AGRICULTURAL LAND CLASSIFICATION NOTES FOR LAND AT CARR LANE, MORETON, WIRRAL

Introduction

This 7.8 ha site lies 1 km west of Moreton north of the A553 and consists of 3 fields adjoining the northern edge of the Carr Lane, brickworks and clay pit. The site is at an altitude of 4 m and is level with very slight undulations which reflect its esturine origins. The site is crossed by 2 open drains and all the boundaries have open water filled ditches which drain away from the site.

The area receives an average annual rainfall of about 764 mm and the mean accumulated temperature above 0°C (January to June) is 1456. The rainfall is relatively evenly distributed but with a slightly dry period from February to June. The growing season lasts approximately 260 days from late March to early December and the mean date of the last frost is late April. There are no climatic limitations to the agricultural use of this land.

The soils are derived from estuarine alluvium which is composed of 2 main parent materials. Most of the site is underlain by heavy clay soils which are poorly drained. However, along the northern edge of the site the heavy clay topsoils are underlain by deep, light textured sandy/silty material. In places these 2 parent materials alternate over short distances. Soil wetness is the main limitation to the agricultural use of the land.

At the time of survey the site was under grass which is regularly cut for hay. The land was surveyed on the 26 January 1990 using a 110 cm dutch soil auger. Soil borings were taken on a 100 m grid with supplementary observations taken when necessary and augered to 100 cm.

Agricultural Land Classification

Grade 3a land occupies 1.6 ha and accounts for 20.5 % of the site. This land occurs as a narrow strip adjacent to the northern boundary where heavy clay loam topsoils are underlain by deep, permeable sandy/silty soils. Soils are gleyed throughout reflecting past soil water regimes and many of the borings were moist below 40 cm at the time of survey. In contrast much of the remainder of the site was waterlogged at or near to the surface. These soils generally have no slowly permeable layers and are generally wetness class I or II with drainage. The main limitation to the agricultural use of this land is the heavy topsoils which are locally organic reflecting the soil wetness and recent management of the land for hay.

Grade 3b land occupies 1.0 ha and accounts for 12.5 % of the site. This small area of land occupies a low mound in the eastern most field which is less wet than most of the surrounding lower lying land. The soils typically have a medium clay loam topsoil overlying clay by about 30 cm with red clay occurring below 60 cm.

The soil has a slowly permeable layer virtually to the surface but the slightly elevated position allied to lighter topsoil textures makes the land slightly more flexible than the remainder of the clay rich soils on site.

Grade 4 land occupies 51 ha and accounts for 67.0% of the site. The majority of the site falls into this grade with soils which are clay throughout and typically have a heavy clay loam or clay topsoil which is locally organic, overlying grey clay subsoils. The soils are waterlogged for prolonged periods and heavy topsoil restricts the opportunities for arable cultivation. At the time of survey large areas were either under water or had the water table within 20 cm of the surface.

This land is best suited to growing grass but with the well developed subsoil structure the roots will penetrate deeply into the subsoil and will rarely suffer drought stress.

SOIL RESOURCES REPORT

Introduction

The soil resource map identifies the main soil types on the site defined primarily in terms of soil texture and soil depth. More particular attention is given to topsoil texture since these have a greater bearing on the workability of the site, ie the ease with each mechanical farm operation may be satisfactory carried out without damaging the soil structure. Many of the subsoils exhibit a fair degree of uniformity in colour and range of soil textures being mainly clay with a thin strip of lighter sandy silt subsoil along the northern boundary.

Two soil units have been identified on the site. The soil units are based on information collected from the soil auger boring records and detailed soil pit profile descriptions the locations of which are shown on the auger boring map.

Soil Unit I covers 6·2 ha and accounts for 79·5 % of the site. This unit covers the majority of the site and is relatively pure being derived from clay rich estuarine alluvium. The soils typically have an organic rich heavy clay loam or clay topsoil overlying grey clay within 30 cm of the surface. The organic mat at the surface indicates the wet nature of these soils with a slight exception of auger boring for a but which still has an essentially clay profile. Despite the heavy textures the soils are well structured though slowly permeable throughout.

A typical soil profile was recorded at pit 1.

0-10 cm 10 YR 3/2 organic clay. No mottles observed. Abundant fine fibrous roots throughout.

10-25 cm 10 YR 5/2 and 6/2 heavy clay loam. Many prominent 10 YR 5/8 mottles. Moderately developed medium and fine subangular and blocky structures readily breaking down into well developed fine and medium crumb with 10 YR 6/2 ped face colours. Many fine roots, abundant ochreous mottles. Less than 0.5% pores.

25-40 cm 10 YR 6/2 heavy clay loam with 10 YR 5/8 mottles and 5 Y 6/1 ped faces. Well developed coarse prismatic structure. Common roots along ped faces. Occasional worm channels, less than 0.5% pores. Firm consistence.

40-100 cm 2.5 Y 4/1 heavy clay loam with 10 YR 6/1 ped face covers. Well developed coarse angular blocky structures. Firm/very firm consistence. Very dense soil with less than 0.1% pores.

The profile is wetness class IV and has a SPL at 10 cm.

Soil Unit II covers 1.6 ha and accounts for 20.5 % of the site. This unit forms a narrow strip along the northern edge of the site where heavy clay loam or clay topsoils overlie deep permeable sandy silt subsoils which are also derived from estuarine alluvium. These soils are also seasonaly waterlogged but are inherently much better drained and more workable than the remainder of the soils found on site.

A typical soil profile is located at pit 2.

0-20 cm 10 YR 4/2 clay loam. Abundant fibrous roots throughout. Well developed medium/fine crumb structure.

20-30 cm 10 YR 4/1 clay loam. Moderately well developed coarse subangular blocky structure readily breaking down to well developed medium crumb. Common fibrous roots throughout. More than 0.1% pores.

30-110 cm 10 YR 6/1 and 6/2 and 5/6 sandy silt loam. Many prominent ochreous and grey mottles throughout. Soil wet below 55 cm and structure difficult to assess due to wet subsoil though probably weakly developed coarse subangular blocky. More than 0.5% pores with common roots and occasional worm channels to at least 75 cm.

No SPL observed, wetness class I.

In any soil restoration scheme it is strongly recommended that topsoil from the whole site be stripped as one unit. The subsoil from unit I is very heavy and should be stripped separately from the sandy/silty subsoil of unit II. On reinstatement I would suggest that the clay subsoil is used to cap the landfill site with at least 1 m of clay with the clay topsoil overlying that. The sandy silt loam subsoil of unit II would form an admirable topsoil and should be reinstated over a limited area to produce a depth of workable topsoil potentially suitable for arable cultivation.