

STATEMENT OF PHYSICAL CHARACTERISTICS

WICKLESHAM QUARRY, FARINGDON, OXON

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1. BACKGROUND

1.1 The 8.68 ha site lies to the south of the A420 - Oxford to Swindon main road and surrounds the present location of Wicklesham Quarry. A bridle path bounds the site to the south and an access road to Wicklesham Lodge Farm and cottages to the east. The A420 bounds the site to the north.

1.2 The site was surveyed using 110 cm and 120 cm Dutch augers, with samples being taken at approximately 100 m intervals across the site.

Land Use

1.3 At the time of survey, (March 1990) all of the site was under winter cereal.

2. PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2.1 The altitude of the site varies between approximately 115 m A.O.D. and 125 m A.O.D. with the highest land occurring towards the west, falling gently northwards and eastwards. Gradient is not a limitation in terms of land quality at this locality.

Climate

2.2 The average annual rainfall for this area occurs within the range 688 to 692 mm (Met Office 1989). The median accumulated temperature above 0°C between January and June, a measure of the relative warmth of a locality, ranges between 1381 day degrees and 1393 day degrees (Met Office, 1989). The site has

approximately 143 field capacity days which provides a measure of the effect of climate on the soil water require. Crop adjusted moisture deficits are 103 mm for wheat and 94 mm for potatoes at an altitude of 120 A.O.D. The site is unlikely to be especially frost prone or exposed.

- 2.3 Climatic factors per se place no limitation as agricultural land quality, but do affect interactive limitations between soil and climate, namely soil wetness and droughtiness.

#### Soils and Geology

- 2.4 British Geological Survey, Sheet 253, Abingdon, (1971) shows the site to be underlain by Cretaceous ferruginous sands with Faringdon sponge gravels (Lower Greensand) to the north of the site.
- 2.5 Soil Survey of England and Wales, Sheet 6, Soils of South East England, (1983) shows the whole area as Brown calcareous soils of the Fyfield 4 Association. Soil Survey of England and Wales, Sheet 253 (1971) Abingdon shows Wicklesham series dominating; these are described as well drained, calcareous, sandy soils over calcareous gravel (Lower Greensand).
- 2.6 Detailed field examination of the soils indicate the presence of only one broad type across the site.
- 2.7 These soils typically comprise loamy medium sandy or sandy loam topsoils, overlying loamy medium sand or medium sand upper subsoils passing into similar textures in the lower subsoil. Occasionally clay lamellae were present sufficient to give a sandy clay loam texture in a few horizons. Medium sized sand grains were dominant across the site although a higher proportion of coarse sized sand fraction was found on the eastern half of the site. However, this was insufficient to affect the textural class description. Profiles were typically non calcareous (<0.1% CaCO<sub>3</sub>) or very slightly calcareous (0.5 - 1% CaCO<sub>3</sub>) and

the stone content varied from stoneless to very slightly stony c. 1-5% of small rounded quartz and chert pebbles, with occasional larger stones [c. 1% >2 cm.] All profiles were allocated wetness class I, as the soils were well drained ie. there was no evidence of drainage imperfections. Consequently, droughtiness is the most limiting factor in terms of agricultural land quality on these light, permeable and friable soils.

### 3. AGRICULTURAL LAND CLASSIFICATION

3.1 The ALC grading of the survey area is primarily determined by interactions between climate and soil factors, namely droughtiness at this locality. ALC grades 3a and 3b have been mapped and a breakdown of these grades in terms of area and extent is given below.

Grade	ha	% of total Agricultural Land
3a	3.91	45%
3b	4.77	55%
Total agricultural land	8.68	
Total area	8.68	

3.2 Appendix I gives a general description of the grades and subgrades.

#### Grade 3a

3.3 Profiles are typically deep and friable with loamy medium sand to medium sandy loam topsoils over loamy medium sand and medium sand upper subsoils with occasional sandy clay loam and sandy loam upper subsoil textures. Loamy medium sand and medium sand lower subsoils predominate. Thin clay lamellae were found in a few horizons. Most profiles were stoneless, some becoming slightly to very gritty with the presence of small rounded pebbles of quartz

and chert. These profiles exhibit no drainage imperfections and are well drained and placed in wetness class I. Droughtiness is the major limitation in terms of agricultural use due to the high sand content of these soils.

#### Grade 3b

- 3.4 Soils of this grade have profiles which typically comprise loamy medium sand topsoils to 30-35 cm overlying medium sand subsoils to depth. The soils are non calcareous to very slightly calcareous and generally stonefree some becoming very gritty with sponge gravel c. 1-2% < 2 cm.

As above these profiles are well drained and are thus placed in wetness class I. A higher proportion of sand in the profile causes increased droughtiness compared with the grade 3a described above and consequently a grade 3b is appropriate due to a low available water.

#### 4. SOIL RESOURCES

- NB. It should be emphasised that this is not a proposal for soil stripping, but merely an illustration of soil resources available for restoration on the site.

It should also be borne in mind that soils were only sampled to 120 cm. Useful soil forming materials may occur below this depth.

One topsoil unit was identified:

#### Unit 1

This unit typically comprises about 30 cm (ie between 25-38 cm) of strong brown (7.5YR 4/6), dark-brown/brown (7.5YR4/4 and 10YR 4/3) and dark yellowish brown (10YR 4/4), non calcareous

to very slightly calcareous loamy medium sand to medium sandy loam which is unmottled and stoneless.

One subsoil unit was identified:

Unit 1

This unit occurs across the whole of the site in association with the Cretaceous sands (Lower Greensand). It typically comprises strong brown (7.5YR 4/6 and 7.5YR 5/6) dark-brown/brown (7.5YR 4/4) and reddish brown (2.5YR 5/4) and non calcareous to very slightly calcareous loamy medium sand and medium sand texture. In some profiles loamy textures occur to depths of at least 120 cm whereas in others medium sand occurs throughout the subsoils or are confined lower down in the profile.

The subsoils have structures of weakly developed medium to coarse sub-angular blocky peds with single grain or friable structures at depth.

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Fiona Robb  
R.P.G. Reading R0

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