

Oxfordshire Minerals Local Plan
Land at West End,
near Stanton Harcourt
Agricultural Land Classification

MAFF : EL 33/00017
ADAS : 3305/006/93

ADAS
Guildford Statutory Group
Resource Planning Team
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AGRICULTURAL LAND CLASSIFICATION

OXFORDSHIRE MINERALS PLAN LAND AT WEST END NR STANTON HARCOURT

1. SUMMARY

In January 1993, an Agricultural Land Classification (ALC) Survey was carried out on approximately 7 ha of land adjacent to the hamlet of West End 5 miles west of Oxford. ADAS was commissioned by MAFF to determine the quality of land affected by proposals to include this site in the Oxfordshire Minerals Plan.

The survey was undertaken at one boring per hectare detail. A total of 8 borings and 1 soil pit 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 to its agricultural use.

All of the site has been classified as Sub-grade 3B, with soil wetness as the main limitation. The soils are variable but generally consist of a non-calcareous clayey topsoil over clay subsoils with shallow gleying occasionally with slowly permeable layers or overlying stony calcareous horizons extending to depth (120 cm).

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 the 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. In addition, no local climatic factor is significant. The site is climatically Grade 1.

Table 2 : Climatic Interpolation

Grid Reference	SP 421040
Altitude (m)	63
Average Annual Rainfall (mm)	647
Accumulated Temperature (°days)	1445
Field Capacity (days)	138
Moisture Deficit, Wheat (mm)	112
Moisture Deficit, Potatoes (mm)	105

3. AGRICULTURAL LAND CLASSIFICATION

3.1 Subgrade 3B

The soils on the site are quite variable, but are downgraded due to the generally poor workability of the land. Topsoil textures are typically non-calcareous clay and there is consistent evidence of wetness in the form of gleying within the top 40 cm. The attached pit description reveals that the clay subsoils are not in fact slowly permeable although they do slightly impede drainage and the profiles therefore qualify for Wetness Class II (ie. they are wet within 70 cm for 31-90 days in most years). Given the heavy nature of the topsoil textures and the evidence of wetness in the profile, there is a significant restriction on the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

Lower subsoils are often stony and impenetrable, affecting the water holding capacity of the profile, but soil droughtiness is not a major physical limitation.

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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.

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

SOIL PIT DESCRIPTION

Site Name : OMP WEST END STANTON

Pit Number : 1P

Grid Reference: SP42150405

Average Annual Rainfall : 647 mm
 Accumulated Temperature : 1445 degree days
 Field Capacity Level : 138 days
 Land Use : Fallow
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	C	10YR53 00	0	1		MCSAB
30- 67	C	10YR51 00	0	0	M	MCSAB
67- 75	SCL	10YR53 00	0	20		
75-120	LCS	10YR53 00	0	60		

Wetness Grade : 3B

Wetness Class : II
 Gleying : 030 cm
 SPL : No SPL

Drought Grade : 2

APW : 118mm MBW : 6 mm
 APP : 114mm MBP : 9 mm

FINAL ALC GRADE : 3B

MAIN LIMITATION : Wetness