# STATEMENT OF PHYSICAL CHARACTERISTICS

BLEAK HILL 2, SOMERLEY
HAMPSHIRE

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## 1. BACKGROUND

1.1 During July 1992, approximately 15 ha of land at Bleak Hill, Hampshire was surveyed by ADAS in order to determine the agricultural land classification, (ALC) and physical characteristics of the site. The land is the subject of proposals for mineral extraction.

1.2 The site was surveyed using 120 cm Dutch soil augers with samples being taken at 100 m intervals on a grid basis. Additional information was obtained from a soil inspection pit.

### Land Use

1.3 At the time of survey, the site was in arable cropping, specifically winter wheat and peas which were being harvested.

## 2. PHYSICAL FACTORS AFFECTING LAND QUALITY

### Relief

2.1 The site lies at an altitude of 48 - 50 m A.O.D and is generally flat. Gradient nor altitude represent a significant limitation in terms of agricultural land quality.

### Climate

2.2 Estimates of climatic variables were obtained by interpolation from a 5 km grid database (Met. Office, 1989), for a representative location in the survey area.

### Climatic Interpolation

| | |
|---|---|
| Grid reference | SU 133 112 |
| Altitude (m.A.O.D) | 50 |
| Accumulated Temperature, (°days, Jan-June) | 1361 |
| Average Annual Rainfall (mm) | 877 |
| Field capacity Days | 181 |
| Moisture deficit, wheat (mm) | 105 |
| Moisture deficit, potatoes (mm) | 98 |

2.3 There is no overall climatic limitation at this locality, although it should be noted that both average annual rainfall and field capacity days are relatively high, in a regional context. Climatic and soil factors do, however, interact to affect soil wetness and droughtiness limitations.

### Geology and Soils

2.4 British Geological Survey, Sheet 314, Ringwood (1976) shows the entire site to comprise Recent and Pleistocene Plateau Gravels.

2.5 Soil Survey of England and Wales, Sheet 6, Soils of South-East England, (1983) maps the area of the site as the Sonning 1 association. These typical paleo-argillic brown earths are described as, 'stony, coarse textured and well drained resting over gravel at moderate depth', (SSEW, 1984).

2.6 Detailed field examination of soils broadly confirms the presence of one main soil type similar to that described by the Soil Survey of England and Wales.

## 3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the site is primarily determined by the interaction between climate and soil factors which results in a soil droughtiness limitation. Less significantly, topsoil stone contents act to limit the agricultural land quality across some parts of the site. ALC grades 3a and 3b have been mapped and a breakdown of these grades in terms of area and extent is given below.

| | Area (ha) | % total agricultural land |
|---|---|---|
| Grade 3a | 3.67 | 24 |
| 3b | 11.45 | 76 |
| Total area of site | 15.12 | |

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

3.3 Grade 3a

Good quality agricultural land represents 24% of the area surveyed. Profiles typically comprise non-calcareous, very slightly stony (ie, 1-4% flints > 2 cm) medium sandy silt loam topsoils. These overlie subsoils of similar texture or medium or sandy clay loam, which are very slightly to slightly stony, containing 3-10% total flints. Profiles generally become impenetrable (to soil auger) at depths between 40 and 52 cm. Lower subsoils below this depth contain about 30 - 35% flints passing to gravel from 60 - 70 cm.
This land is limited by moderate soil droughtiness arising from moderate soil depth over sand and gravel deposits. This results in reduced reserves of available water for plant growth.

3.4 Grade 3b

Moderate quality land occurs across the majority of the site. Profiles are similar to those described in section 3.3 above but are generally slightly more stony and/or shallower soil depth over gravel. Consequently, land suffers from a severe droughtiness limitation and water reserves available for crop growth are much reduced.
Localised areas of the site are limited by topsoil stone contents in the range 15%-17% v/v flints > 2 cm. Such stone contents will have the affect of increasing the wear on farm machinery, thereby increasing production costs.

## 4. SOIL RESOURCES

Soil Units : Consideration for Restoration

4.1 An overlay accompanying the ALC map illustrates the pattern of subsoil resources on the site. It should be emphasised that this is not a soil stripping map, but merely an illustration of the soil resources available for restoration on the site.

4.2 One topsoil unit was identified across the site. This comprises an average 29 cm of dark greyish brown (10YR 4/2) medium sandy silt loam or, occasionally, medium clay loam. These topsoils are typically non-calcareous and very slightly to moderately stony. They contain between 1 and 17% flints > 2 cm and between 2 and 27% flints in total.

Two subsoil units were identified.

4.3 Unit 1

This unit comprises between 13 and 32 cm (with an average depth of 24 cm) of medium sandy silt loam or, less commonly, medium clay loam or medium silty clay loam over gravel at 45 - 60 cm depth. These brown or dark yellowish brown (10YR 4/3 or 10YR 4/4) subsoils are slightly to very stony containing between 5 and 45% v/v flints. Where stone contents exceed 35 - 45%, ie, between about 32 and 40 cm from the surface, profiles become impenetrable to soil auger.

Due to the stony nature of this subsoil unit, it was not possible to assess soil structural conditions.

4.4 Unit 2

This unit is similar to unit 1, although the subsoil resource generally extends to a greater depth. The unit comprises between 35 and 67 cm of medium sandy silt loam, medium clay loam or, occasionally, sandy clay loam and heavy clay loam textures over gravel. These yellowish brown or dark yellowish brown (10YR 5/4 or 10YR 4/4) subsoils are slightly to very stony containing between 5 and 55% v/v flints. Where stone contents exceed 30%, profiles typically become impenetrable to soil auger. Gravel deposits occur between about 60 and 95 cm depth.

The upper subsoils, which tend to be only slightly stony, have good structures, being composed of weakly developed, medium to coarse angular blocky peds of friable consistence. The soils have > 0.5% biopores > 2 mm, thereby being porous. It was not possible to assess the structural condition of the more stony lower subsoils.

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SOURCES OF REFERENCE


- BRITISH GEOLOGICAL SURVEY (1976), Sheet 314, Ringwood.

- 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) Bulletin 15, Soils and their use in South-East England.

# 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.