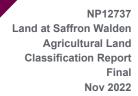


LAND WEST OF THAXTED ROAD, SAFFRON WALDEN AGRICULTURAL LAND CLASSIFICATION REPORT



REPORT

Document status					
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1 INTRODUCTION

- 1.1 This report presents the results of a detailed agricultural land classification (ALC) survey of land to the west of Thaxted Road, Saffron Walden undertaken in accordance with the Ministry of Agriculture Fisheries and Food Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land 1988 in October 2022.
- 1.2 The ALC survey has been prepared on behalf of Kier Ventures Ltd on land associated with an outline planning application for the development of land to the west of Thaxted Road, Saffron Walden for up to 170 residential units, associated landscape and open space, with access from the B184 Thaxted Road.
- 1.3 The methodology for data collection is presented in Section 2 of the report. Section 3 describes the location, topography and climatic characteristics of the Site and Section 4 contains a review of published information relevant to the ALC of the Site. Section 5 describes the soils and agricultural land quality of the Site in detail. Section 6 provides overall conclusions and references are provided in Section 7.

2 METHODOLOGY

2.1 The agricultural resources that have been included in the study are agricultural land quality and soil resources. The methods used to collect data on these agricultural resources are described below.

Agricultural Land Classification

2.2 The assessment of the effects on agricultural land quality and soil resources is based on a desk top assessment of relevant published information and a detailed site survey.

Desk Top Study

- 2.3 The desk top study included the following information:
 - Geological Information from British Geological Survey Internet Portal at
 - British Geological Survey Sheet 222 (Great Dunmow), 1:50,000;
 - Soil Survey of England and Wales, National Soil Map of England and Wales, Sheet 4(Eastern England), 1:250,000 (Sheet 148) 1:63,360
 - Soil Survey of England and Wales, Special Survey 2, Soils of Saffron Walden District
 - The Met. Office Climatological data for Agricultural Land Classification, January 1989
 - DEFRA MAGIC (Multi-Agency Geographic Information for the Countryside) website at <u>www.magic.defra.gov.uk</u>

Site Survey

2.4 A detailed site survey was undertaken on the site in October 2022. This included the examination of 13 hand auger borings taken at the locations shown on Figure 1, together with the examination of two open soil pits on site (excavated for hydrological monitoring works). The auger boring and soil pit descriptions are provided in Appendix A.

3 LOCATION, LAND USE, TOPOGRAPHY AND CLIMATE

Location and Land Use

3.1 The Site comprises two fields in arable cultivation (currently stubble). The Site lies immediately to the south of Saffron Walden and with the B184 Thaxted Road located along the northern boundary of the Site.

Topography

3.2 The Site slopes gently from just over 100m a.o.d. in the south-west to about 70m a.o.d in the north-east. There are no agricultural limitations imposed by slope.

Climate

3.3 The following climatic data relevant to the assessment of specific limitations within the ALC system has been obtained from the Meteorological Office's standard 5km grid point data set for representative points in the north, centre and south of the Site.

Climatic Data for Site	Grid reference TL 547373
Altitude (m)	80m
Accumulated Temperature ATO (day degrees)	1385
Average Annual Rainfall AAR (mm)	591
Climatic Grade	1
Field Capacity Duration (days)	115
Moisture Deficit for wheat (mm)	113
Moisture Deficit for potatoes (mm)	106

3.4 The data are typical of the warm but relatively dry lowland areas of Eastern England, with a short Field Capacity Duration (a measure of climatic wetness) over the winter and moderate to high Moisture Deficits which build up during the summer. In itself climate does not impose any agricultural imitation.

4 PUBLISHED GEOLOGICAL, SOIL AND ALC INFORMATION

Geology

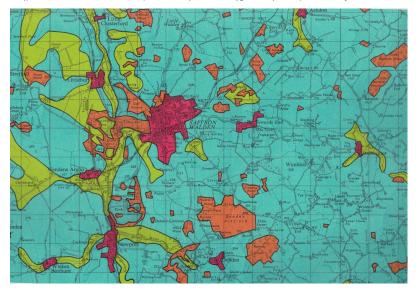
4.1 The local bedrock is Chalk, shown on the map below in bright green, but there is a small area of glacial till usually referred to as the Chalky Boulder Clay on the highest ground in the extreme south-west, shown in a greyish tone.

Soils

- 4.2 The Saffron Walden area was the subject of a reconnaissance survey carried out by the Soil Survey of England and Wales and published at a scale of 1:63,360 in 1969 together with a descriptive report (Sheet 148 Saffron Walden). This uses the concept of Soil Associations, geographic groupings of soils usually related to specific parent materials. Within each Association there are likely to be a number of more tightly defined soil types known as Soil Series. The commonest one gives its name to the Association.
- 4.3 The soil survey sheet shows the site as Association 3 SWAFFHAM PRIOR on the areas shown as Chalk and Head on the geological map and as Association 6 HANSLOPE on the Chalky Boulder Clay.
- 4.4 The Soil Associations on this reconnaissance map and other similar maps have been transposed more or less exactly onto the National Soil Map with due allowance for the differences in scale and updating of the numbering system used for the various Associations. Association 3 SWAFFHAM PRIOR of the Sheet 148 reconnaissance survey becomes Association 511e SWAFFHAM PRIOR on the National Soil Map while Association 6 HANSLOPE becomes Association 411d HANSLOPE. To avoid confusion the association numbers and names of the National Soil Map will be used subsequently in this discussion.
- 4.5 Association 511e SWAFFHAM PRIOR is described as a collection of "well drained calcareous coarse and fine loamy soils over chalk rubble. Some similar shallow soils. Deep non-calcareous loamy soils in places. Striped and polygonal soil patterns locally. Slight risk of water erosion". The well drained calcareous coarse loamy soils include the Swaffham Prior series *per se* with generally sandy loam textures over chalk rubble within 80cm of the surface. Similar but deeper soils belong to the Moulton series. Conversely shallower soils with chalk or chalk rubble within 30cm of the surface would be classed as the Newmarket series.
- 4.6 The material between 30 and 50cm depth in the Newmarket series can also be described as chalk rubble with a calcareous clay loam matrix.
- 4.7 The HANSLOPE Association (411d) is described as a collection of mainly "slowly permeable calcareous clayey soils with some slowly permeable non-calcareous clayey soils" and developed in calcareous glacial till i.e. the Chalky Boulder Clay. It therefore comprises a collection of broadly similar, heavy textured soils, most of which are calcareous, the Hanslope series *per se*, but with some non-calcareous ones, the Faulkbourne series.
- 4.8 Both these soils suffer from impeded drainage due to a slowly Permeable Layer at depth. The topsoils are usually clays or heavy clay loams but are only rarely medium clay loams and may be calcareous (Hanslope series) or non-calcareous (Faulkbourne series).

Agricultural Land Classification

- 4.9 The site is on the Provisional 1:63,360 scale ALC map, Sheet 148 (Saffron Walden) published in 1969. This is the ALC map which corresponds to the reconnaissance soil survey map mentioned above and it is likely that the soil map will have been available to the compiler of the ALC map.
- 4.10 In general, areas of the HANSLOPE and SWAFFHAM PRIOR Associations are shown as Grades 2 (pale blue on the map below) and 3 (green) respectively.



4.11 An area of boulder clay soils has been surveyed previously by DEFRA and was graded a mixture of Grades 2 and Subgrade 3a. The DEFRA map and report for this area is attached at Appendix B.

5 AGRICULTURAL LAND CLASSIFICATION

- 5.1 The site comprises a mixture of Grade 2 and Subgrade 3a land, limited by soil wetness and/ soil droughtiness.
- 5.2 On the higher land on the south western part of the Site, typical boulder clay soils are identified. Profiles comprise a dark brown clay calcareous topsoil overlaying an olive brown mottled clay upper subsoil and a greyish brown/greyish mottled slowly permeable clay lower subsoils. On this part of the Site, these soils are classified as Wetness Class III and graded 3a according to a soil wetness limitation.
- 5.3 As the land falls through the central part of the Site, soils become more typical of the Swaffham Prior association soils. Soil profiles typically comprise brown heavy clay loam topsoils with 5% stone, overlying similar upper subsoils and commonly sandy clay loam lower subsoils with increasing volumes of chalky material. These profiles are limited to Grade 2 by a slight susceptibility to droughtiness.
- 5.4 To the north east of the Site, there is a small upslope where chalky material was more visible on the surface and soil profiles are characteristic of the shallow soils of the Newmarket soil series. These profiles comprise between 27-40cm of chalky heavy clay loam overlying chalk. These profiles are graded Subgrade 3a according to a slightly more severe droughtiness limitation.

ALC Grade	Area (ha)	%
2	4.05	49
3a	3.75	45
Non-Agricultural	0.5	6
Total	8.3	100

5.5 The areas and percentages of Grades on the Site are therefore as follows:

6 CONCLUSIONS

- 6.1 The Site comprises a mixture of approximately 4.05 ha of Grade 2 and 3.75ha of Subgrade 3a agricultural land. The quality of land on this Site is typical of the quality of land within the vicinity of Saffron Walden and the wider area as shown on the MAFF Provisional ALC mapping. The survey of land further to the east by DEFRA also confirms this typical pattern of ALC grading in this aera where a mixture of Grade 2 and Subgrade 3a land was identified (Appendix B).
- 6.2 Indeed, the Uttlesford District Plan (2005) identifies at paragraph 5.9 that *"there is no Grade 1 land but over 80% of the District is classified Grade 2 by the Ministry of Agriculture, Fisheries and Food. There is some Grade 3a land".* The land within this site is not, therefore of exceptional quality within this area and overriding weight in the overall planning balance should not be attached to the loss of this quality of agricultural land within that context.

7 **REFERENCES**

British Geological Survey Sheet 222 (Great Dunmow), 1:50,000. (1990)

British Geological Survey Internet Portal at www.bgs.ac.uk/map-viewers/geology-of-britain-viewer/ consulted October 2022.

Soil Survey of England and Wales, Special Survey 2, Soils of the Saffron Walden District (Sheet 148) 1:63,360 (1969)

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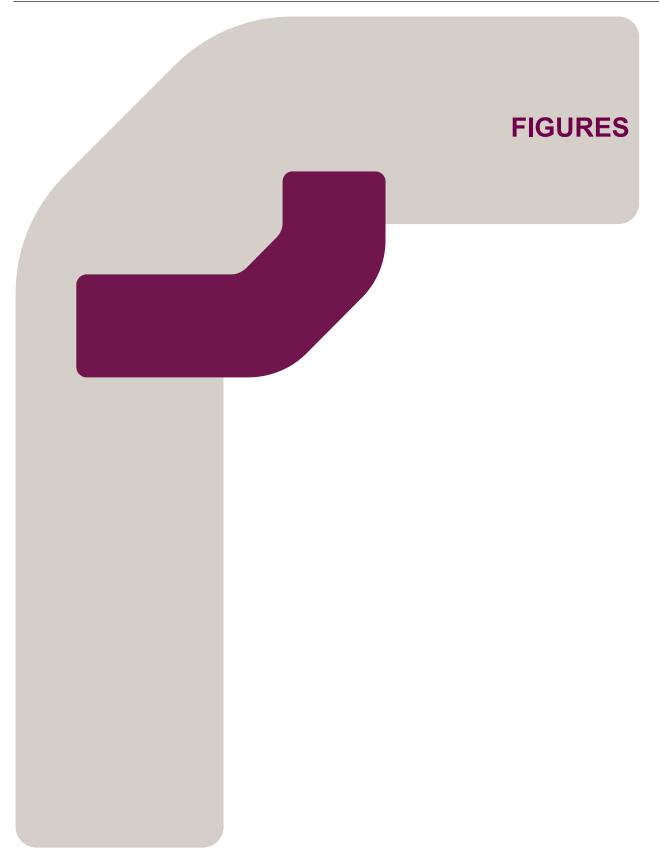
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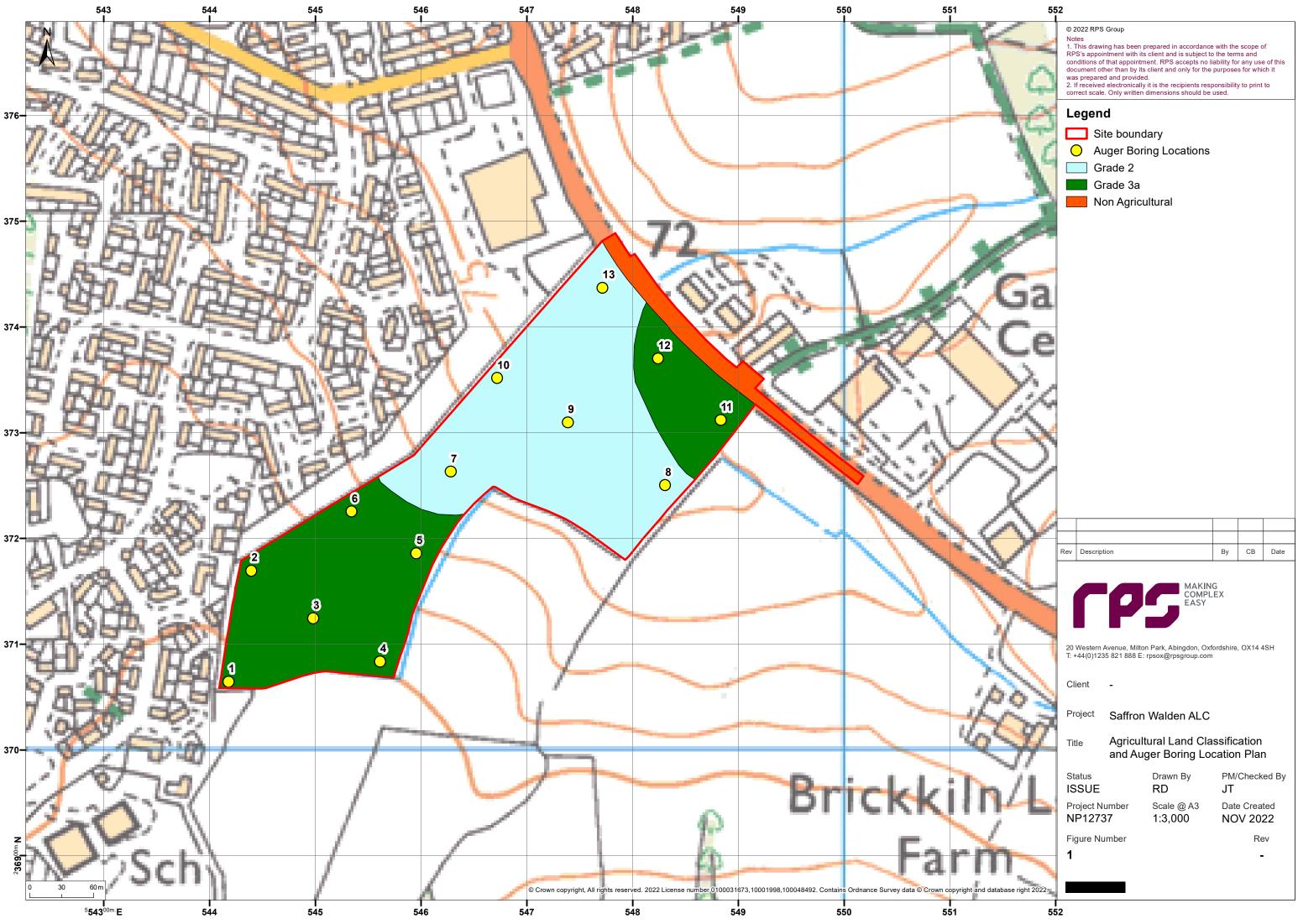
Agricultural Land Classification, Provisional Sheet 148 (Saffron Walden), 1:63,360 (1969) and Accompanying Report (1974).

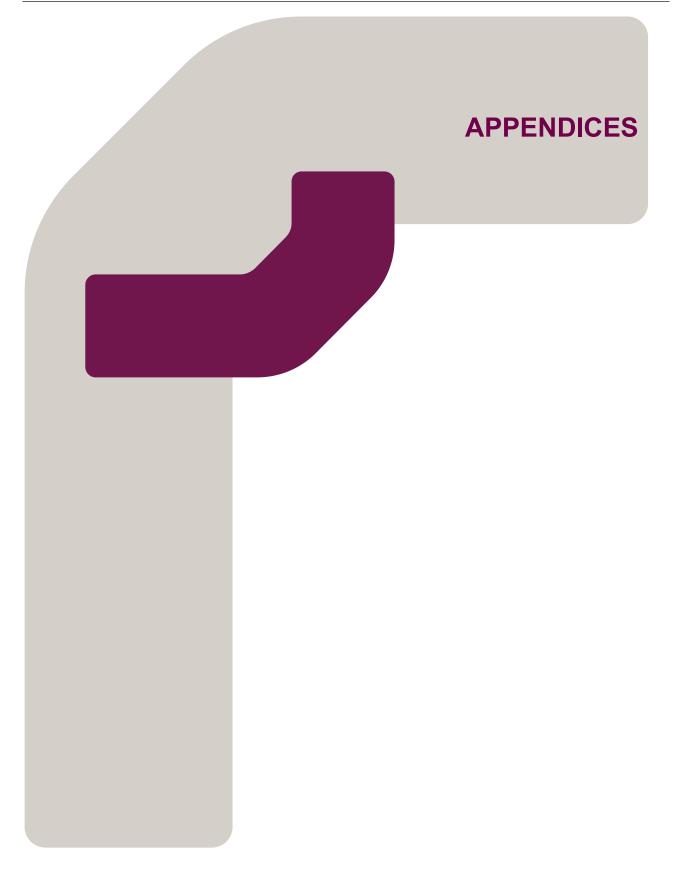
Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land. October 1988.

The Met. Office Climatological data for Agricultural Land Classification. January 1989

DEFRA MAGIC (Multi-Agency Geographic Information for the Countryside) website at magic.defra.gov.uk consulted October 2022.







Appendix A Auger Borings and Soil Pit Descriptions

Key to Auger Boring Descriptions

Textures

Scl – sandy clay loam Hcl – heavy clay loam C – clay

Colours

- Db dark brown
- Ob olive Brown
- Yb yellowish brown
- Gb greyish brown
- Pb pale brown
- Pgb pale greyish brown

Others

Calc – calcareous Cdom – common distinct ochreous mottles Mn – manganese concretions St – stone IMP – Impenetrable SPL – slowly permeable layer

Number	Depth	Colour	Texture	Description	Grade
1	0 – 27	Db	С	Calc; 5% stone	3a
	27 – 48	Ob	С	Cdom; small mn; 5% stone	WC III
	48 – 75+	Pgb	С	Cdom SPL	
2.	0 – 26	Db	С	Calc; 5% stone	3a
	26 – 50	Ob	С	Cdom; small mn; 5% stone	WC III
	50 – 70	Pgb	С	Cdom SPL	
	70-80+	Ŭ		Becoming stony	
3.	0 – 25	Dgb	С	Calc; 5% stone	3a
	25 – 50	Gb	С	Cdom; mn; 5% stone	WC III
	50-90+	g/dg	С	Calc; cdom; 5% stone (very grey here)	
		0 0			
4.	0 – 25	Dgb	С	Calc; 5% stone	3a
	25 – 45	Gb	C	Cdom; mn; 5% stone	WC III
	45 - 65	Pgb	C	Calc; cdom; 5% stone	
	65 - 80+	5		Ditto becoming stony	
		1			
5.	0 – 26	Dgb	С	Calc; 5% stone	3a
	26 – 52	Gb	C	Cdom; mn; 5% stone	WC III
	52-90+	g/dg	C	Calc; cdom; 5% stone (very grey here)	
		5, 5			
6.	0 – 28	Db	Hcl	5% stone; calc (moved off the heavier	2
0.				boulder clay here)	
	28 – 60	В	Hcl	5% stone; calc	Droughtiness
	60 - 70	В	Hcl	Chalky mix (20% chalk); 5% stone	
	70 – 90+	_		Becoming chalky (30-40%) mix with c and 5-	
				10% stone	
7.	0 – 29	Db	Hcl	5% stone; calc (moved off the boulder clay	2
				here)	
	29 – 55	В	Hcl	5% stone; calc	Droughtiness
	55 – 70	В	Hcl	Chalky mix (20% chalk); 5% stone	
	70 – 90+			Becoming chalky (30-40%) mix with c and 5-	
				10% stone	
8.	0 – 27	Db	Hcl	5-10% stone; calc	2
	27 – 55	В	Hcl	5% stone; calc	Droughtiness
	55 – 65	В	Scl	5-10% stone; chalky	
	65 – 85	В		Chalky mixed hcl plus 10% flinty	1
	IMP				
	1				
9.	0 – 27	Db	Hcl	5-10% stone; calc	2
	27 – 55	B	Hcl	5% stone; calc	Droughtiness
	55 - 65	B	Scl	5-10% stone; chalky	<u> </u>
	65 – 85	B		Chalky mixed scl plus 10% flinty	
	IMP	-		,	
	····				
10.	0 – 27	Db	Hcl	5% stone; calc	2
	27 – 50	B	Hcl	5-10% stone	∠ Droughtiness

	50 – 70	В	Scl	Stony here 10% +	
	70-90+	pb	hcl	Chalky mix; 5-10% flinty	
11.				Slight upslope here	
	0 – 27	Dgb	Hcl	15-20% chalky material; few large flints on surface	3a
	27 +			Chalk (Newmarket series here)	Droughtiness
12.	0 – 24	Db	Hcl	Calc; 5% stones	3a
	24 - 40	b	Hcl	20% chalk; 5% stone	Droughtiness
	40+			Chalk	
13.	0 – 28	Db	Hcl	5% stone	2
	28 – 60	В	Hcl	5% stone	Droughtiness
	60 – 70	В	Scl	10-15% chalk; few stones	
	70 – 100+		scl	Chalky mix here (30-40%)	

Soil Pit Descriptions

Pit 1

Close to boring 4 (Open excavation)

- 0 25 cm dark grey brown (10YR 4/2) clay; calcareous; 5% total stone; chalky fragments (5%); stubble roots
- 25 47cm brown/ olive brown (2.5Y 4/4) clay; calcareous; 5 % stone; moderately to coarsely developed angular blocky; common ochreous mottles; mn concretions
- 47 65cm greyish brown (pale) (10YR/5/2) clay; calcareous; medium prismatic structure; increasing stone at depth; slowly permeable layer (WCIII)

Pit 2

Close to Boring 7 (Open excavation)

- 0 28cm dark brown (10YR 4/3) heavy clay loam; calcareous; 5% total stone; chalky frags; stubble
- 28 55cm brown (10YR 5/3) heavy clay loam/sandy clay loam; 5% total stone; calcareous; thickness variable along excavated trench (+ or 10cm); moderately developed coarse subangular blocky
- 55 80cm very pale brown (10YR 7/4) heavy clay loam mixed with 20-30% chalk and 5% stone (flint); moderately/coarse developed sub angular blocky structure.
- 80+ increasingly volumes of chalky material.

Moisture Deficits:

Wheat: 146 Potatoes: 105 (-3) Grade 2 - droughtiness

0 – 29	Db	Hcl	5% stone; calc (moved off the boulder clay	2
			here)	
29 – 55	В	Hcl	5% stone; calc	Droughtiness
55 – 70	В	Hcl	Chalky mix (20% chalk); 5% stone	
70 – 90+			Becoming chalky (30-40%) mix with c and 5- 10% stone	

Appendix B: DEFRA Survey Data

AGRICULTURAL LAND CLASSIFICATION AND SOIL PHYSICAL CHARACTERISTICS

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LAND NEAR SHIRE HILL FARM SAFFRON WALDEN ESSEX

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AGRICULTURAL LAND CLASSIFICATION (ALC) AND SOIL PHYSICAL CHARACTERISTICS

LAND NEAR SHIRE HILL FARM, SAFFRON WALDEN, ESSEX (TL 555 377)

1. BACKGROUND

1.1 The site, an area of 2.8 ha is the subject of an application for spoil dumping to the south east of Saffron Walden in Essex. On the provisional one inch ALC map (MAFF 1968) the land has been graded 2. ADAS carried out a more detailed survey of the site in June 1992 to assess the agricultural land quality.

2. SITE PHYSICAL CHARACTERISTICS

<u>Climate</u>

2.1 Climate data for the site was obtained from the published agricultural climatic dataset (Met Office 1989). This indicates that for the survey area the annual average rainfall is 597 mm (23.5"), field capacity days are 116, and moisture deficits are 112 mm for wheat and 104 mm for potatoes. These climatic characteristics do not impose any limitation on the ALC grading of the survey area.

Altitude and Relief

2.2 The land comprises a shallow valley running east-west flanked to the north and south by gently sloping ground. The average height of the site is 90 m AOD. Neither altitude nor relief constitute limitations to the ALC grade.

3. AGRICULTURAL LAND CLASSIFICATION

- 3.1 The definition of the Agricultural Land Classification grades are included in Appendix 1.
- 3.2 The table overleaf shows the breakdown of ALC grades in hectares and % terms for the survey area.

AGRICULTURAL LAND CLASSIFICATION

Grade	ha	oto
2	1.8	65
3a	<u>1.0</u>	35
Total	2.8	100

Grade 2

3.3 The majority of the site consists of grade 2 land which coincides with the lower slopes of the shallow valley feature which runs east-west through the centre of the site. The profiles comprise deep, calcareous soils, with heavy clay loam or clay topsoils over clayey upper and lower subsoils. The subsoils are permeable to depth, and assessed as wetness class II because a slowly permeable horizon was identified below 65/70 cms depth. The calcareous nature of the soils improves their structure and permeability, thus extending the seasons in which the land can be worked. Slight droughtiness and wetness/workability imperfections restrict the land to grade 2 (very good quality agricultural land).

Subgrade 3a

3.4 Two smaller areas of the site, which correspond with the gently sloping valley sides, have been graded 3a. The soils comprise heavy clay loam topsoils over chalky clay loam or clay. The clayey upper subsoils overlie 'dirty' chalk rubble which occurs from 30/35 cm depth. The upper horizons are moderately stony and become very stony with depth as the chalk stone content increases. Although chalky, the soil remains friable and well rooted to depths of 120 cm or more. The high chalk stone content creates a poor subsoil structure which reduces the available water for crop growth. The land is consequently graded 3a (good quality agricultural land).

4. SOIL PHYSICAL CHARACTERISTICS

<u>Geology</u>

4.1 The published small scale (1:250,000) drift edition geology sheet 16

(Geological Survey 1905), shows the entire site to consist of boulder clay deposits.

<u>Soils</u>

- 4.2 During the current survey a detailed inspection of the soils was carried out. Two main soil types were identified using information from auger borings and soil inspection pits.
- 4.3 Soil Type 1 (see Appendix 2 and Soil Types Map)

These soils occur over the majority of the site within the valley floor. Profiles typically comprise very slightly stony, calcareous heavy clay loam (or occasionally clay) topsoils over slightly stony, (chalk and flint stones) calcareous, clayey subsoils.

4.4 Soil Type 2 (see Appendix 2 and Soil Types Map)

This soil type occurs on the valley sides and consists of shallow, chalky fine loamy soils with slightly stony calcareous, heavy clay loam topsoils. 'Dirty' chalk rubble occurs below 30/35 cm depth and comprises 35% chalk and flints in a matrix of clay loam or clay.

June 1992

TONY DERBYSHIRE Resource Planning Team ADAS Statutory Unit Cambridge

References

Geological Survey of England and Wales, 1931. Drift edition sheet 16 1:250,000 scale.

MAFF, 1968. Agricultural Land Classification sheet 148, Provisional 1:63,360.

MAFF, 1988. Agricultural Land Classification of England and Wales (Revised Guidelines and Criteria for grading the quality of Agricultural Land) Alnwick.

Meteorological Office, 1989. Climatic data extracted from the published agricultural climatic dataset.

Soil Survey of England and Wales, 1968. Saffron Walden sheet 148 1:63,360 scale.

Appendix 1

Grade 1 - excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 - very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. When more demanding crops and grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a - good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b - moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 - poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yield of which are variable. In most climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 - very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

<u>Appendix 2</u>

SOIL PHYSICAL CHARACTERISTICS

LAND NEAR SHIRE HILL FARM, SAFFRON WALDEN, ESSEX

SOIL TYPE 1 (1.8 ha)

TODSO	

.1	Texture	:	heavy clay loam or occasionally clay
	CaC0,	:	calcareous
	Coloŭr	:	dark greyish brown (10 YR 4/2)
	Stone	:	5% chalk fragments
	Boundary	:	abrupt smooth
	Roots	:	many fine and very fine, few medium
	Depth	:	30/35 cm .

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Subsoil	Texture	:	clay
	CaC0,	:	calcareous
	Colour	:	brown (10 YR 5/3) becoming yellowish brown (10
			YR 5/4) at depth.
	Stone	:	5% chalk and flints
	Structure	:	moderately developed coarse subangular blocky
			becoming weakly developed angular and subangular
			blocky below 65/75 cm.
	Mottling	:	common ochreous and manganese concretions below
			65/70 cm.
	Roots	:	many fine and very fine
	Depth	:	120 cm

SOIL TYPE 2 (1.0 ha)

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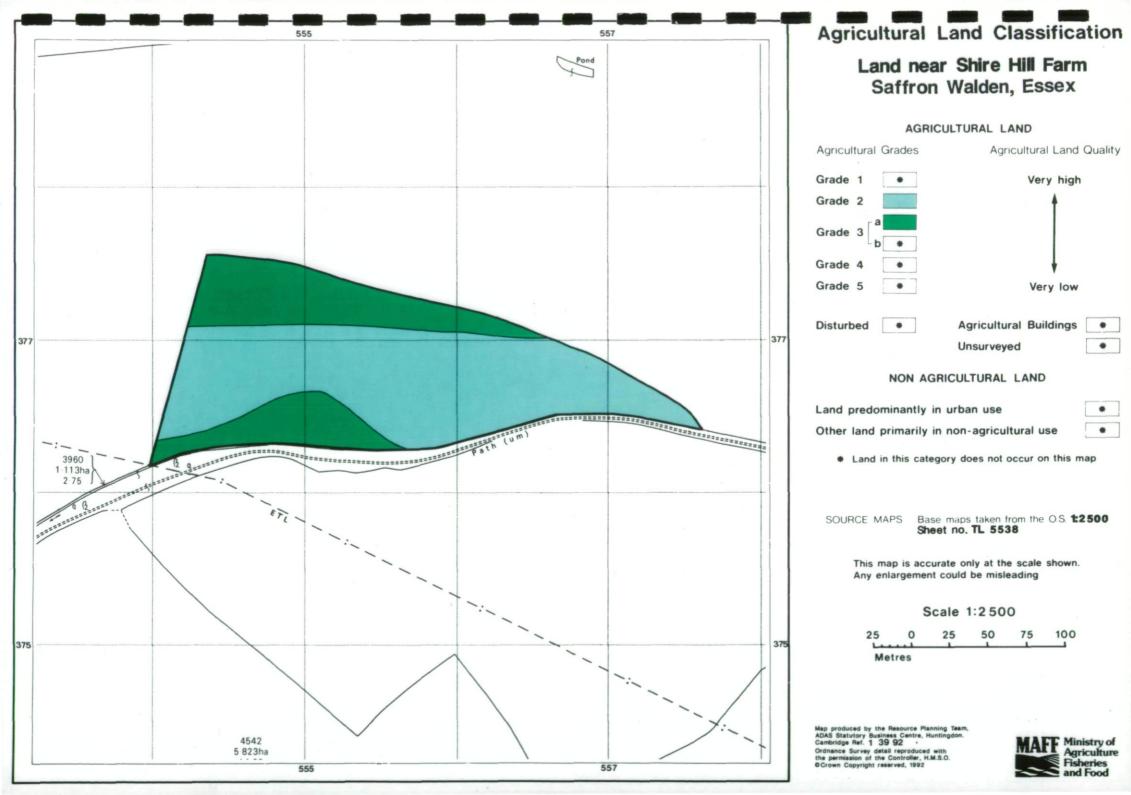
Topsoil	CaC0	:	
Subsoil	CaC0 ₃ Colour Stone Structure Roots	•	very pale brown (10 YR 7/4), with common distinct ochreous mottles (10 YR 6/8) 20 to 30% chalk and 5% flint moderately/weakly developed coarse subangular blocky.

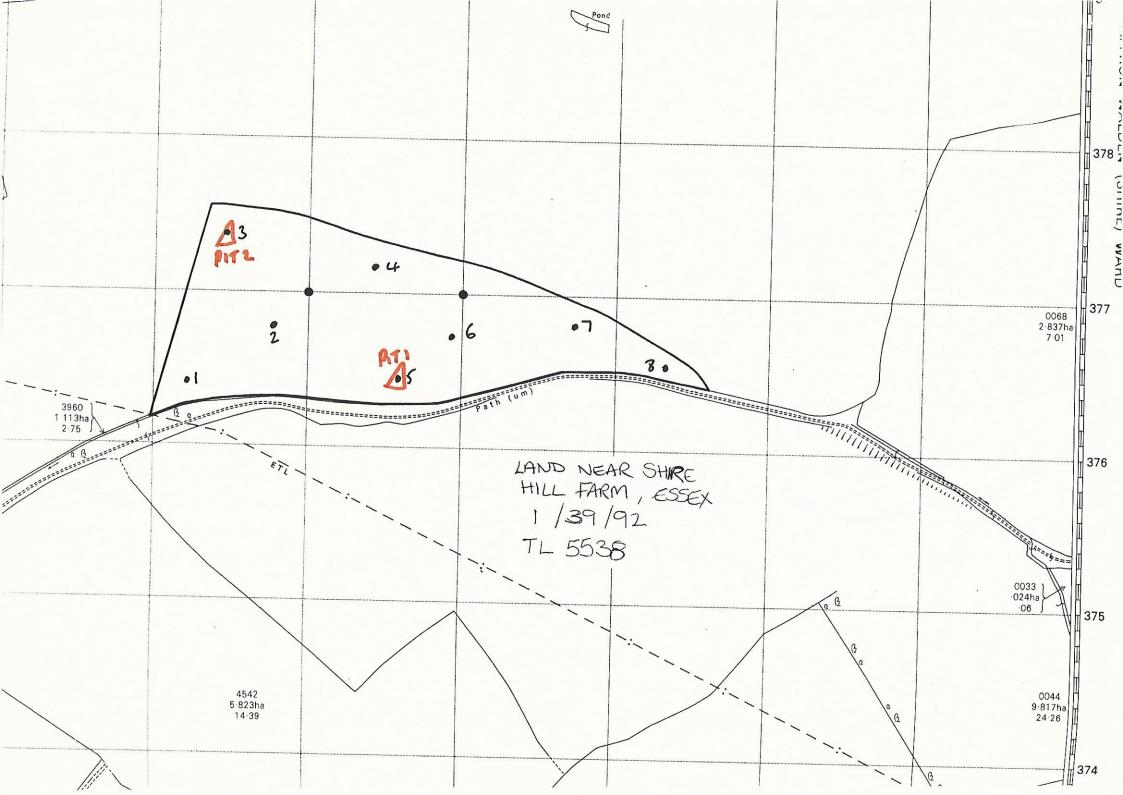
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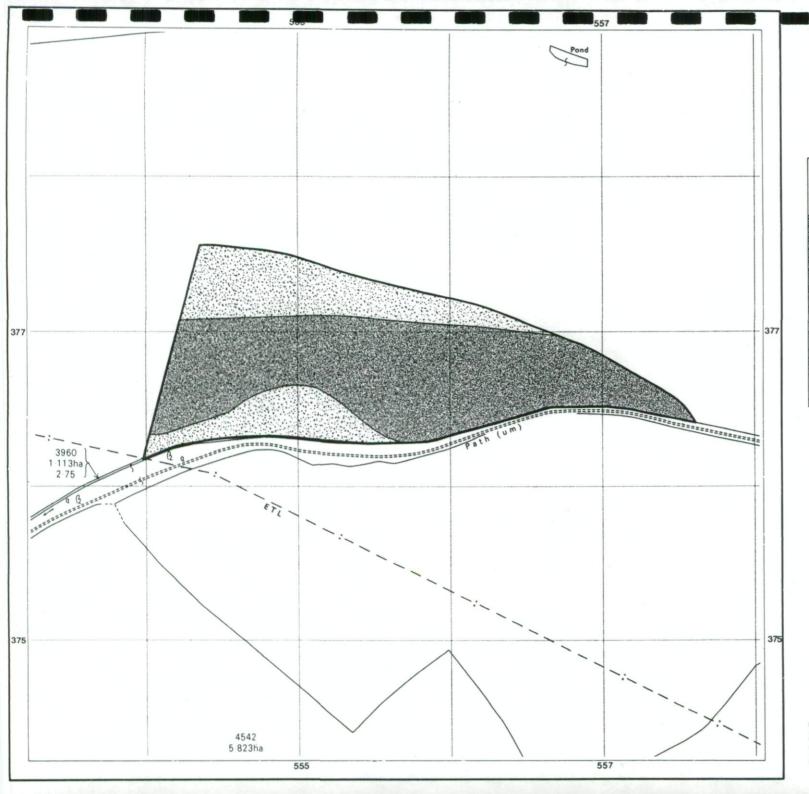
LAND NEAR SHIRE HILL FARM SAFFRON WALDEN ESSEX

MAP 1 : AGRICULTURAL LAND CLASSIFICATION

MAP 2 : SOIL TYPES







Agriculturar Land Classification Land near Shire Hill Farm

Saffron Walden, Essex

SOIL TYPES

SOIL TYPE	TOPSOIL 0-30/35cm	SUBSOIL 30/35-120cm C C	
1	HCL or C		
2	HCL		

SOURCE MAPS Base maps taken from the O.S. 12500 Sheet no. TL 5538

This map is accurate only at the scale shown. Any enlargement could be misleading



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Metres

