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Agricultural Land Classification

Berkshire Minerals Plan

Riding Court Farm ,

Datchet, Berkshire.

AGRICULTURAL LAND CLASSIFICATION

BERKSHIRE MINERALS PLAN

RIDING COURT FARM, DATCHET, BERKSHIRE

1. BACKGROUND

1.1 The 91.2 hectare site lies to the north of Datchet and to the south of Slough in Berkshire. The site is bounded to the north by housing, to the east and west by fencelines comprising hedgerow, trees, and wire messing. The southern boundary is formed by the M4 motorway and Riding Court Road.

1.2 The site was surveyed in February 1992 using 1.2m Dutch soil augers with samples being taken at approximately 100m intervals across the site. In addition soil pits were examined to enable more detailed soil descriptions.

Land-use

1.3 At the time of survey most of the site was under winter cereals except for a small area towards the south west that was under permanent pasture, grazed by horses, and towards the north and north west that was under oilseed rape.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The altitude of the site varies between approximately 19-22m A.O.D. The land slopes gently southwards towards the M4 motorway. Land quality on this site is not influenced by either gradient or altitude.

Climate

2.2 Estimates of climatic variables, for a representative location in the survey area, were obtained by interolation from grid point data sets (Met Office, 1989) and adjusted for altitude.

Climatic Variables

Grid Reference	SU 994777	SU 994785
Altitude (m A.O.D)	19	22
Accumulated Temperature (°days, Jan - June)	1511	1508
Average Annual Rainfall (mm)	706	707
Field Capacity Days	158	158
Moisture Deficit Wheat (mm)	113	112
Moisture Deficit Potatoes (mm)	106	106

2.3 The important parameters in assessing an overall climatic limitation are, average annual rainfall, (a measure of the degree of wetness), and accumulated temperature (a measure of the relative warmth of a locality). At this locality an overall climatic limitation does not exist.

Climatic factors do however interact with soil factors to influence land quality, principally by way of soil wetness and droughtiness limitations.

Geology and Soils

2.4 British Geological Survey, Sheet 269, (1981), indicates the presence of a number of geological deposits which outcrop at this locality. Across much of the site deposits of Flood plain Gravels have been mapped. Towards the north of the site Taplow Gravels outcrop, and a localized band of Alluvium occurs in association with the brook and the lake.

2.5 Soil Survey of England and Wales, Sheet 6, Soils of South East England, (1983) shows the site to comprise soils of the Sutton 2 Association. The main soils within this Association are "well drained, often stony, loamy typical argillic brown earths, usually over gravel at moderate depths." (SSEW 1984). The distribution of soils on the terraces is complex although the range of variation in soil properties is small. Seasonally or occasionally water logged clayey and fine alluvial soils are found locally on alluvium.

2.6 Detailed field examination of the soils indicates the presence of three soil groups.

2.7 The first group is relatively localised and comprises clayey alluvial soil which are mapped in association with deposits of alluvium which outcrop towards the centre of the site. These soils are poorly drained and may be affected by fluctuating groundwater.

2.8 The second group of soils occur towards the north of the site, in association with the Taplow Gravels. These soils typically comprise sandy clay loam and sandy loam topsoils over similar textures or medium sand becoming impenetrable (to soil auger) due to gravelly horizons between about 48 and 80 cm.

2.9 The third group of soils occur in association with the Flood plain Gravels and comprises three varients.

The main soil group ranges in texture from sandy silt loams, sandy clay loams or clay loam topsoils which are slightly to moderately stony, usually resting over gravelly horizons at variable depths.

The second varient of this soil group comprise fine sandy clay loam or clay loam topsoils, over calcareous sandy textures becoming impentrable (to soil auger) due to gravelly horizons at moderate depths.

The third varient comprises sandy loam or sandy silt loam topsoils over sandy clay loam or clay loam subsoils which are deep (› 120 cm) stoneless and well drained.

3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the site is primarily determined by interactions between soil and climatic factors, namely soil wetness and droughtiness. ALC grades 1, 2, 3a and 3b have been mapped at this locality and the area and extent is given below. A small area towards the centre of the site was not surveyed as this had been disturbed by engineers who were strengthening bridges and diverting water coarses.

Grade	Area (ha)	% of total agricultural land
1	13.01	16
2	37.70	46
3a	14.1	17
3b	16.9	21
Total agricultural area	81.7	100
Woodland	2.03	
Agricultural Buildings	0.15	
Urban	3.14	
Not Surveyed	9.0	
Land in non agricultural use	3.27	
Total area of site	31.2	

3.2 Appendix 1 gives a generalised description of the grades and subgrades identified in this survey.

Grade 1

3.3 Land of this quality occurs across the upper slopes, towards the north of the site. Profiles typically comprise non calcareous fine sandy silt loam and sandy loam topsoils, medium clay topsoils were found to occur sporadically. These overlie subsoils of sandy clay loam, medium or heavy clay loam occasionally overlying sandy clay or clay. Lower subsoils were found to be slightly stony (c. 5-15% v/v flints) becoming impenetrable (to soil auger) due to gravelly horizons between 90 and 95 cm. Land within this grade is generally well drained wetness class I, minor wetness limitations were evident in profiles that were gleyed between 27 and 53 cm but not slowly permeable. Occasional profiles were found to be slowly permeable within 75 cm; and gleyed within 58 cm; wetness class II was therefore assigned to such profiles.

Grade 1 land has no significant limitations which affect land quality. The land is easily worked and retains good reserves of available water for plant growth. It is capable of supporting a wide range of agricultural and horticultural crops. Yields are high and less variable than land of a lower quality.

Grade 2

3.4 Land of this quality is mapped in two blocks situated towards the north and south. Profiles typically comprise non calcareous sandy clay loam or medium clay loam topsoils overlying similar textures which become heavier with depth (ie clay content increases). Lower subsoils typically comprise heavy clay loam, sandy clay or clay. Stone content increases with depth c. 6-15% v/v flints becoming impenetrable (to soil auger) due to gravelly horizons between 67 and 88 cm. Similary profiles were also found to become lighter in texture (ie clay content decreased) as depth increased typically passing from sandy clay loam, sandy clay or clay to lower subsoils comprising calcareous or non calcareous sandy clay loam, sandy loams or loamy sands, occasionally becoming impenetrable over gravelly horizons at variable depths.

Profiles were found to be well drained, wetness class I, although occasional profiles exhibit evidence of slight drainage imperfections (ie gleyed between 26 and 62 cm but not slowly permeable, or gleyed and slowly permeable below 48 cm); wetness class I, II and III was therefore assigned to such profiles.

Grade 2 land at this locality is limited by minor wetness and/or droughtiness limitations, however land of this quality is capable of supporting a wide range of agricultural and horticultural crops. The level of yield is generally high but may be lower and more variable than grade 1.

Grade 3a

3.5 Land within this grade occurs towards the centre and to the south of the site. Profiles typically comprise non calcareous medium or heavy clay loam topsoils, over similar textures, or medium clay. Lower subsoils typically comprise sandy clay loam or medium clay loam becoming impenetrable (to soil auger) due to gravelly horizons between 60 and 73 cm. Occasional profiles were found to comprise non calcareous sandy clay loam, medium or heavy clay loam topsoils which are very slightly stony (c. 2-4% v/v flints >2 cm) over similar textures or medium clay with c. 5-40% v/v flints becoming impenetrable (to soil auger) due to gravelly horizons between 40 and 55 cm.

Profiles were found to be moderately well drained. Such profiles were found to be gleyed within 37 cm but were not slowly permeable, or were found to be gleyed within 53 cm and slowly permeable between 44 and 55 cm, wetness class II and III was therefore assigned to such profiles.

Land within this grade is limited by a combination of both wetness and/or droughtiness. The former may restrict plant growth in terms of poor seed bed germination or inhibited root development. The latter in terms of limited moisture reserves. Land assigned to this grade is capable of consistently producing moderate to high yields of a narrow range of crops, or moderate yields of a wide range of crops.

Grade 3b

3.6 Land within this grade occurs towards the centre and to the north of the site. Profiles situated to the north typically comprise sandy loam or sandy clay loam topsoils, which are moderately stony (c. 10-20% v/v flints >2 cm), commonly overlying sandy clay loam becoming impenetrable (to soil auger) due to gravelly horizons between 48 and 50 cm. Profiles tend to be well drained wetness class I, but are limited in terms of both droughtiness and topsoil stone content. The combination of poor structural conditions and shallow depths over gravel result in reduced reserves of available water for plant growth. In addition topsoil stone contents act as an impediment to cultivation, harvesting and plant growth.

Grade 3b land mapped towards the centre of the site was found to be poorly drained. Profiles typically comprise heavy clay loam topsoils over slowly permeable clay within 36 cm. These profiles are assigned to wetness class IV.

Land at this locality is limited by both wetness and workability restrictions which adversly affects plant growth or imposes restrictions to cultivation or trafficability of machinery. Land assigned to this grade is capable of producing moderate yields of a narrow range of crops, principally cereals and grass.

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