

**A1**  
**M40 Motorway Service Areas**  
**Site 3 Lewknor A**  
**Agricultural Land Classification**  
**ALC Map and Report**  
**October 1994**

# AGRICULTURAL LAND CLASSIFICATION REPORT

## M40 MOTORWAY SERVICE AREAS SOUTH OXFORDSHIRE DISTRICT COUNCIL, LEWK NOR A AGRICULTURAL LAND CLASSIFICATION

### Summary

- 1 1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on land near Lewknor Site A. This work was in connection with proposed M40 motorway service areas.
- 1 2 Approximately 34.9 hectares of land relating to this area was surveyed in September 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 32 borings and 2 soil inspection pits\* were assessed in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on its use for agriculture. Laboratory measured stone contents supplemented the field assessed data.
- 1 3 The work was carried out by members of the Resource Planning Team in the Huntingdon Statutory Group of ADAS.
- 1 4 At the time of survey the agricultural land use was under arable production (oilseed rape, bare soil and cereals). The Non agricultural area includes woodland and the area of Urban includes roads and associated land.
- 1 5 The distribution of the grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading. This map supersedes any previous survey information for this site.

**Table 1 Distribution of Grades and Subgrades**

<b>Grade</b>	<b>Area (ha)</b>	<b>% of Site</b>	<b>% of Agricultural Area</b>
3a	13.0	37.2	45.1
3b	14.8	45.3	54.9
Woodland	0.8	2.3	
Urban	5.3	15.2	
<b>Total</b>	<b>34.9 ha</b>	<b>100%</b>	<b>100% (28.8 ha)</b>

---

\* Additional pit information from adjacent sites was also used in the assessment.

- 1 6 A general description of the grades subgrades and land use categories is provided in Appendix 1 The main classes are described in terms of the type of limitation that can occur the typical cropping range and the expected level and consistency of yield
- 1 7 The land quality on the site has been classified as subgrade 3a (good quality land) as a result of moderate droughtiness restrictions and subgrade 3b (moderate quality land) as a result of significant droughtiness limitations
- 2 0 **Climate**
- 2 1 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
- 2 2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall as a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality The combination of rainfall and temperature at this site mean an overall climatic grade of 1

**Table 2 Climatic Interpolation**

Grid Reference	SU717988
Altitude (m AOD)	115
Accumulated Temperature ( days Jan June)	1381
Average Annual Rainfall (mm)	698
Field Capacity Days	150
Moisture Deficit wheat (mm)	102
Moisture Deficit potatoes (mm)	92
Overall Climatic Grade	1

- 3 0 **Relief**
- 3 1 The site lies at a north east south west aspect and is bisected by the M40 motorway It is gently undulating with an altitude range of 115 m to 120 m AOD Neither gradient nor relief impose a limitation on ALC grade
- 4 0 **Geology and Soils**
- 4 1 The published geology map for the site area (BGS Sheet 254 1980 Henley on Thames 1 50 000) shows the site to be underlain by Lower Chalk
- 4 2 The published soils information for the area (SSEW 1983 Sheet 6 1 250 000) shows the site to comprise the Coombe 2 Association described as well drained calcareous fine silty soils over chalk rubble Shallow soils in places especially on brows and steeper slopes (SSEW 1983)

5 0 **Agricultural Land Classification**

5 1 The ALC classification of the site is shown on the attached ALC map

5 2 The location of the soil observation points is shown on the attached sample point map

**Subgrade 3a**

5 3 Slightly less than half of the agricultural area has been graded 3a. Soils typically comprise very slightly stony (with chalk fragments) calcareous heavy clay loam topsoils to 25 30 cm depth. Upper subsoils comprise heavy clay loams with approximately 10% chalk to 30 50 cm which merge into chalkier clay loams with approximately 30% chalk to 55 70 cm (and occasionally 80 90 cm). This is underlain by fractured chalk rock which is exploited by roots for approximately 10 cms. Subsoil stoniness and rooting restrictions in the subsoil (approximate rooting to a maximum of 90 cms) reduce the available water for crop growth. Consequently this results in moderate droughtiness restrictions which limit the land to subgrade 3a (good quality agricultural land)

5 4 Within this area individual less droughty borings graded 2 were encountered. However these borings occur sporadically as a result of extremely variable soil depth over chalk bedrock and therefore it is not appropriate to delineate a separate area of grade 2

**Subgrade 3b**

5 5 Over half of the agricultural land has been graded 3b and occurs where soils overlie chalk rock at shallower depths. Soils typically comprise very slightly slightly stony heavy clay loam topsoils to 25 30 cm. In some areas topsoils immediately overlie fractured chalk rock while elsewhere subsoils comprise heavy clay loams with 30% chalk rock to 30 45 cm over fractured chalk rock. Root exploitation is approximately 15 cm within the fractured chalk rock horizon. Stoniness and rooting restrictions significantly reduce the available water for crop growth and consequently result in severe droughtiness imperfections which limit the land to subgrade 3b

**Urban**

5 6 The urban area consists of the M40 motorway and associated land

**Non Agricultural (Woodland)**

5 7 A small area of deciduous woodland bounded by the M40 motorway and Nethercote Lane is shown as Non Agricultural

## REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES 1980 Sheet 254 Henley  
on Thames 1 50 000 scale

MAFF 1971 Agricultural Land Classification map Sheet 159 Provisional 1 63 360  
scale

METEOROLOGICAL OFFICE 1989 Data extracted from the published  
agroclimatic dataset

SOIL SURVEY OF ENGLAND AND WALES 1983 Sheet 6 South East England  
1 250 000 scale

## Appendix 1

### **DESCRIPTION OF THE GRADES AND SUBGRADES**

The ALC grades and subgrades are described below in terms of the types of limitation which can occur typical cropping range and the expected level of consistency of yield. In practice the grades are defined by reference to physical characteristics and the grading guidance and cut offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions. The most productive and flexible land falls in Grades 1 and 2 and Subgrade 3a and collectively comprises about one third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where farmland predominates. The remainder is very poor quality land in Grade 5 which most occurs in the uplands.

#### **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 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 levels of yields It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yield 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

### ***Descriptions of other land categories used on ALC maps***

#### **Urban**

Built up or hard uses with relatively little potential for a return to agriculture including housing industry commerce education transport religious buildings cemeteries Also hard surfaced sports facilities permanent caravan sites and vacant land all types of derelict land including mineral workings which are only likely to be reclaimed using derelict land grants

### **Non agricultural**

Soft uses where most of the land could be returned relatively easily to agriculture including private parkland public open spaces sports fields allotments and soft surfaced areas on airports/airfields Also active mineral workings and refuse tips where restoration conditions to soft after uses may apply

### **Woodland**

Includes commercial and non commercial woodland A distinction may be made as necessary between farm and non farm woodland

### **Agricultural buildings**

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses Temporary structures (e g polythene tunnels erected for lambing) may be ignored

### **Open water**

Includes lakes ponds and rivers as map scale permits

### **Land not surveyed**

Where the land use includes more than one of the above land cover types e g buildings in large grounds and where map scale permits the cover types may be shown separately Otherwise the most extensive cover type will usually be shown

Appendix 2

**FIELD ASSESSMENT OF SOIL WETNESS CLASS**

**Definition of Soil Wetness Classes**

---

Wetness Class	Duration of Waterlogging <sup>1</sup>
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years <sup>2</sup>
II	The soil profile is wet within 70 cm depth for 31-90 days in most years <i>or</i> 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
III	The soil profile is wet within 70 cm depth for 91-180 days in most years <i>or</i> , 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
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 <i>or</i> 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
V	The soil profile is wet within 40 cm depth for 211-335 days in most years
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years

---

<sup>1</sup> The number of days specified is not necessarily a continuous period

<sup>2</sup> In most years is defined as more than 10 out of 20 years

Appendix 3

**SOIL BORING AND SOIL PIT DESCRIPTIONS**

*Contents*

- \* Soil boring descriptions
- \* Soil pit descriptions
- \* Soil Abbreviations Explanatory Note

SAMPLE NO	GRID REF	ASPECT		GRDNT	WETNESS			WHEAT		POTS		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
		USE			SPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD					
1	SU70899910	WHT	S	01	1	2	66	36	66	26	3B					DR	3B	
1P	SU71309870	OSR	S	01	1	2	58	44	58	34	3B					DR	3B	PIT @ AB18
2P	SU71409860	OSR			1	2	102	0	107	15	3A					DR	3A	PIT @ AB26
3	SU71009900	OSR	S	01	1	2	147	45	111	19	1					WK	2	
4	SU70909890	WHT	S	01	1	2	87	15	90	2	3A					DR	3A	
5	SU71009890	WHT	S	01	1	2	77	25	77	15	3B					DR	3B	
6	SU71109890	OSR	S	01	1	2	111	9	110	18	2					DR	2	
7	SU71509890	OSR	S	01	1	2	133	31	114	22	1					WK	2	
8	SU71609890	PLO	S	02	1	2	95	7	101	9	3A					DR	3A	
9	SU71009880	WHT	S	01	1	2	76	26	78	14	3B					DR	3B	
10	SU71209880	OSR	S	01	1	2	78	24	80	12	3B					DR	3B	
11	SU71309880	OSR	S	01	1	2	146	44	117	25	1					WK	2	
12	SU71409880	OSR	S	02	1	2	152	50	115	23	1					WK	2	
13	SU71509880	OSR	S	01	1	2	96	6	104	12	3A					DR	3A	
14	SU71609880	OSR	S	02	1	2	117	15	118	26	2					DR	2	
15	SU71709880	PLO	S	02	1	2	83	19	85	7	3A					DR	3A	BORDER 3B
16	SU71109870	WHT	S	01	1	2	81	21	82	10	3B					DR	3B	
18	SU71309870	OSR	S	01	1	2	73	29	73	19	3B					DR	3B	
19	SU71409870	OSR	S	02	1	2	140	38	112	20	1					WK	2	
20	SU71509870	OSR	S	01	1	2	144	42	108	16	1					WK	2	
21	SU71609870	OSR	S	01	1	2	77	25	77	15	3B					DR	3B	
22	SU71709870	PLO	E	02	1	2	91	11	94	2	3A					DR	3A	
23	SU71109860	WHT	S	01	1	2	59	43	59	33	3B					DR	3B	
24	SU71209860	WHT	S	01	1	2	67	35	67	25	3B					DR	3B	
26	SU71409860	OSR			1	2	106	4	108	16	3A					DR	3A	
27	SU71509860	OSR	S	01	1	2	92	10	97	5	3A					DR	3A	
28	SU71209850	WHT	S	01	1	2	67	35	67	25	3B					DR	3B	
29	SU71309850	WHT	S	01	1	2	146	44	110	18	1					WK	2	
31	SU71509850	PLO	SE	02	1	2	70	32	70	22	3B					DR	3B	
32	SU71709820	PLO			1	2	122	20	114	22	2					DR	2	
33	SU71809810	PLO			1	2	103	1	109	17	3A					DR	3A	
34	SU71809800	PLO			1	2	60	42	60	32	3B					DR	3B	
35	SU71909790	PLO			1	2	106	4	112	20	3A					DR	3A	
36	SU71509845	PLO	SE	02	1	2	77	25	77	15	3B					DR	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES		PED		STONES			STRUCT/	SUBS						
				COL	ABUN	CONT	COL	GLE	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
1	0 25	hc1	10YR41 00					1	0	CH	5							Y
	25 30	hc1	25 Y72 00					0	0	CH	30		M					Y
	30 45	ch	25 Y71 00					0	0		0		P					Y
1P	0 30	hc1	10YR32 00					8	3	HR	21							Y
	30 45	ch	25 Y72 00					0	0		0		P					Y ROOTING TO 45
2P	0 25	hc1	10YR41 00					0	0	CH	6							Y
	25 45	hc1	10YR53 00					0	0	CH	15	MDCOAB	FR	M				Y
	45 65	h 1	10YR62 00					0	0	CH	30	WKMDAB	FR	M				Y
	65 75	ch	25 Y82 00					0	0		0		P					Y ROOTING TO 75
3	0 30	hc1	10YR41 00					1	0	CH	3							Y
	30 40	c	25 Y52 00					0	0	CH	10		M					Y
	40 120	hc1	25 Y72 00					0	0	CH	30		M					Y
4	0 25	h 1	10YR41 00					1	0	CH	5							Y
	25 50	hc1	25 Y72 00					0	0	CH	30		M					Y
	50 60	h	25 Y71 00					0	0		0		P					Y
5	0 30	hc1	10YR41 00					1	0	CH	5							Y
	30 40	hc1	25 Y72 00					0	0	CH	30		M					Y
	40 50	ch	25 Y71 00					0	0		0		P					Y
6	0 30	hc1	10YR41 00					1	0	CH	3							Y
	30 75	h 1	25 Y72 00					0	0	CH	30		M					Y
	75 85	ch	25 Y72 00					0	0		0		P					Y
7	0 30	h 1	10YR41 00					1	0	CH	5							Y
	30 70	hc1	25 Y42 00					0	0	CH	10		M					Y
	70 95	hc1	25 Y72 00					0	0	CH	30		M					Y
	95 105	ch	25 Y72 00					0	0		0		P					Y
8	0 35	hc1	10YR42 00					1	0	CH	2							Y
	35 55	hc1	10YR72 00					0	0	CH	30		M					Y
	55 65	ch	25 Y71 00					0	0		0		P					Y
9	0 25	c	10YR41 00					1	0	CH	5							Y
	25 40	hc1	25 Y72 00					0	0	CH	30		M					Y
	40 55	ch	25 Y71 00					0	0		0		P					Y
10	0 30	c	10YR41 00					1	0	CH	3							Y
	30 40		25 Y72 00					0	0	CH	30		M					Y
	40 55	ch	25 Y71 00					0	0		0		P					Y
11	0 30	hc1	10YR41 00					1	0	CH	3							Y
	30 70	c	10YR54 00					0	0	CH	3		M					Y
	70 120	hc1	25 Y72 00					0	0	CH	30		M					Y

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES			PED		STONES			STRUCT/ CONSIST	SUBS				
				COL	ABUN	CONT	COL	GLEY	2	6	LITH		TOT	STR	POR	IMP	SPL
12	0 35	hc1	10YR42 00						2	0	HR	3					Y
	35 120	hc1	10YR72 00	10YR56 00	F				0	0	CH	10		M			Y
13	0 30	h 1	10YR41 00						3	0	CH	10					Y
	30 60	hc1	25 Y72 00						0	0	CH	30		M			Y
	60 70	ch	25 Y71 00						0	0		0		P			Y
14	0 40	hc1	10YR42 00						2	0	HR	3					Y
	40 70	c	10YR43 00						0	0	CH	2		M			Y
	70 80	c	10YR72 00						0	0	CH	30		M			Y
	80 90	ch	25 Y71 00						0	0		0		P			Y
15	0 30	h 1	10YR42 00						3	0	CH	3					Y
	30 42	hc1	10YR72 00						0	0	CH	30		M			Y
	42 57	ch	25 Y71 00						0	0		0		P			Y
16	0 25	hc1	10YR41 00						1	0	CH	5					Y
	25 40		25 Y52 00						0	0	CH	10		M			Y
	40 55	ch	25 Y71 00						0	0		0		P			Y
18	0 30	h 1	10YR41 00						10	0	CH	13					Y
	30 35	hc1	25 Y72 00						0	0	CH	30		M			Y
	35 50	ch	25 Y71 00						0	0		0		P			Y
19	0 30	hc1	10YR42 00						5	1	HR	7					Y
	30 70	hc1	10YR73 00	10YR56 00	F				0	0	CH	10		M			Y
	70 120	c	10YR73 00	10YR56 00	F				0	0	CH	10		M			Y
20	0 30	hc1	10YR41 00						3	0	CH	10					Y
	30 120	hc1	25 Y72 00						0	0	CH	30		M			Y
21	0 35	hc1	10YR42 00						3	1	CH	5					Y
	35 50	ch	10YR71 00						0	0		0		P			Y
22	0 35	hc1	10YR42 00						1	0	CH	2					Y
	35 50	hc1	10YR72 00						0	0	CH	30		M			Y
	50 60	ch	25 Y71 00						0	0		0		P			Y
23	0 25	h 1	10YR41 00						1	0	CH	5					Y
	25 40	ch	25 Y71 00						0	0		0		P			Y
24	0 30	hc1	10YR41 00						2	0	CH	8					Y
	30 45	h	25 Y71 00						0	0		0		P			Y
26	0 25	h 1	10YR42 00						5	0	CH	6					Y
	25 45	hc1	10YR52 00	10YR56 00	F				0	0		10		M			Y
	45 65	hc1	10YR52 00						0	0	CH	30		M			Y
	65 80	ch	10YR61 00						0	0		0		P			Y

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES		PED		STONES			STRUCT/	SUBS							
				COL	ABUN	CONT	COL	GLE	2	6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC	
27	0 30	hc1	10YR31 00					3	0	CH	10							Y	
	30 55	hc1	25 Y72 00					0	0	CH	30		M					Y	
	55 65	ch	25 Y72 00					0	0		0		P					Y	
28	0 30	hc1	10YR41 00					0	0	CH	7							Y	
	30 45	ch	25 Y71 00					0	0		0		P					Y	
29	0 25	hc1	10YR41 00					1	0	CH	7							Y	
	25 120	hc1	10YR63 00					0	0	CH	20		M					Y	
31	0 35	hc1	10YR42 00					2	1	CH	3							Y	
	35 40	hc1	10YR53 00					0	0	CH	3		M					Y	
IMP 40 STONES																			
32	0 35	hc1	10YR42 00					3	0	HR	4							Y	
	35 60	c	10YR43 00					0	0	CH	3		M					Y	
	60 90	c	10YR72 00					0	0	CH	30		M					Y	
	90 100	ch	25 Y71 00					0	0		0		P					Y	
33	0 30	hc1	10YR42 00					3	0	HR	3							Y	
	30 70	c	10YR72 00					0	0	CH	30		M					Y	
	70 80	ch	25 Y71 00					0	0		0		P					Y	
34	0 35	hc1	10YR42 00					8	1	CH	9							Y	
	IMP 35 STONES																		
	35	0 35	h 1	10YR42 00					5	0	HR	6							Y
		35 50		10YR54 00					0	0	CH	3		M					Y
50 70		c	10YR72 00					0	0	CH	30		M					Y	
70 80	ch	25 Y71 00					0	0		0		P					Y		
36	0 30	hc1	10YR42 00					2	0	HR	3							Y	
	30 40	hc1	10YR72 00					0	0	CH	30		M					Y	
	40 50	ch	25Y 71 00					0	0		0		P					Y	

SOIL PIT DESCRIPTION

Site Name M40 MSA LEWKNOR A OXON P t N be 1P

Grid Refe e c SU71309870 A e g A 1 R fall 698 mm  
 Acc mul ted Tempe at re 1381 deg ee d y  
 F eld C p c ty Le 1 150 days  
 Land U 0 lseed R pe  
 Slope a d Aspect 01 deg s S

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 30	HCL	10YR32 00	8		21	HR					Y
30 45	CH	25 Y72 00	0		0					P	Y

W t ess Gr d 2 W t Class I  
 Gley ng cm  
 SPL No SPL

D o ght G ade 3B APW 58 mm MBW 44 mm  
 APP 58 mm MBP 34 mm

FINAL ALC GRADE 3B  
 MAIN LIMITATION D o ght ss

SOIL PIT DESCRIPTION

Site Name M40 MSA LEWKNOR A OXON Pit Number 2P

Grid Reference SU71409860 Age Actual Rainfall 698 mm  
 Annual Total Temperature 1381 degree days  
 Field Capacity Level 150 days  
 LDU 0 1 seed Rape  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 25	HCL	10YR41 00	0		6	CH					Y
25 45	HCL	10YR53 00	0		15	CH		MDCOAB	FR	M	Y
45 65	HCL	10YR62 00	0		30	CH		WKMDAB	FR	M	Y
65 75	CH	25 Y82 00	0		0					P	Y

Wetness Grade 2  
 Wetness Class I  
 Gleying cm  
 SPL No SPL

Drought Grade 3A  
 APW 102mm MBW 0 mm  
 APP 107mm MBP 15 mm

FINAL ALC GRADE 3A  
 MAIN LIMITATION Droughtiness

Appendix 3 (Cont)

**SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE**

Soil profile and pit information obtained during ALC surveys is held on a database  
This has commonly used notations and abbreviations as set out below

**BORING HEADERS**

- 1 GRID REF National grid square followed by 8 figure grid reference
- 2 USE Land use at the time of survey  
The following abbreviations are used

ARA arable	PAS/PGR permanent pasture
WHT wheat	RGR rough grazing
BAR barley	LEY ley grassland
CER cereals	CFW coniferous woodland
OAT oats	DCW deciduous woodland
MZE maize	SCR scrub
OSR oilseed rape	HTH heathland
BEN field beans	BOG bog or marsh
BRA brassicae	FLW fallow
POT potatoes	PLO ploughed
SBT sugar beet	SAS set aside
FDC fodder crops	OTH other
FRT soft and top fruit	LIN linseed
HOR/HRT horticultural crops	
- 3 GRDNT Gradient as measured by optical reading clinometer
- 4 GLEY/SPL Depth in centimetres (cm) to gleyed and/or slowly permeable horizons
- 5 AP (WHEAT/POTS) Crop adjusted available water capacity The amount of soil water (in millimetres) held in the soil profile that is available to a growing crop (wheat and potatoes are used as reference crops)

6 MB (WHEAT/POTS) The moisture balance for wheat and potatoes obtained by subtracting the soil moisture deficit from the crop adjusted available water capacity

7 DRT Grade according to soil droughtiness assessed against soil moisture balances

8 M REL Micro relief )  
FLOOD Flood risk ) If any of these factors are  
EROSN Soil erosion ) considered significant in terms  
of  
EXP Exposure ) the assessment of agricultural  
land  
FROST Frost prone ) quality a y will be entered in the  
DIST Disturbed land ) relevant column  
CHEM Chemical limitation )

9 LIMIT Principal limitation to agricultural land quality  
The following abbreviations are used

OC overall climate	CH chemical limitations
AE aspect	WE wetness
EX exposure	WK workability
FR frost	DR drought
GR gradient	ER erosion
MR micro relief	WD combined soil wetness/soil droughtiness
TX soil texture	ST topsoil stoniness
DP soil depth	

## PROFILES AND PITS

1 TEXTURE Soil texture classes are denoted by the following abbreviations

S	sand
LS	loamy sand
SL	sandy loam
SZL	sandy silt loam
ZL	silt loam
MZCL	medium silty clay loam
MCL	medium clay loam
SCL	sandy clay loam
HZCL	heavy silty clay loam
HCL	heavy clay loam
SC	sandy clay
ZC	silty clay
C	clay

For the sand loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction may be indicated by the use of prefixes

F	fine (more than $\frac{2}{3}$ of the sand less than 0.2 mm)
C	coarse (more than $\frac{1}{3}$ of sand greater than 0.6 mm)
M	medium (less than $\frac{2}{3}$ fine sand and less than $\frac{1}{3}$ coarse sand)

The sub divisions of clay loam and silty clay loam classes according to clay content are indicated as follows

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Other possible texture classes include

OL organic loam  
P peat  
SP sandy peat  
LP loamy peat  
PL peaty loam  
PS peaty sand  
MZ marine light silts

2 MOTTLE COL Mottle colour

3 MOTTLE ABUN Mottle abundance

F few less than 2% of matrix or surface described  
C common 2 20% of the matrix  
M many 20 40% of the matrix  
VM very many 40% + of the matrix

4 MOTTLE CONT Mottle continuity

F faint indistinct mottles evident only on close examination  
D distinct mottles are readily seen  
P prominent mottling is conspicuous and one of the outstanding features of the horizon

5 PED COL Ped face colour

6 STONE LITH Stone lithology One of the following is used

HR all hard rocks or stones  
MSST soft medium or coarse grained sandstone  
SI soft weathered igneous or metamorphic  
SLST soft oolitic or dolomitic limestone  
FSST soft fine grained sandstone  
ZR soft argillaceous or silty rocks  
CH chalk  
GH gravel with non porous (hard) stones  
GS gravel with porous (soft) stones

Stone contents (>2 cm >6 cm and total) are given in percentages (by volume)

- 7 STRUCT the degree of development size and shape of soil peds are described using the following notation

<u>degree of development</u>	WK	weakly developed
	MD	moderately developed
	ST	strongly well 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
	SB/SAB	sub angular blocky
	AB	angular blocky
	PR	prismatic
	PL	platy

- 8 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

- 9 SUBS STR Subsoil structural condition recorded for the purpose of calculating profile droughtiness

G good  
M moderate  
P poor

- 10 POR Soil porosity If a soil horizon has less than 0.5% biopores >0.5 mm a y will appear in this column
- 11 IMP If the profile is impenetrable a y will appear in this column at the appropriate horizon
- 12 SPL slowly permeable layer If the soil horizon is slowly permeable a y will appear in this column
- 13 CALC If the soil horizon is calcareous a y will appear in this column
- 14 Other Notations
- APW available water capacity (in mm) adjusted for wheat
- APP available water capacity (in mm) adjusted for potatoes
- MBW moisture balance wheat
- MBP moisture balance potatoes