

A1

SLOUGH BOROUGH LOCAL PLAN

Site 19: Land at Market Lane

Langley

Berkshire

Agricultural Land Classification

ALC Map and Report

April 1997

**Resource Planning Team
Eastern Region
FRCA Reading**

**RPT Job Number: 0204/057/97
MAFF Reference: EL 02/01239**

AGRICULTURAL LAND CLASSIFICATION REPORT

SLOUGH BOROUGH LOCAL PLAN

SITE 19:

LAND AND AT MARKET LANE, LANGLEY.

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 12.4 hectares of land to the east of Langley in Berkshire. The survey was carried out during April 1997.

2. The survey was carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with the Slough Borough Local Plan. This survey supersedes any previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of the FRCA. 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 land on the site was in permanent grassland, oilseed rape and cereal crops.

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.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area
1	9.8	79.0
3a	2.6	21.0
Total site area	12.4	100

7. The fieldwork was conducted at an average density of 1 boring every hectare. A total of 13 borings and 2 soil pits were described.

8. The central and southern part of the site has been mapped as Grade 1 (excellent quality agricultural land). The soils in this area are free draining, deep brickearths and typically

comprise silt loam and fine sandy silt loam topsoils overlying similar upper subsoils which become slightly heavier (silty clay loam) with depth. The combination of these soil properties and the prevailing climate results in the land having very minor or no limitations to agricultural use.

9. The area to the north has been mapped as Subgrade 3a (good quality agricultural land). The profiles generally comprise very slightly stony silty clay loam or clay loam topsoils overlying similar upper subsoils which rest over poorly structured clay or silty clay. These clayey soils cause drainage to be impeded resulting in slight seasonal waterlogging which restricts land utilisation. In addition, the subsoil horizons within this unit become gravelly and impenetrable at depth limiting the land quality on the basis of soil droughtiness as well as soil wetness.

FACTORS INFLUENCING ALC GRADE

Climate

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

11. 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	TQ 022 797	TQ 021 791
Altitude	m,AOD	26	27
Accumulated Temperature	day°C	1484	1483
Average Annual Rainfall	mm	675	675
Field Capacity Days	days	139	139
Moisture Deficit, Wheat	mm	117	117
Moisture Deficit, Potatoes	mm	112	112

12. 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.

13. 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 (AT0, January to June), as a measure of the relative warmth of a locality.

14. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Other local climatic factors such as exposure and frost risk are not believed to have a significant adverse effect on the site. The site is climatically Grade 1.

Site

15. The agricultural land at this site lies at an altitude of 26-27m AOD. The majority of the land at the site is flat or very gently sloping with slight undulations. Nowhere does gradient or microrelief affect agricultural land quality.

Geology and soils

16. The published geological information (BGS, 1981) shows the entire site to be underlain with Brickearth deposits with the possibility of London Clay outcropping at the surface in the north.

17. The most recently published soil information shows the Hamble 2 Association to be mapped across the entire survey area. These soils are described as 'Deep well drained, stoneless silty soils and similar soils affected by groundwater, over gravel locally.' (SSEW, 1983).

18. Upon detailed field examination, soils generally consistent with the above description were found to exist across the site, although occasional soils which were heavier and more gravelly were observed in the north of the survey area.

AGRICULTURAL LAND CLASSIFICATION

19. 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.

20. 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 II.

Grade 1

21. The majority of the site has been classified as Grade 1 (excellent quality agricultural land). The soils comprise deep free-draining brickearth deposits and typical profiles comprise silt loam or fine sandy silt loam topsoil overlying similar upper subsoil which become medium or heavy silty clay loam with depth. The profiles are generally stoneless throughout with a few flints occurring in occasional topsoils. The soils are assessed as Wetness Class 1. Soil pit 2 is representative of these soil types. Moisture balance calculations indicate that the available water capacity of the soils is sufficient to provide crops with adequate moisture to prevent drought stress in most years. This land therefore has very minor or no limitations to its agricultural use.

Grade 3a

22. A smaller area of very good quality agricultural land has been mapped to the extreme north of the survey area. The land is affected mainly by wetness with soil droughtiness being equally or more restricting in places. The majority of profiles within this unit comprise very slightly stony (0-3% total flints by volume) medium clay loam or medium silty clay loam topsoils overlying similar or slightly heavier subsoils which are sometimes gleyed (suggesting seasonal waterlogging). Poorly structured slowly permeable clay or silty clay horizons occur at depths between 38 and 58cm, some of which contain up to 10% total flints. The profiles become impenetrable to the auger at depths between 60 and 80cm over gravel. A wetness class of

between I and III has been assigned to these soils depending on depth to gravel and/or slowly permeable horizons. Soil pit 1 is representative of these soil types. On the whole, the combination of soil texture and hard stone restricts the water available to crops such that there is a slight risk of drought stress to the plants in most years. This, in combination with soil wetness (caused by slowly permeable subsoil horizons occurring at moderate depths, giving rise to workability restrictions affecting the timing of cultivations and trafficking) restricts the land to Subgrade 3a.

Sharron Cauldwell
Resource Planning Team,
FRCA Reading.

SOURCES OF REFERENCE

British Geological Survey (1981) Sheet No. 269, Windsor 1:50,000 scale (Solid and Drift Edition). 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*. 1:250,000 scale. SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*. Bulletin 15. SSEW: Harpenden.

APPENDIX I

DESCRIPTIONS OF THE 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 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 or horticultural crops can usually be grown but on some land of this 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 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When 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 the level of yields. It is mainly suited to grass with occasional arable crops (e.g. 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL DATA

Contents:

Sample location map

Soil abbreviations - explanatory note

Soil pit descriptions

Soil boring descriptions (boring and horizon levels)

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

Boring Header Information

- GRID REF:** national 100 km grid square and 8 figure grid reference.
- USE:** Land use at the time of survey. The following abbreviations are used:

ARA: Arable	WHT: Wheat	BAR: Barley
CER: Cereals	OAT: Oats	MZE: Maize
OSR: Oilseed rape	BEN: Field beans	BRA: Brassicae
POT: Potatoes	SBT: Sugar beet	FCD: Fodder crops
LIN: Linseed	FRT: Soft and top fruit	FLW: Fallow
PGR: Permanent pasture	LEY: Ley grass	RGR: Rough grazing
SCR: Scrub	CFW: Coniferous woodland	OTH: Other
DCW: Deciduous woodland	BOG: Bog or marsh	SAS: Set-Aside
HTH: Heathland	HRT: Horticultural crops	PLO: Ploughed
- GRDNT:** Gradient as estimated or measured by a hand-held optical clinometer.
- GLEYS/SPL:** Depth in centimetres (cm) to gleying and/or slowly permeable layers.
- AP (WHEAT/POTS):** Crop-adjusted available water capacity.
- MB (WHEAT/POTS):** Moisture Balance. (Crop adjusted AP - crop adjusted 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	ST: Topsoil Stoniness
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
EX: Exposure		

Soil Pits and Auger Borings

1. **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)

2. **MOTTLE COL:** Mottle colour using Munsell notation.
3. **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% +

4. **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

5. **PED. COL:** Ped face colour using Munsell notation.

6. **GLEYS:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. **STONE LITH:** Stone Lithology - one of the following is used:

HR:	all hard rocks and stones	FSST:	soft, fine grained sandstone
ZR:	soft, argillaceous, or silty rocks	CH:	chalk
MSST:	soft, medium grained sandstone	GS:	gravel with porous (soft) stones
SI:	soft weathered igneous/metamorphic rock	GH:	gravel with non-porous (hard) stones

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

8. **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	
Ped shape	S: single grain	M: massive
	GR: granular	AB: angular blocky
	SAB: sub-angular blocky	PR: prismatic
	PL: platy	

9. **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

10. **SUBS STR:** Subsoil structural condition recorded for the purpose of calculating profile droughtiness: **G:** good **M:** moderate **P:** poor
11. **POR:** Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.
12. **IMP:** If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.
13. **SPL:** Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.
14. **CALC:** If the soil horizon is calcareous, a 'Y' will appear in this column.
15. 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

SOIL PIT DESCRIPTION

Site Name : SLOUGH LP, SITE 19 Pit Number : 1P

Grid Reference: TQ00607830 Average Annual Rainfall : 675 mm
Accumulated Temperature : 1484 degree days
Field Capacity Level : 139 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 38	MZCL	10YR32 00	0	2	HR					
38- 80	ZC	25 Y52 00	0	3	HR	C	SDCAB	FM	P	

Wetness Grade : 3A Wetness Class : III
Gleying : 038 cm
SPL : 038 cm

Drought Grade : 3A APW : 105mm MBW : -13 mm
APP : 108mm MBP : -5 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Soil Wetness/Droughtiness

SOIL PIT DESCRIPTION

Site Name : SLOUGH LP, SITE 19 Pit Number : 2P

Grid Reference: TQ00607800 Average Annual Rainfall : 675 mm
 Accumulated Temperature : 1484 degree days
 Field Capacity Level : 139 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 27	FSZL	10YR43 00	0	0						
27- 48	FSZL	10YR44 00	0	0			MDVCSB	FR	M	
48- 64	MZCL	75YR56 00	0	0			MDCSAB	FR	M	
64-120	HZCL	75YR46 00	0	0		F	MDCOAB	FR	M	

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

Drought Grade : 1 APW : 177mm MBW : 59 mm
 APP : 141mm MBP : 28 mm

FINAL ALC GRADE : 1
 MAIN LIMITATION :

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M. REL		EROSN	FROST	CHEM	ALC	COMMENTS	
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST		LIMIT
1	TQ00607830	CER		032 045	3	3A	105	-13	112	-1	3A			WD	3A	IMP 80 SEE 1P
1P	TQ00607830	CER		038 038	3	3A	105	-13	108	-5	3A			WD	3A	IMP 75 SEE 1P
2	TQ00607820	CER		035 050	3	3A	109	-9	114	1	3A			WE	3A	IMP 80 SEE 1P
2P	TQ00607800	PGR			1	1	177	59	141	28	1					1
3	TQ00707820	OSR		037	2	2	177	59	141	28	1			WE	2	
4	TQ00607810	CER		042	1	1	089	-29	094	-19	3B			DR	3A	PROB 3A IMP 60
5	TQ00707810	OSR		065	1	1	191	73	153	40	1				1	SEE PIT 2
6	TQ00807810	OSR	NE	01	1	1	154	36	124	11	1				1	SEE PIT 2
7	TQ00507800	OSR	NE	01	050	1	1	171	53	133	20	1			1	SEE PIT 2
8	TQ00607800	PGR			1	1	177	59	141	28	1				1	SEE PIT 2
9	TQ00707800	PGR			1	1	186	68	148	35	1				1	SEE PIT 2
10	TQ00807800	PGR			1	1	000	0	000	0					1	SEE PIT 2
11	TQ00607790	PGR			1	1	000	0	000	0					1	SEE PIT 2
12	TQ00707790	PGR			1	1	000	0	000	0					1	SEE PIT 2
13	TQ00607780	PGR			1	1	000	0	000	0					1	SEE PIT 2

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED		---STONES---			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR		
1	0-32	mzc1	25 Y32 00						0	0	HR	2					
	32-45	hzc1	25 Y61 62	10YR46	56	C		Y	0	0		0		M			
	45-75	zc	05 Y51 61	10YR58	00	M		Y	0	0		0		P	Y		IMP GRAVELLY
1P	0-38	mzc1	10YR32 00						0	0	HR	2					
	38-80	zc	25 Y52 00	75YR48	00	C		Y	0	0	HR	3	SDCAB	FM	P	Y	Y
2	0-35	mzc1	10YR32 00						0	0	HR	3					
	35-50	hc1	25 Y52 00	25 Y56	00	C	25 Y62	00	Y	0	0	HR	2		M		
	50-80	c	10YR51 00	10YR58	00	M		Y	0	0		0		P	Y		IMP GRAVELLY
2P	0-27	fsz1	10YR43 00						0	0		0					
	27-48	fsz1	10YR44 00						0	0		0	MDVCSB	FR	M		
	48-64	mzc1	75YR56 00						0	0		0	MDCSAB	FR	M		
	64-120	hzc1	75YR46 00	00MN00	00	F			0	0		0	MDCOAB	FR	M		
3	0-37	z1	10YR42 53						0	0		0					
	37-64	mzc1	10YR64 00	10YR66	58	C	00MN00	00	Y	0	0	HR	1		M		
	64-90	hzc1	10YR64 00	10YR58	00	C	00MN00	00	Y	0	0		0		M		
	90-120	mzc1	10YR64 00	10YR58	00	C	00MN00	00	Y	0	0		0		M		
4	0-30	mc1	10YR32 00						0	0	HR	3					
	30-42	mc1	10YR43 00	10YR58	00	F			0	0	HR	5			M		
	42-48	hc1	25 Y52 00	10YR58	00	C		Y	0	0	HR	5			M		
	48-60	c	10YR52 00	10YR58	00	C		Y	0	0	HR	10			P		IMP GRAVELLY
5	0-40	z1	10YR42 53						0	0		0					
	40-65	fsz1	10YR52 53						0	0		0			M		
	65-85	mzc1	10YR64 00	10YR56	58	C	00MN00	00	Y	0	0		0		M		
	85-120	hzc1	10YR64 00	10YR56	58	C	00MN00	00	Y	0	0		0		M		
6	0-30	z1	10YR33 00						0	0	HR	2					
	30-60	mzc1	10YR43 44	10YR46	00	F			0	0		0			M		
	60-90	hzc1	10YR44 00	10YR46	00	F	10YR52	00		0	0		0		M		
	90-120	hzc1	10YR44 00				10YR53	00		0	0		0		M		
7	0-40	z1	10YR43 00						0	0		0					
	40-50	mzc1	10YR44 00						0	0		0			M		
	50-65	mzc1	10YR53 00	10YR58	00	C	00MN00	00	Y	0	0		0		M		
	65-120	hzc1	10YR53 00	10YR56	00	C	00MN00	00	Y	0	0		0		M		
8	0-25	fsz1	10YR42 00						0	0		0					
	25-48	fsz1	10YR54 00						0	0		0			M		
	48-65	mzc1	10YR54 00	00MN00	00	F			0	0		0			M		
	65-120	hzc1	10YR54 00	00MN00	00	F			0	0		0			M		
9	0-30	fsz1	10YR42 00						0	0		0					
	30-35	fsz1	10YR43 00						0	0		0			M		
	35-65	fsz1	10YR54 00						0	0		0			M		
	65-120	hzc1	10YR54 44						0	0		0			M		

SAMPLE	DEPTH	TEXTURE	COLOUR	---MOTTLES---			PED COL.	---STONES---			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR	POR	IMP	SPL
10	0-29	fsz1	10YR42 00					0	0	0							
	29-60	mzc1	10YR44 54					0	0	0				M			
	60-120	hzc1	10YR44 00	00MN00	00	F		0	0	0				M			
11	0-25	fsz1	10YR42 00					0	0	0							
	25-58	fsz1	10YR44 00					0	0	0				M			
	58-70	mzc1	10YR54 00					0	0	0				M			
	70-120	hzc1	10YR54 00	00MN00	00	F		0	0	0				M			
12	0-37	fsz1	10YR42 00					0	0	0							
	37-50	fsz1	10YR44 54					0	0	0				M			
	50-120	mzc1	10YR54 00	00MN00	00	F		0	0	0				M			
13	0-25	fsz1	10YR42 00					0	0	0							
	25-50	fsz1	10YR44 00	00MN00	00	F		0	0	0				M			
	50-75	mzc1	10YR54 00	00MN00	00	F		0	0	0				M			
	75-120	hzc1	10YR54 00	00MN00	00	F		0	0	0				M			