

**LAND AT RED HOUSE FARM,
LILLINGTON
AGRICULTURAL USE & QUALITY**

Report 867/1b

24th July, 2013

Land
Research
ASSOCIATES

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LILLINGTON
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Report 867/1b

Land Research Associates Ltd
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24th July, 2013

SUMMARY

A study and semi-detailed agricultural land classification survey has been undertaken of 29 ha of Red House Farm adjacent to Lillington.

The land varies from almost level in some of the fields adjoining Lillington to moderately steeply sloping to the south-east. Sub-grade 3a land is mapped on the more level land of the hill-tops and at the foot of the slopes where there is a cover of loamy topsoil and upper subsoil over the underlying clay. The slopes have heavy topsoils directly over red clay. On these, sub-grade 3b land is dominant but there is some grade 4 on the steepest slopes.

The land is overall of poorer quality than land on the north-west or south-west flanks of Leamington, where large areas of grade 2 land have been mapped.

1.0 Introduction

- 1.1 This report provides information on the agricultural quality and use of 29 ha of agricultural land abutting Lillington in Warwickshire. The report is based on a desk study and a survey of the land in July 2013.

SITE ENVIRONMENT

- 1.2 The land investigated comprises a block of nine fields of Red House Farm on the south-east edge of Lillington. Four of the fields abut or partly abut residential land, the western edge adjoins a water treatment works and the other edges of the survey area are formed by further agricultural fields. The land falls from 97 m AOD beside Lillington to 68 m AOD in the south, with strong or moderately steep slopes in parts.

AGRICULTURAL USE

- 1.3 The land is part of a block of 120 ha of Red House Farm, which farms a further 260 ha of land in the locality. All but one field within the survey area are grassland to provide grazing or conserved fodder for Red House Farm Riding School. The north-east field is in arable use, with a crop of oats at the time of the survey.

PUBLISHED INFORMATION

- 1.4 The 1:50,000 BGS geological information shows that the land is underlain by Mercian Mudstone but capped at upper levels by a sequence of glacial drift deposits, including Oadby Till, Woolston Clay, Thrussington Till and Bagington Sand and Gravel. The 1:250,000 reconnaissance soil map of Midland and Western England¹ shows loamy over clayey soils of the Salop association at higher levels with clay soils of the Worcester association on the slopes.
- 1.5 Agricultural land classification (ALC) mapping carried out in the 1970s (before revision of the classification and only designed to indicate a generalised pattern) shows the agricultural land as grade 3. A later survey (undertaken to the current classification) of land to the north shows a mixture of sub-grade 3a and 3b land, the latter mapped on the slopes.

¹ Ragg, J M (*et al*) 1984. *Soils and their Use in Midland and Western England* Soil Survey of England and Wales Bulletin No. 12

2.0 Soils

2.1 A semi-detailed soil and agricultural quality survey was carried out in July 2013. It was based on observations at alternate intersects of a 100 m grid, giving a sampling density of one observation every two hectares. During the survey soils were examined by a combination of pits and augerings to a maximum depth of 1.1 m. A map (Map 2) showing the location of survey observations is in an appendix to this report. A log of observations is available on request.

2.2 The main soils vary from loamy upper horizons over clay, to clay topsoil and reddish clay subsoil over mudstone. They are briefly described below.

LOAMY OVER CLAYEY SOILS

2.3 These are of two types. On the hilltop a 15-20 cm-thick medium clay loam or sandy clay loam topsoil is over a brown upper subsoil of similar texture and thickness. The upper subsoil is often slightly mottled and in places is fairly stony. Slowly permeable reddish clay till is encountered at a depth of 40-50 cm.

2.4 Similar soils occur on the gentle footslopes of the southern margin but contain less stones and are over reddish clay weathered from Mercian Mudstone.

CLAY SOILS

2.5 These soils mainly occur on slopes of 4-12°. Topsoils are heavy clay loam or clay and, in places, weakly calcareous. They are immediately over dense red clay that grades below into weathered mudstone. The clay subsoil and weathered mudstone are calcareous in places and contain small stones of sandstone 'skerry'. On the steepest slopes weathered calcareous mudstone can be directly below the topsoil.

2.6 Heavy soils also occur patchily on gently sloping land around the riding stables, but over grey-mottled clay derived from glacial till as opposed to mudstone.

OTHER SOILS

2.7 The top of the steeper slopes is marked in places by a very thin band of sandy soils.

3.0 Agricultural 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 Agricultural Land Classification (ALC) system classifies land into five grades numbered 1 to 5, with grade 3 divided into two sub-grades (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 Classification². The relevant site data for an average elevation of 80 m is given below.

- Average annual rainfall: 655 mm
- January-June accumulated temperature >0°C 1400 day°
- Field capacity period 140 days
(when the soils are fully replete with water) late Nov-early April
- Summer moisture deficits for: wheat: 102 mm
potatoes: 93 mm

3.3 The survey described in the previous section was used in conjunction with the agroclimatic data above to classify the site using the revised guidelines for agricultural land classification issued in 1988 by the Ministry of Agriculture, Fisheries and Food³.

SURVEY RESULTS

3.4 The agricultural quality of the survey area is mainly determined by topsoil texture and the degree of soil wetness over slowly permeable subsoil. However slope is a controlling factor in places. Land of grades 3 and 4 have been mapped.

Sub-grade 3a

3.5 This is mapped on the loamy over clayey soils described in paragraphs 2.3 and 2.4. Because of the slowly permeable subsoil and a soil wetness class of III, this

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

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

land suffers some workability and grazing constraints in autumn, winter and early spring.

Sub-grade 3b

- 3.6 This sub-grade is mapped on the slopes and locally elsewhere where soils are heavy textured (see paragraph 2.5) and tend to suffer surface wetness for long periods from autumn through to spring (Wetness Class III, locally IV). Consequently this land is more suited to grassland and early autumn-sown cereal and oilseed crops

Grade 4

- 3.7 The steepest slopes are classified in this grade. Soils are as described in paragraph 2.5 but the lack of a safe turning area for farm vehicles at the foot of most of these slopes has discouraged cultivation and kept the agricultural use as grassland.

Other land

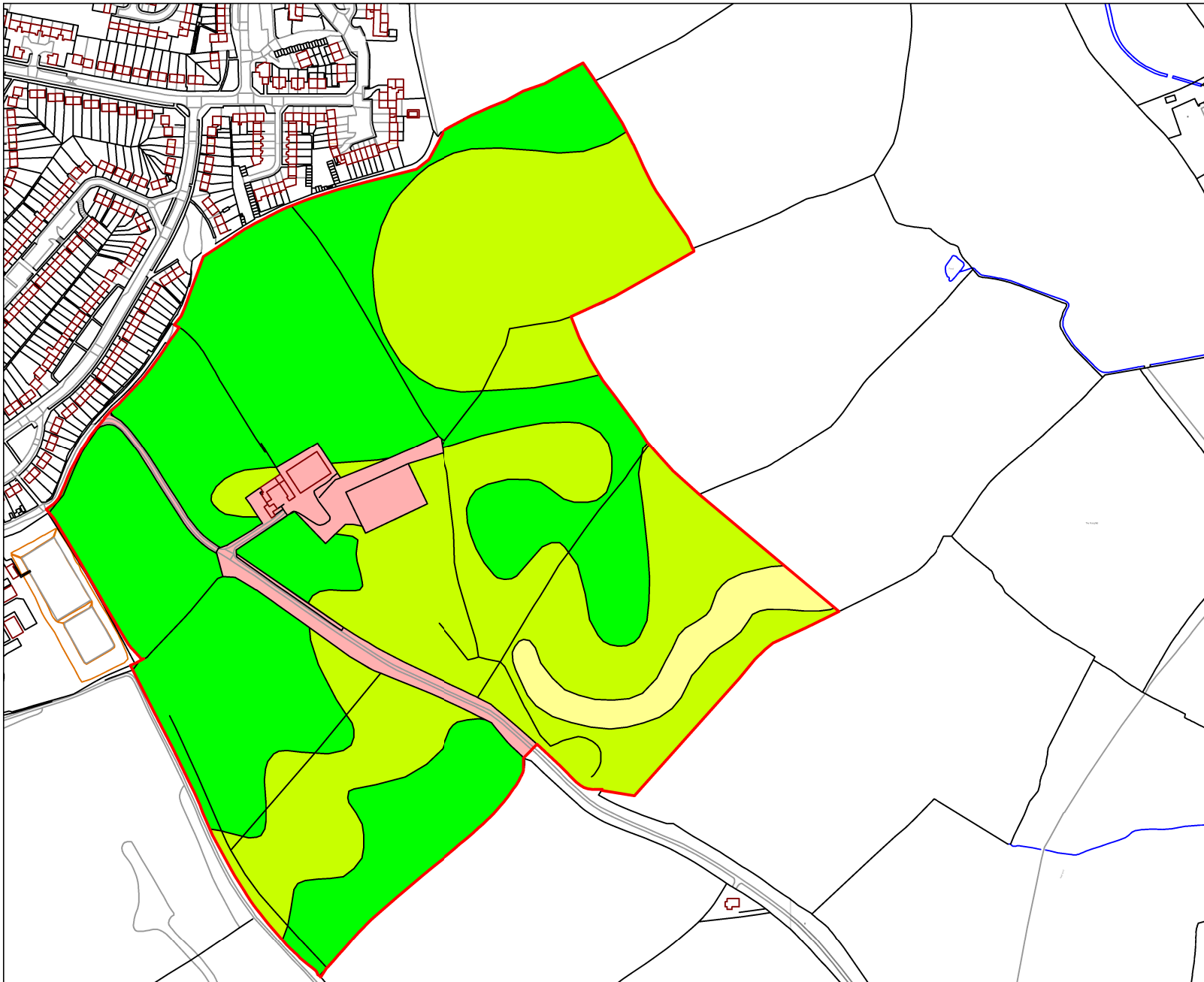
- 3.8 This includes the farm access road and margins that run north-west to south-east through the survey area, and the buildings, manege and car parking area of the riding school.

Grade areas

- 3.9 The boundaries between the different grades of land are shown on Map 1 and the areas occupied by each are shown below.

Table 1. Areas occupied by the different land grades

<i>Grade/sub-grade</i>	<i>Area (ha)</i>	<i>% of the agricultural land</i>
Sub-grade 3a	14.0	51
Sub-grade 3b	12.6	46
Grade 4	1.0	3
Other land	1.5	-
Total	29.0	100



KEY

- Survey area
- Sub-grade 3a
- Sub-grade 3b
- Grade 4
- Non-agricultural land

Client:

H Johnson

Project:

Red House Farm, Lillington

Map title:

**Map 1
Agricultural quality**

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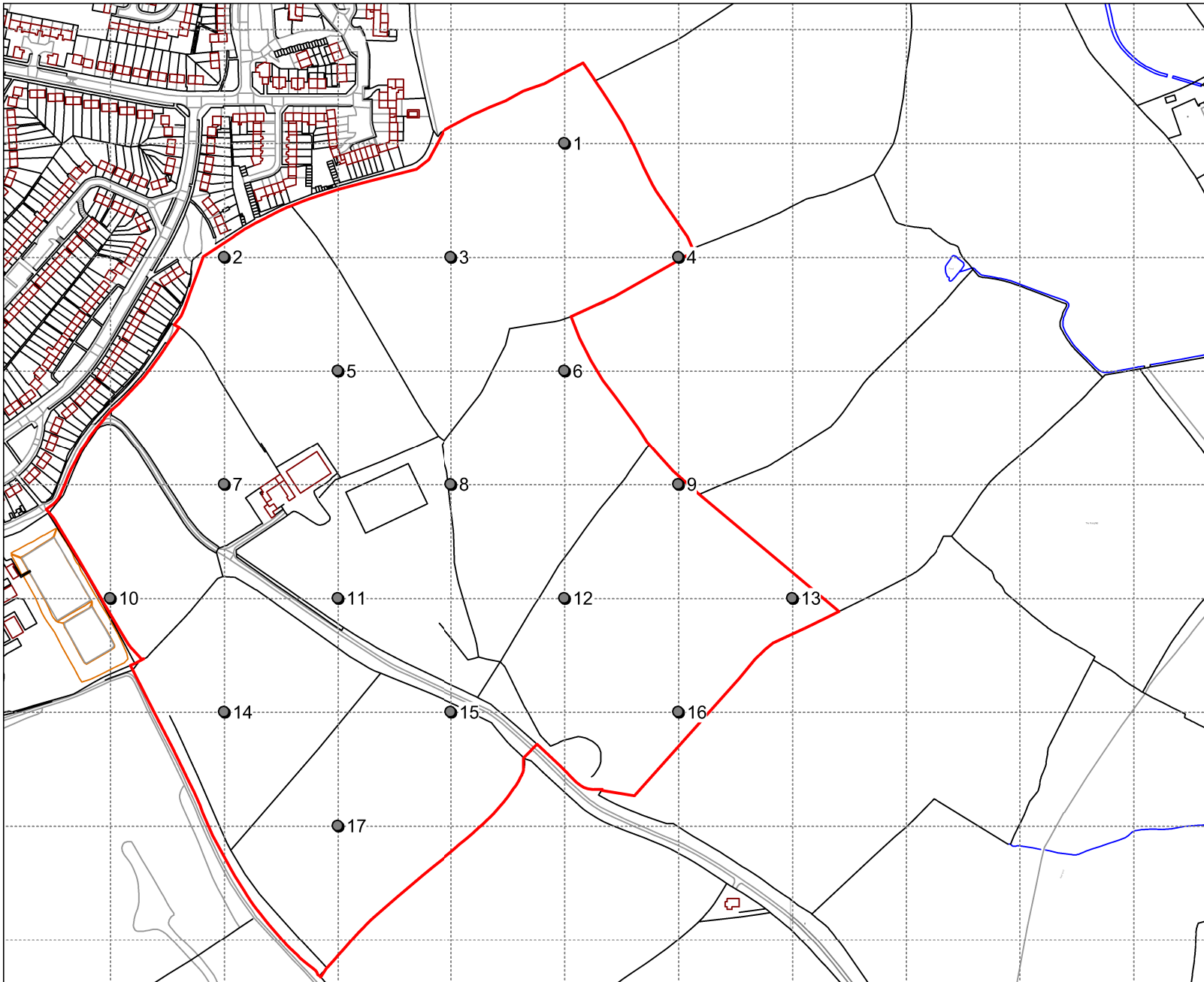
Scale:
1:5,000 at A4

Date:
23/7/2013

4.0 Conclusions

- 4.1 The semi-detailed agricultural land classification survey of 29 ha of Red House Farm, Lillington has shown that:
- Strong and moderately steep slopes have heavy topsoils directly over red clay. On these, sub-grade 3b land is dominant but there is some grade 4 on the steepest slopes.
 - On most of the more level land of the hill-tops and at the foot of the slopes, sub-grade 3a land is mapped where there is a cover of loamy topsoil and upper subsoil over the underlying clay.
- 4.2 The land is overall of poorer quality than land on the north-west or south-west flanks of Leamington, where large areas of grade 2 land have been mapped.

APPENDIX
LOCATION OF SURVEY OBSERVATIONS



KEY



Survey area



Survey observations

Client:

H Johnson

Project:

Red House Farm, Lillington

Map title:

**Map 2
Survey observations**

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Scale:
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