

## PHYSICAL CHARACTERISTICS REPORT FOR LAND NORTH OF THE FIRS, SANDWAY

In connection with proposals to extract sand, detailed information on the physical characteristics of the land were determined including an agricultural land classification (ALC) survey. Auger borings were made over the site at 100 m intervals using a 1.1 m Dutch auger. A number of soil inspection pits were also made at locations representative of the main soil types occurring over the site.

### PHYSICAL CHARACTERISTICS

#### Location, altitude and relief

The site lies to the west of Sandway in Kent, with a boundary which is not well defined by physical features except to the south where the site is bounded by field boundaries. The land lies at an altitude of approximately 100 m OD, and to the north is relatively flat with gradients approximately 5 degrees. However, further to the south the land is more undulating with gradients in excess of 8 degrees in places which can create difficulties with mechanised harvesting and the use of precision drilling equipment. Therefore, gradient and microrelief to the south of the site impose a limitation in terms of agricultural quality.

#### Climate

The average annual rainfall for this area is about 732 mm (1941 -70) (Met. Office, 1989). The median accumulated temperature above zero degrees C (January to June) (a measure of the relative warmth of the locality) is estimated from interpolated data to be 1392 day degrees (Met. Office, 1989). The site is estimated to have 153 field capacity days (Met. Office, 1989) which provides a measure of the effect of climate on the soil water regime. Crop adjusted moisture deficits are 109 and 101 mm for wheat and potatoes respectively (Met. Office, 1989), and the area is unlikely to be affected by frost or exposure (Met. Office, 1979). Climate is therefore not a limitation in terms of agricultural land classification grading.

#### Geology and Soils

The published Geological Survey of England and Wales map (1:50000; sheet 288) shows the site to be underlain mainly by Folkestone Bed deposits. The published Soil Survey of England and Wales map (1:250000; sheet 6) shows the site to belong to the Fyfield 2 soil association (typical argillic brown earth) which is associated with the Folkestone Beds.

#### Land use

At the time of survey, the site was in arable use (oil seed rape).

## AGRICULTURAL LAND CLASSIFICATION

Appendix 1 gives a generalised description of the grades used in the revised ALC system (MAFF, 1988). A breakdown of the site area in terms of grade and percentage of the total agricultural land is given below.

	ha	%
Total area of site:	1.78	-
Total agricultural land:	1.78	-
Grade 2:	0.92	52
Grade 3b:	0.86	48

### Grade 2

Land to the north of the site is grade 2. Profiles are typically composed of sandy clay loam or sandy loam topsoils generally overlying similarly textured subsoils. Topsoils and lower subsoils are virtually stoneless in all profiles, while stone content in the upper subsoils varies between 1-8%. Profiles within this grade are however somewhat varied in composition, and it is considered that liability to slight drought stress due to light textures (ie. loamy sand and occasionally sand) in some subsoils limits this land in terms of agricultural land quality.

### Grade 3b

The remaining land to the south of the site is grade 3b. Profiles are typically composed of virtually stoneless loamy sand topsoils overlying similarly textured subsoils. Profiles within this grade fall into soil wetness class 1, but unlike soils in grade 2, the greater moisture balance deficits present due to lighter top- and subsoils results in this land falling into grade 3b. The main agricultural limitation to this land is therefore susceptibility to drought stress, with gradients above 7 degrees also imposing a limitation towards the south of the site.

## SOIL UNITS

Two soil units have been identified.

### Unit 1

Unit 1 lies to the north of the site. Profiles are typically 28-35 cm of virtually stoneless dark greyish brown (10YR4/2) sandy clay loam or sandy loam topsoils overlying similarly textured greyish brown (10YR5/2) to brown (10YR5/3) upper subsoils which generally become lighter in colour with depth (7.5YR5/8 - 7.5YR5/4). Occasionally, subsoils also become lighter in texture (ie. loamy sand and sand) with depth. Upper subsoils within this unit have 1-8% stone content, and are weakly developed with friable, coarse subangular blocky peds. Lower subsoils are virtually stoneless, and are weakly developed with very friable, medium subangular blocky peds.

### Unit 2

Unit 2 lies to the south of the site. Profiles are typically 35-38 cm of virtually stoneless very dark greyish brown (10YR3/2) to dark greyish brown (10YR4/2) loamy sand topsoils overlying similarly textured brown (7.5YR5/2), greyish brown (10YR5/2), or

brownish yellow (10YR6/8) subsoils. Subsoils within this unit are somewhat varied in their structural characteristics and appear to be either weakly or moderately well developed with firm or very friable medium to coarse subangular blocky peds.

REFERENCES

- MAFF 1966. Agricultural Land Classification. Tech. Bull. 11.  
MAFF 1976. Agricultural Land Classification of England and Wales. Tech. Bull. 11/1.  
Meteorological Office 1979. Meteorological survey of old OS sheet 172.  
Meteorological Office 1989. Climatological data for agricultural land classification.  
Geological Survey of England and Wales 1976. Sheet 288, Maidstone. 1:50000.  
Soil Survey of England and Wales 1983. Sheet 6, Soils of South East England. 1:250000.

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## APPENDIX 1

### DESCRIPTION OF THE GRADES AND SUBGRADES

#### **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.