

AGRICULTURAL LAND CLASSIFICATION AND PHYSICAL CHARACTERISTICS REPORT FOR THE PROPOSED EXTENSION TO THE EXISTING QUARRY AT BENT FARM

Following the request for detailed information on the physical characteristics of soil at Bent Farm an Agricultural Land Classification survey was undertaken in April and May 1991. Soils were augured to 100 cm and soil pits dug to 120 cm.

Location, Altitude and Relief

The main part of the site lies to the east of the minor road to Brownlow Heath from the A534. It lies immediately to the south of the existing Quarry. A smaller area occurs just north of Bent Farm, adjacent to the existing Quarry. The land lies at an altitude of between 95 and 105 metres. The main area to the south of the Quarry is almost level and the small area to the north is gently sloping to the north-east. Altitude and relief are non-limiting in the classification of the site.

Climate and Rainfall

The main parameters used in the assessment of the climatic limitations are average annual rainfall (AAR) and accumulated temperature (ATO). For this site these figures are 804 mm and 1346°C respectively indicating that there are no climatic limitations on the site. The field capacity days figure for the site is 197 days. The mean last frost occurs in late April.

Geology and Soils

The area is underlain by Middle Keuper Marl. These are overlain by glacial drift deposits of sand and then two or more metres of Boulder Clay.

The soils overlying the Boulder Clay are lighter, consisting of predominantly sandy loams and occasionally medium sands, loamy sands and sandy clay loams. There is great variation in the depth to the Boulder Clay from the surface, thus greatly affecting the soil wetness and the grade of the land.

Land Use

At the time of survey the land supported winter cereals and permanent pasture.

Agricultural Land Classification

The majority of the agricultural area is of good to moderate quality agricultural land with a smaller area of very good quality land.

Grade 2

This grade accounts for 3.4 ha and 5.9% of the site. It occurs to the east of Wallhill Lane Farm. The topsoils are typically loamy sands or sandy loams; overlying sandy loams; over medium sand, loamy sand, sandy loam or sandy clay loam, over clay or medium sand. Where sand occurs at depth with no clay present within 120 cms, droughtiness can be a limiting factor.

Grade 3

Sub Grade 3a accounts for 16.1 ha and 28.3% of the site. It is widespread within the southern part of the site. The soils are typically sandy loams overlying loamy sand, sandy loam or sandy clay loam over clay. The clay typically occurs at depths between 53 and 80 cms, falling into Wetness Class III. Soil wetness is the limiting factor. Isolated profiles of better quality land occur where the clay is at a greater depth, but these areas are too small to map separately at this scale.

Sub Grade 3b accounts for 8.1 ha and 14.3% of the site. It occurs in the south east corner, and in two small areas in the middle) of the southern section of the site and covers all the smaller northern section. Soil wetness is the limiting factor with clay occurring above 53 cms, thus falling into Wetness Class IV. The soils are typically sandy loams or loamy sands over clay, with sandy clay loam sometimes occurring as a horizon in between. Isolated profiles of better quality land do occur where the clay is at a greater depth, but these areas are too small to map separately at this scale.

Non Agricultural Land

This accounts for 29.4 ha and 51.5% of the site. It consists of woodland, ponds, the quarry and farm buildings.

Breakdown of ALC Grades

Grade	Area (ha)	% of agricultural area	% of site
2	3.4	12.2	5.9
3a	16.1	58.4	28.3
3b	8.1	29.4	14.3
Non Agricultural land	29.4	-	51.5
Total	57.0	100.0	100.0

Soil Units

Three Soil Units have been identified.

Unit 1

Unit 1 covers most of the large field east of Wallhill Lane Farm. It consists of the lightest subsoil within the area mapped. Typically 30 cms of very dark greyish brown (10 YR 3/2) sandy loam overlies dark brown (7.5 YR 3/2) sandy loam to depths of 40 to 70 cms. The lower subsoil consists mainly of pale brown (10

YR 6/3) to reddish yellow (5 YR 6/8) gleyed medium sand to a depth of 125 cm or more, with pockets of dark greyish brown (10 YR 4/2) loamy sand. Pockets of reddish brown (5 YR 4/4) clay occur in the lower subsoil around the edge of the soil unit.

The topsoil and upper subsoil have 1% of hard gravel pebbles in their horizons. A thin 3 cm layer of 25% hard gravel pebbles occurs between the upper and lower subsoils. The lower subsoil has 1% of hard gravel pebbles and a little compacted sand occurred in the soil pit dug at the western end of the field.

The soil pit indicated that all the soils were porous. The topsoil had a moderately developed, coarse, subangular blocky structure with many roots. The upper subsoil had a weakly developed, coarse, angular blocky structure with a few roots. The lower subsoil was massive with no roots visible.

Unit 2

Unit 2 covers the remainder of the site that is undisturbed or not built on. It is identified by its clay subsoil which is lacking in Unit 1. Typically 20-45 cm of very dark greyish brown (10 YR 3/2) sandy loam overlies either dark greyish brown (10 YR 4/2) sandy loam or brown (10 YR 5/3) sandy clay loam, 15 to 40 cm thick and gleyed. Sometimes this horizon is not found in the profile and the topsoil immediately overlies the reddish brown (5 YR 4/4) gleyed clay, which extends to a depth beyond 125 cm and includes sand lenses in its horizon.

The topsoil is either stoneless or has up to 1% of hard gravel pebbles. The upper subsoil is stoneless or as in the area in between The Bungalow and Wallhill Lane Farm it has up to 5% hard gravel pebbles. The lower subsoil is either stoneless or has up to 2% hard gravel pebbles.

A soil pit dug in the permanent grassland to the south of the working quarry revealed the topsoil to have a weakly developed, coarse, subangular blocky structure with many roots. The clay subsoil had a weakly developed, coarse, prismatic structure, with few roots.

Unit 3

Unit 3 includes the existing quarry area and the soil mounds around the working area.

Summary

Agricultural land comprises 48.5% of the site. Of this 12.2% is very good quality land, 58.4% is good quality land and 29.4% is moderate quality land.