Wanborough

Agricultural Land Classification

December 1996

Resource Planning Team
Taunton Statutory Group
ADAS Bristol

Job Number 33/96
Commission 1301
MAFF Reference EL 45/1057

Ministry of Agriculture, Fisheries and Food
Land Use Planning Unit

WANBOROUGH

AGRICULTURAL LAND CLASSIFICATION SURVEY

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INTRODUCTION

1. This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey of 855 ha of land at Wanborough.. Field survey was based on 249 auger borings and 9 soil profile pits, and was completed in December 1996.

2. The survey was conducted by the Resource Planning Team of ADAS Taunton Statutory Group on behalf of MAFF Land Use Planning Unit in its statutory role in the preparation of The Wiltshire Plan.

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 4 through the middle of the site, with Grade 3 elsewhere and a small area of Grade 2 at Wanborough, the site had not been surveyed previously. However, the current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF, 1988) and supersedes any previous ALC survey. Grade descriptions are summarised in Appendix I.

4. Accout has been taken of the findings of the adjacent survey to the north (ADAS 1996) in the preparation of this report.

5. At the time of survey land cover was primarily grassland with some blocks of arable. An area of 58 ha of agricultural land within the survey area was not surveyed because of access restrictions. At Rotton Row, one field is planned for recreation; ownership could not be established for the adjacent field and two at The Marsh. Access was not granted at Breach Farm.. Other land which was not surveyed included land near the village of Wanborough owned by the Woodland Trust which had been planted with young trees. Unplanted areas within this block are for recreational use.

SUMMARY

6. The distribution of ALC grades is shown on the accompanying 1:25 000 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 Table 1.

Table 1: Distribution of ALC grades: Wanborough

Grade	Area (ha)	% Surveyed Area (720 ha)
3a	34	5
3b	686	95
Agricultural land not surveyed	58	
Other land	77	
Total site area	855	

7. All of the agricultural land surveyed except a small area south of Red House Farm is Subgrade 3b with a moderate wetness limitation caused by slowly permeable claysoils. A small area of Subgrade 3a is mapped where the soils are better drained clays.

CLIMATE

8. 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 a key point in the site is given in Table 2 below.

9. 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.

10. 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: Wanborough

Grid Reference		SU 200 835
Altitude (m)		100
Accumulated Temperature (day °C)		1416
Average Annual Rainfall (mm)		695
Overall Climatic Grade		1
Field Capacity Days		156
Moisture deficit (mm):	Wheat	102
	Potatoes	93

RELIEF

11. Altitude ranges from 90 metres along the River Cole to 144 metres at the southern end of the site with even the steeper land in the south not limiting to agriculture.

12. Land along the River Cole is subject to flooding. Based on farmer information, this could downgrade the land to Grade 4. Farmer information indicates that the water authority have created a ponding area north of Lotmead Farm in response to this flooding caused by high levels of run off from Swindon.

GEOLOGY AND SOILS

13. The underlying geology of the site is shown on the published geology map (IGS, 1974). The northern part of the site is underlain by Upper Jurassic Kimmeridge Clay and the south Lower Cretaceous Gault Clay. The higher land at Wanborough Village is mapped as Head. Other recent deposits of alluvium are found along the streams. Small areas of Upper Jurassic Sand and Lower Cretaceous Lower Greensand are found near Mount Pleasant Farm. The recent survey identified soils developed over the underlying geology except the sands.

14. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW, 1983) as mainly the Denchworth Association. Around the River Cole, Fladbury 1 Association is mapped.

15. Denchworth Association is described as slowly permeable seasonally waterlogged clayey soils with similar fine loamy over clayey soils. Some fine loamy over clayey soils with only slight seasonally waterlogging and some slowly permeable calcareous clayey soils are also included. Fladbury 1 Association is described as a stoneless clayey soil variably affected by ground water.

16. The recent survey showed that all the soils were slowly permeable clays except those mapped as Subgrade 3a South of Red House Farm, and were thus more similar to the Denchworth Association overall, without indication of Fladbury 1.

AGRICULTURAL LAND CLASSIFICATION

17. The distribution of ALC grades found by the current survey is shown on the accompanying 1:25 000 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.

Subgrade 3a

18. An area of good qualilty land with moderate workability limitations is mapped south of Red House Farm. The clay profiles do not have slowly permeable layers and are Wetness Class I (see Appendix II). However, there is some evidence of waterlogging in the profile with gleying present in the lower subsoils. Two soil profile pits (pits 7 and 9) were dug in this area to confirm the grading. Within this unit some Subgrade 3b profiles have been placed. These profiles had slowly permeable layers at depth and were Wetness Class II. These soils bear more similarities with the Subgrade 3a soils than the surrounding 3b soils and at the scale of mapping have been included in this unit. At a more detailed scale of survey, a more complex grading patterm may be identified.

Subgrade 3b

19. The rest of the agricultural land surveyed is limited to Subgrade 3b by a moderate wetness limitation. These soils are generally Wetness Class IV with occasional Wetness Class III. The clay profiles have slowly permeable subsoils which usually have moderate structural conditions in the upper subsoils and poor in the lower subsoils. Gleying is either present from the surface or in the upper subsoil. Seven soil profile pits were dug around the site to confirm the gradings.

Other Land

20. The agricultural land not surveyed is expected to be Subgrade 3b on the basis of the surrounding gradings.

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ADAS Bristol
December 1996

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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 (In preparation) Soil Survey Field Handbook, Revised Edition.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 1	0°	PGR	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	KIMMERIDGE CLAY
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	31/10/96	SU20858720	GMS		33/96/1

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	26	C	10YR41	NONE (VIS)	CDFO 7.5YR56	NONE	—	—	—	—	MVF		CLEAR SMOOTH
2	65+	C	10YR51	NONE (VIS)	CDFO 10YR58	NONE	MCPr	V FIRM	POOR	POOR	CVF		

Profile Gleyed From: SURFACE

Depth to Slowly Permeable Horizon: 26cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 124 mm

Potatoes: 101 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 22 mm

Potatoes: 8 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): WETNESS

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 2	0°	CEREAL STUBBLE	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	KIMMERIDGE CLAY
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	1/11/96	SU19358640	GMS		33/96/2

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	17	ZC	10YR42	NONE (VIS)	NONE	NONE	—	—	—	—	CVF		CLEAR SMOOTH
2	32	C	10YR52	NONE (VIS)	CDFO 7.5YR56	NONE	MCSAB tending to PRISMATIC	FIRM	MOD	GOOD	CVF		GRADUAL SMOOTH
3	70+	C	2.5Y51	NONE	MDFO (10YR58) within ped	NONE	WCPr Breaking into MCAB	FIRM	POOR	POOR	CVF		

Profile Gleyed From: 17cm

Depth to Slowly Permeable Horizon: 32cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 125 mm

Potatoes: 102 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 23 mm

Potatoes: 9 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): WETNESS

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 3	O°	PGR	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	KIMMERIDGE CLAY/ALLUVIUM
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	6/11/96	SU19758585	GMS		—

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	17	HCL	10YR42	NONE	FDFO 10YR46	NONE					MVF		CLEAR WAVY
2	32	C	10YR52	NONE	CDFO 7.5YR56	NONE	WCPr	FRIABLE	MOD	POOR	CVF		CLEAR WAVY
3	45	C	2.5Y52	NONE	CDFO 10YR56	NONE	MMPr	FRIABLE	MOD	POOR	CVF		CLEAR SMOOTH
4	65+	C	2.5Y52	NONE	MDFO 7.5YR58	NONE	MCPr	FIRM	POOR	POOR	FVF		

Profile Gleyed From: 17CM

Depth to Slowly Permeable Horizon: 17CM

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 131 mm

Potatoes: 108 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 29 mm

Potatoes: 15 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): WETNESS

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 4	O°	OSR	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	GAULT CLAY
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	7/11/96	SU19738310	GMS		33/96/4

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	C	7.5YR42	NONE	NONE	NONE	—	—	—	—	CF.VF	—	ABRUPT SMOOTH
2	37	C	10YR51	NONE	MDFO 7.5YR56	NONE	WCAB	FRIABLE	MOD	GOOD IN PARTS	CVF	—	CLEAR SMOOTH
3	65+	C	2.5Y52	NONE	MDFO 7.5YR58	NONE	MCAB (some MMPr)	FIRM	MOD	POOR	CVF	—	

Profile Gleyed From: 25cm

Depth to Slowly Permeable Horizon: 37cm

Wetness Class: IV

Wetness Grade: 3b

Available Water	Wheat:	139 mm
	Potatoes:	115 mm
Moisture Deficit	Wheat:	102 mm
	Potatoes:	93 mm
Moisture Balance	Wheat:	37 mm
	Potatoes:	22 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): WETNESS

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 5	3°N	PGR	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	GAULT CLAY
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	7/11/96	SU20528292	GMS		—

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	20	C	7.5YR42	NONE	FRR	NONE	—	—	—	—	MVF	—	CLEAR SMOOTH
2	40	C	10YR52	NONE	CFFO 10YR56	NONE	WCAB	FIRM	POOR	POOR	CVF	—	GRADUAL SMOOTH
3	60+	C	2.5Y52	NONE	CDFO 10YR58	NONE	MCAB	FIRM	POOR	POOR	CVF	—	

Profile Gleyed From: 20cm

Depth to Slowly Permeable Horizon: 20cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 122 mm

Potatoes: 99 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 20 mm

Potatoes: 6 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): WETNESS

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 6	O°	PGR	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	KIMMERIDGE CLAY
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	13/11/96	SU20088496	GMS		33/96/6

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	20	C	10YR41	NONE	CDFO 7.5YR46	NONE	—	—	—	—	MVF		CLEAR SMOOTH
2	52	C	10YR52	NONE	CDFO 7.5YR46	NONE	WMPr	FRIABLE	MOD	POOR	CVF		CLEAR SMOOTH
3	70+	C	2.5Y52	NONE	MDFO 7.5YR58	NONE	MCPr	FIRM	POOR	POOR	FVF		

Profile Gleyed From: SURFACE

Depth to Slowly Permeable Horizon: 20CM

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 131 mm

Potatoes: 109 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 29 mm

Potatoes: 10 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): WETNESS

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 7	0°	PGR	Av Rainfall: 695 mm ATO: 1416 day °C	GAULT CLAY
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 156 Climatic Grade: 1	SOIL SAMPLE REFERENCES
33/96	14/11/96	SU20898435	GMS	Exposure Grade: 1	—

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	24	C	10YR42	NONE	NONE	NONE	—	—	—	—	MVF		Abrupt Smooth
2	50	C	10YR54	NONE	NONE	NONE	MMPr Breaking into CSAB	FRIABLE	MOD	POOR	CVF		Clear Smooth
3	80+	C	10YR54, 53	NONE	CDFO 7.5YR56	NONE	MCSAB	FRIABLE	MOD	GOOD	CVF		

Profile Gleyed From: 50cm

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 3A

Available Water Wheat: 138 mm

Potatoes: 114 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 36 mm

Potatoes: 21 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3A

Main Limiting Factor(s): WORKABILITY

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	Pit 8	0°	PGR	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	Alluvium
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	15/11/96	SU21328610	GMS		———

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	24	C	10YR31	NONE	NONE	NONE	—	—	—	—	MVF		*Abrubt* Smooth
2	38	C	10YR51	NONE	CDFO 7.5YR46	NONE	MCSAB	FRIABLE	MOD	GOOD	CVF		Clear Smooth
3	65+	C	2.5Y52	NONE	MDFO 10YR58	NONE	MCAB	FIRM	POOR	POOR	FVF		

Profile Gleyed From: 24cm

Depth to Slowly Permeable Horizon: 38cm

Wetness Class: IV

Wetness Grade: 3b

Available Water Wheat: 128 mm

Potatoes: 105 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 26 mm

Potatoes: 12 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): WETNESS

Remarks:

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
WANBOROUGH	PIT 9	0°	PGR	Av Rainfall: 695 mm ATO: 1416 day °C FC Days: 156 Climatic Grade: 1 Exposure Grade: 1	GAULT CLAY
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
33/96	15/11/96	SU20348410	GMS		33/96/9

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	C	10YR42	NONE	NONE	NONE	—	—	—	—	MVF		CLEAR SMOOTH
2	56	C	10YR53 (10YR52)	NONE	NONE*	NONE	MM/C SAB	FRIABLE	GOOD & MOD	GOOD	CVF		CLEAR SMOOTH
3	80+	C	10YR53, 54	NONE	CDFO 10YR58	NONE	MCSAB	FRIABLE	MOD	Border-line	FVF		

Profile Gleyed From: 56cm

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 3a

Available Water Wheat: 139 mm

Potatoes: 115 mm

Moisture Deficit Wheat: 102 mm

Potatoes: 93 mm

Moisture Balance Wheat: 37 mm

Potatoes: 22 mm

Droughtiness Grade: (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): WORKABILITY

Remarks: *Orange colours seem to be where soil is disturbed but not mottles

APPENDIX III

ABBREVIATIONS AND TERMS USED IN SURVEY DATA

Soil pit and auger boring information collected during ALC survey is held on a computer database and is reproduced in this report. Terms used and abbreviations are set out below. These conform to definitions contained in the Soil Survey Field Handbook (Hodgson, 1974).

1. Terms used on computer database, in order of occurrence.

GRID REF: National 100 km grid square and 8 figure grid reference.

LAND USE: At the time of survey

WHT:	Wheat	**SBT:**	Sugar Beet	**HTH:**	Heathland
BAR:	Barley	**BRA:**	Brassicas	**BOG:**	Bog or Marsh
OAT:	Oats	**FCD:**	Fodder Crops	**DCW:**	Deciduous Wood
CER:	Cereals	**FRT:**	Soft and Top Fruit	**CFW:**	Coniferous Woodland
MZE:	Maize	**HRT:**	Horticultural Crops	**PLO:**	Ploughed
OSR:	Oilseed Rape	**LEY:**	Ley Grass	**FLW:**	Fallow (inc. Set aside)
POT:	Potatoes	**PGR:**	Permanent Pasture	**SAS:**	Set Aside (where known)
LIN:	Linseed	**RGR:**	Rough Grazing	**OTH:**	Other
BEN:	Field Beans	**SCR:**	Scrub		

GRDNT: Gradient as estimated or measured by hand-held optical clinometer.

GLEY, SPL: *Depth in centimetres to gleying or slowly permeable layer.*

AP (WHEAT/POTS): Crop-adjusted available water capacity.

MB (WHEAT/POTS): Moisture Balance. (Crop adjusted AP - crop potential MD)

DRT: Best grade according to soil droughtiness.

If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

MREL:	Microrelief limitation	**FLOOD:**	Flood risk	**EROSN:**	Soil erosion risk
EXP:	Exposure limitation	**FROST:**	Frost prone	**DIST:**	Disturbed land
CHEM:	Chemical limitation				

LIMIT: The main limitation to land quality: The following abbreviations are used.

OC:	Overall Climate	**AE:**	Aspect	**EX:**	Exposure
FR:	Frost Risk	**GR:**	Gradient	**MR:**	Microrelief
FL:	Flood Risk	**TX:**	Topsoil Texture	**DP:**	Soil Depth

CH:	Chemical	**WE:**	Wetness	**WK:**	Workability
DR:	Drought	**ER:**	Erosion Risk	**WD:**	Soil Wetness/Droughtiness
ST:	Topsoil Stoniness				

TEXTURE: Soil texture classes are denoted by the following abbreviations:-

S:	Sand	**LS:**	Loamy Sand	**SL:**	Sandy Loam
SZL:	Sandy Silt Loam	**CL:**	Clay Loam	**ZCL**	Silty Clay Loam
ZL:	Silt Loam	**SCL:**	Sandy Clay Loam	**C:**	Clay
SC:	Sandy clay	**ZC:**	Silty clay	**OL:**	Organic Loam
P:	Peat	**SP:**	Sandy Peat	**LP:**	Loamy Peat
PL:	Peaty Loam	**PS:**	Peaty Sand	**MZ:**	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:-

F: Fine (more than 66% of the sand less than 0.2mm)
M: Medium (less than 66% fine sand and less than 33% coarse sand)
C: Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content: **M:** Medium (< 27% clay) **H:** heavy (27 - 35% clay)

MOTTLE COL: Mottle colour using Munsell notation.

MOTTLE ABUN: Mottle abundance, expressed as a percentage of the matrix or surface described.

F: few <2% **C:** common 2 - 20% **M:** many 20 - 40% **VM:** very many 40%+

MOTTLE CONT: Mottle contrast

F: faint - indistinct mottles, evident only on close inspection
D: distinct - mottles are readily seen
P: Prominent - mottling is conspicuous and one of the outstanding features of the horizon.

PED. COL: Ped face colour using Munsell notation.

GLEY: If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

STONE LITH: Stone Lithology - One of the following is used.

HR:	All hard rocks and stones	**SLST:**	Soft oolitic or dolimitic limestone
CH:	Chalk	**FSST:**	Soft, fine grained sandstone
ZR:	Soft, argillaceous, or silty rocks	**GH:**	Gravel with non-porous (hard) stones
MSST:	Soft, medium grained sandstone	**GS:**	Gravel with porous (soft) stones

SI: Soft weathered igneous or metamorphic rock

Stone contents are given in % by volume for sizes >2cm, >6cm and total stone >2mm.

STRUCT: The degree of development, size and shape of soil peds are described using the following notation

Degree of development	**WK:**	Weakly developed	**MD:**	Moderately developed
	ST:	Strongly developed		
Ped size	**F:**	Fine	**M:**	Medium
	C:	Coarse	**VC:**	Very coarse
Ped Shape	**S:**	Single grain	**M:**	Massive
	GR:	Granular	**AB:**	Angular blocky
	SAB:	Sub-angular blocky	**PR:**	Prismatic
	PL:	Platy		

CONSIST: Soil consistence is described using the following notation:

L:	Loose	**VF:**	Very Friable	**FR:**	Friable	**FM:**	Firm
VM:	Very firm	**EM:**	Extremely firm	**EH:**	Extremely Hard		

SUBS STR: Subsoil structural condition recorded for the purpose of calculating profile droughtiness: **G:** Good **M:** Moderate **P:** Poor

POR: Soil porosity. If a soil horizon has poor porosity with less than 0.5% biopores >0.5mm, a 'Y' will appear in this column.

IMP: If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

SPL: Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

CALC: If the soil horizon is calcareous with naturally occurring calcium carbonate exceeding 1% a 'Y' will appear this column.

2. Additional terms and abbreviations used mainly in soil pit descriptions.

STONE ASSESSMENT:

VIS:	Visual	**S:**	Sieve	**D:**	Displacement

MOTTLE SIZE:

EF:	Extremely fine <1mm	**M:**	Medium 5-15mm
VF:	Very fine 1-2mm>	**C:**	Coarse >15mm

F: Fine 2-5mm

MOTTLE COLOUR: May be described by Munsell notation or as ochreous (OM) or grey (GM).

ROOT CHANNELS: In topsoil the presence of 'rusty root channels' should also be noted.

MANGANESE CONCRETIONS: Assessed by volume

N:	None		**M:**	Many	20-40%
F:	Few	<2%	**VM:**	Very Many	>40%
C:	Common	2-20%			

STRUCTURE: Ped Development *

WA:	Weakly adherent	**M:**	Moderately developed
W:	Weakly developed	**S:**	Strongly developed

POROSITY:

P: Poor - less than 0.5% biopores at least 0.5mm in diameter
G: Good - more than 0.5% biopores at least 0.5mm in diameter

ROOT ABUNDANCE:

The number of roots per $100cm^2$:		Very Fine and Fine	Medium and Coarse
F:	Few	1-10	1 or 2
C:	Common	10.25	2 - 5
M:	Many	25-200	>5
A:	Abundant	>200	

ROOT SIZE

VF:	Very fine	<1mm	**M:**	Medium	2 - 5mm
F:	Fine	1-2mm	**C:**	Coarse	>5mm

HORIZON BOUNDARY DISTINCTNESS:

Sharp:	<0.5cm	**Gradual:**	6 - 13cm
Abrupt:	0.5 - 2.5cm	**Diffuse:**	>13cm
Clear:	2.5 - 6cm		

HORIZON BOUNDARY FORM: Smooth, wavy, irregular or broken.*

* See Soil Survey Field Handbook (Hodgson, 1974) for details.

WANBOROUGH

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

1. This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey of 855 ha of land at Wanborough. Field survey was based on 249 auger borings and 9 soil profile pits, and was completed in December 1996.

2. The survey was conducted by the Resource Planning Team of ADAS Taunton Statutory Group on behalf of MAFF Land Use Planning Unit in its statutory role in the preparation of The Wiltshire Structure Plan.

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 4 through the middle of the site, with Grade 3 elsewhere and a small area of Grade 2 at Wanborough, the site had not been surveyed previously. However, the current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF, 1988) and supersedes any previous ALC survey. Grade descriptions are summarised in Appendix I.

4. Account has been taken of the findings of the adjacent survey to the north (ADAS 1996) in the preparation of this report.

5. At the time of survey land cover was primarily grassland with some blocks of arable. An area of 58 ha of agricultural land within the survey area was not surveyed because of access restrictions. At Rotton Row, one field is planned for recreation; ownership could not be established for the adjacent field and two at The Marsh. Access was not granted at Breach Farm. Other land which was not surveyed included land near the village of Wanborough owned by the Woodland Trust which had been planted with young trees. Unplanted areas within this block are for recreational use.

6. The distribution of ALC grades is shown on the accompanying 1:25 000 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 Table 1.

Table 1: Distribution of ALC grades: Wanborough

Grade	Area (ha)	% Surveyed Area (720 ha)
3a	34	5
3b	686	95
Agricultural land not surveyed	58	
Other land	77	
Total site area	855	

7. All of the agricultural land surveyed except a small area south of Red House Farm is Subgrade 3b with a moderate wetness limitation caused by slowly permeable claysoils. A small area of Subgrade 3a is mapped where the soils are better drained clays.