LAND NORTH OF COPPID BEECH ROUNDABOUT, BRACKNELL, BERKSHIRE

STATEMENT OF SITE PHYSICAL CHARACTERISTICS, REPORT OF SURVEY

LAND NORTH OF COPPID BEECH ROUNDABOUT, BRACKNELL, BERKSHIRE
STATEMENT OF SITE PHYSICAL CHARACTERISTICS, REPORT OF SURVEY

1. Introduction : In July 1992, a detailed Agricultural Land Classification (ALC) was carried out on 27.2 hectares of land adjacent to the A329(M) and B3408 at Bracknell in Berkshire. ADAS was commissioned by MAFF to determine the land quality affected by the application for planning permission for the extraction of sand and gravel with progressive restoration by inert fill to agricultural use.

   The work was conducted by members of the Resource Planning Team within the Guildford Statutory Group with an approximate density of observations of 1 boring per hectare. A total of 26 borings and 3 soil pits was described using MAFF's revised guidelines and criteria for grading the quality of agricultural land. These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on its agricultural use.

   The distribution of the grades and sub-grades are shown on the attached ALC map and the area of each grade is given in the table below. The map has been drawn at a scale of 1:5,000; information is accurate at this level but any enlargement would be misleading.

   The majority of the site is of high land quality and a full statement of site physical characteristics has been compiled as a record of the soil resource before the site is worked.

   Soil droughtiness is the main factor affecting the classification of the soils across the majority of the site. As a result, soils can be classified no higher than Grade 2. Some soils experience a significant soil wetness problem and have been graded as Sub-grade 3A or Sub-grade 3B, depending upon the severity of the limitation.

   Table 1 : Distribution of Grades and Sub-grades

Grade	Area (ha)	% of Agricultural Area
2	21.9	83.3
3A	2.8	10.6
3B	1.6	6.1
Woodland	1.0	100% (26.3 ha)
	27.3	

2. Climate : The climatic criteria are considered first when classifying land. Climate can be overriding in the sense that a severe limitation would restrict land to low grades irrespective of favourable soil or site conditions. The main parameters used in the assessment of the climatic limitation are average annual rainfall, a measure of overall wetness, and accumulated temperature, a measure of the relative warmth of a locality.

A detailed assessment of the prevailing climate has been made by interpolation from a 5km gridpoint dataset. The details are presented in the table below and show that there is no overall climatic limitation affecting the site. In addition, no local climatic factor is significant. The site is climatically Grade 1.

Table 2 : Climatic Interpolations

Grid Reference	SU835694	SU837691
Altitude (m)	75	90
Average Annual Rainfall (mm)	674	680
Accumulated Temperature (° days)	1437	1420
Field Capacity (days)	140	141
Moisture Deficit, Wheat (mm)	111	109
Moisture Deficit, Potatoes (mm)	104	102

3. Agricultural Land Classification : The soils have developed over a varied geology which comprises Plateau Gravel in the southeast of the site, Bagshot Beds in the central and western section, and London Clay to the extreme north of the site.

3.1 Grade 2 : The majority of the site has been placed in this grade with soil droughtiness as the single most limiting factor. Two soil pits have been located in this grade to illustrate the variation in the soils that exist. Details of the soil pits are attached. Pit 1 is typical of the sandier profiles which exhibit topsoil and upper subsoil horizons of Medium Sandy Loam texture overlying lower subsoil horizons of Loamy Medium Sand texture. The profiles are stone free, show good subsoil structural conditions and are placed in Wetness Class I (ie the profile is not wet within 70 cm for more than 30 days in most years).

Pit 2 is typical of the stonier soils developed on the higher land on the Plateau Gravels. Topsoil and upper subsoil textures are similar to adjacent soils but stone contents are approximately 8% in the topsoil and 15% in the upper subsoil. Lower subsoil horizons are variable with mixtures of clay horizons and sandier lenses; subsoil stone content are very low and roots are able to extend to depth to exploit the available water resources in the profile. These soils are also placed in Wetness Class I.

3.2 Subgrade 3A : An area of lower lying land in the northwest of the site has been placed in this grade with soil wetness as the main physical limitation. Topsoil textures are generally heavier than adjacent soils (Medium Clay Loams) and overly upper and lower subsoils of Clay texture. There is clear evidence of gleying at shallow depths and the clay horizons become slowly permeable with poor structure and low porosity at depths sufficient to place the profiles in Wetness Class III (ie the soil profile is wet within 70 cm for 91-180 days in most years). As a result, these profiles experience waterlogging which restricts the range of crops that may be grown and limits the number of days during which the soils may be trafficked by machinery or livestock without causing subsoil structural damage.

3.3 Subgrade 3B : A minor area of higher land adjacent to the A329(M) has been placed in this grade. These soils have very shallow slowly permeable clay layers which cause a severe wetness limitation. The soils are placed in Wetness Class IV (ie the soil profile is wet within 70 cm for more than 180 days but not wet within 40 cm for more than 210 days in most years) and this severely restricts the flexibility of the land.

4. Soil Resources

4.1 Topsoil : 'Topsoil' is defined as the organic rich darker surface horizons. A Topsoil Map is attached which illustrates the distribution of the topsoil materials across the site. The majority of the topsoils are light textured (mainly MSL) and have been distinguished from minor areas of heavier textures (predominately SCL). These 2 topsoils should be handled separately from the point of view of soil movement. Structures in the topsoils across the site are typically moderately developed, coarse, subangular blocky with little current evidence of compaction.

Average topsoil depth varies little across the site and is typically 25 cm deep giving a total topsoil resource of 65,550 m^3.

4.2 Subsoil : 'Subsoil' is defined as the non-organic rich lower horizons. The variation in subsoil across the site has meant that it is possible to distinguish between upper and lower subsoil resources.

4.2.1 Upper Subsoil : The attached Upper Subsoil Map identifies the distribution of 4 main upper subsoils across the site. These distinguish deep light textures that are stone free from shallower, stonier areas and those were deep clay textures exist. Map units A and C can be handled together from the point of view of soil movement but these must be kept separate from units B and D which contain very different soil material. A total upper subsoil resource of 149,070 m^3 is available. Details of the upper subsoil structure conditions are given in the soil pit descriptions.

4.2.2 Lower Subsoil : The attached Lower Subsoil Map identifies the distribution of a separate clay horizon which extends to depth and which provides a total resource of 99,900 m^3. Details of the lower subsoil structures are given in the soil pit descriptions.

SOIL PIT DESCRIPTION

Site Name : COPPID BEECH BERKS Pit Number : 1P

Grid Reference: SU
Average Annual Rainfall : 677 mm
Accumulated Temperature : 1431 degree days
Field Capacity Level : 141 days
Land Use : Permanent Grass
Slope and Aspect : 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 21	MSL	10YR42 00	0	2	C	MMSAB
21- 42	MSL	10YR44 00	0	0		WCSAB
42- 78	LMS	10YR63 00	0	0	C	MCSAB
78-120	LMS	10YR62 00	0	0	C	

Wetness Grade : 1
Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 2
APW : 129mm MBW : 19 mm
APP : 098mm MBP : -6 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : COPPID BEECH BERKS Pit Number : 2P

Grid Reference: SU
Average Annual Rainfall : 677 mm
Accumulated Temperature : 1431 degree days
Field Capacity Level : 141 days
Land Use : Permanent Grass
Slope and Aspect : degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 26	MSL	10YR42 32	6	8		MCSAB
26- 55	MSL	75YR54 00	0	15		MCMSAB
55-105	C	25Y 62 00	0	2	M	MCSAB
105-115	SCL	75YR58 00	0	1		
115-120	C	05Y 52 00	0	0	M	

Wetness Grade : 1
Wetness Class : I
Gleying :055 cm
SPL :115 cm

Drought Grade : 2
APW : 133mm MBW : 23 mm
APP : 102mm MBP : -2 mm

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

ADAS

SOIL PIT DESCRIPTION

Site Name : COPPID BEECH BERKS Pit Number : 3P

Grid Reference: SU

Average Annual Rainfall : 677 mm
Accumulated Temperature : 1431 degree days
Field Capacity Level : 141 days
Land Use : Permanent Grass
Slope and Aspect : degrees N

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR42 00	0	2		MCSAB
25- 45	C	10YR52 00	0	2	M	MDCP
45-100	C	10YR61 00	0	0	M	MDCP

Wetness Grade : 3A

Wetness Class : III
Gleying :025 cm
SPL :045 cm

Drought Grade : 3A

APW : 111mm MBW : 1 mm
APP : 102mm MBP : -2 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION :