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WILTSHIRE MINERALS LOCAL PLAN
S71 ROUND HOUSE FARM, MARSTON MEYSEY

AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

Resource Planning Team
Taunton Statutory Unit

February 1993

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Report of Survey

1. SUMMARY

Fifty six hectares of land at Round House Farm, Marston Meysey were graded using the Agricultural Land Classification (ALC) System in May 1990 and February 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000. The information is correct at this scale but any enlargement would be misleading. A total of 57 auger borings and 7 soil profile pits were examined.

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying map.

Distribution of ALC grades: Round House Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3b	17.7	31.7	32.6	
4	36.6	65.5	67.4	
Urban	0.5	0.9	100%	(54.3 ha)
Non Agric	1.1	1.9		
TOTAL	55.9	100%		

There are no climatic or site limitations for the survey area. The main limitation in the survey area is flood risk. This down grades the site to Subgrade 3b and Grade 4.

2. INTRODUCTION

Fifty six hectares of land at Round House Farm, Marston Meysey were graded using the Agricultural Land Classification (ALC) System in May 1990 and February 1993. The survey was carried out on behalf of MAFF as part of its statutory role in the preparation of the Wiltshire Minerals Local Plan.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 57 auger borings and 7 soil profile pits were examined.

The published Provisional 1" to the mile ALC map of this area (MAFF 1973) shows the site to be Grade 3 except for a small area of Grade 2 in the north east. The recent survey supersedes this map and the 1979 1:25,000 survey having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988).The results of the survey carried out in May 1990 have been previously published but at that time information was not available to take account of the risk imposed by flooding on the site. This has now been assessed and the results incorporated into this report. This has resulted in the downgrading of the land to Subgrade 3b and Grade 4.

The ALC provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120cm of the soil profile. A description of the grades used in the ALC.System can be found in Appendix 2.

3. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to lower grades despite other favourable conditions.

Estimates of climatic variables were obtained for the site by interpolation from the 5km grid Meteorological Office Database (Meteorological Office 1989) and are shown in Table 1.

The parameters used for assessing overall climatic limitation are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The values shown in Table 1

reveal that there is no overall climatic limitation.

No locally limiting climatic factors such as exposure were noted in the survey area. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in Section 6.

Table 1 Climatic Interpolations: Round House Farm

Grid Reference		SU 135 964
Height (m)		86
Accumulated Temperature (day deg)		1440
Average Annual Rainfall (mm)		689
Overall Climatic Grade		1
Field Capacity (Days)		156
Moisture Deficit,	Wheat (mm)	105
	Potatoes (mm)	97

4. RELIEF

The site is virtually flat with only a slight rise away from the river. None of the fields have microrelief limitations. The site is at 76m AOD.

5. GEOLOGY AND SOILS

The published one inch scale solid and drift geology map, sheet 252 (Geological Survey of England and Wales 1974) shows the majority of the site to be of First Terrace River deposits. Beside the River Thames there is an area of Alluvial deposits.

The Soil Survey of England and Wales mapped the soils of the area in 1983, at a reconnaisance scale of 1:250,000. This map shows the soils at the site to be of two associations. Beside the river is the Thames Association. This soil is poorly drained. The rest of the site is of the Badsey 2 Association, described as mainly well drained fine loamy soils over calcareous gravel.

The soils found in the recent survey show evidence of high water tables for part of the year. Many of the soils are also stony and this imposes a limitation on the available water for crop growth.

6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Table 2 Distribution of ALC grades: Round House Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
3b	17.7	31.7	32.6	
4	36.6	65.5	67.4	
Urban	0.5	0.9	100%	(54.3 ha)
Non Agric	1.1	1.9		
TOTAL	55.9	100%		

Subgrade 3b

A third of the site has been mapped as Subgrade 3b. These soils have been downgraded from mainly Subgrade 3a because of the risk associated with flooding. This area is occasionally flooded in winter for long periods. These soils are mainly droughty, caused by high stone contents in a light textured subsoil. The soils are groundwater gleys but are rapidly permeable. Part of this area also has more poorly drained soil which has thick clay horizons. These are slowly permeable and the soil is Wetness Class IV. The topsoils are heavy clay loams. These soils are also Subgrade 3b on wetness.

Grade 4

The majority of the site has been downgraded to Grade 4 on the basis of a more severe risk of flooding. Here the winter flooding is seen to be frequent and long lasting. The soils are similar to those described above.

Urban and Non Agricultural

Small areas of the site have houses and other associated non agricultural uses.

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1974) Solid and drift edition. Sheet 252 Swindon, 1:63,360 scale

MAFF (1973) Agricultural Land Classification Map sheet 157 Provisional 1:63,360 scale

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

METEOROLOGICAL OFFICE (1989) Published climatic data extracted from the agroclimatic dataset, compiled by the Meteorological Office

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5 Soils of South West England 1:250,000

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall : 689	PARENT MATERIAL
Round House Farm	Pit 1	0	Ley	ATO : 1440	Alluvium
				FC Days : 156	
JOB NUMBER 69/92	DATE 5 Feb 1992	GRID REFERENCE SU 134 962	DESCRIBED BY PRW/GMS	Climatic Grade : 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	26	10YR43	HCL	18% HR < 2 mm Sieved/displ	None	MMG	Common	Moderate	Friable	Many fine		None	Smooth abrupt
2	60	2.5Y66	LCS	73% GH < 2 mm Sieved/displ	cdom	-	Common		Loose	Few fine		-	Clear smooth
3	85+	2.5Y66	CS	68% HR < 2 mm sieve	-	-	Common		Loose	-		-	-

Profile Gleyed From : Not

Depth to Slowly Permeable Horizon : None

Wetness Class : II

Wetness Grade : 3a

Available Water Wheat : 51 mm

Potatoes : 46 mm

Moisture Deficit Wheat : 105 mm

Potatoes : 97 mm

Moisture Balance Wheat : -54 mm

Potatoes : -51 mm

Droughtiness Grade : 4 (to 120 cm)

Final ALC Grade : 3b

Upgraded to 3b from 4 due to high water table

Main Limiting Factor(s) : Droughtiness

Remarks

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SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall : 689	PARENT MATERIAL
Round House Farm	Pit 2	0	Cereal	ATO : 1440	First Terrace Deposits
				FC Days : 156	
JOB NUMBER 69/92	DATE 5 Feb 1992	GRID REFERENCE SU 130 964	DESCRIBED BY PRW/GMS	Climatic Grade : 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	30	10YR43	HCL	18% > 2 mm HR Sieved/displ	-	MCSAB	Good	-	Friable	Many fine		None	Smooth abrupt
2	70+	10YR64	CS	46% > 2 mm HR Sieved/displ	Some oxidation	-	Good	Moderate	Friable	Few very fine to 50 cm			

Profile Gleyed From : Not

Depth to Slowly Permeable Horizon : None

Wetness Class : II

Wetness Grade : 3a

Available Water Wheat : 63 mm

Potatoes : 55 mm

Moisture Deficit Wheat : 105 mm

Potatoes : 97 mm

Moisture Balance Wheat : -42 mm

Potatoes : -42 mm

Droughtiness Grade : 3b (to 120 cm)

Final ALC Grade : 3b

Main Limiting Factor(s) : Droughtiness

Remarks

Water table at 60 cm (=> WC II)
Pit dug to 70 cm

197-VP

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall : 689	PARENT MATERIAL
Round House Farm	Pit 3	0	Cereal	ATO : 1440	First Terrace Deposits
				FC Days : 156	
JOB NUMBER 69/92	DATE 11 Feb 1993	GRID REFERENCE SU 134 965	DESCRIBED BY GMS/GSI	Climatic Grade : 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	20	10YR42	HCL	~ 2% < 2 cm (visual)	None	MMSAB	> 0.5	-	Friable	Many medium to fine		-	Abrupt smooth
2	33	10YR53	HCL	4% < 2 cm (Sieved/displ)	cdogm ~ gleyed	MCSAB	> 0.5	Moderate	Friable	Many fine			
3	60	25Y64	CSL	27% HR (Sieved/displ)	cdom	MMSAB	> 0.5	Good	Friable	Many, very fine			
4	90+	10YR73	LCS	48% HR (Sieved/displ)	Gleyed - too wet to see	-	> 0.5	Good	Friable	To at least 70 cm			

Profile Gleyed From : 20 cm

Depth to Slowly Permeable Horizon : None

Wetness Class : II

Wetness Grade : 3a

Available Water Wheat : 113 mm

Potatoes : 104 mm

Moisture Deficit Wheat : 105 mm

Potatoes : 97 mm

Moisture Balance Wheat : +8 mm

Potatoes : +7 mm

Droughtiness Grade : 2 (to 120 cm)

Final ALC Grade : 3b

Main Limiting Factor(s) : Flood risk

Remarks

- Pit dug to 90 cm
- Water table at 60 cm - settled in pit at 50 cm

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall : 689	PARENT MATERIAL
Round House Farm	Pit 4	0	Cereal	ATO : 1440	First Terrace Deposits
				FC Days : 156	
JOB NUMBER 69/92	DATE 11 Feb 1993	GRID REFERENCE SU 130 964	DESCRIBED BY GMS/GSI	Climatic Grade : 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	19	10YR42/43	HCL	10% hard rock (Sieved/displ)	None	MCSAB	> 0.5		Friable	Many fine and very fine fibrous			Smooth abrupt
2	35	10YR53	HCL	0	Many 10YR56	MCSAB (tending towards strong development	Good	Moderate	Friable	Many very fine fibrous			Smooth abrupt
3	55	10YR56	HCL	35% hard rock (Sieved/displ)	Gleyed (wet)	WMSAB	Good	Good	Friable	Common fine			Too wet to assess
4	55+	10YR66	MSL	57% hard rock (Sieved/displ)	(Gleyed) too wet	Too stony and wet to assess	Good	Moderate	Too wet				

Profile Gleyed From : Not

Depth to Slowly Permeable Horizon : None

Wetness Class : II

Wetness Grade : 3a

Available Water Wheat : 115 mm

Potatoes : 95 mm

Moisture Deficit Wheat : 105 mm

Potatoes : 97 mm

Moisture Balance Wheat : +10 mm

Potatoes : -2 mm

Droughtiness Grade : 2 (to 120 cm)

Final ALC Grade : 4

Main Limiting Factor(s) : Flood risk

Remarks

Water table at 50 cm
Pit dug to 55 cm

197-VP

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall : 689	PARENT MATERIAL
Marston Meysey Minerals Wiltshire 8FCS 3696	1	Flat	Bare soil	ATO : 1440 FC Days : 156	Gravel Terrace Deposits
JOB NUMBER 56/90	DATE May 1990	GRID REFERENCE	DESCRIBED BY DEB	Climatic Grade : 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
Topsoil	0-20	10YR53	MZCL	Negligible	-	Moderate CSAB	+ 0.5%	SI compacted	Friable			cmn	Sharp colour change
Sub 1	20-47	2.5Y64	HZCL	-	mdogm	Moderate CSAB tending to CAB	+ 0.5%	Moderate	Firm	Old, common		cmn	Sharp colour change
Sub 2	47-63	2.5Y74	MCL	Approx 30% vsst hard gravel	mdom (and sandy weath colours)	Difficult, due to high stone content;	+ 0.5%	Good	V friable	No evidence of old roots but should be easy to penetrate		-	Gradual change into gravel below
Sub 3	63-85 IMP	Water table at 83 cm	LCS	Approx 25% vsst hard, rounded									

Profile Gleyed From : 0-40 cm

Depth to Slowly Permeable Horizon : None present / Groundwater Gley

Wetness Class : II

Wetness Grade : 2

Available Water Wheat : 120 mm (assuming Sub 3 continues to 120 cm and provides available water to this depth; using 58% LMS, 42% hard stone)

Potatoes : 111 mm

Moisture Deficit Wheat : 105 mm

Potatoes : 97 mm

Moisture Balance Wheat : +15 mm

Potatoes : +14 mm

Droughtiness Grade : 2

Final ALC Grade : 2

Main Limiting Factor(s) : Droughtiness, wetness

Remarks

Adjacent boring could not penetrate stony Sub 2; but LCS layer does not start until + 15 cm below.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :	PARENT MATERIAL
Marston Meysey Minerals Wiltshire 8FCS 3696	2	Flat (minor evidence of old ridge and furrow - poor crop response in linear bands)	Grass	ATO : FC Days : 154	Gravel Terrace Deposits
JOB NUMBER 56/90	DATE May 1990	GRID REFERENCE	DESCRIBED BY DEB	Climatic Grade :	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
Topsoil	0-25	10YR42	HCL	None, + 2 cm Neg, + 2 mm	fdom	Moderate CAB	No large pores evident in peds	SI compacted	Firm	Common fine		-	Sharp
Sub 1	25-36	2.5Y64	C	-	mdogm	Thin horizon tending to moderate CP	+ 0.5%	Poor	Firm	Common fine		cmn	Sharp
Sub 2	+36	Various 10YR64 & 74	LMS	42% (+ 2 mm)	Mottled	Presumed good structure; quite loose				Few fine roots evident		Distinct Mn staining from 53 cm	
	Impenetrable rock at 85 cm				Moist from 66 cm; water table at 84 cm								

Profile Gleyed From : 0-40 cm

Depth to Slowly Permeable Horizon : None present
Rapidly permeable groundwater gley

Wetness Class : I

Wetness Grade : 2

Available Water Wheat : 85 mm (stopping at 85 cm; using 58% x LMS 42% x hard stone)

Potatoes :

Moisture Deficit Wheat : 105 mm

Potatoes :

Moisture Balance Wheat : -20 mm

Potatoes :

Droughtiness Grade : 3A

Final ALC Grade : 3A

Main Limiting Factor(s) : Droughtiness. Given the depth of the WT at the time of survey (84 cm on 17.5) and the impenetrable layer below, it is doubtful that the groundwater is able to make a significant contribution to AP during the critical growth phase.

Remarks

Texture and stone content of Sub 2 provided by laboratory analysis

197-VP

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :	PARENT MATERIAL
Marston Meysey Minerals Wiltshire 8FCS 3696	3	Flat	Cereals	ATO : FC Days : 154	Gravel Terrace Deposits
JOB NUMBER 56/90	DATE May 1990	GRID REFERENCE	DESCRIBED BY DEB	Climatic Grade :	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
Topsoil	0-18	10YR42	HCL	10% vsst hard, visual	-	Weak MSAB			Friable			-	Distinct
Subsoil	18-80+	10YR64	MCL	5% vsst; occasional large stones, up to 5%	mdom	Weak MSAB	Good	Good	V friable	Common to depth		cmn	Sharp colour

Pit dug to 80 cm, with good root penetration to this depth. The pit, however, may not be wholly representative of the local soils. Occasional large fragments of tarmacadam and brick where found at depth, suggesting that the profile may have been disturbed. As with the other pits, the depth of soil or soil/gravel mix seems greater than observable by auger.

Profile Gleyed From : 0-40 cm

Depth to Slowly Permeable Horizon : None present
: Rapidly permeable groundwater gley

Wetness Class : I

Wetness Grade : 2

Available Water Wheat : +128 mm (calcd to 80 cm)
Potatoes :

Moisture Deficit Wheat : 105 mm
Potatoes :

Moisture Balance Wheat : At least +13 mm
Potatoes :

Droughtiness Grade : 1/2

Final ALC Grade : 2

Main Limiting Factor(s) : Workability

(Soils locally are graded 3A; this pit is much deeper than observed borings)

Remarks