Cambs 29/90

PHYSICAL CHARACTERISTICS REPORT INCORPORATING AGRICULTURAL LAND CLASSIFICATION

LAND NORTH OF BROOM, BEDFORDSHIRE

1.0 INTRODUCTION

1.1 A survey was carried out over 205.3 ha of land, north of Broom, Bedfordshire in connection with a planning application to extract gravel by Tarmac Roadstone.

1.2 A total of 207 inspections were made using a dutch auger to a depth of 1.2m unless stopped by impenetrable stones or gravel. In addition six soil pits were dug to assess subsoil conditions.

2.0 AGRICULTURAL LAND CLASSIFICATION

2.1 Definitions 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	%
2	27.0	13.0
3a	159.5	78.0
3b	13.4	6.5
Urban	0.9	0.5
Non Agricultural	4.5	2.0
TOTAL	205.3	100.0

2.3 Three main soil types were identified. The majority of the site comprises well drained soils which are typically sandy loams overlying sandy loams or medium sand. A narrow strip of heavier soils (Wetness Class II and III) runs in a north south direction towards the east of the site. These soils are commonly calcareous clay loam topsoils overlying calcareous clay loam or clay subsoils. Towards the western site boundary soils are typically non calcareous sandy loam topsoils

over clay loam, sandy clay loam or clay subsoils and were assessed as predominately Wetness Class I and II. The main limitations to agricultural land quality for this site is droughtiness on the lighter soil variants and/or wetness on the heavier soil variants.

2.4 Grade 2

2.4.1 Grade 2 land occurs in two main situations; on the lighter soils where profiles are relatively stone free or on the heavier soils where profiles are free and relatively free draining (Wetness Class I or II).

2.5 Grade 3a

2.5.1 The majority of the site is classified as 3a. This occurs on the lighter soils where a combination of texture and stone content leads to droughtiness limitations. Grade 3a land also occurs on the heavier textured calcareous soils where profiles have a slowly permeable layer which leads to wetness/workability limitations.

2.6 Grade 3b

2.6.1 Land graded 3b occurs on the lighter textured soils. These soils tend to overlie medium sand at depth or have a high profile stone content together with a light texture.

2.7 A full description of soil physical characteristics is given below.

3.0 SITE PHYSICAL CHARACTERISTICS

Climate

3.1 Climatic information for the site has been interpolated from the 5km grid datasets produced by the Meteorological Office (Met Office, 1989). The average annual rainfall for the site is 550mm which is low by national standards. The number of days at which the site is likely to be at field capacity is also low at 95.

3.2 The accumulated temperature for this area is approximately 1442 degrees celsius and soil moisture deficits for wheat and potatoes are 119 and

114mm respectively.

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

Relief and Altitude

The land is relatively level across the majority of the site. An area towards the north east of the site is undulating but slopes are invariably less than 3°. Altitude rises from 29m AOD in the north east to a maximum of 38m AOD in the west. Gradient and altitude do not constitute limitations to the ALC grade.

4.0 SOIL PHYSICAL CHARACTERISTICS

4.1 Geology

The published 1:50000 solid and drift edition geology sheet 204 (Biggleswade) shows the site as underlain predominately by glacial gravels. A narrow strip of alluvium runs north to south and towards the north of the site merges with grey/grey blue clays.

4.2 Soils

During the course of this survey, a detailed inspection of the soils indicated the presence of three main soil types which are more fully described below.

Soil Mapping Unit 1

Topsoil

Texture	:	medium sandy loam, occasionally sandy clay loam
Colour	:	dark brown (10YR 4/3)
$CaCO_3$	:	typically non calcareous
Stone	:	Variable within the the range 1-10% >2cm and 5-23% total stone. Typically 2-3% >2cm and 8-10% total comprising small and medium flints
Boundary	:	smooth and clear
Roots	:	common fine and very fine
Depth	:	30-38cm, typically 32cm

Upper Subsoil

Texture	:	medium sandy loam, sandy clay loam or occasionally loamy medium sand
Colour	:	yellowish brown (10YR 5/4, 5/6)
$CacO_3$	:	commonly non calcareous
Stone	:	variable in the range 5-25%, typically 10% small and medium flints
Structure	:	typically moderately developed coarse sub angular blocky
Consistence	:	friable or very friable
Porosity	:	0.5% biopores
Boundary	:	smooth and gradual
Roots	:	common fine and very fine
Depth	:	variable in the range 40-85cm, typically 55cm

Lower Subsoil

Texture	:	typically medium sand loam or sandy clay loam and occasionally loamy medium sand or medium sand
Colour	:	yellowish brown 107YR 5/6 or brownish 10YR 6/6
$CaCO_3$	:	typically non calcareous
Stone	:	variable in the range 10-50% small and medium flints
Structure	:	moderately developed very coarse sub angular blocky
Consistence	:	friable
Porosity	:	>0.5% biopores
Roots	:	few fine and very fine
Depth	:	120cm+

Soil Mapping Unit 2

Topsoil

Texture	:	typically heavy clay loam, occasionally medium clay loam or sandy clay loam
Colour	:	dark brown or brown (10YR 3/3, 4/3)
$CaC0_3$	:	calcareous
Stone	:	in the range 2-6% >2cm, 5-15% total, typically 2-3% >2cm and 8-10% total
Boundary	:	smooth and clear
Roots	:	common fine and very fine
Depth	:	30-35cm, typically 32cm

Upper Subsoil

Texture	:	typically clay or heavy clay loam, occasionally sandy clay loam or medium clay loam
Colour	:	brown or yellowish brown (10YR 5/3, 5/4)
$Cac0_3$	:	calcareous
Stone	:	in the range 5-15%, typically 8-10%
Boundary	:	smooth and clear
Structure	:	weakly developed coarse sub angular blocky
Consistence	:	firm
Boundary	:	0.3% biopores
Roots	:	common fine and very fine
Depth	:	typically 55cm

Lower Subsoil

Texture	:	clay or heavy clay loam, occasionally sand clay loam
Colour	:	brown (107YR 5/3)
$CaCO_3$	:	calcareous
Stone	:	typically 5-8%
Structure	:	moderately developed very coarse prisms
Consistence	:	firm
Porosity	:	0.2% biopores
Roots	:	few fine and very fine
Depth	:	120cm+

Soil Mapping Unit 3

Topsoil

Texture	:	medium sandy loam or occasionally medium clay loam
Colour	:	typically dark brown (10YR 4/3)
$CaCO_3$	:	non calcareous
Stone	:	typically 2-4% >2cm, and 5-10% total
Boundary	:	smooth and clear
Roots	:	common fine and very fine
Depth	:	30-38cm

Upper Subsoil

Texture	:	heavy clay loam, medium clay loam or sandy clay loam, occasionally clay
Colour	:	yellowish brown (10YR 5/4)
$CacO_3$	:	non calcareous
Stone	:	typically 8-10%
Structure	:	typically moderately developed very coarse sub angular blocky
Consistence	:	friable, occasionally firm
Porosity	:	0.5% biopores
Roots	:	common fine and very fine roots
Depth	:	50-70cm typically 65cm

Lower Subsoil

Texture	:	clay or sandy clay, occasionally sandy clay loam
Colour	:	typically brown (107YR 5/3)
$CaCO_3$	:	non calcareous
Stone	:	typically 15-20% small and medium flints and chalk stones
Structure	:	moderately developed coarse angular blocky
Consistence	:	firm
Porosity	:	0.3% biopores
Roots	:	few fine and very fine
Depth	:	120cm+

RPG

Cambridge

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References

Geological survey of England and Wales (1976) Drift edition geology 1:50,000 sheet 204 (Biggleswade).

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

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