AGRICULTURAL QUALITY OF LAND

EAST OF GLOUCESTER ROAD

HARESFIELD

Report 1689/1

18th May, 2020

Land Research ASSOCIATES
www.lra.co.uk

AGRICULTURAL QUALITY OF LAND EAST OF GLOUCESTER ROAD, HARESFIELD

[redacted]

Report 1689/1
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18th May, 2020

SUMMARY

An agricultural land quality survey has been undertaken of 23.6 ha of land east of Gloucester Road, Haresfield.

Land at the site is made up entirely of fine loamy over slowly permeable soils providing subgrade 3b quality land. Agricultural land quality is limited by wetness.

1.0 Introduction

1.1 This report provides information on the agricultural quality of 23.6 ha of land east of Gloucester Road, Haresfield. The report is based on the findings of a detailed survey of the site in May 2020.

SITE ENVIRONMENT

1.2 The site comprises four agricultural fields, bordered to the north by Stonehouse, to the east and south by adjoining agricultural land and to the west by Gloucester Road.

1.3 The land is level to very gently sloping, at an average elevation of approximately 25 m AOD.

PUBLISHED INFORMATION

1.4 1:50,000 scale BGS information records the geology of the land as undifferentiated Blue Lias and Charmouth Mudstone Formation. No superficial deposits are recorded within the site.

1.5 A reconnaissance detail soil map of the area (published at 1:250,000 scale) shows the land within the site as Evesham 2 Association, mainly slowly permeable calcareous clayey soils[1].

1.6 Reconnaissance detail Agricultural Land Classification (ALC) mapping shows the land as grade 3 quality. No detailed survey of the land has previously been published.

[1]Findlay, D.C. *et al*., (1984).*Soils and their use in South West England,* Soil Survey of England and Wales. Bulletin No. 14, Harpenden.

2.0 Soils

2.1 A detailed soil resource and agricultural quality survey was carried out in May 2020. It was based on observations atintersects of a 100 m grid, giving a sampling density of oneobservationper hectare. During the survey, soils were examined by a combination of pits and augerings to a maximum depth of 1.0 m. A log of the sampling points and a map (Map 1) showing their location is in an appendix to this report.

SLOWLY PERMEABLE SOILS

2.2 These soils make up the entire site. They comprise heavy clay loam or clay topsoils, over slowly permeable clay that shows evidence of seasonal waterlogging to shallow depth (by the presence of greyish and ochreous mottle *gley* colouration).

2.3 An example profile is described below from a pit at observation 4 (Map 1).

0-30 cm	Dark greyish brown (10YR 4/2) heavy clay loam; very slightly stony with small subangular hard stones; moderately developed medium subangular blocky structure; friable; smooth clear boundary to:
30-74 cm	Olive brown (2.5Y 4/4) clay with common distinct fine reddish yellow (7.5YR 6/8) and grey (2.5Y 5/1) mottles; very slightly stony with small subangular hard stones; weakly developed coarse prismatic structure; very firm; smooth gradual boundary to:
74-100cm+	Grey (Gley 6 1/N) clay with common medium distinct reddish yellow (7.5YR 6/8) mottles; slightly stony with small rounded chalk stones; massive (structureless);very firm; calcareous.

2.4 These soils are poorly draining (Soil Wetness Class IV), with a low capacity to absorb excess winter rainfall.

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[2]. The relevant site data for an average elevation of25 m is given below.

- Average annual rainfall: 737 mm
- January-June accumulated temperature >0°C 1500 day°
- Field capacity period (when the soils are fully replete with water) 160 days early Nov-mid Apr
- Summer moisture deficits for: wheat: 106 mm potatoes: 99 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[3]. There are no climatic limitations at this locality.

SURVEY RESULTS

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

Subgrade 3b

3.5 This land grade makes up all of the land within the site. The land is limited by wetness due to the combination of relatively high topsoil clay content and imperfect to poor subsoil drainage (Soil Wetness Class III/IV). This means the land is likely to be too wet to cultivate in spring most years under the local

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

climate. Arable use of the land is therefore limited to autumn-sown combinable crops.

Other land (non-agricultural)

3.6 This land comprises hedgerows and a residential property.

Grade areas

3.7 The boundary of the land gradesare shown on Map 2, the areas occupied are shown below.

Table 1: Areas occupied by the land grades

Grade/subgrade	*Area (ha)*	*% of the land*
Subgrade 3b	20.2	98
Non Agricultural	0.4	2
Total	20.6	100

APPENDIX

MAPS AND DETAILS OF OBSERVATIONS

Land east of Gloucester Road, Haresfield: 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	0-27	C	<5	27-80+	C	xxx				0	IV	3b	W
2	0-31	C	<5	31-100+	C ca	xxx				0	IV	3b	W
3	0-30	C	<5	30-60+	C	xxx				0	IV	3b	W
4	0-30	HCL	<5	30-80+	C	xxx				1	IV	3b	W
5	0-30	C	<5	30-60+	C	xxx				0	IV	3b	W
6	Non agricultural - hedgerow												
7	0-32	C ca	<5	32-60+	C ca	xxx				0	IV	3b	W
8	0-31	HCL	<5	31-60	C	xxx	60-76+	SC gravel	xxx	0	IV	3b	W
9	0-30	HCL/C	<5	30-60+	C	xxx				1	IV	3b	W
10	0-30	HCL	<5	30-100+	C	xxx				0	IV	3b	W
11	0-30	HCL	<5	30-100+	C ca	xxx				0	IV	3b	W
12	0-26	C	<5	26-80+	C ca	xxx				0	IV	3b	W
13	0-34	HCL	<5	34-58	C	xxx	58-75+	C ca	xxx	1	IV	3b	W
14	0-32	HCL	<5	32-70+	C	xxx				1	IV	3b	W
15	0-30	HCL/C	<5	30-80+	C	xxx				0	IV	3b	W
16	0-30	HC	<5	30-80+	C	xxx				0	IV	3b	W
17	0-28	HCL	<5	28-90+	C	xxx				1	IV	3b	W
18	0-28	C/HCL	<5	28-80+	C	xxx				0	IV	3b	W
19	0-31	HCL	<5	31-80+	C ca	xxx				1	IV	3b	W
20	0-26	HCL	<5	26-100+	C	xxx				0	IV	3b	W

Key to table

Mottle intensity:

o	unmottled
x	few to common rusty root mottles (topsoils) or a few ochreous mottles (subsoils)
xx	common to many ochreous mottles and/or dull structure faces
xxx	common to many greyish or pale mottles (gleyed horizon)
xxxx	dominantly grey, often with some ochreous mottles (gleyed horizon)

a depth underlined (e.g. <u>50</u>) indicates the top of a slowly permeable layer
(a wavy underline indicates the top of a layer borderline to slowly permeable)

Texture:

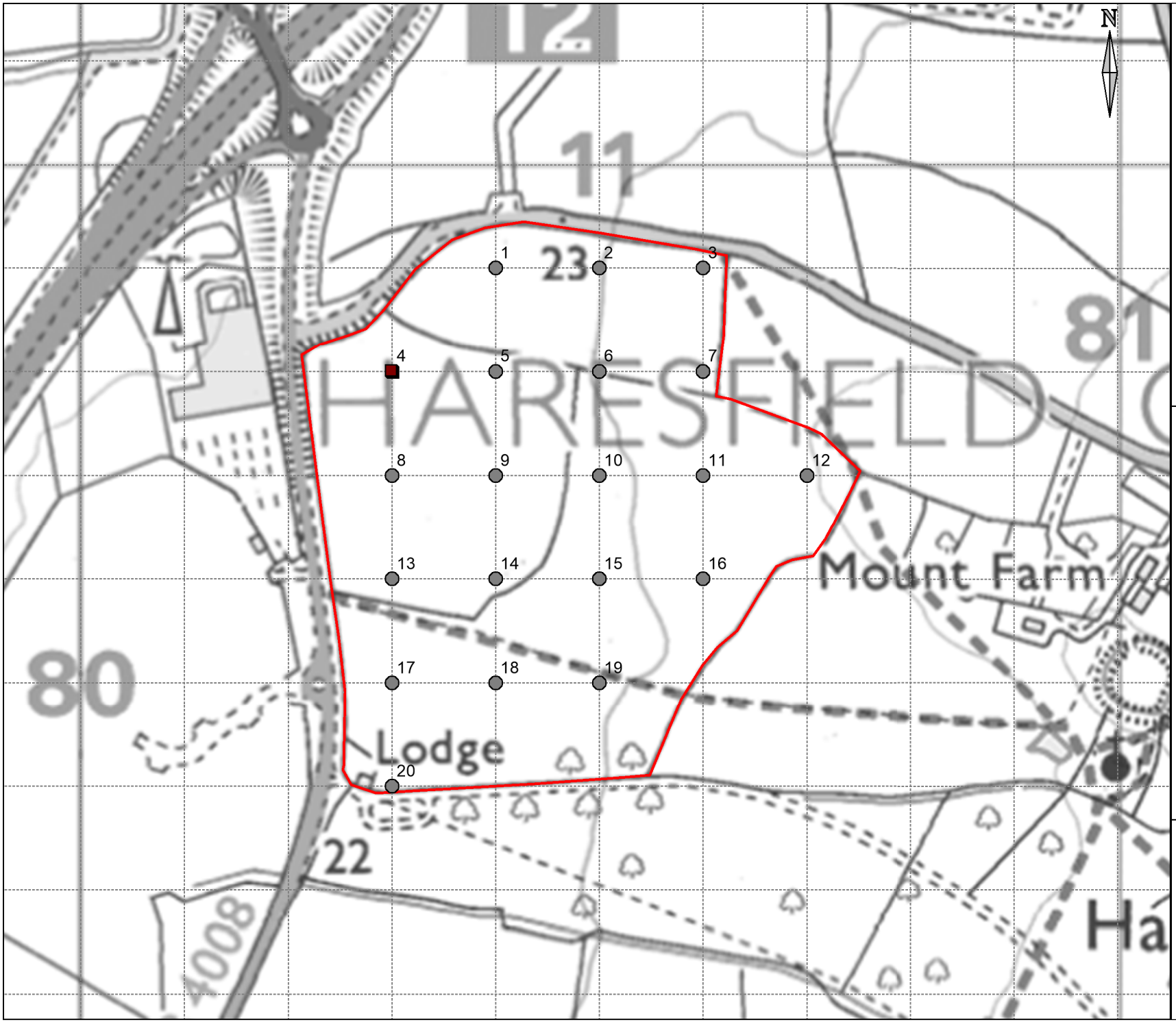
C - clay
ZC - silty clay
SC - sandy clay
CL - clay loam (H-heavy, M-medium)
ZCL - silty clay loam (H-heavy, M-medium)
SCL - sandy clay loam
SZL - sandy silt loam (F-fine, M-medium,C-coarse)
SL - sandy loam (F-fine, M-medium, C-coarse)
LS - loamy sand (F-fine, M-medium, C-coarse)
S - sand (F-fine, M-medium, C-coarse)
P - peat (H-humified, SF-semi-fibrous, F-fibrous)
LP - loamy peat; PL - peaty loam
R - bedrock

Limitations:

W - wetness/workability
D - droughtiness
De - depth
St – stoniness
Sl – slope
F - flooding
T – topography/microrelief

Texture suffixes & prefixes:

ca – calcareous: x-extremely, v-very, sl-slightly
(ca) marginally calcareous
mn - ferrimanganiferous concentrations
gn – greenish, yb – yellowish brown, rb – reddish brown
r – reddish; (v)st – (very) stony; sdst–sandstone;lst - limestone
dist - disturbed soil layer; mdst - mudstone



KEY

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

Client:

TRITAX SYMMETRY
A TRITAX BIG BOX COMPANY

Site:

Land east of Gloucester Road, Haresfield

Map title:

Map 1
Survey observations

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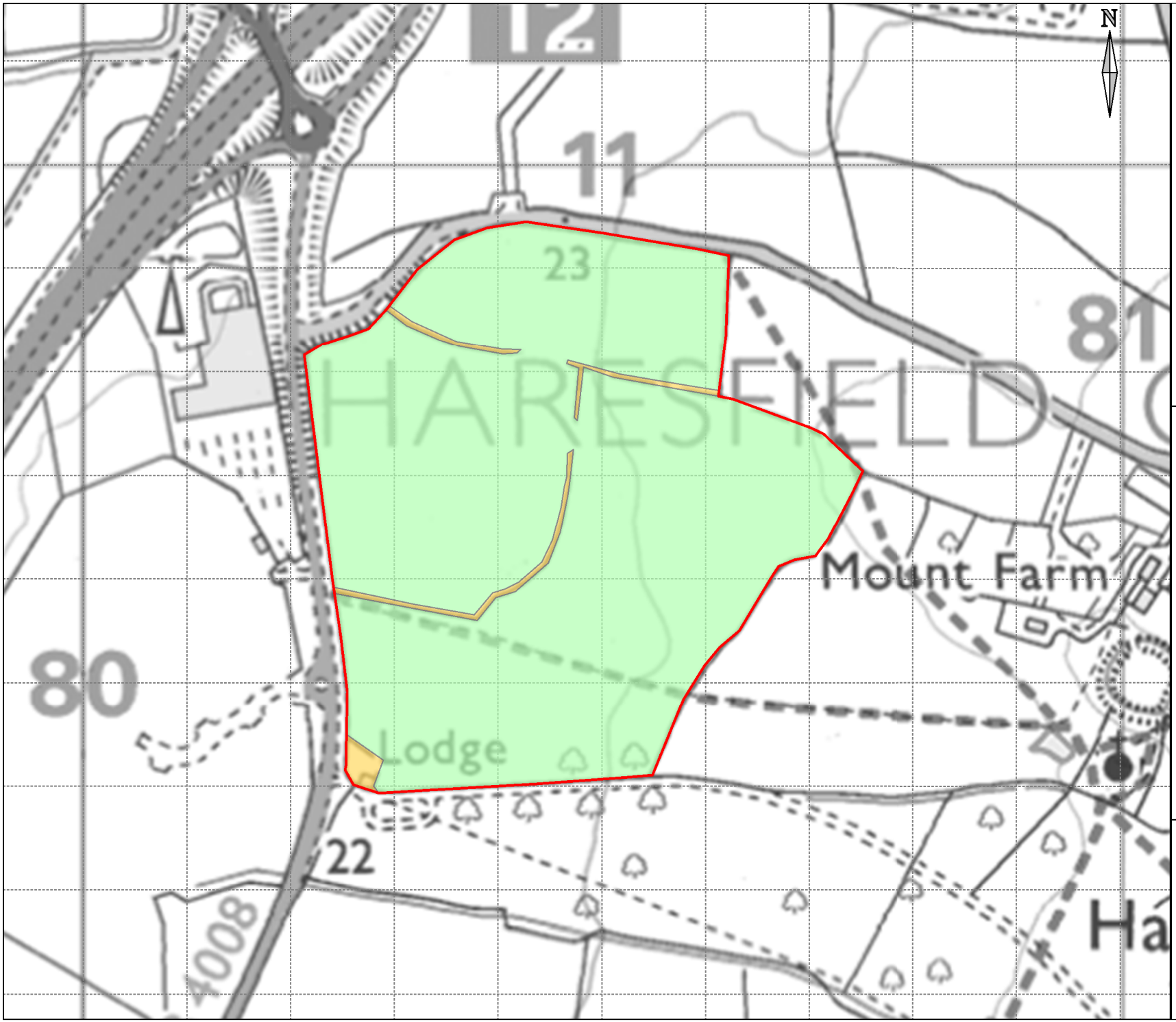
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 14/03/2019



KEY

- Subgrade 3b
- Non agricultural
- Survey area

Client:

TRITAX SYMMETRY
A TRITAX BIG BOX COMPANY

Site:

Land east of Gloucester Road, Haresfield

Map title:

Map 2
Agricultural Land Classification

Land Research Associates
Lockington Hall
Lockington
Derby DE74 2RH
01509 670570

Scale: 1:5,000

Date: 14/03/2019