Cambs 47/90

PHYSICAL CHARACTERISTICS REPORT INCORPORATING AGRICULTURAL LAND CLASSIFICATION

BECK FARM, EAST BILNEY, NORFOLK

1.0 INTRODUCTION

1.1 A survey was carried out over 22.6 ha of land at Beck Farm, East Bilney, Norfolk in connection with a planning application by ECC Construction Materials Ltd to extract sand and gravel.

1.2 A total of 25 inspections were made using a dutch auger to a depth of 1.1 metres unless stopped by impenetrable stone. In addition two soil pits were dug to assess subsoil conditions.

2.0 AGRICULTURAL LAND CLASSIFICATION

2.1 The definition of the Agricultural Land Classification grades are included in Appendix 1.

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

Agricultural Land Classification

Grade	ha	%
3b	19.9	88
4	2.7	12
Total	22.6	100

2.3 Soils typically comprise medium sandy loam or occasionally loamy medium sand topsoils over similarly textured upper subsoils. Lower subsoil was typically loamy medium sand over medium sand at 40/70 cm. The main limitation to agricultural land quality for this site

is droughtiness which derives from a combination of soil texture and stoniness.

2.4 GRADE 3b

The majority of the site has been classified as 3b. These soils typically comprise medium sandy loam and loamy medium sand upper horizons over medium sand at depth.

Stone content varies considerably, with topsoil stone in the range 3-25%, typically 10-15% and subsoil stone in the range 5-25%, typically 15-20%.

The main limitations to agricultural land quality for this land are droughtiness and occasionally topsoil stone content, (larger than 2 cm).

2.5 GRADE 4

An area with a significantly higher stone content than the soils described in paragraph 2.4, classified as grade 4, was identified towards the north east corner of the site. These soils typically comprise medium sandy loam topsoils over loamy medium sand (with medium sand lenses) subsoils. These light textures, in combination with the high stone content results in those soils being excluded from a higher grade due to droughtiness. Topsoil stone content is in the range 30-40% typically 38%. Subsoil stone content was found by riddling to be 70%.

2.6 A full description of site and soil physical characteristics is given below.

3.0 SITE PHYSICAL CHARACTERISTICS

Climate

3.1 Climatic information for the site has been interpolated from the 5 km grid datasets produced by the Meteorological Office (Met Office, 1989). The average annual rainfall for the site is 678 mm. The number of days at which the site is likely to be at field capacity is 141.

3.2 The accumulated temperature for this area is approximately 1373 degrees Celsius and soil moisture deficits for wheat and potatoes are 109 and 102 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 50 m AOD. The land falls gently (1-3°) from the south at 59 m AOD to the north at 40 m AOD. Gradient and altitude do not constitute limitations to ALC grade.

4.0 SOIL PHYSICAL CHARACTERISTICS

4.1 GEOLOGY

No detailed published map exists for this area. However, the published 1:233440 drift edition geology sheet 12 shows the site to comprise sands and gravels deposits overlying boulder clay.

4.2 SOILS

The published 1:250000 soil map maps the site as the Burlingham 1 and Beccles 1 soil series. During the course of this survey, a

detailed inspection of the soils indicated the presence of two main soil types which are more fully described below.

SOIL MAPPING UNIT 1

Topsoil

Texture	:	medium sandy loam or occasionally loamy medium sand.
$CaCO_3$	:	non calcareous
Colour	:	dark brown (10yr 4/3)
Stone	:	in the range 3-25%, typically 10-15% comprising mainly rounded and subrounded medium flints
Depth	:	in the range 28-32 cm, typically 30 cm
Structure	:	cultivation zone - not applicable
Boundary	:	smooth clear lower boundary
Roots	:	common fine and very fine roots

Upper Subsoils

Texture	:	loamy medium sand or occasionally medium sandy loam
$CaCO_3$	:	non calcareous
Colour	:	yellowish brown (10yr 5/6) or occasionally dark yellowish brown (10yr 4/4)
Stone	:	variable, in the range 5-25%, typically 15-20% rounded and subrounded medium flints
Depth	:	in the range 35-70 cm, typically 50 cm
Structure	:	moderately developed coarse and very coarse sub angular blocky
Consistence	:	friable
Boundary	:	smooth clear lower boundary
Roots	:	few fine and very fine roots

Lower Subsoil

Texture	:	typically medium sand but occasionally loamy medium sand. Rarely clay with sand lenses was found at

		depth
$CaCO_3$	:	non calcareous
Colour	:	typically yellowish brown (10yr 5/8), occasionally brown (7.5yr 5/4)
Stone	:	variable; in the range 5-25%, typically 15% rounded and subrounded medium flints
Depth	:	up to 110 cm+ frequently impenetrable to auger 45 cm+ due to stone content and dry field conditions
Structure	:	weakly developed coarse sub angular blocky tending to massive in medium sand and loamy medium sand textures
Consistence	:	very friable
Boundary	:	smooth clear lower boundary
Roots	:	few fine and very fine roots

SOIL MAPPING UNIT 2

Topsoil

Texture	:	medium sandy loam
$CaCO_3$	:	non calcareous
Colour	:	dark brown (10yr 4/3)
Stone	:	in the range 30-40%, typically approximately 38% mainly medium and large rounded and subrounded flints
Depth	:	typically 28-30 cm
Structure	:	cultivation zone - not applicable
Boundary	:	smooth clear lower boundary
Roots	:	common fine and very fine

Subsoil

Texture	:	loamy medium sand with medium sand lenses
$CaCO_3$	:	non calcareous
Colour	:	yellowish brown (10yr 5/6)
Stone	:	70% medium and large rounded and subrounded flints were found by riddling
Depth	:	impenetrable 95 m+
Structure	:	undeterminable - masked by stones
Roots	:	few fine and very fine

Supplementary infomration

Wetness class: all soils were found to be wetness Class I.

RESOURCE PLANNING GROUP
CAMBRIDGE

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REFERENCES

Geological Survey of England (1953), 1:233,440 scale. Drift Edition, sheet 12.

MAFF (1972 1:63,360 scale, Agricultural Land Classification Map sheet No 125.

MAFF (1988) Agricultural Land Classification of England and Wales.

Meteorological Office (1989) Climatological data for Agricultural Land Classification.

Appendix 1

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 most climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughtly 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.