

MANOR FARM MINERALS  
PENNINGTON HAMPSHIRE

STATEMENT OF SITE  
PHYSICAL CHARACTERISTICS

MANOR FARM MINERALS APPLICATION PENNINGTON, HAMPSHIRE

Statement of Site Physical Characteristics

1 Introduction In May 1992 a detailed Agricultural Land Classification (ALC) was carried out on 5.9 hectares of land to the south of Pennington in Hampshire. ADAS was commissioned by MAFF to determine the land quality affected by the application for planning permission to extract sand and gravel, and to draw-up a detailed statement of site physical characteristics to assist re-instatement of the site to agriculture.

The work was conducted by members of the Resource Planning Team within the Guildford Statutory Centre. A total of 4 borings and 1 soil pit was described.

The whole site has been classified as Grade 2 and this together with details of the topsoil, upper subsoil and lower subsoil materials and volumes is given on the attached maps. The maps have been drawn at a scale of 1:5,000, the information is accurate at this level but any enlargement would be misleading.

A total topsoil resource of 17,600 m<sup>3</sup> is available, together with 34,900 m<sup>3</sup> of subsoil.

2 Agricultural Land Classification

2.1 The area has been classified 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 characteristics impose long term limitations on its use for agriculture.

2.2 Climate A detailed assessment of the prevailing climate has been made by interpolation from a 5 km gridpoint dataset. The details are given in the table below.

Climate is considered first when grading land as it can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable soil or site conditions. The main parameters used in the assessment of a climatic limitation are average annual rainfall a measure of overall wetness, and accumulated temperature a measure of the relative warmth of a locality.

The interpolation shows that there is no overall climatic limitation. In addition, no local climatic factors are significant. The site is climatically grade 1.

Table 2 Climatic Interpolation

Grid Reference	SZ318932
Altitude (m)	3
Accumulated temperature (days)	1564
Average annual rainfall (mm)	784
Field capacity (days)	163
Moisture deficit, Weight (mm)	117
Moisture deficit, Potatoes (mm)	113

2 3 Grade 2 Pit 1 is typical of these soils which experience a droughtiness limitation. The profiles typically exhibit light topsoil textures (MSL, MSZL) overlying light upper and lower subsoils with moderate structural conditions. There is evidence of gleying within 40 cm but there are no slowly permeable horizons in the profile despite some borings having occasional heavier subsoil horizons. The soils fall into Wetness Class II (ie they are wet within 70 cm for more than 90 days but not wet within 40 cm depth for more than 30 days in most years). The north western area contains soils which exhibit clay subsoils with clear evidence of wetness but these horizons are not slowly permeable.

3 Soil Resources

3 1 Topsoil 'Topsoil is defined as the organic rich darker surface horizons Textures are either Medium Sandy Loam or Medium Sandy Silt Loam and these can be treated together from the point of view of soil handling Structures in the topsoils are typically moderately developed medium subangular blocky with no current evidence of compaction

Average topsoil depth varies little over the site and is typically 32 cm deep A total topsoil resource of 17,600 m<sup>3</sup> is available

3 2 Subsoil 'Subsoil is defined as the the non-organic rich lower horizons

The soils in the central southern and eastern areas exhibit an upper subsoil of MSZL and a lower subsoil of CSL (with some inclusions of HCL) and all of the subsoil can be treated as one working resource The subsoil resource available in this area, map unit A, extends to 1 metre and represents 30,600 m<sup>3</sup>

The soils in map unit B exhibit clay horizons to approximately 75 cm and this produces a subsoil resource of 4,300 m<sup>3</sup>

These subsoil types should be handled and stored separately A total subsoil resource exists of 34,900 m<sup>3</sup>

## 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 include 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

### 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 PIT DESCRIPTION

Site Name PENNINGTON MINERALS Pit Number 1P

Grid Reference SZ317 933  
 Average Annual Rainfall 784 mm  
 Accumulated Temperature 1564 degree days  
 Field Capacity Level 163 days  
 Land Use Permanent Grass  
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 30	MSL	10YR41 00	0	2		MMSAB
30- 75	MSZL	10YR51 00	0	2	C	MMSAB
75- 85	HCL	25Y 63 00	0	30	C	
85-100	CSL	25Y 63 00	0	50	C	

Wetness Grade 1  
 Wetness Class II  
 Gleying 030 cm  
 SPL No SPL

Drought Grade 2  
 APW 126mm MBW 9 mm  
 APP 117mm MBP 4 mm

FINAL ALC GRADE 2  
 MAIN LIMITATION Droughtiness

## SOIL PROFILE DESCRIPTIONS      EXPLANATORY NOTE

### (1) 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"



(11) 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

(111) 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