

**A1
Oxfordshire Structure Plan
Land at Bodicote Banbury
Agricultural Land Classification Report
Semi detailed Survey
March 1996**

**Resource Planning Team
Guildford Statutory Group
ADAS Reading**

**ADAS Reference 3301/034/96
MAFF Reference EL 33/00838
LUPU Commission 2390**

AGRICULTURAL LAND CLASSIFICATION REPORT

OXFORDSHIRE STRUCTURE PLAN LAND AT BODICOTE, BANBURY

Introduction

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey on approximately 85 hectares of land between the Oxfordshire Canal and Oxford Road situated to the north east of Bodicote near Banbury in Oxfordshire. The survey was carried out during March 1996.

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Oxfordshire Structure Plan. The results of this survey supersede any previous ALC information for this land. Land to the south east of the site was the subject of a semi detailed ALC survey (ADAS Ref 3301/20/90) carried out in 1990. Information from this survey has been included as part of the current report.

3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988). A description of the ALC grades and subgrades is given in Appendix I.

4 At the time of survey the agricultural land on this site was mainly in set aside and arable use (Oilseed Rape) with a small area of permanent grassland to the north. The area mapped as Other Land comprises farm and residential buildings. The land shown as Not Surveyed remains to be surveyed in the near future. At this time additional information gathered may necessitate the alteration of the grade boundaries on the land surveyed so far.

Summary

5 The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.

6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 overleaf.

7 The current fieldwork was conducted at an average density of approximately 1 boring every 2 hectares with a total of 19 borings and 3 soil pit descriptions. The 1990 survey was carried out at an average density of 1 boring every 3 hectares and includes 10 borings and 4 soil pits.

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	% site area	% surveyed area
3a	39.8	47.0	63.9
3b	19.8	23.4	31.8
4	2.7	3.2	4.3
Other Land	0.3	0.4	
Not Surveyed	22.0	26.0	
<hr/>			
Total surveyed area	62.3		100.0
Total site area	84.6	100.0	

8 The majority of the agricultural land on this site has been classified as Subgrade 3a (good quality) the key limitations being soil wetness and soil droughtiness. Subgrade 3b (moderate quality) land mainly occurs on the higher ground in the centre of the site as well as in narrow strips to the north and south. Again the key limitations are soil wetness and soil droughtiness. The extreme northern end of the site has been mapped as Grade 4 (poor quality) due to significant soil disturbance.

9 The majority of soils comprise moderately to poorly drained loamy over clayey profiles with slowly permeable subsoils. The resultant soil wetness can lead to poor root development and seed germination as well as restricting the timing of cultivations and trafficking of the land. Consequently Subgrade 3a and 3b have been assigned according to the severity of the drainage restriction.

10 The land to the centre and extreme south of the site is markedly more stony comprising loamy over clayey profiles above the Marlstone. In this local climatic regime the combination of soil textures, stone content and depth to bedrock acts to reduce the amount of profile available water for crops. This land is therefore limited to Subgrade 3a and 3b on soil droughtiness.

11 The disturbed land to the north of the site comprises extremely shallow loamy profiles with a high stone and refuse content. This land can therefore be graded no higher than Grade 4.

FACTORS INFLUENCING ALC GRADE

Climate

12 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

13 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989)

Table 2 Climatic and altitude data

Factor	Units	Values	Values
Grid reference	N/A	SP 469 389	SP 467 380
Altitude	m AOD	95	115
Accumulated Temperature	day°C (Jan June)	1391	1369
Average Annual Rainfall	mm	687	690
Field Capacity Days	days	155	155
Moisture Deficit Wheat	mm	104	101
Moisture Deficit Potatoes	mm	94	91

14 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions

15 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality

16 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation (Climatic Grade 1) However climatic factors can interact with soil properties to influence soil wetness and droughtiness

17 Local climatic factors such as frost risk and exposure are not thought likely to adversely affect agricultural land use on this site

Site

18 The land on this site slopes gently from 140m AOD in the north east to 130m AOD in the south west Gradient and microrelief do not affect agricultural land quality

19 Flooding does not appear to be limiting on this site

Geology and soils

20 The relevant geological sheet (BGS 1968) maps the Marlstone Bedrock in the middle and southern parts of the site Middle and Lower Lias Clays have been mapped in the north

21 The most recently published soils information for this area (SSEW 1983) maps the Banbury soil association across most of the site with a thin strip of Wickham 2 soils along the northern site boundary The former are described as well drained brashy fine and coarse loamy ferruginous soils over Ironstone Some deep fine loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging (SSEW 1983) The latter are slowly permeable seasonally waterlogged fine loamy over clayey soils fine silty over clayey and

clayey soils Small areas of slowly permeable calcareous soils on the steeper slopes (SSEW 1983)

Agricultural Land Classification

22 The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1 page 2

23 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III

Subgrade 3a

24 Subgrade 3a (good quality agricultural land) has been mapped across the majority of the site On the lower lying land to the north, the soil profiles are moderately well drained comprising very slightly stony (2% total flint) medium clay loam topsoils over moderately structured medium clay loam upper subsoils with a similar stone content Between 45-60cm depth a moderately structured heavy clay loam occurs above a poorly structured clay lower subsoil Both of these horizons show signs of gleying they also have a low porosity and are slowly permeable Drainage through the profile is therefore restricted causing wet soils consistent with Wetness Class III (Appendix III) As a result seed germination and development will be reduced leading to diminished crop growth and yields In this local climatic regime the medium textured topsoils may also limit the timing of cultivations as trafficking of the land by farm machinery and grazing livestock may increase the likelihood of damage to the soil structure This land has therefore been classified as Subgrade 3a due to a moderate soil wetness and workability limitation

25 On the higher land towards the centre and to the south of the site the soil profiles are limited by soil droughtiness These profiles are typified by soil inspection Pit 3 and Pit 9 from the 1990 survey (Appendix III) They comprise slightly stony (5-10% soft sandstone) medium and heavy clay loam topsoils over slightly to moderately stony (10-25% total soft sandstone) heavy clay loam or clay upper subsoils The moderately to very stony (15-40% soft sandstone) heavy clay loam and clay lower subsoils are believed to overlie sandstone bedrock at approximately 85cm depth All of the subsoils are moderately well structured and generally do not show any signs of soil wetness In this local climatic regime the combination of soil textures structures and stone contents acts to reduce the amount of profile available water for crops As a result the level and consistency of crop yields will be moderately restricted This land has therefore been classified as Subgrade 3a

26 Occasional borings of higher and lower quality also occur within this mapping unit but these were too limited in number and extent to be mapped separately here

Subgrade 3b

27 Most of the land mapped as Subgrade 3b (moderate quality land) comprises poorly drained profiles typified by soil inspection Pit 1 (Appendix III) Slightly stony (5-10% total soft sandstone) medium clay loam or medium silty clay loam topsoils over a combination of very slightly to slightly stony (10-5% total soft sandstone) medium and heavy clay loam or silty clay loams and clays At depth the profile becomes markedly more stony (40% soft

sandstone) before reaching the bedrock. The soil profile is generally slowly permeable from approximately 30-35cm depth, thus significantly restricting drainage and causing prolonged waterlogging. In this local climatic regime, the resultant soil wetness will limit seed germination and growth. The medium topsoil textures may also limit the timing of cultivations as such wet soils are more susceptible to damage from over trafficking. This land has therefore been assessed as Wetness Class IV (Appendix III) Subgrade 3b due to soil wetness and workability restrictions.

28 The remaining Subgrade 3b land is limited by soil droughtiness and occasional topsoil stoniness. The topsoils comprise slightly to very stony (8-27% total soft sandstone and occasionally 22% > 2cm) medium silty clay loams over the Marlstone Bedrock at 25-40cm depths. The shallow soil depth significantly restricts the rooting depth of crops. In this local climatic regime, the combination of soil textures, structures, depth and stone contents acts to reduce the amount of profile available water for plants. The level and consistency of crop yields will therefore be adversely affected. Topsoil stones can also limit the land in places as large stones (i.e. > 2cm in diameter) can cause increased damage and wear to tyres. They can also disrupt crop growth and establishment.

Grade 4

29 The Grade 4 (poor quality land) is believed to have been disturbed. The soil profiles are extremely shallow. They comprise a very thin (5cm) medium clay loam topsoil with 2% flints over a moderately to very stony (35% flints) heavy clay loam upper subsoil which also contained breeze blocks & twisted metal. At 40cm depth the profiles become impenetrable. The soil resource and rooting depth is very limited in this area, therefore this land has been classified as Grade 4 due to disturbance, significant soil droughtiness, and limitations. The presence of metal and stone on the surface would further hamper cultivation and grazing.

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ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1978) *Sheet No 201 Banbury* 1 50 000 Series Solid & Drift
BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of
England and Wales Revised guidelines and criteria for grading the quality of agricultural
land*
MAFF London

Met Office (1989) *Climatological Data for Agricultural Land Classification*
Met Office Bracknell

Soil Survey of England and Wales (1983) *Sheet 6 Soils of South East England*
SSEW Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW Harpenden

SOIL PIT DESCRIPTION

Site Name OXON SP BODICOTE BANBURY Pit N mbe 1P

Grid Reference SP46653878 Ave age Annu l Rainfall 687 mm
 Accumulated Temperature 1391 degree days
 Field Capacity Level 155 days
 Land Use Set aside
 Slope and Aspect 03 degrees NE

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	MZCL	10YR43 00	0		6	HR					
25- 38	MZCL	10YR54 00	0		0		C	MDCSAB	FR	M	
38 53	HCL	25Y 52 00	0		0		M	MDCAB	FM	P	
53 80	C	10YR63 00	0		40	MSST	M	WKCAB	FM	P	
80 90	MSST	75YR44 00	0		0					P	

Wetness Grade 3B Wetness Class IV
 Gleying 038 cm
 SPL 038 cm

Drought Grade 3A APW 098mm MBW 6 mm
 APP 102mm MBP 8 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name OXON SP BODICOTE BANBURY Pit Number 2P

Grid Reference SP46803910
 Average Annual Rainfall 687 mm
 Accumulated Temperature 1391 degree days
 Field Capacity Level 155 days
 Land Use Oilseed Rape
 Slope and Aspect 02 degrees NE

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 32	MCL	10YR43 00	0		3	HR					
32 50	MCL	10YR54 00	0		1	HR		MDCSAB	FR	M	
50 77	HCL	10YR53 00	0		0		M	WKCAB	FR	M	
77 120	C	05Y 61 00	0		0		M	WKCAB	FM	P	

Wetness Grade 3A
 Wetness Class III
 Gleying 050 cm
 SPL 050 cm

Drought Grade 1
 APW 142mm MBW 38 mm
 APP 117mm MBP 23 mm

FINAL ALC GRADE 3A
 MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name OXON SP BODICOTE BANBURY Pit Number 3P

Grid Reference SP46603800 Average Annual Rainfall 687 mm
 Accumulated Temperature 1391 degree days
 Field Capacity Level 155 days
 Land Use Oilseed Rape
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0	30	HCL	10YR44 00	1	12	MSST					
30	50	HCL	10YR46 00	0	43	MSST		MDCSAB	FR	M	
50	70	HCL	10YR54 00	0	41	MSST	F	WKCSAB	FR	M	
70	85	HCL	10YR54 00	0	51	MSST	F	WKCSAB	FR	M	

Wetness Grade 2 Wetness Class I
 Gleying cm
 SPL No SPL

Drought Grade 3A APW 089mm MBW 15 mm
 APP 088mm MBP 6 mm

FINAL ALC GRADE 3A
 MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	ASPECT		WETNESS		WHEAT		POTS		M REL		EROSN	FROST	CHEM	ALC	COMMENTS	
		USE	NE	GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
1	SP46643937	PGR	NE	02	005	2	1	046	58	046	48	4			DB	4	Disturbed
1P	SP46653878	SAS	NE	03	038 038	4	3B	098	6	102	8	3A			WE	3B	SL Gley 25
2	SP46803930	OSR			030 030	4	3B	134	30	112	18	2			WE	3B	Nearby Spring
2P	SP46803910	OSR	NE	02	050 050	3	3A	142	38	117	23	1			WE	3A	
3	SP46703920	OSR	NE	05	030 030	4	3B	134	30	112	18	2			WE	3B	
3P	SP46603800	OSR				1	2	089	15	088	6	3A			DR	3A	T/S 5% HR
4	SP46903920	OSR			030 060	3	3A	143	39	115	21	1			WE	3A	
5	SP46803910	OSR	E	01	028 045	3	3A	138	34	114	20	1			WE	3A	
6	SP46703900	OSR	E	02	0 070	3	3A	145	41	123	29	1			WE	3A	Border 2 WE
7	SP46903900	SAS	E	01	030 030	3	3A	142	38	109	15	1			WE	3A	S1 Gleyed 30
8	SP46603890	SAS	NE	03	028	1	1	159	55	123	29	1				1	
9	SP46723883	SAS	NE	03	035 035	4	3B	124	20	104	10	2			WE	3B	
10	SP46883882	SAS	E	02	035 035	4	3B	093	11	100	6	3A			WE	3B	
11	SP47003890	SAS	E	01	050 050	3	3A	126	22	106	12	2			WE	3A	
12	SP46653878	SAS	NE	01	030 030	4	3B	129	25	097	3	2			WE	3B	
13	SP46803870	SAS	NE	03	065 065	2	2	127	23	111	17	2			WD	2	
14	SP46603820	OSR				1	2	087	17	098	4	3A			DR	3A	I65 QMarlstone
15	SP46503810	OSR				1	2	076	28	079	15	3B			DR	3B	I55 QMarlstone
16	SP46703810	OSR			055 035	3	3B	097	7	098	4	3A			WE	3B	
17	SP46603800	OSR				1	2	084	20	088	6	3A			DR	3A	I60 See 3P
18	SP46803800	OSR				1	2	092	12	101	7	3A			DR	3A	I65 QMa lstone
19	SP46703790	OSR				1	1	108	4	092	2	3A			DR	3A	I105 QMarlston

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES			STRUCT/ CONSIST	SUBS			CALC
				COL	ABUN	CONT	COL	GLEYS	2	6	LITH		TOT	STR	POR	
9	0 28	mzc1	10YR33 00	10YR68 00	F				1	0	HR	5				
	28 35	mzc1	10YR64 00	10YR68 00	F			0	0	HR	2	M				
	35 90	hzc1	25Y 64 00	10YR68 00	C			Y	0	0	HR	2	P		Y	
	90 120	zc	25Y 63 64	75YR58 00	M			00M00 00	Y	0	0	HR	2	P		Y
10	0 35	mc1	10YR43 00						1	0	HR	5				
	35-60	hc1	10YR53 00	75YR46 00	M			00M00 00	Y	0	0	HR	15	M		Y
	60 65	ms1	10YR54 00	75YR58 00	M			Y	0	0	HR	30	M		Imp Marlstone	
11	0 30	mc1	10YR43 00						0	0	HR	5				
	30 50	hc1	10YR54 00		F			00M00 00		0	0	HR	5	M		
	50 120	c	10YR53 00	10YR58 00	M			00M00 00	Y	0	0	HR	10	P		Y
12	0 30	mzc1	10YR53 00						1	0	HR	5				
	30 55	hzc1	25Y 63 00	10YR58 00	C			00M00 00	Y	0	0	HR	10	P		Y
	55 85	c	25Y 63 00	10YR58 00	C			00M00 00	Y	0	0	HR	25	P		Y
	85 120	hzc1	10YR44 54	75YR58 00	C			Y	0	0	HR	2	M		Y	
13	0 30	mc1	10YR53 00						1	0	HR	5				
	30 65	mzc1	10YR54 00					00M00 00		0	0	HR	10	M		
	65 85	zc	25Y 64 00	75YR58 00	M			Y	0	0	HR	15	P		Y	
	85 120	c	25Y 63 00	75YR58 46	C			00M00 00	Y	0	0	HR	25	P		Y
14	0 30	hc1	10YR53 00						1	0	HR	10				
	30 65	c	10YR54 00						0	0	HR	15	M		Imp Marlstone	
15	0 30	hc1	10YR44 00						1	0	HR	10				
	30 50	hc1	10YR54 00						0	0	HR	25	M			
	50 55	c	10YR54 00						0	0	HR	35	M		Imp Marlstone	
16	0 35	hc1	10YR44 00						1	0	HR	5				
	35 55	c	10YR54 00	10YR66 00	M			S	0	0	HR	10	P		Y	
	55 85	zc	25Y 64 00	10YR66 00	C			Y	0	0	HR	25	P		Y	
17	0 30	hc1	10YR44 00						0	0	HR	5				
	30 50	hc1	10YR46 00	00FE00 00	F				0	0	MSST	25	M			
	50 60	hc1	10YR46 00	00FE00 00	F				0	0	MSST	35	M		Imp Marlstone	
18	0 35	hc1	10YR44 00						1	0	HR	5				
	35 55	c	10YR54 00						0	0	HR	10	M			
	55 65	c	10YR54 00						0	0	HR	25	M		Imp Marlstone	
19	0 25	mc1	10YR34 00						0	0	HR	10				
	25 30	hc1	10YR44 00						0	0	MSST	15	M			
	30 50	hc1	10YR46 00						0	0	MSST	35	M			
	50 105	hc1	10YR46 00	00FE00 00	F				0	0	MSST	40	M		Imp Marlstone	

BANBURY LOCAL PLAN - BODICOTE AREA

AUGER BORING SCHEDULE

- 1 Cereal stubble v stony on surface v sl falls N and NW
- | | | |
|------|------|--|
| 0-25 | MZCL | 10YR 4/3 non-calc sl gritty |
| | | stony - 22% >2 cm (c 7% >6 cm) + c 5% <2 cm (calc marlstone) |
| 25+ | | Impenetrable - hard brashy calc marlstone |
- WC I Grade 3b/4 (drought/topsoil stones)
- 2 Cereal stubble stony on surface upper slopes
- | | | |
|------|------|--|
| 0-35 | MZCL | 10YR 4/4 non-calc gritty |
| | | stony - 8-9% >2 cm 2% <2 cm (calc marlstone) |
| 35+ | | Impenetrable hard calc marlstone |
- WC I Grade 3b (drought)
- 3 Grassland pasture upper slopes gently falls N and NW
- | | | |
|------|------|-----------------------------|
| 0-35 | MZCL | 10YR 4/4 non-calc sl gritty |
| 35+ | | Impenetrable marlstone |
- WC I Grade 3b (drought)
- 4 Ploughed flat occasional surface stones
- | | | |
|-------|-----|-----------------------------------|
| 0-30 | HCL | 10YR 4/4 non-calc |
| 30-40 | MC | 10YR 4/4 not mottled |
| 40-60 | ZC | 10YR 5/3 matrix gleyed - 10YR 6/4 |
| | | sl gritty 10YR 5/8 mottles |
| 60+ | | Impenetrable - calc marlstone |
- WC I Grade 3a (drought)
- 5 Ploughed flat not stony on surface
- | | | |
|-------|--------|-------------------------------------|
| 0-30 | HCL | 10YR 4/3 non-calc not stony |
| 30-40 | HCL/MC | 10YR 4/3 not stony |
| 40-55 | MC | 10YR 4/3 sl gritty few Mn concs |
| 55-75 | MC | 10YR 5/3 matrix gleyed |
| | | CDOM - 10YR 6/6 |
| 75-80 | MC | As above becoming gritty and brashy |
| 80+ | | Impenetrable calc marlstone |
- WC II Grade 3a (wetness/drought)

BANBURY LOCAL PLAN BODICOTE AREA

AUGER BORING SCHEDULE

- 1 Cereal stubble v stony on surface v sl falls N and NW
- 0-25 MZCL 10YR 4/3 non-calc sl gritty
stony - 22% >2 cm (c 7% >6 cm) + c 5% <2 cm (calc
marlstone)
- 25+ Impenetrable - hard brashy calc marlstone
- WC I Grade 3b/4 (drought/topsoil stones)
- 2 Cereal stubble stony on surface upper slopes
- 0-35 MZCL 10YR 4/4 non-calc gritty
stony - 8-9% >2 cm + 2% <2 cm (calc marlstone)
- 35+ Impenetrable hard calc marlstone
- WC I Grade 3b (drought)
- 3 Grassland pasture upper slopes gently falls N and NW
- 0-35 MZCL 10YR 4/4 non-calc sl gritty
- 35+ Impenetrable - marlstone
- WC I Grade 3b (drought)
- 4 Ploughed flat occasional surface stones
- 0-30 HCL 10YR 4/4 non-calc
- 30-40 MC 10YR 4/4 not mottled
- 40 60 ZC 10YR 5/3 matrix gleyed - 10YR 6/4
sl gritty 10YR 5/8 mottles
- 60+ Impenetrable - calc marlstone
- WC I Grade 3a (drought)
- 5 Ploughed flat not stony on surface
- 0-30 HCL 10YR 4/3 non-calc not stony
- 30-40 HCL/MC 10YR 4/3 not stony
- 40-55 MC 10YR 4/3 sl gritty few Mn concs
- 55-75 MC 10YR 5/3 matrix gleyed
CDOM - 10YR 6/6
- 75-80 MC As above becoming gritty and brashy
- 80+ Impenetrable - calc marlstone
- WC II Grade 3a (wetness/drought)

6 Cultivated flat occasional stones on surface

0-30	HCL	10YR 4/4 non-calc
30-48	MC	10YR 3/4 common Fe concs
48 100+	C	10YR 5/3 matrix mottled and gleyed
		10YR 5/6 OM gritty

WC III Grade 3b (wetness)

7 Ploughed not stony on surface

0-30	HCL	10YR 4/4 non-calc
30-40	HCL	10YR 5/4
40-50	MC	10YR 5/4
50-65	MC	10YR 6/4 matrix mottled and gleyed
		10YR 7/6 and 7 5YR 5/6 mottled
		few marlstone frags calc
65+	Impenetrable	calc marlstone

WC III Grade 3b (wetness)

8 Ploughed flat no stones on surface

0-28	HCL	10YR 4/3
30-35	HCL	10YR 4/3 few Fe concs
35-80	MC	10YR 4/3 FDOM - 7 5YR 6/8 not gleyed
80 90	MC	As above 7 5YR 6/8 matrix
		20% calc marlstone
90+	Impenetrable	calc marlstone

WC I Grade 2 (wetness/drought)

9 Ploughed/cereal stubble v sl falls N upper slopes

0-30	HCL	10YR 4/3 non-calc
30 45	HCL	10YR 4/4 non-calc
45-60	MC	2 5Y 6/4 few Mn concs
60-90	MC	becoming gritty and brashy - calc marlstone
		poss sl gleyed from 70+
80+	Impenetrable	- calc marlstone

WC I Grade 2 (wetness/drought)

10 Cereal stubble upper slopes gentle falls east

0-40	MZCL	10YR 3/4 non-calc
		stony 4% >2 cm (2% >6 cm) +
		2% <2 cm
40	Impenetrable	- marlstone

WC I Grade 3b (drought)

6 Cultivated flat occasional stones on surface

0-30	HCL	10YR 4/4 non-calc
30-48	MC	10YR 3/4 common Fe concs
48 100+	C	10YR 5/3 matrix mottled and gleyed
		10YR 5/6 OM gritty

WC III Grade 3b (wetness)

7 Ploughed not stony on surface

0-30	HCL	10YR 4/4 non-calc
30 40	HCL	10YR 5/4
40-50	MC	10YR 5/4
50-65	MC	10YR 6/4 matrix mottled and gleyed
		10YR 7/6 and 7 5YR 5/6 mottled
		few marlstone frags calc
65+		Impenetrable - calc marlstone

WC III Grade 3b (wetness)

8 Ploughed flat no stones on surface

0-28	HCL	10YR 4/3
30-35	HCL	10YR 4/3 few Fe concs
35-80	MC	10YR 4/3 FDOM - 7 5YR 6/8 not gleyed
80-90	MC	As above 7 5YR 6/8 matrix
		20% calc marlstone
90+		Impenetrable - calc marlstone

WC I Grade 2 (wetness/drought)

9 Ploughed/cereal stubble v sl falls N upper slopes

0-30	HCL	10YR 4/3 non-calc
30-45	HCL	10YR 4/4 non-calc
45-60	MC	2 5Y 6/4 few Mn concs
60-90	MC	becoming gritty and brashy calc marlstone
		poss sl gleyed from 70+
80+		Impenetrable calc marlstone

WC I Grade 2 (wetness/drought)

10 Cereal stubble upper slopes gentle falls east

0-40	MZCL	10YR 3/4 non-calc
		stony 4% >2 cm (2% >6 cm)
		2% <2 cm
40+		Impenetrable - marlstone

WC I Grade 3b (drought)

PIT DETAILS

PIT AT BORING 7

TOPSOIL	0-26	HCL	non-calc not stony
SUBSOIL	24-55	MC	moderately well developed prismatic (coarse or occasionally medium) firm consistence >0 5% biopores well rooted not mottled or gleyed AVERAGE - POOR structure
	55-60	MC	structure as above >0 5% biopores becoming sl gleyed POOR structure much weathered marlstone
	60+		Impenetrable - large rounded marlstone frags with MC matrix

PIT AT BORING 9

TOPSOIL	0-29	HCL	10YR 4/3 non-calc
SUBSOIL	29-45	MC	moderately well developed medium and coarse sub-angular blocky firm consistence >0 5% biopores Not mottled or gleyed GOOD - AVERAGE structure
	45-60	HC	moderately well developed coarse sub-angular blocky → prismatic >0 5% biopores firm consistence AVERAGE - POOR structure
	60+		Impenetrable - 30% marlstone frags within c matrix

PIT DETAILS

PIT AT BORING 7

TOPSOIL	0-26	HCL	non-calc not stony
SUBSOIL	24-55	MC	moderately well developed prismatic (coarse or occasionally medium) firm consistence >0 5% biopores well rooted not mottled or gleyed AVERAGE - POOR structure
	55-60	MC	structure as above >0 5% biopores becoming sl gleyed POOR structure much weathered marlstone
	60+		Impenetrable - large rounded marlstone frags with MC matrix

PIT AT BORING 9

TOPSOIL	0-29	HCL	10YR 4/3 non-calc
SUBSOIL	29-45	MC	moderately well developed medium and coarse sub-angular blocky firm consistence >0 5% biopores Not mottled or gleyed GOOD - AVERAGE structure
	45-60	HC	moderately well developed coarse sub-angular blocky → prismatic >0 5% biopores firm consistence AVERAGE - POOR structure
	60+		Impenetrable - 30% marlstone frags within c matrix