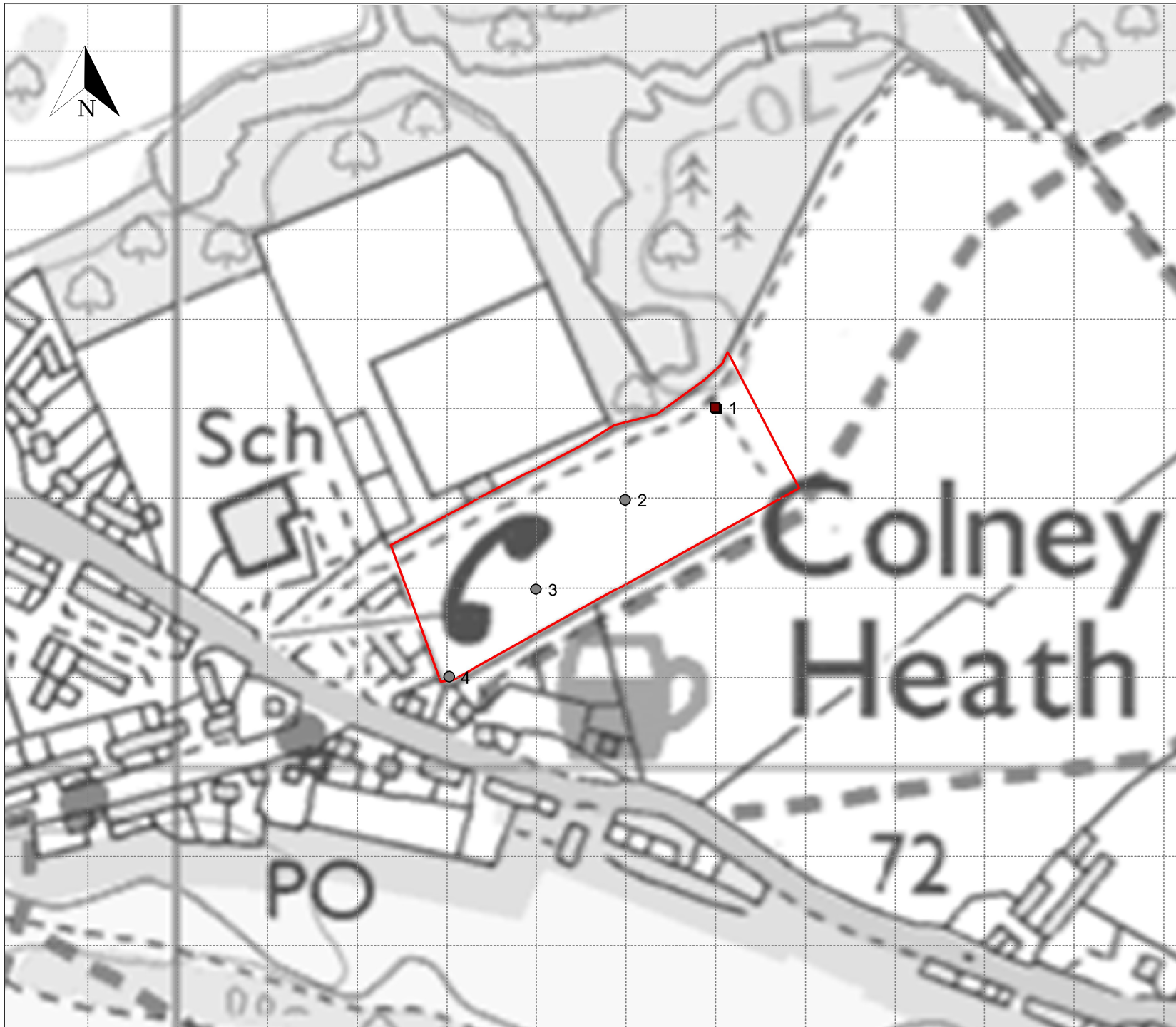
³ Occasionally recorded in the texture box

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)



KEY

- Auger observation
- Soil/land grade description pit
- Survey area

Site:

Land at Colney Heath

Map title:

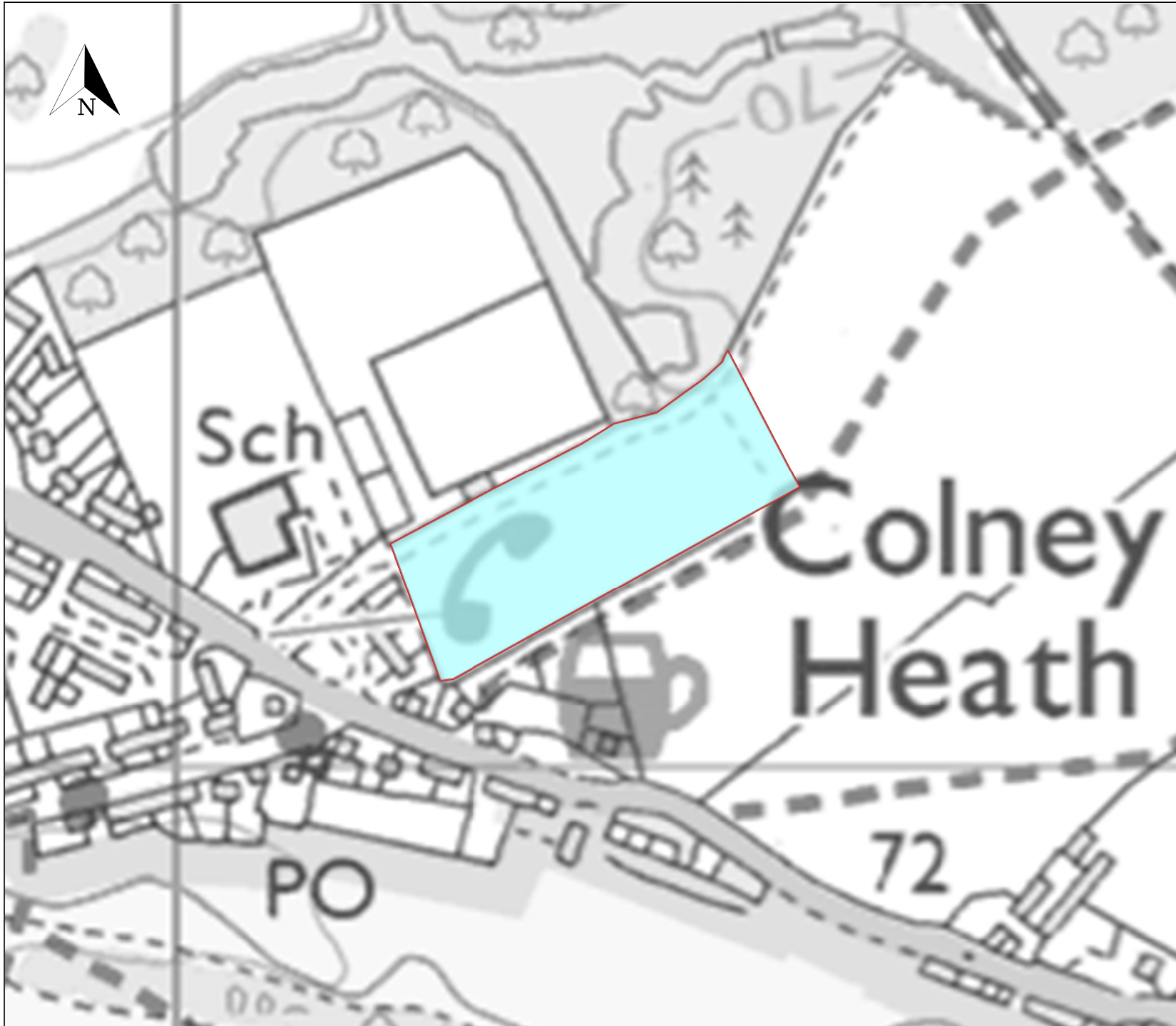
**Map 1
Survey observations**

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Scale: 1:3,000

Date: 26/05/2022



KEY

 Grade 2

 Survey area

Site:

Land at Colney Heath

Map title:

**Map 2
Agricultural Land Classification**

**Land
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01509 670570

Scale: 1:3,000

Date: 26/05/2022