AGRICULTURAL LAND CLASSIFICATION
AND STATEMENT OF PHYSICAL CHARACTERISTICS

Harworth Airfield, Bawtry

South Yorkshire

Proposed Sand & Gravel Extraction Site

MAFF

Leeds Regional Office

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AGRICULTURAL LAND CLASSIFICATION REPORT
ON THE PROPOSED SAND AND GRAVEL EXTRACTION
SITE AT HARWORTH AIRFIELD, BAWTRY

1. Introduction

The site covers an area of 120 hectares around National Grid Reference SK 637935, about 1 kilometre West of Bawtry.

Soils were examined by hand auger borings at 112 locations predetermined by the National Grid in November 1990. The density of borings was about one per hectare. Detailed soil descriptions and sampling for laboratory analyses were carried out in an inspection pit which was representative of the whole site.

All assessments of agricultural land quality were made using the methods described in "Agricultural Land Classification of England and Wales" (MAFF, 1988).

Climate and Relief

Average annual rainfall in the area is approximately 605 mm. Accumulated temperature above 0°C (January to June) is approximately 1394 day°C and the mean duration of field capacity is approximately 117 days. These factors impose no overall climatic limitation on ALC grade. Summer moisture deficits of 109 mm for winter wheat and 102 mm for potatoes, however, mean that soil droughtiness will be limiting on the sandy, stony soils prevalent in the area.

Geology and Soils

The site is underlain by fluvioglacial sand and gravel deposits which form a thick cover over the underlying Triassic sandstones. Soils consist predominantly of freely drained medium sandy loam topsoils over subsoils which become progressively coarser with depth. All are freely drained and fall within Wetness Class I.

Land Use

All agricultural land is in arable use growing mainly cereals and root crops. In the south west there is a large area of woodland known as Swinnow Wood.

2. AGRICULTURAL LAND CLASSIFICATION GRADES

The ALC grades occurring on the site are as follows:-

Table 1

Grade or Subgrade	Hectares	Percentage of total Site Area	Percentage of total Agricultural Land
3a	52.0	44.5%	54.2%
3b	43.9	37.5%	45.8%
Woodland	20.2	17.3%	-
Urban	0.8	0.7%	-
Total	116.9	100	100

Subgrade 3a

This subgrade is widespread. Soils consist of medium sandy loam topsoils over coarser subsoils. The overall limiting factor is stoniness with all the land surveyed containing 10-15% of hard stones larger than 2 cm in the top 25 cm of soil. These will impede cultivations, harvesting and crop growth and increase droughtiness thus restricting this land to a maximum of subgrade 3a.

Subgrade 3b

Subgrade 3b land occurs mainly in the central, northern and eastern parts of the site. Soils are somewhat lighter and stonier than on the adjoining 3a land. Droughtiness and stoniness are thus more restricting and these soils are limited to subgrade 3b for these reasons.

Urban

These areas consist of hard access roads crossing the site.

Woodland

This consists of Swinnow Wood in the south western corner of the site.

3. STATEMENT OF PHYSICAL CHARACTERISTICS

One relatively uniform soil type covers the whole site. Topsoil and subsoil resources are shown on the accompanying maps along with soil depth and quantity information.

1. Light to very light textured stony soil derived from fluvioglacial drift

This soil varies little across the site except for minor changes in the particle size of the sand which varies between medium and fine. Topsoils consist mainly of stony fine or medium sandy loams with a weakly developed fine sub angular blocky structure. This unit has an optimum depth of 30 cm and corresponds with T1 on the topsoil resources map.

The upper subsoil is a stony medium or fine sandy loam with a weakly developed fine sub angular blocky structure and common fine fibrous roots. This unit, U1 on the upper subsoil resources map, has an optimum thickness of 30 cm.

The lower subsoil is generally a stony medium or coarse structureless sand containing common fine fibrous roots. It corresponds to unit S1 on the lower subsoil map and has an optimum thickness of 40 cm.

Resource Planning Group
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4. SOIL PROFILE PIT DESCRIPTION

Soil Profile Pit A (NGR 634933)

Land Use: Arable (cereals)
Slope: 0°
Wetness Class: 1

Horizons	Depth (cm)	Description
1	0-30	Very dark greyish brown (10YR32); stony fine sandy loam; unmottled; moist; fine sub angular blocky structure; weakly developed; weak ped strength; slightly sticky; slightly plastic; common fine fibrous roots; non-calcareous; clear wavy boundary.
2	30-50	Yellowish brown (10YR56); stony fine sandy loam; unmottled; moist; fine sub angular blocky structure; weakly developed; weak ped strength; slightly sticky; slightly plastic; common fine fibrous roots; non-calcareous; clear wavy boundary.
3	50-100	Strong brown (75YR56); stony medium to coarse sand; unmottled; dry; structureless single grain; non sticky; non plastic; common fine fibrous roots; non-calcareous.

MAPS