Deep Moor Landfill Site Torrington

Agricultural Land Classification & Statement of Site Physical Characteristics

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Resource Planning Team
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AGRICULTURAL LAND CLASSIFICATION SURVEY AND STATEMENT OF SITE PHYSICAL CHARACTERISTICS

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INTRODUCTION

1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 23 2 ha of land at Deep Moor Torrington Field survey was based on 20 auger borings and 3 soil profile pits and was completed in July 1997

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 Minerals Planning Authority under the Town and Country Planning Act 1990 for an extension to Deep Moor Landfill Site

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 A detailed survey (ADAS 1983) undertaken in connection with a previous extension to the south of the current survey area described the soil resources available for restoration in some detail but did not classify the land to ALC grade The auger boring data for this survey indicates mainly silty loam topsoil over distinctly mottled clay similar to the Grade 4 profiles of the current survey However this survey relied on shallow auger borings not penetrating the subsoil to any depth and would have used guidelines for agricultural land classification which are now superseded

5 At the time of survey land cover in the lower part of the site was mainly grass for grazing by beef cattle All this part of the site has been recently reclaimed from the rough grazing and scrub shown on the Ordnance Survey base map The higher field north of Belle Vue Lodge was currently used for maize ley grassland and an area of fallow presumably set aside Other land which was not surveyed included residential land and a small scrapyard

SUMMARY

6 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 Deep Moor Landfill Site Torrington

Grade	Area (ha)	% Surveyed Area (21 9 ha)
3a	10 4	47
4	11 5	53
Other land	1 3	
Total site area	23 2	

7 This shows that 47% of the survey area was found to be best and most versatile This was Subgrade 3a with a moderate limitation mainly due to restricted workability also wetness in parts and even the possibility of droughtiness in other parts where the rootable profile is shallow The remainder of the site was found to be Grade 4 with a severe limitation due to wetness

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 key points around the site are 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 an overall climatic limitation which limits the land to Grade 2

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 Deep Moor Landfill Site Torrington

Grid Reference		SS 526218	SS 521213
Altitude (m)		200	175
Accumulated Temperature (day C)		1368	1397
Average Annual Rainfall (mm)		1068	1060
Overall Climatic Grade		2	2
Field Capacity Days		215	215
Moisture deficit (mm)	Wheat	71	74
	Potatoes	53	58

RELIEF

11 Altitude ranges from 175 metres at the south end of the site to 200 metres at Belle Vue Cross Slopes are mainly gentle or moderate and are not limiting to agricultural land classification

GEOLOGY AND SOILS

12 The underlying geology of the site is shown on the published geology map (IGS 1978) as Carboniferous Culm Measures (Bude formation) mainly shale with some sandstone The sandstone is shown as occurring in the higher field and this was found to be confirmed by the current survey

13 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1 250 000 (SSEW 1983) as mainly Hallsworth 2 association on the lower ground and Neath association on the higher ground Hallsworth 2 association is described as slowly permeable seasonally waterlogged clayey fine loamy and fine silty soils Neath association is described as well drained fine loamy soils often over rock with small patches of similar soils with slowly permeable subsoils and slight seasonal waterlogging This description and distribution was entirely borne out by the current survey except that the extent of the better drained Neath association is somewhat greater than indicated on the reconnaissance scale map

AGRICULTURAL LAND CLASSIFICATION

14 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

Subgrade 3a

15 The area shown as Subgrade 3a was found to be mainly Wetness Class I (See Appendix II) with dark reddish brown heavy clay loam topsoil indicating a moderate limitation mainly due to restricted workability Some borings found gleying in the lower subsoil similar to that in Pit 1 indicating Wetness Class II and a moderate limitation due to wetness This may also apply to some of the auger borings which were found to be impenetrable so that the profile could not be examined to 70 cm However the evidence for wetness examined in detail at Pit 1 was considered to amount to only Wetness Class II which indicates Subgrade 3a even with heavy clay loam topsoil Pit 3 was found to be Wetness Class I with only a few ochreous mottles generally distributed in the lower subsoil

Grade 4

16 The area shown as Grade 4 was found to be mainly Wetness Class IV with a slowly permeable layer starting below the topsoil or in the upper subsoil topsoil texture generally heavy clay loam or heavy silty clay loam frequently gleyed from the surface This area also includes two borings which were found to be Wetness Class III with a slowly permeable layer starting in the lower subsoil or in one case where gleying was evident below the topsoil but with no true slowly permeable layer

SOIL RESOURCES

17 The site has been divided into two distinct areas shown as Soil Units on the attached map of soil resources This is not a soil stripping map but is intended to illustrate the soil resources available for restoration

Soil Unit I

18 Topsoil mainly heavy clay loam occasionally medium clay loam 22 28cm deep dark reddish brown (7 5YR42 or43) friable or very friable with weak or moderately developed medium or coarse granular structure good porosity and common or many fine and very fine roots 25 30% stones mainly less than 2 cm and mainly the more resistant harder sandstone Clear or abrupt smooth boundary

19 Subsoil mainly clay or heavy clay loam but frequently with the feel of a sandy clay loam in the auger borings due to rock fragment abrasion Little change or horizon development evident to 90 or 100 cm where examined in pits although frequently less in the auger borings as several of these were found to be impenetrable Generally pale pinkish grey colours (7 5YR54 or 63) mainly firm and with weakly developed coarse subangular blocky structure particularly at lower depth Stone contents were assessed at the pit sites as ranging from 38% to 60% mainly a softer sandstone and in smaller fragments Porosity tending to be low and rooting limited to few very fine roots At Pit 1 gleying was evident below 65 cm although this was a gradual and irregular boundary whereas at Pit 3 only few distinct fine ochreous mottles were found throughout the horizon becoming common in small isolated patches again below 65 cm

Soil Unit II

20 Topsoil mainly heavy clay loam or heavy silty clay loam generally around 20 cm deep and grey or dark grey in colour (10YR53 to 2 5Y51) Frequently gleyed with common ochreous mottles or common rusty root channels undisturbed consistency friable but generally saturated Generally stone free or up to 5% small hard stones Many fine and very fine roots with moderately developed medium and fine subangular blocky structure at Pit 2 Abrupt or clear smooth boundary

21 Subsoil texture variable mainly clay very pale grey (2 5Y62 or 5Y72) Moderately developed very coarse prismatic structure at Pit 2 becoming weak in the lower profile and with poor porosity throughout Stone content variable ranging from 5 to 20% at the pit site and rarely impenetrable to the auger Common or few very fine roots and many or very many distinct medium ochreous mottles throughout

Table 3 Soil Resources Deep Moor Landfill Site Torrington

Map Unit	Depth cm	Area, ha	Texture	Stones %	Volume m^3
Topsoil					
I	0 25	10 4	HCL	25	26 000
II	0 20	11 5	HCL	5	23 000
				Total topsoil	49 000 m^3
Subsoil					
I	25 120	10 4	mainly clay	50	98 800
II	20 120	11 5	clay	10	115 000
				Total subsoil	213 800 m^3

22 Depths and volumes quoted should be treated with caution due to soil variability Soil resources may extend below 120cm For both Soil Units I and II the subsoil shows little differentiation and may well extend below 120cm but may be more appropriately described as soil forming material

RESTORATION

23 It may be possible to restore Soil Unit I to Subgrade 3a but this would require a minimum depth of 76 cm after settlement above any slowly permeable layer This could only be achieved if both topsoil and subsoil are stripped and replaced under friable conditions when the moisture content is below the lower plastic limit Reinstatement should be by loose tipping all in accordance with standards of good practice for restoration

24 It should also be noted that the area of Soil Unit 1 (Subgrade 3a) occupies an area of land which is raised above the wetter land below making operation of the site for landfill particularly conspicuous in a hitherto unspoiled rural landscape This effect would be made worse by any further raising of land level by landfill

25 Due to the nature of the site satisfactory restoration of Soil Unit II is unlikely Although currently graded as ALC Grade 4 acceptable utilisation depends to a considerable degree on the effect of soil structure for drainage This would inevitably be destroyed during stripping and storage Restoration to non agricultural amenity use such as the willow scrub currently growing on neighbouring land may be considered more feasible

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July 1997

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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 cultivation 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

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

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Deep Moor	Pit 1 (ASP 1/2)	2 SW	PGR	Av Rainfall 1068 mm ATO 1368 day C FC Days 215 Climatic Grade 2 Exposure Grade	Culm sandstone
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY		PSD SAMPLES TAKEN
46 97	3/7/97	SS 5238 2166	PB		TS 0 25 cm

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	23	HCL	7 5YR42	10% > 2cm (S) 16% < 2 m (S+D) 26% HR MSST	0	0	MCGr	VFr	G	G	MVF		Ab smooth
2	65	HCL	7 5YR63	10% > 2 cm (S) 28% < 2 m (S+D) 38% MSST HR	FDFO 10YR58 (below 50cm)	0	MM FSAB	Fr	G	G	CVF		Grad Irreg
3	90+	C	10YR73	40% > 2 m (S) 13% 2 m (S+D) 53% MSST HR	CDFO 10YR58	F	WCSAC	Fm	P	P	None seen		

Profile Gleyed From 65

Depth to Slowly Permeable Horizon

Wetness Class II

Wetness Grade 3a

Available Water	Wheat	99 mm
	Potatoes	95 mm
Moisture Deficit	Wheat	72 mm
	Potatoes	55 mm
Moisture Balance	Wheat	+27 mm
	Potatoes	+40 mm
Droughtiness Grade	2	(Calculated to 100 cm)

Final ALC Grade

Main Limiting Factor(s)

Remarks Pit dug to 90 cm probed to 100 cm Lower parts of H3 may be SPL but not effectively within 76 cm due to irregular boundary H2/H3

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Deep Moor	Pit 2 (Nr ASP 13)	2 S	PGR	Av Rainfall 1068 mm ATO 1368 day C FC Days 215 Climatic Grade 2 Exposure Grade	Culm head
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY		PSD SAMPLES TAKEN
46 97	3/7/97	SS 5209 2144	PB		TS 0 25 cm

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	HZCL	2 5Y51	5% HR (VIS)	CRRC 75YR58	0	MMPr Br to MM FSAB	Fr	M	G	MF VF		Ab smooth
2	45	C	2 5Y62	5% HR (VIS)	MDMO 10YR56	0	MVCPr	Fm	P	P (low)	CVF		Grad smooth
3	10+	C	5Y72	20% HR MSST (VIS)	ADMO 10YR56	0	WVCPr	Fm	P	P (low)	FVF		

Profile Gleyed From 0 cm

Depth to Slowly Permeable Horizon 24 cm

Wetness Class IV

Wetness Grade 4

Available Water	Wheat	103 mm
	Potatoes	96 mm
Moisture Deficit	Wheat	72 mm
	Potatoes	55 mm
Moisture Balance	Wheat	+31 mm
	Potatoes	+41 mm
Droughtiness Grade	1	(Calculated to 100 cm)

Final ALC Grade 4

Main Limiting Factor(s) We

Remarks Water seeping into pit below H1 and collecting

SITE NAME	PROFILE NO	SLOPE AND ASPECT	LAND USE			PARENT MATERIAL
Deep Moor	Pit 3 (Nr ASP 3)	3 S	Maize	Av Rainfall ATO FC Days Climatic Grade Exposure Grade	1068 mm 1368 day C 215 2	Culm sandstone
JOB NO	DATE	GRID REFERENCE	DESCRIBED BY			PSD SAMPLES TAKEN
46 97	4/7/97	SS 5252 2166	PB			TS 0 25 cm

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	28	HCL	7 5YR42	10% 2 m (S) 20% < 2cm (S+D) 30% HR	0	0	WMGr	VFr	G	G	CF VF		Clear smooth
2	45	C	7 5YR54	60% MSST HR (VIS)	0	0	WCSAB (M)	Fm	M	P	FVF		Clear wavy
3	100+	C	7 5YR53	20% 2 m (S) 40% < 2 cm (S+D) 60% MSST HR	FDFO 10YR58 C mm o l t d p t h below 65 m	F	Too stony	Fm	(M)	(G)	FVF		

Profile Gleyed From

Depth to Slowly Permeable Horizon

Wetness Class I

Wetness Grade 3a

Available Water	Wheat	74 mm
	Potatoes	69 mm
Moisture Deficit	Wheat	72 mm
	Potatoes	55 mm
Moisture Balance	Wheat	+2 mm
	Potatoes	+14 mm
Droughtiness Grade	3a	(Calculated to 100 cm)

Final ALC Grade 3a

Main Limiting Factor(s) Dr

Remarks Very few roots seen in H2 H3 depth of droughtiness calc arbitrary