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**BERKSHIRE MINERALS PLAN
(OMISSION SITES)**

**SITE 0S 1 - CHAMBERHOUSE FARM, THATCHAM
ALC MAP AND REPORT
JULY 1993**

AGRICULTURAL LAND CLASSIFICATION

BERKSHIRE MINERALS PLAN - (OMISSION SITES)

SITE OS 1 - CHAMBERHOUSE FARM, THATCHAM

1.0 INTRODUCTION

- 1.1 An Agricultural Land Classification (ALC) survey was carried out over 17.2 ha of land to the north of Chamberhouse Farm, Thatcham on 24 July 1993. The site lies immediately to the north of a larger area that was surveyed by ADAS in March 1991 and April 1993.
- 1.2 The site lies to the south of the main east west railway line and straddles the Kennet and Avon canal. Sixteen observations were made over the site using a dutch auger and were described in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land, (MAFF, 1988).
- 1.3 At the time of survey the majority of the land to the north of the canal was in set aside and was covered in volunteer cereal plants, thistles and other agricultural weeds. At the extreme eastern end of the site was a small pony paddock under permanent grass. The land to the south of the canal was under rough grass and used for cattle grazing.

2.0 PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

- 2.1 Climatic information for the area has been interpolated from the 5 km dataset produced by the Meteorological Office (Met. Office, 1989) and is set out in the table below:

Grid Reference	SU 525 663
Altitude (m, AOD)	69
Accumulated Temperature (deg)	1452
Average annual rainfall (mm)	704
Field capacity days	153
Moisture deficit, wheat (mm)	108
Moisture deficit, potatoes (mm)	101

- 2.2 Although the average annual rainfall is relatively low in a national context, there is no overall climatic limitation affecting the land quality of the site. However, climatic factors do affect interactive limitations between soil and climate, namely soil wetness and droughtiness.

Relief

- 2.3 The altitude of the site is approximately 69 m AOD and is very gently undulating on the northern side of the canal, with the land rising gently to the north and also falling slightly to the west. To the south of the canal the land is relatively level although at the western end there is an area of minor humps and hollows, which is covered by

nettles. This area may have undergone some disturbance in the past. Relief however does not constitute any limitation to the agricultural land quality across the site.

Geology and Soils

- 2.4 The British Geological Survey, Sheet 267 (1971) shows the majority of the area to comprise alluvium with a small area of River Valley Gravel in the centre of the site between the canal and railway line.
- 2.5 The Soil Survey of England and Wales, Sheet 6, Soils of South East England (1983) shows the site to comprise soils of the Frome Association. In the Kennet Valley fine textured deposits rest on flint and/or chalky gravel,; calcareous marl and peat bands occur locally and the soils are described as "calcareous alluvial gley soils. They are grey and mottled silty clay loam soils affected by high groundwater, with calcareous flints and/or chalky gravels at relatively shallow depths", (SSEW, 1984).
- 2.6 The detailed survey revealed three distinct soil types. The eastern end of the site together with a small area toward the western end on the northern side of the canal comprised shallow soils over impenetrable gravel. A typical profile has a medium clay loam or occasionally sandy clay loam topsoil which is slightly stony (c. 5-10% flints) over a very stony yellowish brown sandy clay loam which was generally impenetrable to the auger within 40 cm depth. These soils are assessed as wetness class I.
- 2.7 At the western end and also in the middle of the site slightly deeper alluvial soils over gravel were mapped. These soils have a calcareous, medium silty clay loam or clay loam topsoil over a heavy silty clay loam upper subsoil with common distinct ochreous mottles. Below 40-50 cm depth the soil becomes sandier and stonier before impenetrable gravel is encountered between 50-70 cm depth. These soils have been assessed as wetness class II/III.
- 2.8 At the extreme western end of the site to the south of the canal a small slightly hummocky area comprises very calcareous, organic soils, which in the hollows are extremely wet. These soils have an organic silt loam or peaty loam topsoil over a clay loam or silt loam, which contains a high proportion of algal marl. These soils have a variable wetness pattern dependent on the topography and have been assessed as ranging from wetness class III to V.

3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 The ALC grading of this site is determined by the interactions between soil and climatic factors principally droughtiness, although at the extreme western end of the site wetness is the major limitation. The following table gives a breakdown of the grades in terms of area and extent for the site and their distribution is shown on the accompanying map.

<u>Grade</u>	<u>Area (ha)</u>	<u>% of agricultural land</u>
3a	<u>7.5</u>	43.6
3b	<u>9.7</u>	<u>56.4</u>
Total area of site	<u>17.2</u>	<u>100.0</u>

Grade 3a

- 3.2 The alluvial soils described in paragraph 2.7 above have been mapped as Grade 3a. The principal limitation associated with these soils is droughtiness caused by the moderately shallow depth to the underlying gravel. Moisture balance calculations reveal a moderate droughtiness restriction. An additional limitation is caused by a minor wetness restriction especially on the areas with heavy clay loam topsoil textures. The soils have been assessed as wetness class II or III and as such areas with heavier textured topsoils will have a workability restriction.

Grade 3b

- 3.3 The shallow gravelly soils described in paragraph 2.6 have been assigned to this grade as a result of a moderately severe droughtiness restriction. Over the majority of this area impenetrable gravels were encountered within 40 cm depth thus restricting the plant available water. Moisture balance calculations showed that these soils are very droughty for both wheat and potatoes.
- 3.4 The small slightly hummocky area at the western end of the site described in paragraphs 2.3 and 2.8 has also been included within this grade. This area comprises some very wet soils especially in the hollows which at the time of survey were waterlogged to within 35 cm depth together with some drier soils on the hummocks. The presence of a mass of nettles lends evidence to the fact that this area may have undergone some disturbance in the past.

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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 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.

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, 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 III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years.

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years.

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

SITE OS1

Auger borings

- 1 0-30 10YR2/3 sl org mZCL calc 2-3% small & med flints
30-40 2.5Y5/3 mCL common dist och mottles calc 5-10%
flints
40-50 2.5Y6/3 mSL v gravelly chalks & flints (30-40%)
calc
Impenetrable at 50 cm
Wetness Class II
- 2 0-30 10YR3/3 gritty ZL 2-3% flints v calc
30-40 10YR4/3 hZCL com dist och mottles & grey streaks
calc
40-55 2.5Y6/2 mZCL/fSCL com dist och mottles calc
55-70 10YR6/3 fSCL com faint och mottles calc sl stony
Impenetrable gravel @ 70 cm
Wetness Class II/III
- 3 0-30 10YR2/3 sl org hCL 7-10% small & med flints
30-40 2.5Y6/3 SCL/mSL com dist och mottles c. 10% flints
40-70 2.5Y7/3 mSL com faint och mottles 5% gravels calc
Impenetrable @ 70 cm
Wetness Class II
- 4 0-30 10YR3/3 mCL 10-15% small med & occasional large
flints calc
30-40 10YR6/4 gravelly SCL calc v stony
Impenetrable gravel @ 40 cm
Wetness Class I
- 5 0-27 10YR2/3 hCL 5-7% small & med flints sl calc
27-35 10YR5/4 v gravelly SCL 40% flints
Impenetrable gravel @ 35 cm
Wetness Class I
- 6 0-30 10YR3/2 hZCL sl calc 1-2% flints
30-40 10YR4/2 hCL com faint och mottles non calc
40-50 2.5Y5/2 SCL/SC com dist och mottles v sl calc 5%
flints
Impenetrable gravel @ 50 cm
Wetness Class II/III
- 7 0-30 7.5YR4/3 SCL 2-3% small & med flints non calc
30-70 10YR5/4 SCL no mottles 5% flints non calc
Impenetrable gravel @ 70 cm
Wetness Class I

- 8 0-30 10YR3.5/3 SCL/mCL(s) v sl calc 8-10% small & med.
flints
30-50 10YR5/5 mCL 10% flints
Impenetrable gravel @ 50 cm
Wetness Class I
- 9 0-30 10YR4/4 mCL(s) 10-15% flints v sl calc
30+ 10YR5/4 v gravelly SCL 40% gravel?
Impenetrable gravel @ 30 cm
Wetness Class I
- 10 0-30 10YR4/3 SCL v stony 20-25% flints calc
30+ 10YR5/4 v gravelly SCL c. 40% gravel?
Impenetrable @ 30 cm
Wetness Class I
- 11 Track
- 12 0-30 10YR4/2 sl org mCL 15-20% small & med flints
30+ very stony impenetrable gravel
Wetness Class I
- 13 0-30 10YR4/3 mCL 15-20% small & med flints
30+ 10YR5/4 v stony SCL
Impenetrable @ 30 cm
Wetness Class I
- 14 0-27 10YR4/3 mZCL v calc 3-5% flints
27-37 2.5Y5/4 hCL com dist och mottles 8-10% flints calc
37+ as above but v gravelly
Impenetrable @ 40 cm
Wetness Class II/III
- 15 0-20 7.5YR2/2 Pty L com dist och mottles
20-35 2.5Y5/2 ZL com dist och mottles calc v wet and
plastic
35-120 10YR4/3 ZL? with much algal marl incorporated
saturated, v soft.
Wetness Class V
- 16 0-20 10YR2/2 sl org mZCL calc 5% flints band of flint at
base of horizon
20-35 10YR3/2 sl org hZCL com faint dark brown mottles sl
stony as above calc
35-50 2.5Y5/2 hCL com dist och mottles c.10% flints sl
calc
Impenetrable gravel @ 50 cm
Wetness Class III
- 17 0-30 7.5YR2/2 org ZL v calc
30-120 10YR6/4 CL & algal marl com dist och mottles v
moist (wet below 60 cm)
Wetness Class III?
Area disturbed? mounds & hollows.