PHYSICAL CHARACTERISTICS REPORT FOR CHAPEL FARM, LENHAM HEATH ROAD

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 east of Sandway in Kent, and is bounded to the south by Lenham Heath Road, to the west by a drainage ditch, to the east by field boundaries, while to the north the boundary is less well defined except where it follows a field boundary and drainage ditch towards the western half of the site. The land lies at an altitude of approximately 100 m OD, and is relatively flat with gradients and microrelief imposing no limitation in terms of agricultural quality.

Climate

The average annual rainfall for this area is about 735 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 110 and 103 mm for wheat and potatoes respectively (Met. Office, 1989), and the area is unlikely to be especially frost or exposure prone (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 majority of the site was in arable use with some pasture within the field boundary north west of Chapel Barton.

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:	20.85	-
Total agricultural land:	20.70	-
Non-agricultural:	0.15	-
Grade 1:	16.95	81.88
Grade 2:	1.61	7.78
Grade 3b:	2.14	10.34

Grade 1

The majority of the site is grade 1 with soil profiles typically composed of virtually stoneless sandy clay loam or sandy loam topsoils, generally overlying similarly textured subsoils. Towards the south of the site the subsoils become somewhat lighter (ie. loamy sand) with depth. Profiles within this grade fall into soil wetness class 1 and have good structural conditions within the subsoil. This, coupled with available water capacities and moisture deficits of the site, result in the land falling into grade 1 in terms of moisture balance deficits. Therefore, land within this grade will suffer no or very minor limitations to agricultural use.

Grade 2

A small area to the south west of the site is grade 2. Profiles are typically composed of virtually stoneless sandy clay loam or sandy loam topsoils overlying sandy loam, loamy sand or sand subsoils. Profiles within this grade fall into soil wetness class 1 but unlike soils in grade 1, the slight moisture balance deficits present due to the lighter subsoils at depth results in this land falling into grade 2. The main agricultural limitation to this land is therefore a slight susceptibility to drought stress.

Grade 3b

Apart from a small area of non-agricultural land, the remaining agricultural land lying to the north of the site is grade 3b. Profiles are typically composed of virtually stoneless medium sandy clay loam topsoils overlying heavy sandy clay loam and sandy clay subsoils. From approximately 35 cm downwards distinct prominent mottling is found to occur within the subsoil which, together with the presence of a slowly permeable layer normally at approximately 40 cm depth, results in these soils falling into wetness class 4. In turn, this wetness class, coupled with topsoil textures and number of field capacity days, results in the land falling into grade 3b. The main agricultural limitation to this land is therefore related to problems of soil wetness and relatively difficult workability.

SOIL UNITS

Only one soil unit has been identified. Profiles are typicaly 25-30 cm of virtually stoneless greyish brown/dark greyish brown (10YR5/2 - 10YR4/2) to brown/dark brown (10YR5/3 - 10YR4/3) sandy clay loam or sandy loam topsoils overlying virtually stoneless brown (10YR5/3), brownish yellow (10YR6/6), or yellow (10YR8/8) subsoils of similar textures. Occasionally, subsoils become lighter in texture (ie. loamy sand and sand) with depth. Apart from soils towards the north of the site (grade 3b land), subsoils within the site tend to be weakly to moderately well developed, with friable, medium subangular blocky peds. They therefore qualify as having a good structure and are permeable and well drained. Although texturally similar, subsoils towards the north of the site are more weakly developed, with coarse subangular to angular blocky peds and less than 0.5% biopores. Together with evidence of gleying within the upper horizons, these subsoils therefore qualify as slowly permeable.

REFERENCES

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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.