

**AGRICULTURAL QUALITY
OF LAND EAST OF PIRTON**

Report 1271/2

6th July 2026

Land
Research
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OF LAND EAST OF PIRTON**

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SUMMARY

An agricultural land quality survey has been undertaken of 6.5 ha of land east of Pirton, Hertfordshire.

The soils identified have heavy topsoil and impeded subsoil drainage, causing wetness limitations to agriculture. Land quality is limited to Subgrade 3a.

1.0 Introduction

- 1.1 This report provides information on the soils and agricultural quality of 6.5 ha of land east of Pirton in Hertfordshire.

SITE ENVIRONMENT

- 1.2 The survey area (Site) comprises a single field, bordered to the north by a residential property, to the south by Hambridge Way, to the west by residential development and to the east by adjoining agricultural land. The land is level, at an average elevation of approximately 67 m AOD.

AGRICULTURAL USE

- 1.3 The land was under cereal stubble at the time of survey.

PUBLISHED INFORMATION

- 1.4 1:50,000 BGS geological information records the solid geology of the site as West Melbury Marly Chalk Formation. In the south of the Site Lowestoft Formation glacial till deposits are recorded to overlie the chalk.
- 1.5 The reconnaissance (1:250,000) soil map of South East England¹ shows the land as in the Wantage 2 Association, comprising mainly freely and imperfectly-draining fine loamy soils formed in chalky drift over chalk or chalk marl.

¹ Jarvis, M.G. (et al) 1984. *Soils and their Use in South East England*. Soil Survey of England and Wales Bulletin No. 15

2.0 Soils

- 2.1 A detailed agricultural quality survey was undertaken in accordance with Defra/Welsh Government (2025) Agricultural Land Classification Guidelines². 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 auger sampling points, example soil pit profile description and a map (Map 1) showing their location is in an appendix to this report.
- 2.2 Soils were found to be relatively uniform. They comprise heavy calcareous topsoils and upper subsoils, over calcareous clay or silty clay lower subsoil. The subsoil is generally poorly-structured and slowly permeable within 50 cm of the land surface, with evidence of waterlogging (grey mottled colours) found at shallow depth.
- 2.3 An example profile is described below from observation 6 (Map 1)
- | | |
|-----------|---|
| 0-30 cm | Dark greyish brown (10YR 4/2) heavy clay loam; slightly stony with small and medium quartz pebbles; moderately developed medium and coarse sub-angular blocky structure; friable; calcareous; smooth clear boundary to: |
| 30-48 cm | Brownish yellow (10YR 6/6) heavy clay loam with pale brown (10YR 6/3) ped faces and common medium strong brown (7.5YR 5/8) mottles; slightly stony with small and medium quartz pebbles; weakly developed coarse sub-angular blocky structure; friable; moderately porous; calcareous; smooth diffuse boundary to: |
| 48-75 cm | Pale brown (10YR 6/3) heavy silty clay loam to silty clay with many medium strong brown (7.5YR 5/8) and medium light grey (10YR 7/2) mottles; very slightly stony with small angular flints, small chalk fragments and rare medium pebbles; weakly developed very coarse sub-angular blocky structure; firm; <0.5% macropores; very calcareous; smooth diffuse boundary to: |
| 75-120 cm | Light grey (10YR 7/2) silty clay with many coarse yellow (10YR 7/6) mottles; stoneless; weakly developed coarse prismatic structure; firm; <0.5% macropores; very calcareous. |
- 2.4 These soils are judged imperfectly-draining (Soil Wetness Class III).

²Defra/Welsh Government, (2025). *Joint Publication 069: Agricultural Land Classification of England and Wales: Guidelines for Grading the Quality of Agricultural Land*.

3.0 Agricultural use

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 Classification³. The relevant site data for an average elevation of 67 m and a central point at grid reference TL 152,319 is given below.

- Average annual rainfall: 581 mm
- January-June accumulated temperature >0°C 1409 day°
- Field capacity period (when the soils are fully replete with water) 105 days mid Dec-late Mar
- Summer moisture deficits for: wheat: 114 mm potatoes: 107 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 agricultural land classification issued in 1988 by the Ministry of Agriculture, Fisheries and Food⁴. There are no climatic limitations to land quality in this part of England.

SURVEY RESULTS

3.4 The agricultural quality of the land is determined by soil wetness. Land of grade 3 has been identified.

Subgrade 3a

3.5 This Subgrade accounts for all of the land at the Site. The heavy topsoils combined with the imperfectly-draining subsoil mean this land is often too wet to cultivate in early spring. The high calcium carbonate content of the topsoil makes these soils more workable than would otherwise be the case however, and later spring cultivations are likely to be possible under the local climate.

³ *Climatological Data for Agricultural Land Classification*. Meteorological Office, 1989

⁴ *Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land*. MAFF, 1988.

Grade areas

- 3.6 The boundaries between the different grades of land are shown on Map 2 and the areas occupied by each are shown below.

Table 1. Areas occupied by the different land grades

<i>Grade/subgrade</i>	<i>Area (ha)</i>	<i>% of the agricultural land</i>
Subgrade 3a	6.5	100
Total	6.5	100

APPENDICES:

1. SOIL AUGER LOG

2. MAPS

Land east of Pirton: ALC and soil resources 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	27	HCL ca	<5	27-45	HZCL ca	xx	48-80 80-110+	C ca ZC ca	xxx xxx	<1	III	(3a)	W
2	26	ZC ca	<5	26-35	ZC ca	xx(x)	35-110+	ZC ca	xxx	<1	III	(3a)	W
3	28	ZC ca	<5	28-110+	ZC ca	xxx				<1	III	(3a)	W
4	31	ZC ca	<5	31-45	ZC ca	xxx	45-90+	ZC ca	xxx	<1	III	(3a)	W
5	25	HCL	5	25-33	HCL	xxx	33-90+	HZCL ca	xxx	<1	III	(3a)	W
6	30	HCL ca	5	30-48	HCL ca	xxx	48-75 75-110+	HZCL ca ZC ca	xxx xxx	<1	III	(3a)	W
7	27	HCL ca	<5	27-85	HCL/C	xxx	85-90+	C	xxx	<1	III	(3a)	W

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)

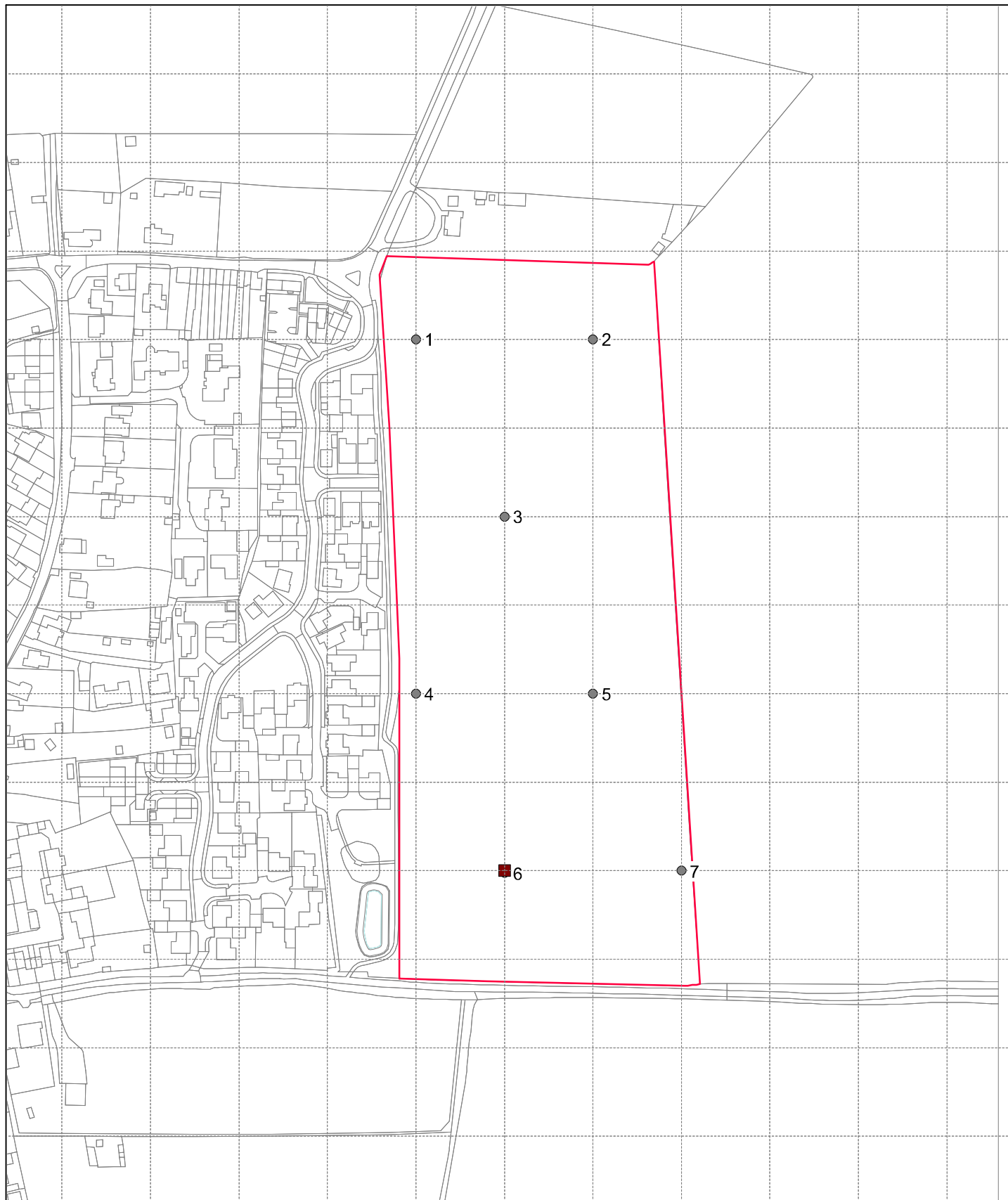
⁵Soil Wetness Classes are defined in Hodgson (1997)

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



Site:

Pirton

Map title:

MAP 1
Observations

KEY

● Auger observations

■ Pits

□ Survey area

Date: 06/07/2026

Scale: 1:3,000

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Site:

Pirton

Map title:

MAP 2
Agricultural Land
Classification

KEY



Subgrade 3a



Survey area

Date: 06/07/2026

Scale: 1:3,000

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