



Patrick Stephenson Ltd
Agricultural Consultants

AGRICULTURAL LAND CLASSIFICATION REPORT

Sunnica Energy Farm

Chippenham

Cambridgeshire

CB7 5PP

Proposed Development

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Draft

Prepared by: Patrick Stephenson BSc (Hons) Agriculture

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1.0 Introduction

Patrick Stephenson Limited was approached to undertake a detailed Agricultural Land Classification Survey (ALC Survey) of the agricultural land quality at selected fields in and around Chippenham, Cambridgeshire. The envelope covers approximately 80 hectares and is located between the villages of Isleham, Chippenham, and Worlington.

1.1 Method

The method used to create this report was primary research in the form of a detailed-on site Agricultural Land Classification survey following the guidelines and criteria as stated in the documents listed below:

- "The Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" DEFRA 1988
- "Specifications for Topsoil" British Standards Institute 2007.

Survey work was carried out on 80 ha of arable land, as outlined in the plans in Appendix 1. Soils were examined using a one metre handheld Dutch Auger at one hundred metre intervals. Additional borings were made to confirm soil boundaries and profiles. Secondary research was carried out via a desk top survey covering the whole area.

1.2 Secondary Research

The desk top survey used the following sources:

- Published Agricultural Land Classification (ALC) Grades for the area
- The area viewed on Google Maps (Tele Atlas 2012)
- Natural England MAGIC web site (<http://magic.defra.gov.uk/website/magic>)
- The British Geological Survey Digital Mapping (70)
- Planning Policy Statement 7 (PPS7) *Sustainable Development in Rural Areas*.
- LA112 population and human health update January 2020
- The National Planning Policy Framework (NPPF July 2018)
- MAFF's *Guidelines for Agricultural Land Classification of England and Wales* (Revised 1988)
- Metropolitan Weather Office data
- Landis Soilscape
- Soil Survey of England and Wales Sheet 4

The research was conducted to establish what the land quality is like in the area and if the development of the proposed site would result in the loss of the 'best and most versatile' agricultural land.

1.3 Planning Policy

Planning policy regarding agricultural land in England has continually evolved. Most recently, from guidance contained in Planning Policy Guidance Note 7 (PPG7), The Implementation of National Planning Policy Guidance in relation to the Diversification of Farm Businesses March 2001 (*The Countryside Environmental Quality and Economic and Social Development*) to the Planning Policy Statement 7 (PPS7) *Sustainable Development in Rural Areas*.

Guidance contained in PPS7 was recently superseded by the National Planning Policy Framework (NPPF July 2018). Whilst reflecting much of the earlier advice the NPPF states that,

“Local planning authorities should take into account the economic and other benefits of the ‘best and most versatile’ agricultural land. Where significant development of agricultural land is demonstrated to be necessary, local planning authorities should seek to use areas of poorer quality land in preference to that of a higher quality”.

The NPPF does specifically classify the ‘best and most versatile’ agricultural land. Further clarity is provided in MAFF’s *Guidelines for Agricultural Land Classification of England and Wales* (Revised 1988) which refers to the ‘best and most versatile’ land as Grades 1 to 3a. Further modification to the assessment of land and its economic impact is outlined in LA112 Population and Human Health, update January 2020.

2.0 Location

Six fields were selected for assessing, these were:-

T3 Surprise Hill TL 6772 8800 approx. 12.00 ha Off Elms Road

T1 Smiths Rectory Farm TL 6843 7197 9.5 ha Off Elm Road

T 25 Beck Road TL6673 8125 approx. 23 ha

Gargett TL 6870 4858 approx. 16 ha Near Badlingham Manor

Havica TL 6870 2040 approx. 14 ha Near Badlingham Manor

Isleham TL 6772 8800 approx. 10 ha off station Road

Appendix 1 shows the land locations.

2.1 Site characteristics

The Soils of England and Wales (Sheet 4) shows the area to be dominated by three soil series Newport 4, Moulton and Swaffham Prior. The Cranfield University Land Information System describes them as follows:-

Newport 4

Deep well drained sandy soils covering 746 km² (0.5% of England and Wales). Growing Cereals, Sugar Beet, Carrots and Potatoes.

Moulton

Well drained coarse and fine loamy soils with similar shallow calcareous coarse loamy soils over chalk or chalk rubble in places. This series covers 149 km² (0.1% of England and Wales). In average years the soils are slightly droughty for cereals, oilseed rape and sugar beet, moderately droughty for potatoes and very droughty for grass.

Swaffham Prior

Well drained calcareous coarse and fine loamy soils over chalk rubble covering 693 km² (0.46% of England and Wales). The soils are very easy to cultivate and there are adequate days for spring and autumn cultivation. Yields from direct drilled autumn- and spring-sown crops are like those from conventional techniques. Arable crops including winter and spring cereals, sugar beet, potatoes, peas, and beans are grown

2.2 Climate and Relief

The Metropolitan Weather Office data for the Newmarket area shows an annual average annual rainfall of 580 mm, and the accumulated temperature from the period January to June as 1555 c°.

The land is flat to gently sloping 0°- 6° and the Ordinance Survey data shows the land to be between 5m and 19m meters above sea level.

3.0 Land Use

The surveyed area is currently parsnips, potato, and cereal stubbles.

4.0 Land Quality

The quality of land is assessed using the ALC Scheme, established by Defra, which provides a method for assessing the quality of farmland, so informed choices can be made about its future use within the planning system. It also helps underpin the principles of sustainable development.

4.1 Definitions and Grades

The ALC system classifies land into 1 through to 5 Grades, with Grade 3 further subdivided into Grade 3a and 3b, see Table 1. Consistent with national guidance, Grades 1, 2 and 3a represents the 'best and most versatile' land.

The 'best and most versatile' land is considered to be the most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals. Current estimates are that Grade 1 and 2 together form about 21% of all farmland in England; Sub-Grade 3a contains a similar amount.

The ALC system is used by Defra and others to give advice to local planning authorities, developers and the public if development is proposed on agricultural land or other 'Greenfield' sites that could grow crops. The General Development (Procedure) Order refers to the 'best and most versatile' land policy in requiring statutory consultations with Defra.

The ALC grading system is also used by commercial consultants to advise clients on land use and planning issues.

The classification is based on the long-term physical limitations of land for agricultural use. Factors affecting the Grade are climate, site and soil characteristics.

Climate: temperature and rainfall; aspects, exposure and frost risk

Site: gradient, micro relief and flood risk

Soil: texture, structure, depth and stoniness; chemical properties which cannot be corrected

The combination of climate and soil factors determines soil wetness and droughtiness. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock. The Classification is also concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC Grade.

4.2 Versatility and Yield

The physical limitations of land have four main effects on the way land is farmed.

These are:

- the range of crops which can be grown
- the level of yield
- the consistency of yield
- the cost of obtaining the crop

The ALC gives a high Grade to land which allows more flexibility in the range of crops that can be grown (its 'versatility') and which require lower inputs. These higher Grades (1, 2,3a)

also take into account the ability to produce consistently high yields of a narrower range of crops.

Table 1- Definitions of Land Classification Grades

Grade	Definition
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. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.
Sub-Grade 3a – Good Quality Agricultural Land	Land capable of consistently producing moderate to high yields from a narrow range of arable crops, especially cereals, or moderate yields from a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Sub-Grade 3b – Moderate Quality Agricultural Land	Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields from 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, the yields of which are variable. The Grade 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.

Planning Policy Guidance note 7 Annex B paragraph B11 refers to irrigation and its impact on land quality. Land which has a proven supply of water and has irrigation systems operating with secure licenses will be categorised in line with their potential.

5.0 Published Survey Information

The Provisional ALC survey 1968-1972 carried out by MAFF showed the whole site to be Grade 2,3 and 4. It is acknowledged that this survey has limitations as boundaries and soil grades are determined by one sample every 80 ha and there is no sub-grade for Grade 3 lands. Detailed published land classification details show that there are grade 3a, 3b and 2 soils in the vicinity of the proposed development.

6.0 Survey Results

The field survey work was carried out in accordance with the method described in the "Revised Guidelines and Criteria for Grading the Quality of Agricultural Land" (DEFRA 1988).

The following soil grades were found within the survey area. Appendix 3 has a description of the sample point profiles. Table 2 shows a summary of the ALC grades found on the site as shown in Appendix 2.

Table 2 Summary of ALC Grades

Grade/Subgrade	Approximate Area Ha	Area %
2	8.0	10.0
3a	54.4	68.0
3b	15.9	19.9
4	1.7	2.1
Total	80.00	100

The detailed survey showed that most of the topsoil was sandy loam, loamy sand to silty sandy. Topsoil depth varied from 250 mm to 450 mm across the sites. All profiles had a degree of chalk and variable flint content. The main grade limiting factor was soil droughtiness and to a lesser extent soil depth.

Grade 2

This accounted for 10% of the area and was exclusively at the Isleham site. The topsoil was 400mm and had chalk throughout the profile and characterised as sandy loam over sandy silty loam. The main limitation for this grade was droughtiness.

Grade 3

3a Sub-grade

This accounted for 68% of the total and was the main grade across all sites. The soils were predominantly either sandy loam or loamy sand to a minimum depth of 250mm. Sub-soils varied from sandy silt loams, loamy sands to sands. The limiting factors for these soils are primarily droughtiness and to a lesser extent depth of the topsoil.

3b subgrade

This accounted for 19.9% of the area and was the second largest area. This was categorised by droughtiness and limitations to soil depth. The topsoil was commonly loamy sand with sand subsoils.

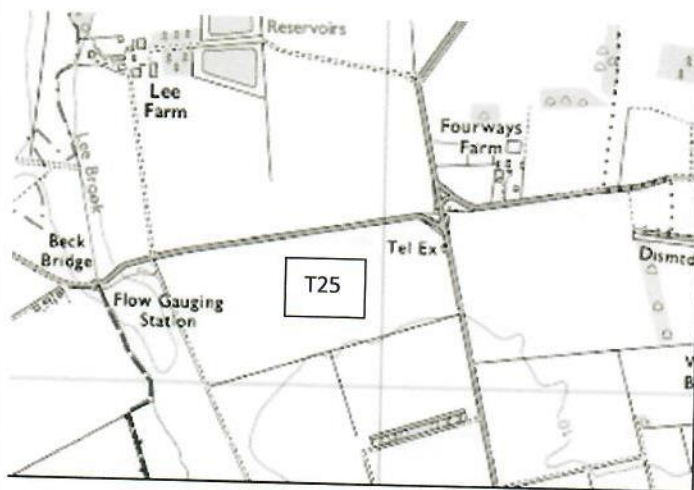
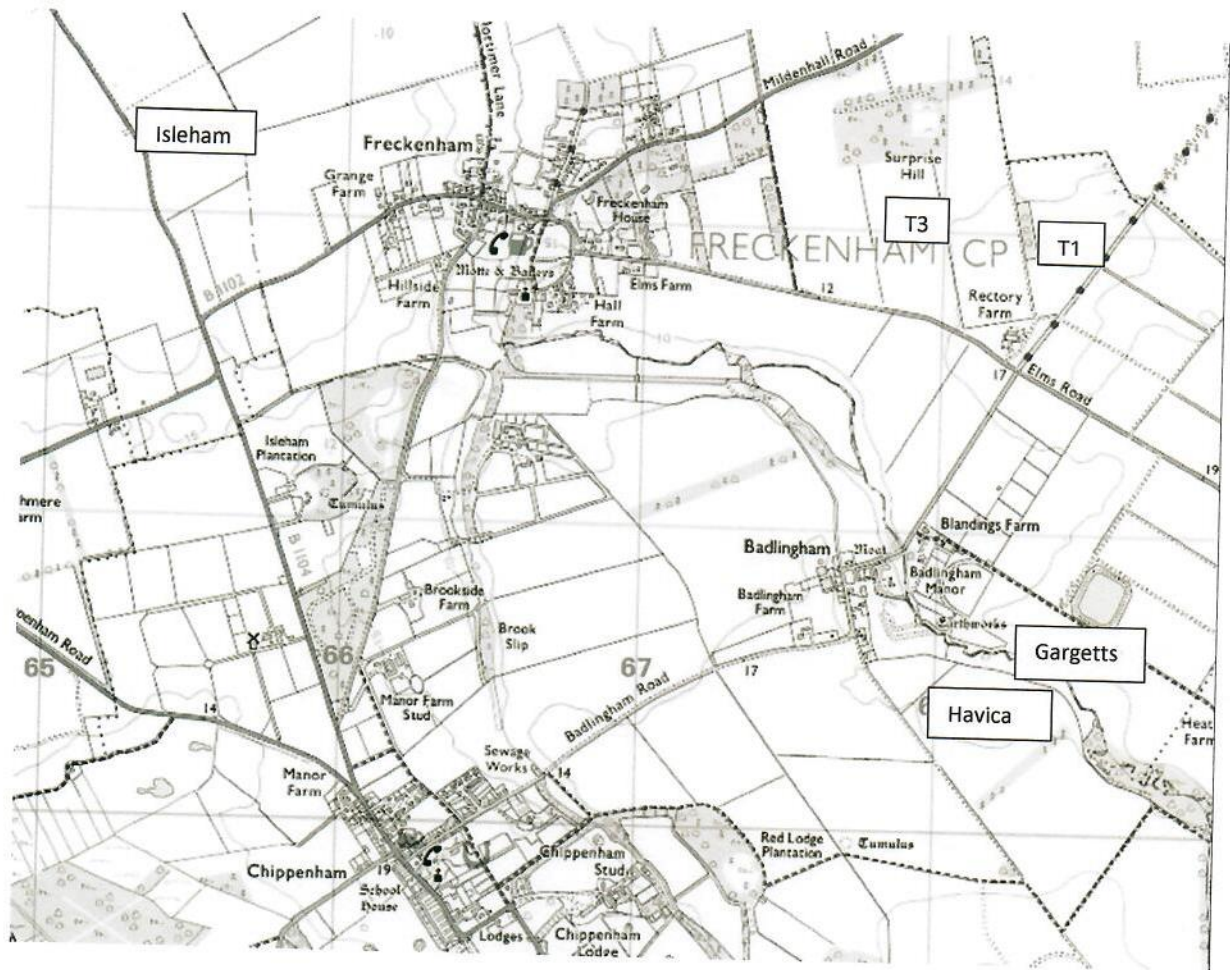
Grade 4

This area was adjacent to the River Kennet where flooding and wetness were the major characteristic.

7.0 Conclusion

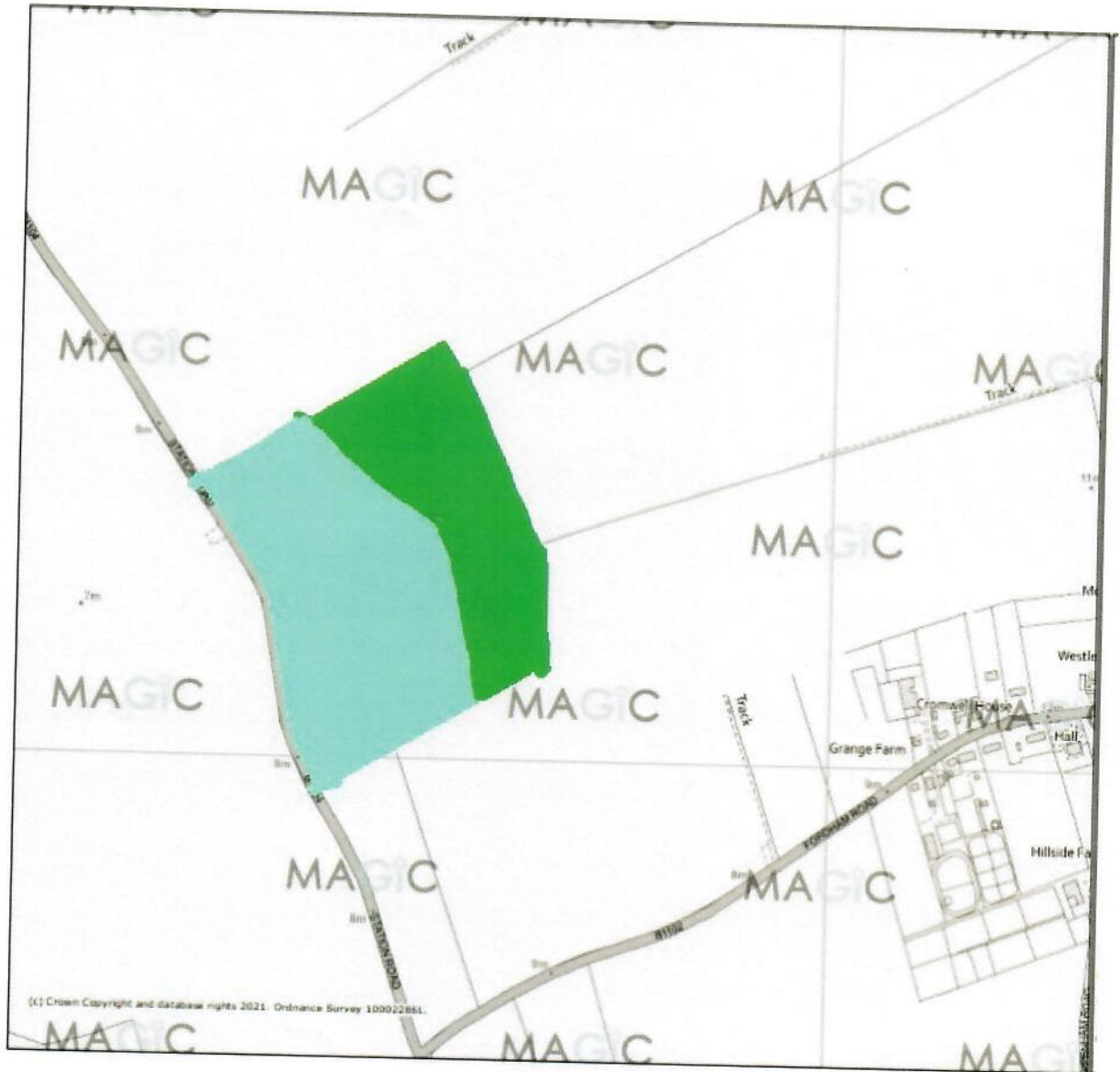
Detailed ALC surveys carried out in the area showed the site to be dominated by the 'best and most versatile' grades namely 3a and 2. In National, regional, and local terms this development would have an impact on the loss of the 'best and most versatile' land.

Appendix 1 – Location of Land



Appendix 2 - Detailed ALC map

Isleham



T3 T1



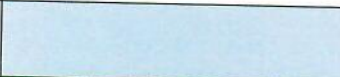



Gargett and Havica



T25



Key

Grade 2	
Grade 3a	
Grade 3b	
Grade 4	

Appendix 3- Sampling Point Descriptions
SOIL PROFILE SURVEY RESULTS

Soil Type Key:

O- ORGANIC

C- CLAY

S- SAND

L- LOAM

Z- SILT

P- PEAT

Hole	Grid ref	Texture	Depth mm	Stones	Wetness Class
	FIELD T3				
1	N5219 078 E000 27 034	SL	0-30	CHALK ODD FLINT	I
17m		LS	30+		
2	N5219 129 E000 27 809	SL	0-35	CHALK	I
		LS	35+		
3	N5219 181 E000 27 787	SL	0-30	CHALK FLINT	I
		S	30+		
4	N5219 239 E000 27 769	SL	0-25	CHALK FLINT	I
		LS	25+		
5	N5219 295 E000 27 754	SL	0-25	CHALK FLINT	I
		LS	25+		
6	N5219 345 E000 27 739	LS	0-25	CHALK FLINT	I
		S	25+		
7	N5219 336 E000 27 661	LS	0-25	CHALK FLINT	I
		S	25+		

8	N5219 289 E000 27 675	SL	0-30	CHALK FLINT	
		LS	30+		
9	N5219 242 E000 27 687	SL	0-25	CHALK FLINT	
		LS	25+		
10	N5219 192 E000 27 703	SL	0-35	CHALK FLINT	
		S	35+		
11	N5219 144 E000 27 715	SL	0-25	CHALK FLINT	
		LS	25+		
12	N5219 099 E000 27 729	LS	0-30	CHALK FLINT	
		S	30+		
	<u>FIELD T1</u>				
13	N5219 147 E000 28 135	LS	0-40	CHALK FLINT	
		S	40+		
14	N5219 192 E000 28 124	LS	0-45	CHALK FLINT	
		S	45+		
15	N5219 243 E000 28 111	LS	0-30	CHALK FLINT	
		S	30+		
16	N5219 298 E000 28 097	LS	0-35	CHALK FLINT	
		SL	35+		
17	N5219 348 E000 28 168	LS	0-45	LOW CHALK FLINT	
		S	45+		
18	N5219 301 E000 28 180	LS	0-45	LOW CHALK FLINT	
		S	45+		
19	N5219 252 E000 28 194	LS	0-45	LOW CHALK	

		S	45+	FLINT	
20	N5219 200 E000 28 211	LS S	0-45 45+	LOW CHALK FLINT	
	FIELD T25				
21 7m	N5219 899 E000 27 112	SILTY LOAM SILTY SANDY LOAM	0-25 25+	CHALK FLINT	
22	N5219 891 E000 27 034	LS S	0-30 30+	CHALK FLINT	
23	N5219 878 E000 26 954	LS S	0-25 25+	CHALK FLINT	
24	N5219 865 E000 26 874	LS S	0-25 25+	CHALK FLINT	
25	N5219 849 E000 26 784	SL S	0-30 30+	CHALK FLINT	
26	N5219 838 E000 26 710	LS S	0-35 35+	CHALK FLINT	
27	N5219 827 E000 26 622	SILTY L SL	0-25 25+	CHALK FLINT	
28	N5219 859 E000 26 565	SL LS	0-30 30+	CHALK FLINT	
29	N5219 917 E000 26 539	LS S	0-30 30+	CHALK FLINT	
30	N5219 940 E000 26 605	LS S	0-35 35+	CHALK FLINT	
31	N5219 895 E000 26 642	LS	0-35	CHALK FLINT	

		S	35+		
32	N5219 906 E000 26 729	LS	0-35	CHALK FLINT	
		S	35+		
33	N5219 951 E000 26 718	LS	0-25	CHALK FLINT	
		S	25+		
34	N5219 963 E000 26 791	LS	0-30	CHALK FLINT	
		S	30+		
35	N5219 925 E000 26 839	S	0-30	CHALK FLINT	
		COARSE S	30+		
36	N5219 927 E000 26 914	SILTY L	0-25	CHALK FLINT	
		S	25+		
37	N5219 977 E000 26 910	SILTY L	0-25	CHALK FLINT	
		S SILTY L	25+		
38	N5219 983 E000 26 994	SILTY L	0-30	CHALK FLINT	
		SL	30+		
39	N5219 939 E000 27 019	LS	0-30	CHALK FLINT	
		SILTY L	30+		
40	N5219 969 E000 27 072	SL	0-30	CHALK FLINT	
		S SILTY L	30+		
41	N5219 940 E000 27 104	SILTY L	0-25	CHALK FLINT	
		S SILTY L	25+		
	FIELD GARGETT				
42	N5218 588 E000 27 955	LS	0-35	CHALK	
		S	35+		
43	N5218 567 E000 28 015	SL	0-35	CHALK	
		S	35+		

44	N5218 542 E000 28 077	SL S	0-40 40+	CHALK FLINT	
45	N5218 513 E000 28 151	SL S	0-45 45+	CHALK FLINT	
46	N5218 491 E000 28 207	SL S	0-30 30+	CHALK FLINT	
47	N5218 468 E000 28 270	SL S SILTY L	0-30 30+	CHALK	
48	N5218 440 E000 28 339	SL S SILTY L	0-30 30+	CHALK	
49	N5218 411 E000 28 418	LS S	0-25 25+	CHALK FLINT	
50	N5218 371 E000 28 379	LS SILTY LOAM	0-25 25+	CHALK FLINT	
51	N5218 400 E000 28 311	LS SILTY LOAM	0-25 25+	CHALK FLINT	
52	N5218 422 E000 28 251	S SILTY L LS	0-30 30+	CHALK FLINT	
53	N5218 447 E000 28 188	SILTY L SILT	0-30 30+	CHALK FLINT	
54	N5218 471 E000 28 124	LS S	0-30 30+	CHALK FLINT	

55	N5218 495 E000 28 063	S SILTY L LS	0-30 30+	CHALK FLINT	
56	N5218 518 E000 28 004	SILTY L S SILTY L	0-30 30+	CHALK FLINT	
57	N5218 542 E000 27 942	SILTY L S	0-30 30+	CHALK FLINT	
	FIELD HAVACRE				
58	N5218 297 E000 27 787	SL S	0-25 25+	CHALK FLINT	
59	N5218 343 E000 27 744	SL S	0-25 25+	CHALK FLINT	
60	N5218 382 E000 27 796	LS S	0-25 25+	CHALK LOTS OF FLINT	
61	N5218 403 E000 27 867	LS S	0-30 30+	CHALK FLINT	
62	N5218 417 E000 27 944	SILTY L SL	0-30 30+	CHALK FLINT	
63	N5218 409 E000 28 018	SILTY L LS	0-30 30+	CHALK FLINT	
64	N5218 385 E000 28 095	SILTY L LS	0-30 30+	CHALK FLINT	
65	N5218 341 E000 28 119	SILTY L S	0-30 30+	CHALK FLINT	
66	N5218 311	LS	0-30	CHALK	

	E000 28 063	S	30+	LESS FLINT	
67	N5218 330 E000 27 933	LS S	0-30 30+	LESS CHALK MORE FLINT	
68	N5218 303 E000 27 930	LS S	0-30 30+	CHALK FLINT	
69	N5218 260 E000 27 953	SL S	0-25 25+	CHALK FLINT	
70	N5218 232 E000 27 892	SL S	0-25 25+	CHALK FLINT	
71	N5218 268 E000 27 843	SL S	0-25 25+	CHALK FLINT	
	FIELD ISLEHAM				
72	N5219 388 E000 25 477	SL SILTY L	0-30 30+	CHALK	
73	N5219 411 E000 25 550	SL S SILTY L	0-30 30+	CHALK	
74	N5219 433 E000 25 617	SL LS to SAND	0-40 40+	CHALK	
75	N5219 451 E000 25 685	SL LS to SAND	0-30 30+	CHALK	
76	N5219 400 E000 25 711	SL LS to SAND	0-30 30+	CHALK	
77	N5219 354 E000 25 719	SL LS to SAND	0-40 40+	CHALK	
78	N5219 332 E000 25 655	SL LS to SAND	0-40 40+	CHALK	

79	N5219 365 E000 25 610	SL LS to SAND	0-40 40+	CHALK	
80	N5219 300 E000 25 551	SL LS to CHALK	0-40 40+	CHALK	
81	N5219 338 E000 25 508	SL LS to SAND to CHALK	0-40 40+	CHALK	