

WHITEHALL QUARRY EXTENSION,
ROMNEY ROAD, LYDD, KENT
AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY

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1. Introduction

In November 1992 a detailed Agricultural Land Classification (ALC) was carried out on 5 hectares of land adjacent to Whitehall Quarry and the Romney Road, north of Lydd in Kent. ADAS was commissioned by MAFF to determine the land quality affected by the application to extend the existing Quarry and extract sand and gravel.

The work was conducted by members of the Resource Planning Team within the Guildford Statutory Group. The site had been previously surveyed in 1987 using MAFF's Original ALC guidelines. These guidelines have been subsequently revised and the previous information on land quality for this site has now been superseded by the current survey. The 1992 fieldwork took the form of a complete resurvey with a total of 4 auger borings and 2 soil pits described in the application area.

The revised 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.

The distribution of the grades and subgrades is shown on the attached ALC map and the area of each grade is given in the table below. A map has been drawn at a scale of 1:5,000 ; the information is accurate at this level but any enlargement may be misleading.

The whole of the site is poor quality agricultural land comprising Subgrade 3B with some Grade 4 land. The 3B land experiences a severe wetness limitation whilst soil droughtiness is the most limiting factor on the Grade 4 land.

Table 1 : Distribution of Grades and Sub-grades

<u>Grade</u>	<u>Area (ha)</u>	<u>Percentage</u>
3B	3.5	72.9
4	<u>1.3</u>	<u>27.1</u>
	4.8 ha	100%

2. Climate

The climatic criteria are considered first when classifying land. Climate can be over-riding in the sense that a severe limitation will restrict land to low grades irrespective of favourable soil or site conditions.

The main parameters used in the assessment of the 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.

A detailed assessment of the prevailing climate has been made by interpolation from a 5 km gridpoint dataset. The details are presented in the table below and show that there is no overall climatic limitation affecting the site. Exposure is a significant local climatic factor but is never the most limiting factor on the site; soil factors are more significant.

Table 2 : Climatic Interpolations

Grid Reference	TR 052 277
Altitude (m)	5
Average Annual Rainfall (mm)	665
Accumulated Temperature (° days)	1509
Field Capacity (days)	136
Moisture Deficit, Wheat (mm)	129
Moisture Deficit, Potatoes (mm)	128

3. Agricultural Land Classification

3.1 Sub-grade 3B

Pit 1 is typical of these soils which experience a significant wetness limitation. Heavy Clay Loam topsoil textures overlie lower Clay subsoils with clear evidence of shallow gleying and with slowly permeable layers present from approximately 45 cm. Given these wetness characteristics, the soils are placed in Wetness Class III (ie. the soil profile is wet within 70 cm depth for 91-180 days in most years). This degree of wetness severely limits the flexibility of the land; there is a significant reduction in the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

3.2 Grade 4

Pit 2 is typical of this extremely stony area which suffers from a significant droughtiness limitation. A topsoil of Medium Silty Clay Loam overlies gravel deposits from approximately 30 cm depth. Stone contents in the topsoil totals approximately 33% with at least 10% stone >2 cm. There is some root penetration into the gravel layers but, even if roots could extend to depth, there is insufficient water available in the profile to allow a classification greater than Grade 4. Given the high moisture deficits which prevail in this area, the lack of water results in a severe restriction to the flexibility of the land in terms of the range of crops that may be grown.

SOIL PIT DESCRIPTION

Site Name : WHITEHALL QUARRY, LIDD Pit Number : 1P

Grid Reference: TR053 226 Average Annual Rainfall : 665 mm
 Accumulated Temperature : 1509 degree days
 Field Capacity Level : 136 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 22	HCL	25YR52 00	1	1		VCSAB
22- 32	HCL	25Y 52 00	0	1	C	MVCSAB
32- 45	C	25Y 62 00	0	0	M	MCSAB
45- 80	C	25Y 52 00	0	0	M	WCP

Wetness Grade : 3B Wetness Class : III
 Gleying : 022 cm
 SPL : 045 cm

Drought Grade : APW : 000mm MBW : 0 mm
 APP : 000mm MBP : 0 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : WHITEHALL QUARRY, LIDD Pit Number : 2P

Grid Reference: TR053 224 Average Annual Rainfall : 665 mm
 Accumulated Temperature : 1509 degree days
 Field Capacity Level : 136 days
 Land Use : Permanent Grass
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MZCL	10YR41 00	10	33		
30- 65	GH	10YR52 00	0	0		
65-120	GH	10YR62 00	0	0		

Wetness Grade : 2 Wetness Class : II
 Gleying : 000 cm
 SPL : No SPL

Drought Grade : 4 APW : 050mm MBW : -79 mm
 APP : 047mm MBP : -81 mm

FINAL ALC GRADE : 4
 MAIN LIMITATION : Droughtiness

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

(i) TEXTURE:-

Soil texture classes are denoted by the following abbreviations (all Upper case*):

S	Sand
LS	Loamy Sand
SL	Sandy Loam
SZL	Sand 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, thus:

F	fine (more than $\frac{2}{3}$ of 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:

P	Peat
SP	Sandy Peat
LP	Loamy Peat
PL	Peaty Loam
PS	Peaty Sand
MZ	Marine Light Silts

* There are two exceptions to the Upper Case rule:-

- The prefix "Calc" is used to identify naturally calcareous soils containing more than 1% Calcium Carbonate
- For organic mineral soils, the texture of the mineral fraction is prefixed by "Org".

(ii) STRUCTURE:-

Nature and size of structural units are denoted by the following abbreviations:

SAB Subangular Blocky
AB Angular Blocky
P Prismatic

(single grain, granular and platy are not abbreviated)

F Fine
M Medium
C Coarse
VC Very Coarse

eg Weak MSAB = Weakly developed medium subangular blocky

(iii) OTHER

f = few = less than 2% of the matrix or surface described
c = common = 2-20% of the matrix or surface described
m = many = 20-40% of the matrix or surface described
vm = very many = +40% of the matrix or surface described

f = faint = indistinct mottles, evident only on close examination
d = distinct = although not striking, the mottles are readily seen
p = prominent = the mottles are conspicuous, and the mottling is one of the outstanding features of the horizon

gm = grey mottling
om = ochreous mottling

eg **cdom** = common distinct ochreous mottles

rrc = rusty root channels
ppf = pale ped faces
mn = manganese

st = stones 6 cm
sst = stones 2-6 cm
vsst = stones 2 cm

WC = Wetness Class (use Roman numerals, eg WC IV)

SPL = Slowly Permeable Layer

WT = Water Table

I = Impenetrable if used in Depth Column

IMP = Impenetrable if used in soil profile notes

(IMP 2 x 40 cm = 2 additional borings, both impenetrable at 40 cm)

ASP = Auger Sample Point

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: 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.