LITTLE LAKES LYE HEAD BEWDLEY

AGRICULTURAL LAND CLASSIFICATION

FEBRUARY 1999

Resource Planning Team
FRCA Worcester
Western Region

Job Number 9/99

MAFF Ref EL17/01831

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AGRICULTURAL LAND CLASSIFICATION SURVEY

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INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 41ha of land at Little Lakes Lye Head Bewdley Field survey was based on 33 auger borings and 3 soil profile pits and was completed in February 1999

2 The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in connection with an application to the planning authority under the Town and Country Planning Act 1990 for an extension to the existing golf course

3 Information on climate geology and soils and from previous ALC surveys was considered and is presented in the relevant section Apart from the published regional ALC map (MAFF 1977) which shows the site at a reconnaissance scale as Grade 3 the site had not been previously surveyed The current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988) *Grade descriptions are summarised in Appendix I*

4 At the time of survey land cover was arable and permanent grassland Other land which was not surveyed include woodland and a pond

SUMMARY

5 The distribution of ALC grades is shown on the accompanying 1 10 000 scale ALC map The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas Areas are summarised in the Table 1

Table 1 Distribution of ALC grades Little Lakes Lye Head Bewdley

Grade	Area (ha)	% Surveyed Area (31ha)
3a	16 5	53
3b	14 5	47
Other land	10 0	
Total site area	41 0	100 0

6 The majority of the site was of Subgrade 3a quality which occurred over the central part of the site The main limitation to this land was soil wetness The remainder of the site was Subgrade 3b with soil wetness and slope being the main limitations

CLIMATE

7 Estimates of climatic variables for this site were derived from the published agricultural climate dataset Climatological Data for Agricultural Land Classification (Meteorological Office 1989) using standard interpolation procedures Data for key points around the site are given in Table 2 below

8 Since the ALC grade of land is determined by the most limiting factor present overall climate is considered first because it can have an overriding influence by restricting land to a lower grade despite more favourable site and soil conditions Parameters used for assessing overall climate are accumulated temperature a measure of relative warmth and average annual rainfall a measure of overall wetness The results shown in Table 2 indicate that there is no overall climatic limitation

9 Climatic variables also affect ALC grade through interactions with soil conditions The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes which are compared with the moisture available in each profile in assessing soil droughtiness limitations These are described in later sections

Table 2 Climatic Interpolations Little Lakes Lye Head Bewdley

Grid Reference		SO 766 750	SO 770 733	SO 766 730
Altitude (m)		115	140	157
Accumulated Temperature (day C)		1370	1341	1322
Average Annual Rainfall (mm)		745	764	776
Overall Climatic Grade		1	1	1
Field Capacity Days		169	172	174
Moisture deficit (mm)	Wheat	93	89	86
	Potatoes	80	75	72

RELIEF

10 Altitude ranges from 115 metres at the south west of the site to 157 metres at the north of the site with gentle slopes over the majority of the site except in the west where slopes of between 9 and 11 were found which limit the ALC grade to Subgrade 3b

GEOLOGY AND SOILS

11 The underlying geology of the site is shown on the published geology map (BGS 1976) as Red Marls from the Old Red Sandstone Era The Sandstone forms a wedge in the central part of the site with Upper Carboniferous Coal Measures to the east and west of the Sandstone The ALC survey reflects the geology as in the central part of the site the soils went onto Sandstone whilst in the eastern and western parts of the site the soils went onto clay to depth

12 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1 250 000 (SSEW 1983) as Rivington 2 association

13 The Rivington 2 association soils are described as coarse loamy soils over rock associated with some fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging

14 The ALC survey found soils to be similar to the published SSEW descriptions and distribution

AGRICULTURAL LAND CLASSIFICATION

15 The distribution of ALC grades found by the current survey is shown on the accompanying 1 10 000 scale map and areas are summarised in Table 1 The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas

16 **Subgrade 3a**

The soils were described as having a medium clay loam topsoil over a heavy clay loam or silty clay loam subsoil onto clay to depth A soil profile pit established that the clay was slowly permeable placing these soils into Wetness Class III (see Appendix II) and Subgrade 3a

17 **Subgrade 3b**

Subgrade 3a land is found over the western part of the site The soils on the higher land to the east of the valley had a medium clay loam topsoil over clay onto sandstone These soils were found to be droughty due to the shallow depth of soil onto the sandstone This places these soils in Subgrade 3b The soils on the lower lying land were also classed as Subgrade 3b and had clay loam topsoils passing onto clay to depth The clay was found high up in the profile and a soil profile pit allowed an assessment of the permeability of the clay to be made The clay was found to be slowly permeable placing these soils in Wetness Class IV and Subgrade 3b

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February 1999

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APPENDIX I

DESCRIPTION OF GRADES AND SUBGRADES

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 include 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

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 yields 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

Source MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for Grading the Quality of Agricultural Land MAFF Publications Alnwick

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile

Wetness Class I

The soil profile is not wet within 70 cm depth for more than 30 days in most years

Wetness Class II

The soil profile is wet within 70 cm depth for 31 90 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 70 cm for more than 90 days but not wet within 40 cm depth for more than 30 days in most years

Wetness Class III

The soil profile is wet within 70 cm depth for 91 180 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 70 cm for more than 180 days but only wet within 40 cm depth for between 31 and 90 days in most years

Wetness Class IV

The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 40 cm depth for 91 210 days in most years

Wetness Class V

The soil profile is wet within 40 cm depth for 211 335 days in most years

Wetness Class VI

The soil profile is wet within 40 cm depth for more than 335 days in most years

Notes The number of days specified is not necessarily a continuous period

In most years is defined as more than 10 out of 20 years

Source Hodgson J M (Ed) (1997) Soil Survey Field Handbook Soil Survey Technical Monograph No 5 Silsoe

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Little Lakes Lye Head Bewdley	PIT 1 (ASP30)	4 S	Cereal Stubble	Av Rainfall 764 mm ATO 1341day C FC Days 172 Climatic Grade 1 Exposure Grade	Sandstone
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY		PSD SAMPLES TAKEN
9/99	4 2 99	SO 768 732	SH/SK		

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	25 30 (27)	MCL/ MZCL	75YR4/2	3 HR(S)	None	None					CF+VF		Abrupt Wavy
2	38 42 (40)	C	5YR4/4 (5YR5/2)	N	CFD 10YR5/6 5Y6/2	None	MDCPR	FM		P	FVF		Abrupt Wavy
	42+	FSST	Solid Rock	R k									

Profile Gl y d l rom 25 0 m

Slo ly P rm abl Hori/on From 25 30 m (but no Sl l for ALC)

Wetness Cla s II

Wetness Grade 2

Availabl Wat r Wh at 64mm

Potatoe 64mm

Moisture Defi it Wheat 89mm

Potatoes 75mm

Moisture Balance Wheat 25mm

Potatoes 11mm

Droughtiness Grade 3b (Calculated to 40cm)

I inal Al C Grade 3b

Main I imiting Factor(s) DR

Remarks 3a on depth

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Little Lakes Lye Head Bewdley	PIT 2 (ASP10)	2 E	Cereal	Av Rainfall	764 mm	Upper Carboniferous Coal Measures
				ATO	1341 day C	
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY	FC Days	172	PSD SAMPLES TAKEN
9/99	4 2 99	SO 770 735	SH/SK	Climatic Grade	1	
				Exposure Grade		

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	55	MCL	10YR4/2 4/3	3 HR(S)	None	None					CF+VF		Abrupt Wavy
2	62 67 (65)	HZCL	75YR5/2 5/ (75YR5/2)	S	CFD 75YR5/C	Few	MDCSAB MDCAB	FM	M	M	FVF		Abrupt Wavy
	82	C/ZC	55 R4/ 4/4	S	MMD 75YR5/6 10YR6/1	Common	MDC MPL	FM	P	P	FVF along plate surfaces		Abrupt Smooth
	From 82+ mudstone MAB structure												

Profile Gleyed From 35cm

Slowly Permeable Horizon From 62 67cm

Wetness Class III

Wetness Grade 3a

Available Water Wheat 114mm

Potatoes 119mm

Moisture Deficit Wheat 89mm

Potatoes 75mm

Moisture Balance Wheat +25mm

Potatoes +44mm

Droughtiness Grade 2 (Calculated to 82cm)

Final ALC Grade 3a

Main Limiting Factor(s) We

Remarks

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Little Lakes Lye Head Bewdley	PIT 3 (ASP39-40)	3 SW	Permanent grassland	Av Rainfall ATO FC Days Climatic Grade Exposure Grade	764 mm 1341 day C 172 1	Sandstone
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY			PSD SAMPLES TAKEN
9/99	4 2 99	SO 767 729	SH/SK			

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	38	MCL (HCL)	10YR4/2	N	None	None					MF+VF		Clear Smooth
2	52	C	10YR5/6	N	CFD 10YR5/6 5/8	Common	MDCPR	FM	P	P			Gradual Smooth
	85	C	25YR5/	N	MMD 10YR 5/8 25YR6/2	Common large nodules	MDCPL with WKCSAB	FM	P	P			
	85+ sandstone												

Profil Cl d Iron 85cm

Slo l P rmeabl Horizon I rom 38cm

Wetness Class IV

Wetnes Grade 3b

A a labl Wat r Wh at 102mm

Potato 110mm

Moisture Deficit Wheat 89mm

Potato 75 nm

Moisture Balance Wheat +20mm

Potatoes +35mm

Droughtiness Grade 2 (Calculated to 85cm)

Final ALC Grad 3b

Main Limiting Factor(s) We

Remarks