Gambs 1/90

PHYSICAL CHARACTERISTICS REPORT INCORPORATING AGRICULTURAL LAND CLASSIFICATION

LAND AT LODGE FARM, CASTLE ACRE, NORFOLK

1.0 INTRODUCTION

1.1 A survey was carried out over 21.3 ha of land at Lodge Farm, Castle Acre, Norfolk in connection with a planning application to extract sand and gravel.

1.2 A total of 24 inspections were made using a dutch auger, to a depth of 1.2 m unless stopped by impenetrable gravel. In addition two soil pits were dug to assess the subsoil conditions. Stone contents in the topsoil were also assessed at a number of points over the site using a 2 cm riddle. The inspections were made on 22nd January 1990.

1.3 The area of survey takes in two fields and a small area of a further field. The largest field was awaiting cultivations following the harvesting of a carrot crop whilst the other complete field was under winter cereals. The small area at the south of the site was under stubble.

2.0 SITE PHYSICAL CHARACTERISTICS

Climate

2.1 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 of the site is 698 mm which is relatively low by national standards. The number of days at which the site is likely to be at field capacity is 148.

2.2 The accumulated temperature for this area is approximately 1369 degrees Celsius and moisture deficits for wheat and potatoes are 103 and 94 respectively.

2.3 There is therefore no overall climatic limitation to agricultural use on this land.

Relief

2.4 The site is located within an area of undulating topography and a dry valley runs through the centre of the site falling from about 58 m AOD in the northwest down to 40 m AOD in the south east. The valley sides rise to about 64 m AOD in the northeast and 68 m AOD on the southwest. Slopes on the site range from approximately 3° to 8° with the steepest slopes on the valley side at the northwest of the site.

2.5 The areas with slopes in excess of 7° will therefore be limited to Grade 3b at best.

3.0 AGRICULTURAL LAND CLASSIFICATION

3.1 The land has been classified as Grade 3a and 3b and a breakdown in terms of area is given below:

Grade	Area (Hectares)	%
3a	11.2	52.6
3b	10.1	47.4
Total	21.3	100.0

3.2 The soils on the site are predominantly sandy or coarse loamy and hence drought is the major limitation associated with this land. In addition some of the area is moderately stony with more than 15% stone content (>2 cm diam) in the topsoil.

Grade 3a

3.3 The area classified as Grade 3a generally corresponds with the more loamy soils on the site many of which overlie chalk drift at depth. Although these soils are only slightly droughty for wheat due to the more moisture retentive subsoil at depth, they are nevertheless moderately droughty for potatoes.

Grade 3b

3.4 The Grade 3b area covers the sandier and the more stony soils of the site. These soils occur on the steeper lower slopes of the valley sides and are limited principally by droughtiness, partly by gradient.

3.5 A full description of the soil physical characteristics is given below.

4.0 SOIL PHYSICAL CHARACTERISTICS

Geology

4.1 No detailed geology map exists for the area, but the 1:250,000 scale drift geology map (sheet 12) indicates the area to be underlain by chalk and red chalk. However areas of sand and gravel are shown locally to occur in the valley of the River Nar.

Soils

4.2 Two soils types were evident on the site, a sandy soil in the valley bottom and on the lower slopes and a coarse loamy soil developed on chalky drift on the upper slopes.

4.3 The sandy soils have a loamy sand topsoil overlying a loamy sand or sand subsoil. The stone content in these soils is variable with some areas being moderately stony with small medium and large flints whilst other profiles are only slightly stony.

4.4 The coarse loamy soils have a slightly stony sandy loam topsoil overlying a loamy sand upper subsoil. Below approximately 70-80 cm depth the chalky drift is encountered which has a sandy clay loam or sandy loam texture with common small chalk fragments. The soils are freely draining throughout.

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APPENDIX 1

SOIL MAPPING UNIT 1

Topsoil	Texture	:	loamy medium sand
	Colour	:	dark brown (7.5 yr 4/3)
	Stone	:	5-20% small, medium and occasionally large subangular flints.
	Depth	:	30-40 cm typically 35 cm
	Boundary	:	abrupt smooth
	Roots	:	few very fine
Subsoil	Texture	:	medium sand occasionally loamy medium sand
	Colour	:	strong brown (7.5 yr 4/6 + 5/6)
	Stone	:	variable ranging from slightly stony to very stony 5-30% small and medium subangular flints.
	Depth	:	120 cm + (auger occasionally stopped by gravel)
	Structure	:	massive
	Consistence	:	very friable
	Porosity	:	very porous
	Roots	:	few very fine

SOIL MAPPING UNIT 2

Topsoil	Texture	:	medium sandy loam
	Colour	:	dark brown (7.5 yr 4/3)
	Stone	:	3-10% small and medium subangular flints
	Depth	:	30-35 cm
	Boundary	:	abrupt smooth
	Roots	:	few very fine
Subsoil 1	Texture	:	loamy medium sand
	Colour	:	brown (7.5 yr 4/4 and 4/5)
	Stone	:	3-10% as above

	Depth	:	60-90 cm typically 70
	Structure	:	massive
	Consistence	:	very friable
	Porosity	:	very porous
	Roots	:	few very fine
	Boundary	:	sharp
Subsoil 2	Texture	:	sandy clay loam, sandy loam or occasionally sandy clay
	Colour	:	very pale brown (10 yr 7/4)
	Stone	:	10% small medium and large chalk fragments and 5-10% subangular flints
	Structure	:	massive
	Consistence	:	friable/slight firm
	Porosity	:	moderately porous
	Roots	:	none

NB. occasionally pockets of strong brown medium sand contained within subsoil 2.