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STATEMENT OF PHYSICAL CHARACTERISTICS

Land south of Sipson Lane, Sipson

London Borough of Hillingdon

Ministry of Agriculture Fisheries and Food

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LAND SOUTH OF SIPSON LANE, SIPSON

1 BACKGROUND

1 1 This 22 2 ha site was surveyed on 20th May 1991 in connection with proposals for sand and gravel extraction It lies to the north of Heathrow Airport (½ mile) adjacent to the settlement of Harlington to the east and about ¼ mile from the settlement of Sipson to the west

The area is bounded to the north by Sipson Lane and a sports ground to the east and south-east by residential development from Harlington and to the south-west and west by open agricultural land

1 The area was assessed using 1 2m Dutch Soil Augers, samples being taken approximately every 100m In addition two soil inspection pits were examined

Land Use

1 3 At the time of the survey the land was under a variety of horticultural crops including cabbages, spinach and onions

2 PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2 1 The altitude of the area varies between approximately 26 and 29m A O D with the highest land occurring towards the north west of the site generally falling to the east and south-east

Gradient is not a limitation in terms of land quality of this locality

Climate

2 The average rainfall for this site is approximately 647mm (Meteorological Office data, 1989) which is relatively low in a national context The median accumulated temperature above 0°C between January and June, a measure of the relative warmth of the locality is 1481 day degrees celsius (Meteorological Office 1989) moderate for the south-east of England The soil is at field capacity for around 130 days per annum (Meteorological Office, 1989), providing a measure of the effect of climate on the soil water regime crop adjusted moisture deficits for wheat and potatoes are 116mm and 111mm respectively

2 3 Climatic factors per se place no limitation on agricultural land quality in this area, but it can affect the interaction of soil factors with the climate namely wetness and droughtiness

Geology and soils

2 4 The Geological Survey of Great Britain, Sheet 269 (1 50000 series, 1981) shows the area to be underlain by Brickearth, of Taplow age which is typically a stoneless loam defined as a River Terrace Deposit

2 5 The Soil Survey of England and Wales Sheet 6 Soils of South East England (1 250000, 1978) indicates one main soil association across the area namely, the Hamble 2 series The detailed field examination carried out supports this indicating one broad soil group across the site

The soils commonly comprise a virtually stoneless medium silty clay loam topsoil over the entire site The upper subsoils were also of this texture generally, but show a higher clay content (heavy silty clay loam) with increasing depth Occasionally subsoils consisted of a sandy clay loam mainly toward the west of the site at a depth in excess of 1m and medium/heavy clay loams toward the south

3 AGRICULTURAL LAND CLASSIFICATION

3 1 The ALC grading of the survey area is primarily determined by interactions between climate and soil factors namely wetness and droughtiness ALC grades of 1, 2 3a and Non-Agricultural usage were noted on the site and a breakdown of these grades in terms of area and extent is given below -

Grad	Area (ha)	% Agricultural area	% Total Area
1	4 0	27	18
2	7 7	53	35
3a	3 0	20	13
N/A	7 5		34

3 2 Appendix 1 gives a generalised description of the grades and sub-grades identified in this study

Grade 1

3 3 Grade 1 land occurs as approximately 27% (4 0 ha) of the total agricultural land on the site and covers the north-western sector Profiles typically comprise a stoneless non-calcareous medium silty clay loam topsoil overlying similar textures in the upper subsoil, to between 50 and 90cm depth The lower subsoils are porous heavy silty clay loams and are slightly ochreously mottled In one case there is a medium clay loam (90-95cm) and a gleyed sandy clay loam (105-120cm) horizon also in the lower subsoils

These soils are deep and well drained (wetness class I) with large reserves of available moisture, warranting their allocation to Grade 1 agricultural land having no significant limitations as to its usage

Grade 2

3 4 Grade 2 land occurs as approximately 53% (7 7 ha) of the total agricultural land on the site covering the width of the site, west to east extending also to the north-east and south-east Profiles typically comprise non-calcareous medium silty clay loam topsoil, occasionally having a small percentage of stones overlying similar upper subsoil textures which contained no stones The lower subsoils are again predominantly porous silty clay loams, heavier than above Occasionally the subsoil has horizons in it of medium/heavy clay loam or sandy clay

For this land the limiting factor is the slightly droughty nature of the soil profile limited in nearly all cases by a gravelly layer from 80 to 105 cm Some of the profiles are also limited by minor wetness (wetness Class II) factors this is primarily where gleying occurs at shallow depths due to fluctuating ground water levels This phenomenon is most apparent in the lower lying areas of the site

Grade 3A

3 5 Land of this quality occupies the remaining 20% (3 0 ha) of the agricultural area of the site and occurs towards the south-west The soil profiles typically comprise a non-calcareous medium silty clay loam topsoil with a maximum of 5% small (<2cm) stones, overlying similarly textured stoneless porous subsoils Due to the depth of gleying (25-39cm), these porous soils are placed in Wetness Class II The most limiting factor with these soils is their droughtiness becoming impenetrable due to gravelly horizons at depths between 60 and 97cm, limiting the soils available water capacity in an area of moderately high moisture deficits

4 SOIL RESOURCES

Topsoil

4 1 One topsoil unit has been identified across the site common to all the borings recorded This typically comprises a medium silty clay loam, dark greyish brown in colour (10YR 3/2 - 4/2) which is non-calcareous and typically stoneless or slightly stony ie <5% of small stones (<2cm diameter) The mean topsoil depth was 31cm, over a range from 21 to 38 cm The relatively deep topsoils at some locations is a reflection of its horticultural usage

Subsoil

4 2 One subsoil unit was recognised based on soil textural characteristics, throughout the site This was typically a non calcareous medium to heavy silty clay loam upper subsoil, of a brown to dark yellowish brown colour (10YR 4/3 - 4/4 - 5/3) This became heavier with depth the colour staying similar This soil was gleyed at many locations, pre-empted by ground water level fluctuations either current or past

The soil is rarely stony above the gravel horizons which were encountered at depths from 60 to 110 cm

Where examined the structures were moderately well developed coarse sub-angular blocky of a friable to firm consistence but may become poorly developed coarse angular blocky, of firm consistence at depth although retaining porosity (ie >0 5% biopores <0 5mm), where strongly gleyed

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REFERENCES

BRITISH GEOLOGICAL SURVEY (1982) Sheet 269, Windsor

MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 6 - Soils of South East England

SOIL SURVEY OF ENGLAND AND WALES (1984), Bulletin 15 - Soils and their use in South East England

THE METEOROLOGICAL OFFICE (1989), Revised ALC Climatic data set

APPENDIX 1

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur typical cropping range and the expected level and consistency of yield In practice the grades are defined by reference to physical characteristics and the grading guidance and cut offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one third of the agricultural land in England and Wales About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4 Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates The remainder is very poor quality land in Grade 5 which mostly occurs in the uplands

Descriptions are also given of other land categories which may be used on ALC maps

Grade 1 – excellent quality agricultural land

Land with no or very minor limitations to agricultural use A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit soft fruit salad crops and winter harvested vegetables Yields are high and less variable than on land of lower quality

Grade 2 – very good quality agricultural land

Land with minor limitations which affect crop yield cultivations or harvesting A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops The level of yield is generally high but may be lower or more variable than Grade 1

Grade 3 – good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops timing and type of cultivation, harvesting or the level of yield Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2

Subgrade 3a – good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops especially cereal or moderate yields of a wide range of crops including cereals grass oilseed rape potatoes sugar beet and the less demanding horticultural crops

Subgrade 3b – moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year

Grade 4 – poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which are variable In moist climates yields of grass may be moderate to high but there may be difficulties in utilisation The grade also includes very droughty arable land

Grade 5 – very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing except for occasional pioneer forage crops

Descriptions of other land categories used on ALC maps

Urban

Built up or hard uses with relatively little potential for a return to agriculture including housing industry commerce education transport religious buildings cemeteries Also hard surfaced sports facilities permanent caravan sites and vacant land all types of derelict land including mineral workings which are only likely to be reclaimed using derelict land grants

Non agricultural

Soft uses where most of the land could be returned relatively easily to agriculture including golf courses private parkland public open spaces sports fields allotments and soft surfaced areas on airports/airfields Also active mineral workings and refuse tips where restoration conditions to soft after uses may apply

Woodland

Includes commercial and non commercial woodland A distinction may be made as necessary between farm and non farm woodland

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses Temporary structures (eg polythene tunnels erected for lambing) may be ignored

Open water

Includes lakes ponds and rivers as map scale permits

Land not surveyed

Agricultural land which has not been surveyed

Where the land use includes more than one of the above land cover types eg buildings in large grounds and where map scale permits the cover types may be shown separately Otherwise, the most extensive cover type will usually be shown

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile Six revised soil wetness classes (Hodgson in preparation) are identified and are defined in Table 11

Table 11 Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years[2]
II	The soil profile is wet within 70 cm depth for 31 90 days in most years *or* if there is no slowly permeable layer within 80 cm depth it is wet within 70 cm for more than 90 days but not wet within 40 cm depth for more than 30 days in most years
III	The soil profile is wet within 70 cm depth for 91 180 days in most years *or* if there is no slowly permeable layer within 80 cm depth it is wet within 70 cm for more than 180 days but only wet within 40 cm depth for between 31 and 90 days in most years
IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years *or* if there is no slowly permeable layer within 80 cm depth it is wet within 40 cm depth for 91 210 days in most years
V	The soil profile is wet within 40 cm depth for 211 335 days in most years
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years

[1] The number of days specified is not necessarily a continuous period

[2] In most years is defined as more than 10 out of 20 years

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics site and climatic factors Adequate quantitative data will rarely be available for AFC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field The method adopted here is common to ADAS and the SSLRC