A1
LAND NORTH OF HAWKINS CRESCENT
SOUTHWICK WEST SUSSEX
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JUNE 1993

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RESOURCE PLANNING TEAM
GUILDFORD STATUTORY GROUP

LAND NORTH OF HAWKINS CRESCENT SOUTHWICK WEST SUSSEX AGRICULTURAL LAND CLASSIFICATION REPORT

1 0 Summary

1 1 In June 1993 an Agricultural Land Classification (ALC) was made on approx imately 10 hectares of land at Southwick Hill on the northern edge of Southwick in West Sussex

1 2 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF s Land Use Planning Unit to provide information on the quality of agricultural land affected by the possible development of a school

1 3 All of the agricultural land (8 2 ha) is classified as Sub grade 3B with gradient and soil droughtiness the key limitations Where the gradients are not limiting the soils are typically shallow over Chalk with insufficient root penetration to overcome the dryness of the locality Topsoil stoniness also limits some of the flatter land in the north

1 4 The ALC information is presented on the attached map at a scale of 1 5 000 it is accurate at this level but any enlargement would be misleading This map supercedes any previous ALC information for this site

1 5 The classification has been made using MAFF s revised guidelines and criteria for grading the quality of agricultural land These guidelines provide a framework for classifying land according to the extent to which its physical or chemical char actristics impose long term limitations on its use for agriculture

1 6 The majority of the area was surveyed previously in May 1993 The ALC grading of the site takes into account information from borings and a pit on adja cent land

1 7 At the time of survey the land was down to a grassland use Soil mounds associated with the bypass roadworks are treated as non agricultural together with an area of scrub around an old dew pond The area of Non agricultural totals 2 2 hectares

1 8 A general description of the grades and sub grades is provided as an appendix 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

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 the overall climatic limitation are annual average rainfall as a measure of overall wetness and accumulated temperature, as a measure of the relative warmth of a locality

2 3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset The details are given in the table below and these show that there is no overall climatic limitation affecting the site

2 4 The site occupies an elevated position which lies open to direct winds from the south and south west Exposure is therefore an important local climatic factor None of the site has been considered eligible for Grade 2 as the windiness would prohibit the growing of the more sensitive horticultural crops

Table 2 - Climatic Interpolations

Grid Reference	TQ242070
Altitude (m)	80
Accumulated Temperature (days)	1449
Average Annual Rainfall (mm)	802
Field Capacity (days)	167
Moisture Deficit Wheat (mm)	109
Moisture Deficit Potatoes (mm)	103
Overall Climatic Grade	1

3 0 Relief and Geology

3 1 The site occupies south west facing slopes some of which are locally steep

3 2 The relevant geological sheet for the site shows the underlying geology to be Upper Middle Chalk with soil profiles being very shallow over the Chalk

4 0 Agricultural Land Classification

4 1 The southern half of the site was surveyed in May 1993 along with additional adjacent land to the east The grading of the current site relates to what was found on the eastern land particularly the description of a soil pit at TQ239068 The pit description is included in Appendix III for reference

4 2 Sub-grade 3B Part of the site has slopes in the range 7 11 degrees and gradient becomes the active limitation Where gradients are not limiting the soil resource typically extends to less than 35 cm before Chalk is encountered with rooting observed for another 40 cm into the Chalk before it becomes too compact for common penetration and extraction of further moisture Soil droughtiness limits these soils to 3B. A topsoil stone assessment was made on the flatter northern slopes and calculated as in the range 15 20 % a mixture of flint and chalk As a result no additional auger borings were required on the site

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB GRADES

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 on 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 When more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2

Sub grade 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

Sub grade 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 (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

Urban

Built up or hard uses with relatively little potential for a return to agriculture 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 re claimed 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

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 sclae permits

Land Not Surveyed

Agricultural land which has not been surveyed

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

APPENDIX II

REFERENCES

* 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

* British Geological Survey (1984) Sheet No 318/333 Brighton & Worthing 1 50 000

APPENDIX III

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents

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
FCD - 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	) 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
FLOOD	Flood risk	)
EROSN	Soil erosion	)
EXP	Exposure	)
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
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 (>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

- degree of development
  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

program ALC012 LIST OF BORINGS HEADERS 07/05/93 SOUTHWICK ADUR DIST LP

SAMPLE NO	GRID REF	ASPECT USE		GRDNT	GLEY	SPL	--WETNESS - CLASS	GRADE	WHEAT- AP	MB	-POTS- AP	MB	M REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1P	TQ	SAS	S	03	000		1	1	084	-28	089	-17	3B		Y		DR	3B	ROOT 65
24	TQ	PGR	W	05	000		1	1	087	-25	092	-14	3B				DR	3B	CH 29
25	TQ	PGR	W	03	000		1	1	087	-25	092	-14	3B				DR	3B	ROOT 69
34	TQ	PGR	W	06	000		1	1	082	-30	087	19	3B				DR	3B	CH 26
35	TQ	PGR	W	04	000		1	1	112	0	101	-5	3A				DR	3A	CH 55
36	TQ	PGR	W	03	000		1	1	088	-24	094	-12	3B				DR	3B	ROOT 70

program ALC011 COMPLETE LIST OF PROFILES 07/05/93 SOUTHWICK ADUR DIST LP

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES ---- COL	ABUN	CONT	PED COL	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
1P	0-27	mzcl	10YR43 00						0	0	CH	2						Y
	27-65	ch	00XX00 00						0	0		0		M				
24	0-29	mzcl	10YR53 00						0	0	CH	5						Y
	29-69	ch	00CH00 00						0	0	HR	5		P				Y
25	0-29	mzcl	10YR53 00						0	0	CH	5						Y
	29-69	ch	00CH00 00						0	0	HR	5		P				Y
34	0-26	mzcl	10YR44 00						0	0	CH	3						Y
	26-66	ch	00CH00 00						0	0	HR	5		P				Y
35	0-35	mcl	10YR54 00						0	0	CH	2						Y
	35-42	hcl	10YR44 00						0	0	CH	5		M				Y
	42-55	hcl	10YR44 81						0	0	CH	90		P				Y
	55-95	ch	00CH00 00						0	0	HR	5		P				Y
36	0-30	mzcl	10YR53 00						0	0	CH	5						Y
	30-70	ch	00CH00 00						0	0	HR	5		P				Y

SOIL PIT DESCRIPTION

Site Name SOUTHWICK ADUR DIST LP Pit Number 1P

Grid Reference TQ

Average Annual Rainfall 789 mm
Accumulated Temperature 1466 degree days
Field Capacity Level 165 days
Land Use
Slope and Aspect 03 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 27	MZCL	10YR43 00	0	2		
27- 65	CH	00XX00 00	0	0		

Wetness Grade 1

Wetness Class I
Gleying 000 cm
SPL No SPL

Drought Grade 3B

APW 084mm MBW -28 mm
APP 089mm MBP -17 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Droughtiness