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Vale of the White Horse District Local Plan
Site H10: Land At Sheepstead Road, Marcham
Agricultural Land Classification
Report
October 1994

AGRICULTURAL LAND CLASSIFICATION REPORT

VALE OF THE WHITE HORSE DISTRICT LOCAL PLAN
SITE H10 : LAND AT SHEEPSTEAD ROAD, MARCHAM

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on a number of sites in the Vale of the White Horse District of Oxfordshire. The work forms part of MAFF's statutory input to the preparation of the Vale of the White Horse District Local Plan.

1.2 Site H10 comprises 4 hectares of land to the north of Marcham. An Agricultural Land Classification, (ALC), survey was carried out during October 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of seven borings and one soil inspection pit were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land, (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose a long term limitation on its use for agriculture.

1.3 The work was carried out by members of the Resource Planning Team in the Leeds Statutory Centre of ADAS.

1.4 At the time of survey the majority of the site was under grass.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
3a	3.0	75	100% (3.0 ha)
Woodland	1.0	25	
Total area of site	4.0 ha	100%	

1.6 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

1.7 The site contains shallow, light textured and, in places, stony soils developed over limestone. Moderate soil droughtiness is the principal limitation. The site is fringed by newly planted woodland to the north, east and west and also contains a belt of trees running east west through its centre.

2. Climate

2.1 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5km grid point dataset (Met. Office, 1989) for a representative location in the survey area.

Table 2: Climatic Interpolation

Grid Reference	SU 455974
Altitude (m)	60
Accumulated Temperature (degree days, Jan-June)	1450
Average Annual Rainfall (mm)	605
Field Capacity (days)	127
Moisture Deficit, Wheat (mm)	116
Moisture Deficit, Potatoes (mm)	110
Overall Climatic Grade	1

2.2 Climatic factors are considered first when classifying land since climate can be overriding in the sense that adverse climatic conditions may restrict land quality irrespective of favourable site and soil conditions. The details in the table above show that there is no overall climatic limitation affecting this site. In addition, no local climatic factors such as exposure or frost risk are believed to affect the land quality.

2.3 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. At this locality, the climate is relatively warm and dry in a regional context. As a result the likelihood of soil droughtiness problems will be enchanced whilst soil wetness limitations may be reduced.

3. Relief

3.1 The site lies at an altitude of approximately 60 metres and is flat. Nowhere on the site do gradient or microrelief affect agricultural land quality.

4. Geology and Soil

4.1 The British Geological Survey (1971) published map of the area (sheet 253), shows the whole site to be underlain with Jurassic Corallian Beds, mostly sandstone.

4.2 The Soil Survey of England and Wales (1971) has mapped the area at 1:63,360 scale (sheet 253). Soils on the site are mapped as Fyfield Series which is described as 'well drained, coarse and loamy and sandy over sands and sandstone', (SSEW, 1973).

4.3 Detailed field examination of the soils on the site revealed no impediment to drainage although soils were shallow over limestone deposits.

5. Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of soil observation points are shown on the attached sample point map.

Subgrade 3a

5.3 Good quality land has been mapped on all the agricultural land on the site. Typical profiles comprise very slightly stony (2-3% limestone fragments), medium sandy loam or medium clay loam topsoils, over similarly textured, moderately stony subsoils (2-30% limestone). Weathering bedrock is occasionally encountered within 120cm depth. These light textured and occasionally shallow soils are restricted to Subgrade 3a by a droughtiness limitation. Soils are well drained falling into Wetness Class I. Soil Pit 1 being typical of these profiles. Moisture balance calculations reveal that the combination of soil characteristics and the relatively dry climatic conditions, causes profile available water to be restricted. Crop growth and yield potential may therefore be affected by drought stress. Such land is 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 less demanding horticultural crops

Woodland

5.4 The site contains a belt of recently planted trees through the centre, running east west, and is fringed by trees to the north, east and west.

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Resource Planning Team
Leeds Statutory Centre
ADAS Leeds

SOURCES OF REFERENCE

British Geological Survey (1971) Sheet No. 253, 1:63,360

MAFF (1988) "Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land".

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

Soil Survey of England and Wales (1971), Sheet 253, 1:63,360 and accompanying bulletin.

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-30	msl	10YR44 00						3	0		0							
	30-75	mcl	10YR46 00						0	0		0		G					
	75-120	ms	10YR46 00						0	0		0		G					
1P	0-20	mcl	10YR31 00						1	0	SLST	2							
	20-68	hcl	25 Y56 00						0	0	SLST	10	STMSAB FM	G					IMP.LIMESTONE
2	0-30	mcl	10YR42 00						2	0	SLST	2							
	30-65	mcl	10YR44 00						0	0		0		G					
	65-120	lms	10YR46 00						0	0	SLST	30		G					
3	0-30	msl	10YR44 00						2	0	SLST	2							
	30-120	msl	10YR46 00						0	0	SLST	2		G					
4	0-25	mcl	10YR31 00						3	0	SLST	2							
	25-68	hcl	25Y 56 00						0	0	SLST	10		G					IMP.LIMESTONE
5	0-20	mcl	10YR31 00						4	0	SLST	2							
	20-68	scl	25Y 56 00						0	0	SLST	10		G					IMP.LIMESTONE
6	0-25	scl	10YR33 00						3	0	SLST	3							
	25-35	scl	10YR64 00	10YR54 00	C				0	0	SLST	8		G					
	35-70	mcl	10YR74 00	10YR68 00	C			Y	0	0	SLST	15		G					
	70-120	cs	25 Y74 00						0	0	SLST	6		G					
7	0-25	mcl	10YR32 00						3	0	SLST	3							
	25-40	mcl	10YR43 00						0	0	SLST	6		G					IMP.LIMESTONE

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU46459737	PAS					1	1	126	10	115	5	2				DR	2	
1P	SU45509730	PGR					1	1	117	1	128	18	3A				DR	3A	PIT AT AB5
2	SU45509737	PAS					1	1	145	29	130	20	2				DR	2	
3	SU45579737	PAS					1	1	173	57	117	7	2				DR	2	
4	SU45409730	PAS					1	1	116	0	127	17	3A				DR	3A	
5	SU4550970	PAS					1	1	094	-22	102	-8	3B				DR	3B	
6	SU45609730	PAS		035			2	2	114	-2	109	-1	3A				DR	3A	
7	SU45609720	PAS					1	1	067	-49	067	-43	3B				DR	3B	IMPEN 40

SOIL PIT DESCRIPTION

Site Name : VALE OF WHITE HORSE H10 Pit Number : 1P

Grid Reference: SU45509730 Average Annual Rainfall : 605 mm
Accumulated Temperature : 1450 degree days
Field Capacity Level : 127 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 20	MCL	10YR31 00	1	2	SLST					
20- 68	HCL	25 Y56 00	0	10	SLST		STMSAB	FM	G	

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : No SPL

Drought Grade : 3A APW : 117mm MBW : 1 mm
APP : 128mm MBP : 18 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness