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Newbury District Local Plan
Site 66 : Radnall Lane, Chieveley
Agricultural Land Classification
ALC Map and Report
February 1994

NEWBURY DISTRICT LOCAL PLAN
SITE 66: RADNALL LANE, CHIEVELEY
AGRICULTURAL LAND CLASSIFICATION REPORT

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on agricultural land quality for a number of sites in the Newbury District of Berkshire. The work forms part of MAFF's statutory input to the preparation of the Newbury District Local Plan.

1.2 Site 66 comprises 16.6 hectares of land to the west of the A34, north of the M4 at Chieveley in Berkshire. An Agricultural Land Classification, (ALC), survey was carried out during February 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 17 soil auger borings and two soil inspection pits were described 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.

At the time of survey the site was in arable cropping.

1.3 The distribution of grades and subgrades is shown on the attached ALC map and the areas and extent are given in the table below. The map has been drawn at a scale of 1:5,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1: Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Area
1	3.1	19.0
2	11.9	73.0
3a	0.5	3.1
3b	0.8	4.9
Total agricultural area	16.3	100
Urban	0.1	
Agricultural Buildings	0.2	
Total Area of Site	16.6 ha	

1.4 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey. 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.

1.5 Land on this site has largely been classified as being very good quality, Grade 2, with smaller areas of Grade 1, excellent quality land and Subgrades 3a and 3b, good to moderate quality land (respectively).
Grade 1 land has been mapped in association with deep, well drained clay loam soils which show no signs of any limitation to their agricultural use. Grade 2 land

comprises similar soils which exhibit signs of slight soil wetness and/or droughtiness. Soils tend to become more sandy towards the eastern site boundary and a small unit of Subgrade 3a relates to land which is limited by soil droughtiness where soils are particularly sandy. Towards the north of the site, a small area of Subgrade 3b has been delineated coincident with relatively heavy, poorly drained soils.

2. Climate

2.1 Estimates of climatic variables relevant to the assessment of agricultural land quality were obtained by interpolation from a 5km grid point dataset (Met. Office, 1989) for a representative location in the survey area.

Climatic Interpolation

Grid Reference	SU479733
Altitude, (m, AOD)	115
Accumulated Temperature (°days, Jan-June)	1397
Average Annual Rainfall (mm)	701
Field Capacity Days	151
Moisture deficit, wheat (mm)	103
Moisture deficit, potatoes (mm)	93

2.2 Climatic factors are considered first when classifying land since climate can be overriding in the sense that adverse climatic conditions may restrict land quality irrespective of favourable site and soil conditions. The details in the table above show that there is no overall climatic limitation affecting this site. In addition, no local climatic factors such as exposure or frost risk affect the land quality.

2.3 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations.

3. Relief

3.1 The site lies at an altitude of 115-120 m, rising gently towards the north-west. Nowhere on the site do microrelief or gradient affect agricultural land quality.

4. Geology and Soils

4.1 British Geological Survey, (1947), Sheet 267, Hungerford shows the site to be mostly underlain by Reading Beds with Cretaceous Upper Chalk outcropping across the north-eastern corner of the site.

4.2 Soil Survey of England and Wales, (1983), Sheet 6, Soils of South-East England maps two soil associations broadly coincident with the geological deposits. Soils of the Wickham 3 association, described as 'slowly permeable, seasonally waterlogged fine and coarse loamy over clayey soils', (SSEW, 1983) are mapped where Reading Beds outcrop. Frilsham association soils are shown to coincide with the deposits of

Upper Chalk. These soils are described as, 'well drained, mainly fine loamy over chalk'. (SSEW, 1983).

4.3 Detailed field examination of the soils on the site proved them to be variable but generally profiles were clay loams or sandy clay loams passing to sandier textures with depth or occasionally, heavier, slowly permeable horizons. Despite the published geological map, there was no evidence of chalk deposits underlying the site.

5. Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached sample point map.

Grade 1

5.3 A small unit of excellent quality agricultural land has been mapped through the centre of the site. Profiles typically comprise non-calcareous medium or sandy clay loam topsoils which may contain 1-2% total flints by volume. These pass to similarly textured subsoils which may become more sandy, (ie, medium sandy loam), or heavier (heavy clay loam or clay), in the lower subsoil and may contain 2-5% total flints throughout. Profiles showed signs of slightly imperfect drainage, in the form of gleying from about 58-98 cm depth. In most instances this is caused by high ground water levels, although occasionally slowly permeable clay horizons deep in the profile are impeding drainage. Overall, these well drained soils are assigned to Wetness Class I. Being deep medium textured and relatively stone free, soils have good reserves of profile available water for crop growth. This flexible and versatile land is capable of producing consistently high yields of a very wide range of crops including horticultural crops.

Grade 2

5.4 The majority of the site has been assigned to this grade which represents very good quality agricultural land. It is very slightly limited in its agricultural use by slight soil wetness and/or (more commonly) droughtiness. Topsoils comprise non-calcareous medium or sandy clay loams or occasionally medium sandy loams which may be very slightly stony, (ie, 1-5% total flints by volume). These overlie subsoils which are variable. Sometimes profiles become more sandy with depth, passing to medium sandy loam, loamy medium sand or medium sand horizons. Such profiles were found towards the east of the site. Across the remainder of the mapping unit, subsoils contained horizons of sandy clay loam, heavy clay loam and clay, generally becoming heavier with depth. Within this mapping unit, subsoils were typically found to be very slightly stony, having 1-5% total flints by volume.

Where profiles of a sandy nature were encountered, they were assigned to Grade 2 on the basis of slight soil droughtiness. Although, occasional profiles were gleyed

below 75 cm as a result of a high groundwater table, these soils are generally well drained and thereby assigned to Wetness Class I. Due to the sandy soil textures, profiles have slightly reduced reserves of available water which may cause crops to suffer drought stress particularly during the summer months. Of less significance in this mapping unit is land affected by slight soil wetness. This arises where slowly permeable clay horizons occur below about 48-76 cm, and impede soil drainage to the extent that gleying was evident in or immediately above the clay. Wetness Class II is appropriate given these drainage characteristics, which equates to Grade 2 in the prevailing climatic regime.

Subgrade 3a

5.5 A small area of the site has been assigned to this subgrade, good quality land, on the basis of a soil droughtiness limitation.
Profiles with a higher sand content than those described above, have lower reserves of available water and as such are prone to a moderate risk of soil droughtiness. Non-calcareous sandy clay loam topsoils and upper subsoils, with stone contents of approximately 2% total flints by volume, pass to loamy sand and sand from about 45 cm. These soils are freely draining, but soil moisture reserves may be inadequate to meet the demands of a growing crop throughout the year. The land cannot be graded higher than Subgrade 3a as a result.

Subgrade 3b

5.6 Subgrade 3b, moderate quality land has been mapped where slightly higher land coincides with poorly drained clayey soils affected by a soil wetness limitation. Sandy clay loam topsoils which are non-calcareous directly overlie gleyed and slowly permeable clay in the subsoil which severely impedes soil drainage. As a result land may lie wet for considerable periods leading to restrictions in the opportunities for cultivations and/or grazing. Crop establishment and growth may also be adversely affected by soil wetness. This land cannot be graded higher than Subgrade 3b as result.

SOURCES OF REFERENCE

* British Geological Survey (1947), Sheet No. 267, Hungerford, 1:63,360.

* MAFF (1988), Agricultural Land Classification of England and Wales. Revised guidelines and criteria for grading the quality of agricultural land.

* Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

* Soil Survey of England and Wales (1983), Sheet No 6, Soils of South East England, 1:250,000, and accompanying legend.

APPENDIX I

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 and 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 into 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 poorer farmland predominates. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.

Descriptions are also given of other land categories which may be used on ALC maps.

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 includes 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 moist 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 (eg. polythene tunnels erected for lambing) may be ignored.

Open water

Includes lakes, ponds and rivers as map scale permits.

Land not surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg 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 II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years[2].
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.
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.
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.
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.

[1] The number of days specified is not necessarily a continuous period.

[2] 'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

SOIL BORING AND SOIL PIT DESCRIPTIONS

Contents:

* **Soil boring descriptions**
* **Soil pit descriptions**
* **Soil Abbreviations : Explanatory Note**

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
1	0-29	scl	10YR42 00						0	0	HR	1							
	29-70	c	10YR53 00	75YR68 00	C		10YR72 00	Y	0	0		0		P			Y		
1P	0-28	mcl	10YR43 00						2	0	HR	5							
	28-52	scl	10YR44 00						0	0	HR	2	MDCSAB	FR	M				
	52-70	msl	10YR54 00						0	0	HR	1	WKCSAB	FR	G				
	70-80	lms	10YR54 00						0	0		0	WKCOAB	VF	M				
	80-120	ms	10YR74 00						0	0		0	WKMDAB	VF	M				
2	0-29	mcl	10YR42 00						2	0	HR	3							
	29-48	hcl	10YR43 00						0	0	HR	3		M					Imp 48,stones
2P	0-29	mcl	10YR42 00						0	0	HR	2							
	29-48	mcl	10YR43 00						0	0	HR	2	MDCSAB	FR	M				
	48-63	hcl	10YR52 00	10YR58 00	C			Y	0	0	HR	2	MDCOAB	FM	P				
	63-85	c	25 Y72 00	75YR58 68	M			Y	0	0	HR	2	WKCOAB	FM	P	Y		Y	Tends to platy
3	0-29	scl	10YR43 00						2	0	HR	5							
	29-48	scl	10YR53 00	75YR58 00	C		10YR63 00	Y	0	0	HR	2		M					
	48-62	c	10YR63 00	75YR58 00	C		10YR62 00	Y	0	0	HR	1		M					Not SP
	62-120	scl	10YR63 00	75YR58 00	C		10YR62 00	Y	0	0	HR	1		M					Common Mn concs.
4	0-30	mcl	10YR42 00						0	0	HR	1							
	30-50	mcl	10YR43 00						0	0	HR	2		M					
	50-57	hcl	10YR52 00	10YR58 00	C			Y	0	0		0		P					
	57-78	c	25 Y62 00	75YR58 00	C		25 Y70 00	Y	0	0		0		P			Y		
	78-89	fsl	10YR71 00	10YR58 00	C			Y	0	0		0		M					
	89-120	c	05 Y71 00	75YR68 00	M			Y	0	0		0		P			Y		
5	0-28	mcl	10YR43 00						0	0	HR	1							
	28-45	scl	10YR54 00						0	0	HR	1		M					
	45-55	msl	10YR54 00						0	0	HR	1		G					
	55-65	lms	10YR64 00						0	0		0		M					
	65-95	ms	10YR64 00						0	0		0		M					
	95-120	lms	10YR73 00						0	0		0		M					
6	0-30	mcl	10YR42 00						2	0	HR	5							
	30-50	hcl	10YR43 00						0	0	HR	2		M					
	50-75	scl	10YR43 00						0	0	HR	2		M					
	75-88	msl	10YR54 00						0	0	HR	2		G					
	88-105	lms	10YR54 00						0	0	HR	2		M					
	105-120	ms	10YR73 00						0	0		0		M					
7	0-30	mcl	10YR42 00						0	0	HR	2							
	30-58	mcl	10YR44 54						0	0	HR	2		M					
	58-88	hcl	10YR53 00	10YR76 00	C		10YR71 00	Y	0	0	HR	2		P					
	88-120	c	10YR72 00	10YR58 00	C		25Y 70 00	Y	0	0	HR	1		P	Y		Y		

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
8	0-35	mcl	10YR42 00						0	0	HR	1						
	35-98	mcl	10YR44 00						0	0	HR	1		M				
	98-120	mcl	10YR53 00	10YR58 00	C		10YR71 00	Y	0	0		0		M				
9	0-30	scl	10YR43 00						0	0	HR	2						
	30-75	scl	10YR54 00	10YR58 00	F				0	0	HR	2		M				
	75-95	scl	10YR42 00	75YR58 00	C		10YR62 00	Y	0	0	HR	5		M				
	95-120	msl	10YR42 00	75YR58 00	C		10YR62 00	Y	0	0	HR	5		G				
10	0-30	scl	10YR43 00						0	0	HR	2						
	30-48	msl	10YR43 54						0	0	HR	1		G				
	48-75	lms	10YR44 00						0	0	HR	1		M				
	75-120	ms	10YR64 74						0	0		0		M				
11	0-29	mcl	10YR43 00						1	0	HR	3						
	29-48	hcl	10YR54 00						0	0	HR	2		M				
	48-52	c	10YR63 00	75YR58 00	C		10YR71 00	Y	0	0	HR	2		P	Y	Y		Imp 52, stones
12	0-29	mcl	10YR43 00						0	0	HR	2						
	29-48	hcl	10YR54 00						0	0	HR	5		M				
	48-60	c	10YR44 00						0	0	HR	5		M				Imp 60, stones
13	0-30	scl	10YR43 00						0	0	HR	1						
	30-50	scl	10YR54 00						0	0	HR	1		M				
	50-77	msl	10YR54 00			F			0	0	HR	1		G				
	77-98	lms	10YR64 00	10YR58 00	C			Y	0	0		0		M				
	98-120	ms	10YR64 00	75YR58 00	C		25 Y70 00	Y	0	0		0		M				
14	0-32	scl	10YR42 00						0	0	HR	2						
	32-45	scl	10YR54 64						0	0	HR	2		M				
	45-60	lms	10YR64 00						0	0	HR	2		M				
	60-120	ms	10YR74 76						0	0		0		M				
15	0-26	scl	10YR43 00						2	0	HR	3						
	26-35	scl	10YR44 54						0	0	HR	2		M				
	35-48	msl	10YR44 00						0	0	HR	2		G				
	48-55	lms	10YR44 00						0	0	HR	2		M				
	55-75	msl	10YR53 54			F			0	0	HR	2		G				Imp 75, stones
16	0-30	mcl	10YR43 00						2	0	HR	5						
	30-40	c	10YR46 00	75YR58 00	C		00MN00 00	Y	0	0	HR	15		M				Slightly gleyed
17	0-35	mcl	10YR43 00						0	0	HR	1						
	35-42	msl	10YR64 00	10YR58 00	F				0	0	HR	1		G				
	42-65	msl	10YR53 00	10YR76 00	C		10YR71 00	Y	0	0		0		G				
	65-76	hcl	10YR72 00	10YR58 00	C		25Y 70 00	Y	0	0		0		M				
	76-120	c	10YR72 00	10YR58 00	M		25Y 70 00	Y	0	0		0		P	Y	Y		FS lenses

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU47807370	CER	S	01	029 029	4	3B	90	0	102	0					WE	3B	
1P	SU48007360	CER	N	01		1	1	126	24	114	21	2				DR	2	
2	SU47807367	CER	N	01		1	1	80	-22	80	-13	3B				DR	3B	IMP 48
2P	SU47807360	CER	S	02	048 063	2	2	107	5	108	15	2				WE	2	
3	SU47877369	CER			029	2	2	145	43	109	16	1				WE	2	
4	SU47807360	CER	S	02	050 057	2	2	140	41	110	20	1				WE	2	
5	SU47907357	CER	N	01		1	1	119	15	102	7	2				DR	2	
6	SU48007360	CER	N	01		1	1	138	33	112	19	1					1	
7	SU47707350	CER			058 088	1	1	135	42	111	23	1					1	
8	SU47807350	CER	S	02	098	1	1	156	54	118	25	1					1	
9	SU47907347	CER	SW	02	075	1	1	154	47	109	16	1					1	
10	SU48007347	CER	N	01		1	1	112	6	96	-1	2				DR	2	
11	SU47707340	CER			048 048	3	3A	84	-18	86	-7	3A				WE	3A	IMP 52
12	SU47807340	CER	S	01		1	1	91	-11	98	5	3A				DR	3A	PROB 2 DR
13	SU47907337	CER	SW	02	077	1	1	134	27	114	17	2				DR	2	
14	SU47987337	CER	N	01		1	1	105	3	89	-4	3A				DR	3A	SANDY
15	SU47707330	CER				1	1	107	-1	108	9	3A				DR	3A	PROB 2 DR
16	SU47807330	CER	S	01	030	1	1	65	-37	65	-28	3B				DR	3B	DISTURBED?
17	SU47907325	CER	W	02	042 076	2	2	149	41	121	22	1				WE	2	

SOIL PIT DESCRIPTION

Site Name : NEWBURY LP, SITE 66 Pit Number : 1P

Grid Reference: SU48007360 Average Annual Rainfall : 702 mm
Accumulated Temperature : 1397 degree days
Field Capacity Level : 92 days
Land Use : Cereals
Slope and Aspect : 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MCL	10YR43 00	2	5		
28- 52	SCL	10YR44 00	0	2		MDCSAB
52- 70	MSL	10YR54 00	0	1		WKCSAB
70- 80	LMS	10YR54 00	0	0		WKCOAB
80-120	MS	10YR74 00	0	0		WKMDAB

Wetness Grade : 1 Wetness Class : I
Gleying : cm
SPL : No SPL

Drought Grade : 2 APW : 126mm MBW : 24 mm
APP : 114mm MBP : 21 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : NEWBURY LP, SITE 66 Pit Number : 2P

Grid Reference: SU47807360
Average Annual Rainfall : 702 mm
Accumulated Temperature : 1397 degree days
Field Capacity Level : 92 days
Land Use : Cereals
Slope and Aspect : 02 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 29	MCL	10YR42 00	0	2		
29- 48	MCL	10YR43 00	0	2		MDCSAB
48- 63	HCL	10YR52 00	0	2	C	MDCOAB
63- 85	C	25 Y72 00	0	2	M	WKCOAB

Wetness Grade : 2
Wetness Class : II
Gleying :048 cm
SPL :063 cm

Drought Grade : 2
APW : 107mm MBW : 5 mm
APP : 108mm MBP : 15 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Wetness

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 - sugarbeet	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)
   EROSN : Soil erosion)
   EXP : Exposure) If any of these factors are considered significant in terms of the assessment of agricultural land quality a 'y' will be entered in the relevant column.
   FROST : Frost prone)
   DIST : Disturbed land)
   CHEM : Chemical limitation)

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

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

PROFILES & 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 ⅔ of the sand less than 0.2 mm)
C - coarse (more than ⅓ of sand greater than 0.6 mm)
M - medium (less than ⅔ fine sand and less than ⅓ 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 (>2cm, >6cm 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

- ped size

F - fine
M - medium
C - coarse
VC - very coarse

- ped shape

S - single grain
M - massive
GR - granular
SB/SAB - sub-angular blocky
AB - angular blocky
PR - prismatic
PL - platy

8. CONSIST : Soil consistence is decribed 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