
HATTON HOSPITAL WARWICK
AGRICULTURAL LAND CLASSIFICATION
FEBRUARY 1998

Resource Planning Team
Bristol
FRCA Western Region

Job Number 79/97
MAFF Ref EL 43/09792



Hatton Hospital

AGRICULTURAL LAND CLASSIFICATION SURVEY

CONTENTS

	Page
INTRODUCTION	1
SUMMARY	1
CLIMATE	2
RELIEF	2
GEOLOGY AND SOILS	3
AGRICULTURAL LAND CLASSIFICATION AND MAP	3
REFERENCES	5
APPENDIX I Description of the Grades and Subgrades	6
APPENDIX II Definition of Soil Wetness Classes	8
APPENDIX III Survey Data	9
	Sample Point Location Map
	Pit Descriptions
	Boring Profile Data
	Boring Horizon Data
	Abbreviations and Terms used in Survey Data

**HATTON HOSPITAL
AGRICULTURAL LAND CLASSIFICATION SURVEY**

INTRODUCTION

- 1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 306.8ha of land at Hatton Hospital Warwick. Field survey was based on 147 auger borings and 6 soil profile pits and was completed in January 1998. During the survey 6 samples were analysed for particle size distribution (PSD).
- 2 The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in the preparation of the Warwickshire 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 3, 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 At the time of survey, land cover was arable and grassland. An area of 51.3ha of agricultural land within the survey area was not surveyed because access could not be obtained. Other land which was not surveyed included residential development, agricultural buildings, roads, tracks, woodland, canal and the railway.
- 5 The distribution of ALC grades is shown on the accompanying 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 Table 1.

SUMMARY

Table 1 Distribution of ALC grades Hatton Hospital

Grade	Area (ha)	% Surveyed Area (168.2 ha)
2	7.0	4.2
3a	60.2	35.8
3b	101.0	60.0
Agricultural land not surveyed	51.3	
Other land	87.3	
Total site area	306.8	

- 6 Best and most versatile land occurs over the western and southern part of the site. Large areas of subgrade 3b land can be found over the north and eastern part of the site in general where the soils are heavier and limited by soil wetness. Grade 2 land occurs in the south west of the site around Alders Farm Museum here the soils are limited by wetness. Subgrade 3a land occurs in blocks across the southern and western

parts of the site on the gently undulating land. These soils generally have moderate wetness 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 Hatton Hospital

Grid Reference	SP 246 672	SP 252 675	SP 243 666
Altitude (m)	90	111	90
Accumulated Temperature (day °C)	1390	1365	1390
Average Annual Rainfall (mm)	674	691	671
Overall Climatic Grade	1	1	1
Field Capacity Days	152	154	151
Moisture deficit (mm)			
Wheat	101	98	101
Potatoes	91	86	91

RELIEF

- 10 Altitude ranges from 75 metres to the south east of the sanatorium to 111 metres at Turkey farm with generally gentle slopes although in the north east of the site gradients of 1:1 were recorded.

GEOLOGY AND SOILS

- 11 The underlying geology of the site is shown on the published geology map (BGS 1984) as Mercia Mudstone over the majority of the site with outcrops of Ardon sandstone formation in the north west and south. Small areas of glacial sands and gravels and associated Till are found around Alders Farm Museum. In the recent survey lighter soils were found on the land around Alders Farm Museum. The clayey soils were found on the gently sloping land and on the higher land the soils pass onto the red clay. Occasional sandier soils were found generally in the vicinity of the sandstone.
- 12 Soils were mapped by the Soil Survey of England and Wales (SSEW) at a reconnaissance scale of 1:250 000 (SSEW 1983) as the Brockhurst Association. The majority of the site from Hatton Hill in the west around the hospital and south to Budbrook farm is mapped as the Brockhurst 2 Soil Association. Land from Thistley Gorse Covert in the west to Turkey Farm in the east is mapped as Brockhurst 1. Around Home Farm and north east of the hospital Salop series is mapped on the higher land with lighter Wick soils in the south west.
- 13 The Brockhurst 1 and 2 Soil Associations are described as having loamy topsoil over clayey subsoils. The clayey subsoil is slowly permeable and waterlogged for long periods in winter. The Salop series is described as fine loamy over clayey soils which occur on Till. These are typically stagnogley soils with reddish matrix colours and greyish mottles in the subsoil. The soils of the Wick Association are described as having deep well drained coarse loamy profiles.
- 14 The majority of the soils in the present survey were found to closely follow the distribution described above. Soils were lighter and better drained on the lower land and became heavier on the higher undulating ground.

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 **Grade 2** A small area of the site in the south east around Alders Farm Museum was found to be of very good quality. The soils were described as having sandy loam topsoil textures overlying sandy clay loam upper subsoil onto clay below 41cm. A profile pit confirmed that the soils were not droughty and have a moderate wetness limitation which places the soils in Wetness Class III.
- 17 **Subgrade 3a** A significant area of the site was found to be of good quality notably to the west of Turkey Farm to the south of the railway line and to the south east of Kingstanding Farm. The Subgrade 3a land is generally found on the gently sloping land. The soils were described as having clay loam or sandy clay loam topsoil textures over clay. Again the clay came into the profile below 41cm placing the soils into Wetness Class III.

18 Subgrade 3b The majority of the site was found to be of moderate quality This covers the higher land to the north and east of Home Farm, the lower lying land to the south of the railway and the eastern side of the site on the higher undulating land The soils were described as having loamy topsoils onto red clay The clay was found in the profile above a depth of 41cm Two soil profile pits confirmed that the clay subsoils were slowly permeable placing the soils into Wetness Class IV

Suzanne Kangh
Resource Planning Team
FRCA Bristol
February 1998

[BRITISH GEOLOGICAL SURVEY 1984 Sheet 184 Warwick [1 50 000] series [Solid and Drift] edition [BGS] London

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

MAFF (1977) 1 250 000 series Agricultural Land Classification South West Region MAFF Publications Alnwick

MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for grading the quality of agricultural land MAFF Publications Alnwick

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land Classification Meteorological Office Bracknell

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 3 Soils of Midland and Western England 1 250 000 scale SSEW Harpenden

SOIL SURVEY OF ENGLAND AND WALES (1984) Soils and Their Use in Midland and Western England Bulletin No 12 SSEW Harpenden

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

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 1997)

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

GLEYSPL 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

GLEYS 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 dolomitic 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

<u>Degree of development</u>	WA Weakly developed Adherent	WK Weakly developed
	MD Moderately developed	ST Strongly developed
<u>Ped size</u>	F Fine	M Medium
	C Coarse	VC Very coarse
<u>Ped Shape</u>	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%			

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 1997) for details

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	674 mm	PARENT MATERIAL	
Hatton Hospital		Pit 1 (ASP41)	2 South	LEY	ATO	1390 day C	MERCIA MUDSTONE	
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	152	PSD SAMPLES TAKEN	
79/97		13/1/98	SP 247 677	SH/SK	Climatic Grade	1	0 25cm TS MCL s 37% z 37% c 26%	
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	31	MCL	10YR 3/2	2% HR T 1 (VIS)							CF+VF		Abrupt wavy
2	47	C	*5YR (4/3 (75YR 5/2)	NONE	mn few		ST CPL	FM	P	(<0 5%) P	CF + VF		Gradual smooth
3	100	C	*5YR 4/3 (5YR5/3)	NONE			MASS structure less overall with M CAB	FM	P	(<0 5%) P			
								FM					

Profile Gleyed From	Available Water	Wheat	114mm	Final ALC Grade	3b
Slowly Permeable Horizon From	31 red soil extends to 100	Potatoes	105mm	Main Limiting Factor(s)	we
Wetness Class	IV	Moisture Deficit	Wheat 101mm		
Wetness Grade	3b	Potatoes	91mm		
		Moisture Balance	Wheat 13mm		
		Potatoes	14mm		
		Droughtiness Grade 2	(Calculated to 100 cm)		
				Remarks	*in matrix of horizon 2 and horizon 3 bands of 5GY61
				Water in pit between boundary of MCL/C	

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE			Av Rainfall	674mm	PARENT MATERIAL			
Hatton Hospital		Pit 2 (ASP 109)	3 South		LEY			ATO	1390 day C	MERCIA MUDSTONE			
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY			FC Days	152	PSD SAMPLES TAKEN			
79/97		13/1/98	SP 247 673		SH/SK			Climatic Grade	1	TS 0 25cm s 61% z 27% c 13% MSL			
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	32	MSL	YR 3/1 3/2	1% HR	NONE	NONE					CF		Abrupt smooth
2	41	SCL	75 YR 5/4 (75YR 53 63)	7%HR (VIS)	NONE	NONE	MD CSAB	FM	M	>0 5 G M	FF		Gradual smooth
3	53	SCL (v heavy)	5 YR 4/4	NONE	NONE	MANY	MD CPL	FM	P	P	F+VF		Gradual smooth
4	100	C 68cm	5 YR 4/4 3/4 25YR 3/4	NONE	NONE	COMMON	*MD C+ VCPL	VM	P	P	F+VF		

Profile Gleyed From 41
 Slowly Permeable Horizon From 41
 Wetness Class III
 Wetness Grade 2

Available Water Wheat 117mm
 Potatoes 107mm
 Moisture Deficit Wheat 101mm
 Potatoes 91mm
 Moisture Balance Wheat 16mm
 Potatoes 15mm
 Droughtiness Grade 2 (Calculated to 100 cm)

Final ALC Grade 2
 Main Limiting Factor(s) We
 in field profile was dry

Remarks
 *Horizon 4 platy structure sand on surface of platy structures Overall structure influenced by geological formation (mudstone) Lower down more massive

SITE NAME		PROFILE NO	SLOPE AND ASPECT		LAND USE		Av Rainfall 691 mm		PARENT MATERIAL		
Hatton Hospital		Pit 3 (ASP30)	1 West		CEREAL		ATO 1365day C		MERCIA MUDSTONE		
JOB NO		DATE	GRID REFERENCE		DESCRIBED BY		FC Days 154		PSD SAMPLES TAKEN		
79/97		15 01 98	SP 251 678		SH / SK		Climatic Grade 1		TS 0 25cm		
							Exposure Grade		s 42% z 35% c 23% MCL		

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	20/36	MCL	10YR42	2 ^g HR (VIS)							CFF		
2	55	HCL	10YR53 (10YR52)	4 ^g HR (VIS)	75YR46 Common	* 1 FEW	MDCAB	FR	M	G	CF & VFF		Wavy abrupt
3	100	C	05YR44		75YR46 Common 10YR62	COMMON	MASS	VM	P	P	FVFF		Smooth gradual

Profile Gleyed From 20/36
 Slowly Permeable Horizon From 55
 Wetness Class III
 Wetness Grade 3A

Available Water Wheat 120mm
 Potatoes 111mm
 Moisture Deficit Wheat 98mm
 Potatoes 86mm
 Moisture Balance Wheat 22mm
 Potatoes 25mm
 Droughtiness Grade 2 (Calculated to 100 cm)

Final ALC Grade 3a
 Main Limiting Factor(s) We

Remarks
 *Several larger stones found at horizon 2
 *1 Many Mn concretions at base of horizon 2

SITE NAME Hatton Hospital		PROFILE NO Pit 4 (ASP164)	SLOPE AND ASPECT 1	LAND USE PGR	Av Rainfall 674mm ATO 1390 day C	PARENT MATERIAL MERCIA MUDSTONE AND ARDEN SST SKERRY
JOB NO 79/97		DATE 14 01 98	GRID REFERENCE SP 246 670	DESCRIBED BY SK/SH	FC Days 152 Climatic Grade 1 Exposure Grade	PSD SAMPLES TAKEN TS Pit 4 MSL S 52% Z 31% C 17%

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	29	MSL	10YR4/2	2 ⁹ HR Tot 1 (VIS)		NONE					CF		Sharp smooth
2	49	HCL	75YR5/4	3 ⁹ HR Tot 1 (VIS)	NONE	FEW	MDCSAB	FR	M	(>0.5) G	CF+VF		Clear smooth
3	58	C	7.5YR5/2 5/3	NONE	75YR5/6 Common fine district	NONE	MDCPR	FM	P	(<0.5) P	FF		
4	80	C	10YR5/2 (10YR6/2 5/2)	NONE	75YR 5/6 4/6 common fine district	NONE to FEW	MDCPL	FM	P	(<0.5) P	FF		

Profile Gleyed From 49
Slowly Permeable Horizon From 49
Wetness Class III
Wetness Grade 2

Available Water Wheat 119mm
Potatoes 110mm
Moisture Deficit Wheat 101mm
Potatoes 91mm
Moisture Balance Wheat 18mm
Potatoes 19mm
Droughtiness Grade 2 (Calculated to 100 cm)

Final ALC Grade 2
Main Limiting Factor(s) We

Remarks
Dug pit to 80 augered to 100

SITE NAME Hatton Hospital		PROFILE NO Pit 5 (ASP 237 254)	SLOPE AND ASPECT 4 North		LAND USE OSR		Av Rainfall 691 mm ATO 1365 day C		PARENT MATERIAL mercia mudston with arden sst skerry			
JOB NO 79/97		DATE 15/01/98	GRID REFERENCE SP 242 666		DESCRIBED BY SK/SH		FC Days 154 Climatic Grade 1 Exposure Grade		PSD SAMPLES TAKEN TS MSL S 64% Z 22% C 14%			

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	35	MSL	10YR4/2	1% >2cm 2% HR Total (VIS)							FF		Abrupt smooth
2	57 78	SCL	25Y6/2	6%HR Total (VIS)	75YR 46/56 common distinct fine		MDCSAB	FR	M	(>0 5) G	FVF		Wavy sharp
3	100	C	05YR4/4 with 5G 5/1 b d g & g	3%HR Total		common	MASS	VM		(<0 5) P	FVF		

Profile Gleyed From	35	Available Water	Wheat	115mm	Final ALC Grade	2
Slowly Permeable Horizon From	57		Potatoes	106mm	Main Limiting Factor(s)	We
Wetness Class	WC III	Moisture Deficit	Wheat	101mm		
Wetness Grade	2		Potatoes	91mm		
	if SPL below 69 WC II gd 1 majority of pit SPL is above 69	Moisture Balance	Wheat	14mm		
			Potatoes	15mm	Remarks	roots not many due to OSR crop
		Droughtiness Grade	2	(Calculated to 100 cm)		Pocket of C between SCL and C horizon on one side of pit

SITE NAME Hatton Hospital		PROFILE NO Pit 6 (ASP100 101)	SLOPE AND ASPECT 2 South East	LAND USE OSR	Av Rainfall 691 mm ATO 1365 day C	PARENT MATERIAL MERCIA MUDSTONE
JOB NO 79/97		DATE 15 1 98	GRID REFERENCE SP 256 674	DESCRIBED BY SH/SK/AC	FC Days 154 Climatic Grade 1 Exposure Grade	PSD SAMPLES TAKEN MCL TS 0 25cm s 34% z 41% c 25%

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	MCL	10YR4/3	2 nd HR T 11 (VIS)							CF + VF		Sharp smooth
2	37	C	75YR5/4 75YR5/2		75YR5/8 many distinct fine	FEW	WKCSAB	FM	P	(>0.5) G	CF + VF		Clear smooth
3	100	C	5YR4/4	NONE		COMMON	WK/MD VCPR	VM	P	(<0.5) P	FF + VF		

Profile Gleyed From 25
Slowly Permeable Horizon From 37
Wetness Class V
Wetness Grade 3b

Available Water Wheat 112mm
Potatoes 103mm
Moisture Deficit Wheat 98mm
Potatoes 86mm
Moisture Balance Wheat 14mm
Potatoes 17mm
Droughtiness Grade 2 (Calculated to 100cm)

Final ALC Grade 3b
Main Limiting Factor(s) We

Remarks