AGRICULTURAL LAND CLASSIFICATION

LOWER HODDERN FARM, PEACEHAVEN, EAST SUSSEX

1. BACKGROUND

1.1 The 6.32 hectare site lies to the north of Peacehaven off the A259 (Newhaven to Brighton Road). The site is bounded to the south and east by housing, to the west by a sports ground and to the north by farm land under arable production.

1.2 The site was surveyed on the 29th April 1992 using 1.2 m Dutch soil augers with sampling densities of one boring per hectare on a grid basis across the site. In addition soil inspection pits were examined in order to enable more detailed soil descriptions.

Land Use

1.3 At the time of survey the eastern half of the site was under arable production. The remaining area west of the track was in rough grassland. Towards the north east of the site an area of non-agricultural land was mapped, this being a former quarry.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The site lies at approximately 35-40 m A.O.D. The highest elevation occurs towards the east and west with land sloping very gently towards the centre of the site, and falling northwards. Nowhere on the site does gradient or altitude represent a significant limitation to agricultural land quality.

Climate

2.2 Estimates of climatic variables were obtained for a representative location in the survey area by interpolation from grid point datasets (Met Office 1989). Figures are adjusted for altitude.

Climatic Interpolation

Grid Reference	TQ 422 011	TQ 422 011
Altitude	35	40
Accumulated Temperature (°days Jan-June)	1499	1494
Average Annual Rainfall (mm)	730	733
Field Capacity Days	155	156
Moisture Deficit Wheat (mm)	119	118
Moisture Deficit Potatoes (mm)	115	114

2.3 The important parameters in assessing an overall climatic limitation on agricultural land quality, are average annual rainfall, (a measure of the degree of wetness), and accumulated temperature (a measure of the relative warmth of a locality). At this locality an overall climatic limitation does not exist. The area is slightly exposed to on shore south westerly winds, which are partially

deflected by the surrounding built up area. Exposure is therefore not considered to be a limitation in terms of land quality. Climatic factors do affect interactive limitations between soil and climate, namely soil wetness and droughtiness.

Geology and Soils

2.4 British Geological Survey Sheet 334, Eastbourne (1978) shows the site to be underlain by Upper Chalk. Deposits of Woolwich Sands occur in close proximity to the site.

2.5 Soil Survey of England and Wales, Sheet 6, 1:250,000, Soils of South East England (1983) shows the site to comprise soils of the Frilsham Association. These soils are described as "well drained, developed in fine loamy flinty drift over chalk" (SSEW 1984).

2.6 Detailed field examination of the site indicates the presence of two soil groups.

2.7 The first group of soils occur in a localised area towards the east of the track. These soils were found to be well drained non-calcareous sandy loam topsoils which were slightly stony (2-3%) over stoneless loamy sands and sandy loams. Occasional subsoils were found to be slightly stony (c. 6% v/v flints) becoming stoneless below 70 cm.

2.8 The second group of soils typically comprise well drained non-calcareous or calcareous sandy silt loam, sandy clay loam or clay loam topsoils which may be slightly stony overlying subsoils of a similar texture with c. 3% v/v flints. Lower subsoil become heavier in texture (ie. sandy clay loam or heavy clay loam) occasionally passing to sandy clay or chalk below 80 cm.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of this site is primarily determined by interactions between soil and climatic factors. The principal limitation to land quality at this site is droughtiness.

Grade	Area (ha)	% of total agricultural land
2	5.21	86
3a	0.84	14
Total Agricultural Area	6.05	
Non Agricultural	0.27	
Total Area of the Site	6.32	

3.2 Appendix 1 gives a generalised description of the grades and subgrades identified in this survey.

Grade 2

3.3 Land of this quality occurs across the entire site except for a small area towards the east. Profiles typically comprise non-calcareous or calcareous sandy silt loam, sandy clay loam or clay loam topsoils which may be slightly stony (c. 1-4% v/v flints >2 cm). Topsoils overlie subsoils of sandy clay loam or clay loam which are non stony or slightly stony (c. 2-3% v/v flints between 2 cm-6 cm) overlying lower subsoils of similar textures occasionally passing to, sandy clay or chalk below 80 cm. The land is generally well drained wetness class I although occasional profiles were found to be gleyed in the upper horizons; wetness class II was therefore assigned to such profiles.

Land within this grade is principally limited by a minor droughtiness limitation, however land of this quality is capable of supporting a wide range of agricultural and horticultural crops.

Grade 3a

3.4 Land graded 3a occurs in a localised area, east of the track. Profiles typically comprise non-calcareous sandy loam or sandy clay loam topsoils which are slightly stony (c. 2-3% v/v flints >2 cm) overlying sandy loam subsoils which overlie lower subsoils of a similar texture or comprise loamy sand. Profiles were found to be non stony to slightly stony (c. 6% v/v flints) becoming stoneless below 70 cm. The land is well drained wetness class I but is limited by a droughtiness limitation due to slight stone contents and/or the sandy nature of the soil. Consequently water availability to plants is reduced. Land of this quality is capable of producing moderate to high yields of a narrow range of arable crops, or moderate yields of a wide range of crops.

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N SHIRT
Resource Planning Group
SE Region

SOIL PIT DESCRIPTION

Site Name : PEACEHAVEN Pit Number : 2P

Grid Reference: TQ42100115
Average Annual Rainfall : 733 mm
Accumulated Temperature : 1494 degree days
Field Capacity Level : 156 days
Land Use : Cereals
Slope and Aspect : degrees W

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 31	MCL	10YR43 00	0	0		
31- 60	HCL	75YR54 46	0	0		WKMCAB
60- 70	SCL	75YR54 00	0	0		MKCAB
70-120	SCL	10YR54 46	0	3		WKMCAB

Wetness Grade : 1
Wetnesss Class : II
Gleying :031 cm
SPL : No SPL

Drought Grade : 2
APW : 145mm MBW : 27 mm
APP : 117mm MBP : 3 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : PEACEHAVEN Pit Number : 4P

Grid Reference: TQ42300115
Average Annual Rainfall : 733 mm
Accumulated Temperature : 1494 degree days
Field Capacity Level : 156 days
Land Use : Cereals
Slope and Aspect : degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MSL	10YR43 00	0	0		
28- 45	MSL	10YR56 00	0	6		WKMSB
45- 70	LMS	10YR56 00	0	6		WKCFSB
70-120	LMS	10YR66 00	0	0		LOOSE

Wetness Grade : 1
Wetnesss Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3A
APW : 117mm MBW : -1 mm
APP : 98 mm MBP : -16 mm

FINAL ALC GRADE : 3a
MAIN LIMITATION : Droughtiness

ADAS

SOIL PIT DESCRIPTION

Site Name : PEACEHAVEN Pit Number : 7P

Grid Reference: TQ42300105
Average Annual Rainfall : 733 mm
Accumulated Temperature : 1494 degree days
Field Capacity Level : 156 days
Land Use : Cereals
Slope and Aspect : degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 32	MSL	10YR43 00	0	3		
32- 60	SCL	25YR46 00	0	0		WKCHSB
60-120	LMS	10YR66 63	0	0		WKMSB

Wetness Grade : 1
Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3A
APW : 119mm MBW : 1 mm
APP : 102mm MBP : -12 mm

FINAL ALC GRADE : 3a
MAIN LIMITATION : Droughtiness

ADAS

boring	topdepth	btmdepth	texture	colour	motabund	stone2	totstone	subsst
4P	0	28	MSL	10YR43 00		0	0	
4P	28	45	msl	10YR56 00		0	6	G
4P	45	70	lms	10YR56 00		0	6	G
4P	70	120	lms	10YR66 00		0	0	M
2P	0	31	mcl	10YR43 00		0	0	
2P	31	60	hcl	75YR54 46		0	0	M
2P	60	70	scl	75YR54 00		0	0	M
2P	70	120	scl	10YR54 46		0	3	P
7P	0	32	msl	10YR43 00		0	3	
7P	32	60	scl	25YR46 00		0	0	M
7P	60	120	lms	10YR66 63		0	0	M
1	0	26	mcl	25Y 43 44		0	0	
1	26	45	hcl	75YR54 56		0	0	M
1	45	67	scl	75YR54 56		0	0	M
1	67	80	sc	75YR54 00	C	0	0	P
1	80	120	sc	75YR54 00	C	0	3	P
2	0	29	mcl	10YR43 00		0	0	
2	29	70	scl	75YR54 46		0	0	M
2	70	80	scl	75YR54 00		0	5	M
3	0	29	fszl	10YR43 00		0	0	
3	29	100	mcl	75YR44 46		0	0	M
4	0	32	msl	10YR43 00		2	2	
4	32	70	msl	75YR54 44		0	0	M
7	0	30	msl	10YR43 00		0	0	
7	30	40	msl	10YR53 54		0	0	M
7	40	58	msl	10YR54 53		0	0	M
7	58	120	lms	10YR54 53	C	0	0	P
6	0	25	scl	10YR44 00		0	0	
6	25	38	msl	10YR56 00	C	0	3	M
6	38	60	msl	10YR56 00	C	0	3	M
6	60	70	scl	75YR46 56		0	0	M
6	70	120	ch	00ZZ00 00		0	0	P
5	0	35	mcl	10YR33 43		1	1	
5	35	50	mcl	10YR54 00		0	0	M
5	50	70	hcl	10YR54 00		0	3	M
5	70	90	c	10YR54 00	F	0	0	P

SOURCES OF REFERENCE:

British Geological Survey, (1978), Sheet 334, Eastbourne.

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

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

Soil Survey of England and Wales, (1983), Sheet 6, Soils of South East England.

Soil Survey of England and Wales, (1984), Soils and their use in South East England, Bulletin 15.

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 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: golf courses, 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 2

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six revised soil wetness classes (Hodgson, in preparation) are identified and are defined in Table 11.

Table 11 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.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.