Cambs 53/90

PHYSICAL CHARACTERISTICS REPORT INCORPORATING AGRICULTURAL LAND CLASSIFICATION

LAND AT BARLING MARSH, ESSEX

1.0 INTRODUCTION

1.1 A survey was carried out in November 1990 over 52 ha of land at Barling Marsh, Essex in connection with an application by Cory Sand and Ballast Company to extract sand and gravel.

1.2 A total of 30 inspections were made by dutch auger to a depth of 1.1 metres. In addition two soils pits were dug to assess subsoil conditions.

2.0 AGRICULTURAL LAND CLASSIFICATION

2.1 The table below shows the breakdown of ALC grades in hectares and percentage terms for the survey area.

	AGRICULTURAL LAND CLASSIFICATION	
Grade	ha	%
2	2.43	5
3a	4.92	10
3b	43.21	85
Total	50.56	100

2.2 The main limitation to agricultural land quality over the majority of the site is wetness resulting from reduced subsoil permeability. A small area of light textured land in the extreme west of the site is limited by droughtiness.

GRADE 2

2.3 A small area of grade 2 land was identified by the western boundary of the site. Upper horizons are commonly non calcareous medium clay loams or medium silty clay loams (occasionally fine sandy loam) overlying heavy clay loam, clay or silty clay lower horizons. These soils are free or relatively free draining, easily worked and hold ample reserves of plant

available water. Minor wetness and droughtiness limitations exclude this land from grade 1.

GRADE 3a

2.4 Land graded 3a occurs in a strip running north-south towards the west of the site. These soils typically comprise non calcareous heavy clay loams or heavy silty clay loam upper horizons overlying clay or silty clay subsoils to depth. These soils are assessed as wetness Class II and are restricted from a higher grade by wetness and workability imperfections.

GRADE 3b

2.5 The majority of the land is classified as grade 3b. These soils have typically non calcareous silty clay or occasionally silty clay loam topsoils over similarly textured subsoils. These soils are assessed as wetness Class III, rarely wetness Class II and are consequently restricted from a higher grade by wetness and workability constraints. A small area of land graded 3b was identified at the extreme west of the site. These soils comprise fine sandy loam topsoils to 28 cm overlying medium sand to 110 cm+. This land is restricted to grade 3b due to droughtiness limitations.

2.6 A full description of site and soil physical characteristics is given in paragraphs 3.0 and 4.0.

3.0 SITE PHYSICAL CHARACTERISTICS

Climate

3.1 Climatic information of the site has been interpolated from the 5 km grid agroclimatic datasets produced by the Meteorological Office (Met Office, 1989). The average annual rainfall for the site is 529 mm. The number of days at which the site is likely to be at field capacity is 89.

3.2 The accumulated temperature for this area is approximately 1487 degrees Celsius and soil moisture deficits for wheat and potatoes are 130 and 129 respectively.

3.3 These climatic characteristics do not impose a climatic limitation on the ALC grading of the site.

Relief

The altitude of the site is approximately 2m AOD. The land is level or gently sloping. Consequently, gradient and altitude do not constitute limitations to ALC grade.

3.4 Geology

The published 1:50,000 solid and drift edition geology sheets 258 and 259 (Southend and Foulness) shows the majority of the site as Marine or Estuarine Alluvium. A small area immediately north of Barling Hall Farm is shown as First Terrace (river deposits) sand and gravel.

4.0 SOIL PHYSICAL CHARACTERISTICS

4.1 Soils

The published Soil Survey Record No 40 and the associated map TQ99, 1:25,000 shows the majority of the site as the Wallasea association with an area of deep Hook association in the south west corner of the site. A small area of the Canewdon soil association is shown towards the extreme west of the site. Detailed field survey observations confirmed the existence of two main soil types. An area towards the extreme west of the site was found to have a third soil type but this was too small to merit separate consideration (see paragraph 2.5). It should be noted that the Wallasea soils occurring on site are likely to be saline. Saline soils are usually more weakly structured and this should be borne in mind when considering movement and storage.

4.2 SOIL MAPPING UNIT 1

This soil mapping unit comprises non calcareous clay or silty clay textures throughout, and soil drainage is assessed predominately as wetness Class III.

Topsoil

Texture:	typically silty clay, clay or occasionally heavy silty clay loam
$CaCO_3$:	non calcareous
Colour:	dark brown typically 10YR 3/3, occasionally 10YR 3/2 or 2.5YR 4/2
Stone:	typically 1-2% small and medium hard stones
Depth:	in the range 25-30 cm, typically 25 cm
Structure:	cultivation zone - not applicable
Boundary:	smooth and clear
Roots:	common fine and very fine

Upper Subsoil

Texture:	silty clay or clay
$CaCO_3$:	non calcareous
Colour:	typically brown 7.5YR 5/2
Stone:	negligible
Depth:	in the range 35-70, typically 45 cm
Structure:	strongly developed very coarse sub angular blocky tending to coarse angular blocky
Consistence:	firm
Boundary:	smooth clear
Roots:	many fine roots

Lower subsoil

Texture:	typically silty clay
$CaCO_3$:	non calcareous
Colour:	typically greyish brown (2.5Y 5/2)
Stone:	negligible
Depth:	110 cm+
Structure:	moderately developed very coarse prismatic breaking into well developed coarse angular blocky
Consistence:	very firm
Roots:	common fine and very fine

Drainage status: wetness Class III

Note: may be saline and therefore require more careful handling

4.3 SOIL MAPPING UNIT 2

This soil mapping unit comprises soils with clay loam topsoils and upper subsoils, which become progressively heavier with depth. Profiles are typically non calcareous and are assessed mainly at wetness Class II.

Topsoil

Texture:	typically heavy clay loam or heavy silty clay loam, occasionally medium clay loam or medium silty clay loam
$CaCO_3$:	non calcareous
Colour:	dark brown (10YR 3/3 and 4/3)
Stone:	negligible
Depth:	in the range 25-28 cm, typically 25 cm
Structure:	cultivation zone - not applicable
Boundary:	smooth and clear
Roots:	common fine and very fine

Upper Subsoil

Texture:	typically heavy silty clay loam, heavy clay loam or medium silty clay loam
$CaCO_3$:	non calcareous
Colour:	yellowish brown or dark yellowish brown, typically 10 YR 5/4, 4/4. Occasionally olive brown 2.5Y 4/4
Stone:	negligible
Depth:	in the range 35-45 cm
Structure:	weakly developed very coarse and coarse subangular blocky
Consistence:	very firm
Boundary:	smooth and clear
Roots:	common fine and very fine roots

Lower subsoil

Texture:	typically heavy clay loam, heavy silty clay loam or silty clay
$CaCO_3$:	non calcareous
Colour:	typically yellowish brown (10YR 5/4, 5/3), grey (5Y 6/1) or greyish brown (2.5Y 5/2)
Stone:	negligible
Depth:	110 cm+
Structure:	moderately developed coarse angular blocky
Roots:	few fine and very fine

Drainage status: wetness Class II

Variation: In the extreme western corner of the site a small area of free draining sandy soils occur which are described in paragraph 2.5. This area is too small to merit separate handling.

November 1990

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