

# LAND CLASSIFICATION REPORT ON LAND AT MORVILLE HEATH, NEAR BRIDGNORTH

Prepared by ADAS Shrewsbury for Morville Aggregates

## Introduction

Site investigation should include soil pits as well as auger borings to determine subsoil details which are not evident in an auger sample.

Rainfall and climate details for revised ALC are obtained from grid point datasets of climatic variables at 5 km intervals, held in LandIS and the Meteorological Office Publication (January 1989) "Climatological Data for Agricultural Land Classification". They are not taken from the MAFF Technical Bulletin "The Agricultural Climate of England and Wales".

It should be made clear that the MAFF book Agricultural Land Classification of England and Wales, referred to is the October 1988 publication.

### 1.3 Climate and Rainfall

Climate details required for revised ALC are site values of average annual rainfall; accumulated temperature above 0°C for the period January to June; field capacity days, and moisture deficits for winter wheat and potatoes, all obtained from the sources mentioned above.

### 1.4 Geology

Solid geology comprises purple and green marls and micaceous sandstones of the Downton Series which is Silurian/Old Red Sandstone not Triassic. Drift deposits are sand and gravel and boulder clay over most but not all of the site.

Soils are mapped as Newport 1 Association. Profile description should refer to actual profiles on site not to a type profile.

## 2.1 General

Water storage capacity of soil is influenced by texture, structure, organic matter content and stone content. Details of all of these are necessary to determine droughtiness.

## 2.2 Topsoil

Presumably topsoil texture was determined by hand texturing, where texture is borderline and/or important in final grading detailed analysis is advisable. Laboratory analysis shows that soils on this site range from loamy sand, through sandy loam to sand loam/sandy silt loam.

No details of topsoil stone content.

## 2.3 Subsoil

Textures include sand, loamy sand and sandy loam in the lower valley areas.

No details of stone content which cannot be determined accurately from an auger.

No details of subsoil structure.

## 2.4 Soil Drainage

For ALC purposes soil wetness assessment takes account of the climatic regime, the soil water regime and topsoil texture. These soils are wetness class 1.

Surface capping and erosion is, for ALC purposes, usually considered as a secondary factor accompanying other more critical limitations such as slope or droughtiness.

### 3.1 Grading

Full grade descriptions should be used.

### 3.2 Conclusions

Droughtiness is the limiting factor on most of this site although profiles of Grade 1 quality can be found. How were moisture balances calculated without moisture deficits, subsoil structure and stone content? Rough calculations on the profiles in Appendix 1A indicate Grade 3a, 2 and 1. What account if any was taken of irrigation?



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## STATEMENT OF PHYSICAL CHARACTERISTICS

### MORVILLE HEATH, BRIDGNORTH

The site, which is subject to a planning application for sand and gravel extraction, was surveyed by the Resource Planning Group in September 1990. It covers about 11 hectares and is situated some 2½ miles west of Bridgnorth at Morville Heath. The site is bounded by minor roads to the north west and south west, a belt of trees and agricultural land to the north east, and agricultural land to the south east. At the time of survey the land was in agricultural use with wheat and barley stubble, apart from the small area of the existing sand pit on the south eastern edge of the site.

#### Climate

Average annual rainfall at this site is about 718 mm and the accumulated temperature above 0°C for the period January to June (a measure of the relative warmth of the site) is 1381 day °C. The combination of rainfall and accumulated temperature indicates that there is no overall climatic limitation to the agricultural use of the land. The distribution of rainfall through the year shows higher rainfall in August, November and December with a drier period from February to April. Median duration of field capacity is 172 days, and growing season extends to about 240 days from the end of March to late November. The balance between summer rainfall and evapotranspiration gives moisture deficits of 94 mm for winter wheat and 81 mm for potatoes. The mean date of the last frost is early May.

#### Site

The altitude of the site ranges from 90 metres on the south east edge of the site to almost 107 metres at its highest point at the junction of Hangmans Lane and Telegraph Lane.



The land is undulating with the western part of the site in general the highest and with a small dry valley running from the Southern end of the centre of the 3 fields (0053) towards the 2 cottages from Hangmans Lane. Although there are numerous changes in direction and angle of slope across the site, nowhere is gradient steep enough to be a limiting factor in grading the land. Over most of the site land is gently to moderately sloping, and has a south easterly aspect.

### Geology and Soils

The solid geology in this area comprises purple and green marls and micaceous sandstones of the Downton Series. This crops out only at the eastern end of the site (the southern half of field 1854) and elsewhere is overlain by glacial drift deposits. Over most of the site these are sand and gravel, but there is a small area of boulder clay limited in extent to the small valley feature in the southern part of field 0053. The soils derived from these parent materials are light textured and sandy with slightly finer, heavier soils in the east associated with the boulder clay and the Downton Series and coarser loamy sands and sands in the western half of the site. Full details are given in the soil units report.

### Agricultural Land Classification

#### Grade 2

The area of Grade 2 land coincides approximately with the dry valley described above. The land is lower lying than the rest of the site and is level or gently sloping. Soils are deep, well drained and quite moisture retentive being sandy loams to depth or sandy loams over loamy sand. Slight drought risk is the limiting factor in this area, but some

profiles approached Grade 1 in quality (eg 5a and 12) even without taking irrigation into account. With irrigation it might be possible to map a small area of Grade 1 land.

### Grade 3a

The remaining agricultural area has been mapped as Grade 3a. Soils are lighter textured, sandy loams and loamy sands over sands and are more droughty than those mapped as Grade 2. Some profiles notably at auger boring 3 and 4 are close to Grade 2. Although irrigation equipment is present on the farm, the availability and use of irrigation on this site is not certain. With irrigation the area of Grade 2 land would increase to cover about 50% of the site.

### Non-agricultural

The small area of non-agricultural land comprises the existing sand pit and surrounding non-farmed land where topsoil has been removed and dumped in places.

### Area of land in each grade

Grade	Hectares	Per cent
Grade 2	3.6 ha	33%
Grade 3a	6.4 ha	59%
Non-ag	0.9 ha	8%
Total	10.9 ha	100%



## SOIL UNITS

The site was surveyed in September 1990 using a hand held Dutch auger. Auger borings were made on a 100 m x 100 m grid to a depth of 1 m unless prevented from doing so by stones or dry compact soil horizons. Two soil pits were dug to determine details such as subsoil structure and stone content. Samples of topsoil and subsoil were analysed for particle size distribution.

Although there are slight differences in the soil profiles across the site only one soil unit has been mapped for the whole area. The soils are deep and well drained with no signs of gleying throughout. Most profiles are stoneless or only slightly stony with very small, small and medium rounded hard stones. The highest stone contents were encountered at the top of field 0053 where stone content in the topsoil (2 mm to 6 cm) was 10% with small and medium stones (2 cm to 6 cm) accounting for about 4% of this. The soils are light textured but well structured with moderately well developed fine and medium granular structures, ranging from loamy sand over sand, to sandy loam over loamy sand over sand, to sandy loam to depths of about 80 cm. The slightly heavier textured soil occur in a band on the lower lying land from the existing pit to the northern corner of the site. The lightest soils are found on the higher parts of the site. The 2 soil pits are representative of the range of soil textures encountered.

### Pit 1

Level, top of ridge, barley stubble.

0-35 cm. 10 YR 4/3 loamy sand; moderately well developed fine to medium granular structure; no stones; many fine roots; earthworm channels.

35-120 cm 7.5 YR 5/6; moderately well developed fine granular structure; very friable; porous; few small and medium rounded hard stones; few fine roots.

Wetness class 1.

Moisture balance wheat - 12 mm

Moisture balance potatoes -16 mm.

Grade 3a

Pit 2

Level barley stubble.

0-40 cm 7.5 YR 4/4 sandy loam; moderately well developed fine to medium granular structure; many fine and medium roots; numerous large earthworm channels.

40-70 cm 7.5 YR 4/4 sandy loam; moderately well developed fine granular structure; friable; no stones; many earthworm channels.

70-90 cm 10 YR 6/4 sandy loam; moderately well developed fine granular structure; very friable; no stones.

90 cm+ mixed gravelly and stony drift with sand and clay with sand.

Wetness class 1.

Moisture balance wheat plus 43 cm.     )     )  
Moisture balance potatoes plus 38 mm.     )both calculated to  
   )90 cm

Grade 1.