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**AGRICULTURAL QUALITY
OF LAND OFF ORTON ROAD, WARTON**

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Report 2544/1

7th February 2025

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**AGRICULTURAL QUALITY
OF LAND OFF ORTON ROAD, WARTON**

R E Leverton PhD, MRSB, FSoilSci

Report 2544/1
Land Research Associates Ltd
Tapton Park Innovation Centre
Brimington Road
Chesterfield
S41 0TZ
www.lra.co.uk

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SUMMARY

An agricultural land quality survey has been undertaken of 5.7 ha of land off Orton Road, to the west of the village of Warton, Warwickshire in February 2025.

The land within the site is made up of sandy clay loams with slowly permeable reddish clay at varying depth. Land is of Grade 2 and Subgrade 3a quality, restricted by wetness and in places equally limited by droughtiness.

1.0 Introduction

- 1.1 This report provides information on the soils and agricultural quality of 5.7 ha of land off Orton Road, to the west of the village of Warton, Warwickshire. The report is based on a survey of the land during February 2025.

SITE ENVIRONMENT

- 1.2 The survey area comprises a single field, bounded to the north and west by Church Road, to the south by Orton Road and to the east by housing and a recreation area.
- 1.3 At the time of survey the agricultural land contained a cereal crop.

PUBLISHED INFORMATION

- 1.4 British Geological Survey 1:50,000 scale information records the bedrock geology of the survey area as Helsby Sandstone Formation sandstone in the east and Helsby Sandstone Formation mudstone in the west. Overlying superficial Head deposits are recorded in the western half of the survey area.
- 1.5 The National Soil Map (published at 1:250,000 scale) records the majority of the survey area as Hodnet Association: mainly reddish fine and coarse loamy soils with slowly permeable subsoils and slight seasonal waterlogging, with some similar well drained reddish fine loamy soils. A small area in the south-west corner is mapped as Newport 4 Association:.. mainly deep well drained sandy soils¹.

¹Ragg, *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 detailed soils and agricultural quality survey was carried out in February 2025 in accordance with MAFF (1988) 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 a combination of pits and augerings to a maximum depth of 1.2 m. A log of the sampling points and maps (Map 1) showing their locations are in an appendix to this report.
- 2.2 Generally the soils within the survey area comprise a sandy clay loam topsoil overlying a similarly-textured upper subsoil. The upper subsoil horizon is usually permeable and ungleyed³. This upper subsoil overlies a reddish clay lower subsoil at varying depth (48-100 cm) which is often gleyed and slowly permeable. Very occasionally a sand-textured lower subsoil was encountered.
- 2.3 Where the clay is at moderate or shallow depth the soils are moderately freely to imperfectly draining (Soil Wetness Class II/III). Where the clay is at depth and the permeable medium loamy soils are not gleyed, the soils are freely-draining and assessed as Soil Wetness Class I.
- 2.4 A soil pit was dug in a representative profile and the results are presented in an appendix to this report.

²MAFF, (1988). *Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land*.

³ Reddish matrix with pale ped faces and ochreous mottles or ferrimanganiferous concentrations

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 Classification⁴. The relevant site data for the survey area at Grid Reference SK 280,033 at an average elevation of 82 m AOD is given below.

- Average annual rainfall: 661 mm
- January-June accumulated temperature >0°C 1382 day°
- Field capacity period 146 days
(when the soils are fully replete with water)
- Summer moisture deficits for: wheat: 103 mm
potatoes: 93 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 MAFF⁵. There are no climatic limitations at this locality.

SURVEY RESULTS

- 3.4 The agricultural quality of the land is determined by a combination of wetness and droughtiness limitations. Land of Grade 2 and 3 has been identified. Other factors have been assessed but do not affect the grading of the land.

Grade 2

- 3.5 This land grade comprises the medium loamy soils that are freely to moderately freely-draining (Soil Wetness Class I/II). They are slightly restricted by slight droughtiness under the relatively dry local climate.

⁴Meteorological Office, (1989). *Climatological Data for Agricultural Land Classification*.

⁵MAFF, (1988). *Agricultural Land Classification for England and Wales: Guidelines and Criteria for Grading the Quality of Agricultural Land*.

- 3.6 The medium loams with reddish clay at depth (Soil Wetness Class II). are equally limited by wetness. These soils will have minor wetness limitations which are likely to restrict the flexibility of cultivations, particularly in winter.

Subgrade 3a

- 3.7 A band of the land running diagonally from the south-west to the north-east is of Subgrade 3a quality, limited by wetness. The soils in this area have a sandy clay loam topsoil and a slowly permeable reddish clay subsoil relatively shallow in the soil profile (Soil Wetness Class III). The combination of moderately high topsoil clay content and impeded drainage means machinery access to this land for cultivation is restricted in winter and early spring; although late spring and autumn croppings are possible in most years.

Other land (non-agricultural)

- 3.8 This comprises a small shrubby area around a pond in the east of the survey area.

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

<i>Grade/subgrade</i>	<i>Area (ha)</i>	<i>% of the land</i>
Grade 2	4.1	72
Subgrade 3a	1.5	26
Other land	0.1	2
Total	5.7	100

APPENDIX
DETAILS OF OBSERVATIONS
MAPS

Land off Church Road, Warton, Warwickshire: Soils and ALC survey – Details of observations at each sampling point

[illegible]

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) 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)

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, m, v, x)**ca**
(very slightly, slightly,
moderately, 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

Land Off Church Road, Warton, Warwickshire

Soil Pit Data

Pit 1 (AB5): Slope – 1°

Land use – Cereal

Depth (cm)	Texture	Colour	Mottles	Stone Content	Structure	Pores	Consistence	Structural Condition	Roots	Calcium Carbonate	Ferri-manganese	Horizon Boundary
0 – 31	Sandy clay loam	5YR 4/2 (Dark reddish grey)	None	6% small to medium rounded quartzite	Weakly developed fine to medium sub-angular blocky	-	-	-	Many very fine to fine	Non-calcareous	-	Clear, smooth
31 – 55	Sandy clay loam	5YR 4/4 (Reddish brown)	None	10% small to medium rounded quartzite	Moderately developed coarse sub-angular blocky	>0.5% biopores	Friable	Moderate	Common very fine to fine	Non-calcareous	-	Abrupt, smooth
55 – 100+	Clay	2.5YR 4/6 (Yellowish red)	Common distinct ochreous mottles (10YR 4/6)	3% small to medium rounded quartzite	Moderately developed coarse prismatic	<0.5% biopores	Firm	Poor	Few very fine to fine	Non-calcareous	Few	

Wetness Class: III

Wetness Grade: 3a

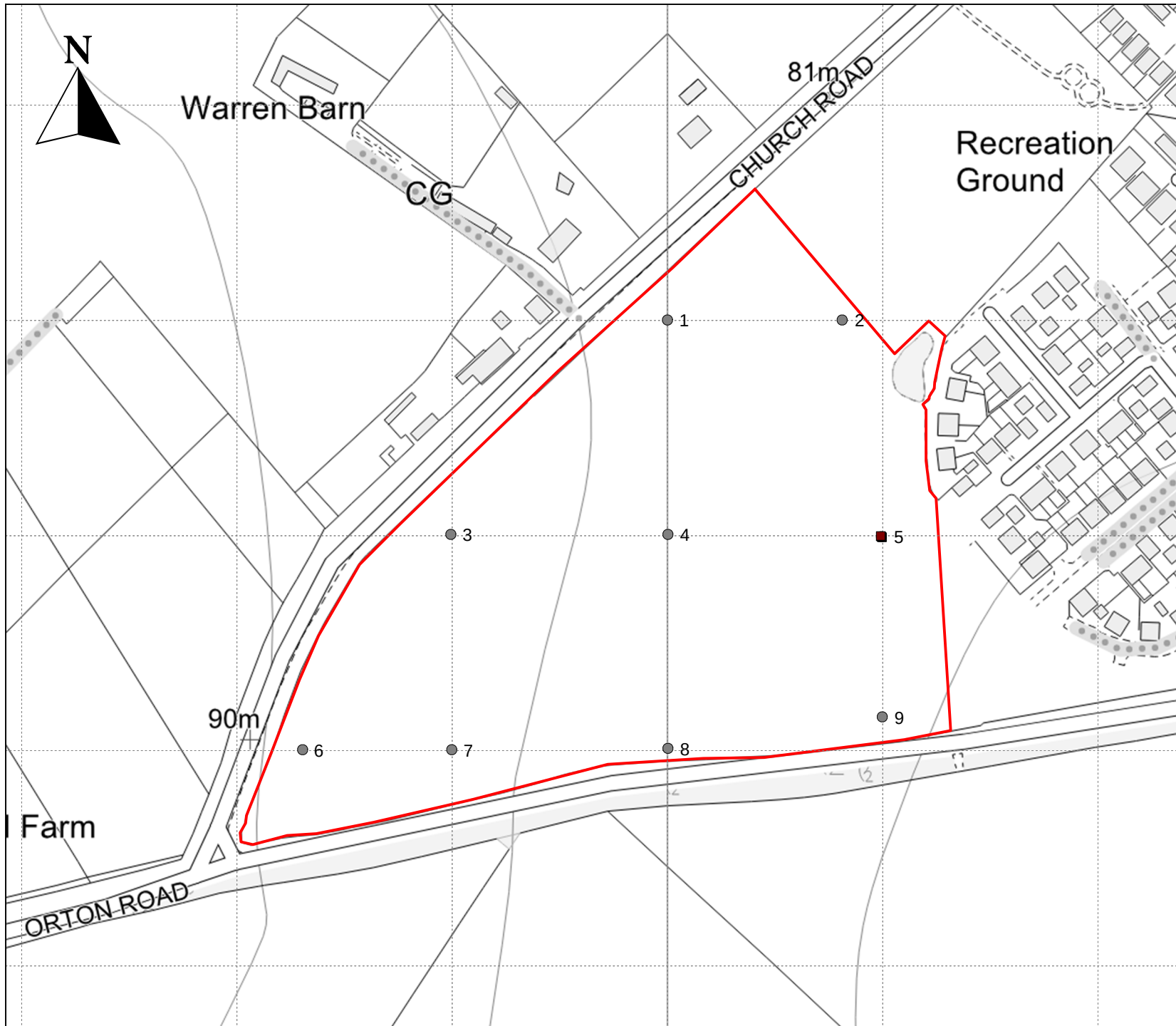
MB (Wheat) = AP (Wheat) 124 - MD (Wheat) 103 = 21mm

MB (Potatoes) = AP (Potatoes) 101 - MD (Potatoes) 93 = -8 mm

Droughtiness Grade: 2

ALC Grade: 3a

Main limiting factor: Wetness and workability



KEY

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

Site:

Land off Orton Road, Warton

Map title:

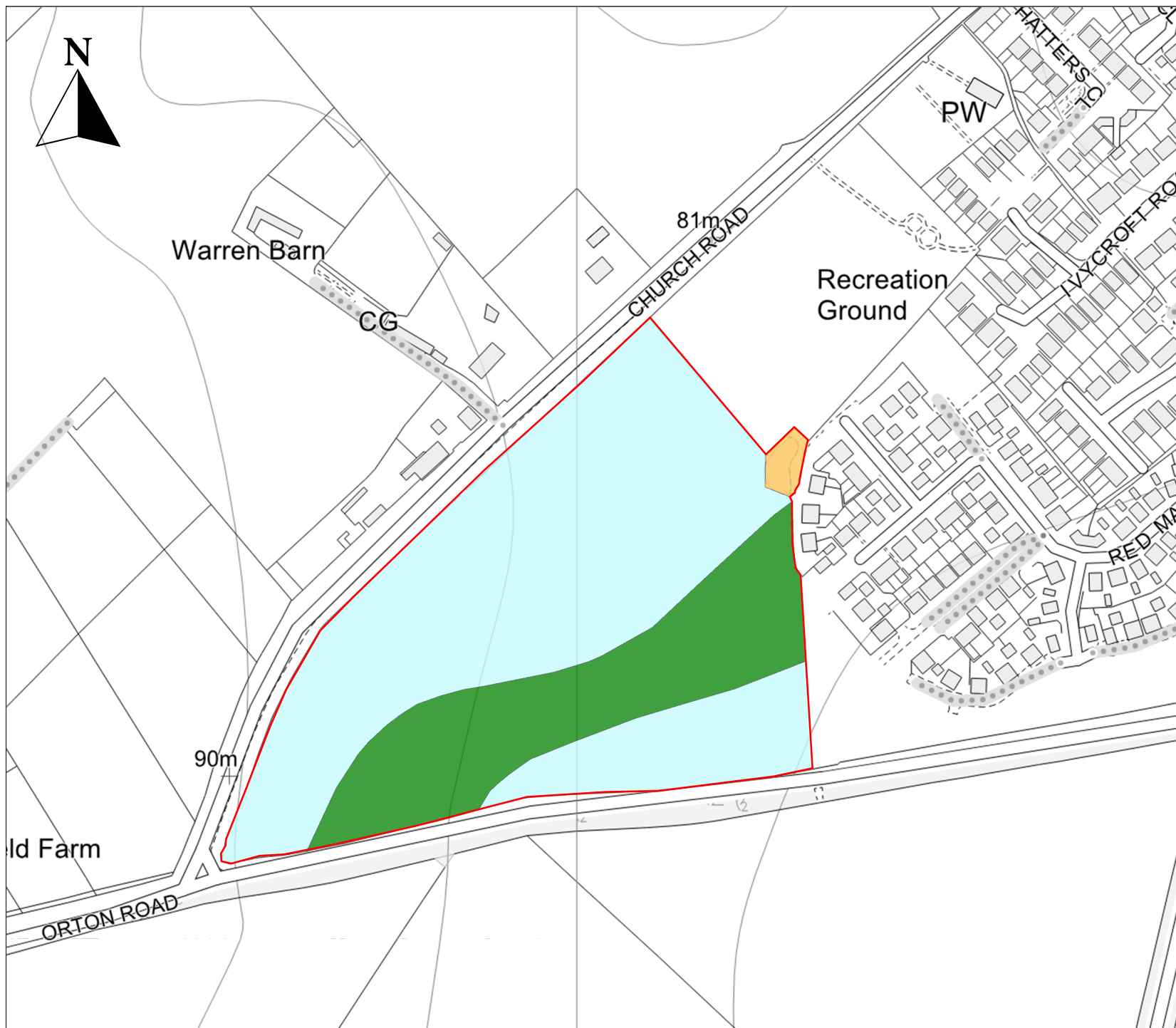
**Map 1
Survey observations**

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Land Research Associates
Tapton Park Innovation
Centre, Chesterfield,
S41 0TZ
www.lra.co.uk

Scale: 1:2,500

Date: 07/02/2025



KEY

- Grade 2
- Subgrade 3a
- Non agricultural
- Survey area

Site:

Land off Orton Road, Warton

Map title:

**Map 2
Agricultural Land Classification**

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Tapton Park Innovation
Centre, Chesterfield,
S41 0TZ
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Scale: 1:3,000

Date: 07/02/2025