

AGRICULTURAL LAND CLASSIFICATION INCORPORATING  
SITE & SOIL PHYSICAL CHARACTERISTICS

SOUTH HALL FARM, RAINHAM, ESSEX

1.0 BACKGROUND

1.1 Land on this 33.3 hectare site was inspected during April 1991 in connection with a proposed mineral extraction. A total of 33 soil inspections were made across the site on a structured 100 metre grid, and this data were supplemented by information from 3 representative soil profile pits.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Climate

2.1 Site specific climate data has been obtained by interpolating information contained in the 5 km grid agroclimatic dataset produced by the Meteorological Office. This shows average annual rainfall to be 558 mm (22.3 inches) which is low by national standards. Field Capacity Days at 101 are also low. Soil moisture deficits of 125 mm and 123 mm are recorded for wheat and potatoes respectively. However the land is capable of being irrigated and this helps offset an existing droughtiness imperfection.

Relief

2.2 The site lies between altitudes of approximately 7 m and 2 m AOD and has an overall southerly aspect. Neither altitude nor relief constitute limiting factors to agricultural land quality.

Geology

2.3 The geology of this area is mapped on the 1:50,000 scale drift edition geology map sheet number 257. This shows the majority of the sloping land to comprise floodplain gravels, with a smaller area of alluvium occurring on the lower lying land in the vicinity of the drains.

## Soils

- 2.4 Three main soil types are identified on site and their physical characteristics are more fully described in section 4.0 of this report.
- 2.5 Over the majority of the mid to upper slopes profiles are very slightly or occasionally slightly stony, comprise mainly sandy silt loam or occasionally silt loam textures, which may become slightly coarser below 50/60 cm depth. These soils are assessed mainly as wetness class I.
- 2.6 In the vicinity of the pylon (by the track) a smaller area of coarser soils occur. Profiles in this area are slightly to very slightly stony at the surface but become moderately and very stony with depth. Textures are typically sandy clay loam or clay loam to 60 cm overlying sandy clay loam or lighter loamy sand or sandy loam below this depth. Drainage status is assessed mainly as wetness class I.
- 2.7 On the low lying land in the vicinity of the drains soils comprise clayey textures to depth and are assessed as Wetness III and IV.

## 3.0 AGRICULTURAL LAND CLASSIFICATION

- 3.1 Land quality is assessed according to the Revised guidelines and criteria for grading the quality of agricultural land and take irrigation into account. The site is consequently predominantly graded 1, with smaller areas of 3a and 3b. A breakdown of ALC grades in hectares and percentage terms is provided below:

ALC	Ha	%
1	21.8	65.5
3a	4.6	13.8
3b	<u>6.9</u>	<u>20.7</u>
Total	33.3	100.0

### Grade 1

- 3.2 This occurs over the majority of the mid to upper slopes where soils are relatively stone free and comprise sandy silt loam or occasionally silt loam textures which become slightly coarser below 50/60 cm depth. Although some soils in the mid slope areas are limited by minor droughtiness imperfections these are offset by the presence of an irrigation facility and the land is graded 1.

### Grade 3a

- 3.3 This occurs in the vicinity of the pylon close to the northeastern boundary of the site. Soils comprise coarser sandy clay loam textures within this area, and profiles are moderately to very stony at depth (see paragraph 2.6). This land is limited by moderately severe droughtiness imperfections which are only partly offset by the presence of irrigation.

### Grade 3b

- 3.4 This is mapped in an area of lower lying ground where profiles typically comprise poorly drained clayey textures to depth. The land is limited by wetness and workability imperfections.

#### 4.0 SOIL PHYSICAL CHARACTERISTICS

##### 4.1 SOIL MAPPING UNIT 1

Topsoil	Texture:	typically sandy silt loam, occasionally silt loam or medium sandy loam.
	CaCO <sub>3</sub> :	non calcareous
	Colour:	dark brown (10YR 4/3, 3/3).
	Stone:	typically 2-3% >2 cm, 2-7% total stone.
	Depth:	in the range 25-32 cm, typically 28-30 cm.
	Structure:	cultivation zone - not applicable.
	Boundary:	smooth and clear lower boundary.
	Roots:	common fine and very fine roots.
Upper Subsoil	Texture:	typically sandy silt loam, occasionally silt loam.
	CaCO <sub>3</sub> :	non calcareous
	Colour:	yellowish brown (10YR 5/4, 5/5).
	Stone:	typically in the range 2-10%, commonly 5% total stone
	Depth:	commonly 50-60 cm.
	Structure:	moderately developed coarse sub angular blocky
	Consistence:	friable
	Porosity:	greater than 0.5%.
	Boundary:	smooth and clear.
	Roots:	few fine and very fine roots.
Lower Subsoil	Texture:	typically sandy clay loam, occasionally medium sandy loam or sandy silt loam.
	CaCO <sub>3</sub> :	non calcareous
	Colour:	yellowish brown (10YR 5/4, 5/5, 5/6).
	Stone:	variable in the range 2-30%, typically 15% total stone
	Depth:	120 cm+.
	Structure:	typically weakly developed medium sub angular blocky
	Consistence:	friable
	Porosity:	greater than 0.5% biopores.
	Roots:	few fine and very fine roots.

4.2 SOIL MAPPING UNIT 2

Topsoil	Texture:	medium clay loam or sandy clay loam.
	CaCO <sub>3</sub> :	non calcareous
	Colour:	dark brown (10YR 4/3, 3/3).
	Stone:	1-3% >2 cm, 2-8% total stone.
	Depth:	in the range 28-32 cm, typically 30 cm.
	Structure:	cultivation zone - not applicable.
	Boundary:	smooth and clear lower boundary.
	Roots:	common fine and very fine roots.
Upper Subsoil	Texture:	typically medium clay loam or sandy clay loam.
	CaCO <sub>3</sub> :	non calcareous
	Colour:	yellowish brown (10YR 5/4).
	Stone:	in the range 20-50% typically 40%.
	Depth:	commonly 60 cm.
	Structure:	moderately developed very coarse sub angular blocky.
	Consistence:	friable
	Porosity:	greater than 0.5% biopores.
	Boundary:	smooth and clear lower boundary.
	Roots:	few fine and very fine roots.
Lower Subsoil	Texture:	loamy medium sand, medium sandy loam or sandy clay loam.
	CaCO <sub>3</sub> :	non calcareous
	Colour:	yellowish brown (10YR 5/4, 5/6).
	Stone:	in the range 55-60%.
	Depth:	120 cm+.
	Structure:	weakly developed medium sub angular blocky.
	Consistence:	very friable.
	Porosity:	greater than 0.5%.
	Roots:	few fine and very fine roots.

4.3 SOIL MAPPING UNIT 3

Topsoil	Texture:	typically clay, rarely medium clay loam.
	CaCO <sub>3</sub> :	calcareous
	Colour:	dark brown (10YR 3/3).
	Stone:	2-3% >2 cm, 2-6% total stone.
	Depth:	28-30 cm.
	Structure:	cultivation zone - not applicable.
	Boundary:	smooth and clear.
	Roots:	common fine and very fine roots.
Upper	Texture:	clay
Subsoil	CaCO <sub>3</sub> :	calcareous
	Colour:	dark grey (10YR 4/1) or brown (10YR 5/3).
	Stone:	negligible
	Depth:	in the range 65-100 cm, typically
	Structure:	strongly developed coarse angular blocky.
	Consistence:	firm
	Boundary:	smooth and clear lower boundary.
	Porosity:	0.3% biopores.
	Roots:	few fine and very fine roots.
Lower	Texture:	clay
Subsoil	CaCO <sub>3</sub> :	calcareous
	Colour:	grey (10YR 5/1).
	Stone:	negligible.
	Depth:	120 cm+.
	Structure:	strongly developed coarse and very coarse prismatic.
	Consistence:	firm.
	Porosity:	0.2% biopores.
	Roots:	few fine and very fine roots.

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