

STATEMENT OF PHYSICAL CHARACTERISTICS FOR MODDERSHALL GRANGE, NR STONE

1. Summary

- 1.1 The Agricultural land Classification (ALC) survey for this site revealed the following proportions of ALC grades:

Grade 3a	29.0 ha
Grade 3b	9.7 ha
Grade 4	3.7 ha
Farm Buildings	0.4 ha
Woodland	0.3 ha
Urban	0.3 ha
Open Water	0.03 ha

- 1.2 The site is limited climatically to Subgrade 3a. However, other limiting factors include wetness, topsoil stone content and gradient.

- 1.3 This site can be subdivided into 2 soil units, the largest covering 25.4 ha (58% of the site).

2.0 Introduction

- 2.1 The site was surveyed by the Resource Planning Team in May and June 1993. An Agricultural land Classification (ALC) survey was undertaken according to the guidelines laid down in the "Agricultural Land Classification of England and Wales - Revised Guidelines and Criteria for Grading the Quality of the land" (MAFF 1988).

- 2.2 The 43.4 ha site is situated 4 miles to the North East of Stone at NGR SJ 937 380. The survey was requested by MAFF in connection with an application for mineral extraction on the site. The need for this survey arose because there were insufficient "post 1988 guidelines" data available.

- 2.3 At LUPU's request this was a "detailed survey" at 1:10000 with a minimum boring density of 1 per hectare. It should be stressed that the attached map is only accurate at the base map scale, any enlargement would be misleading.

- 2.4 At the time of the survey the site was under permanent grazing, ley and winter cereals. Surrounding land was predominantly in agricultural use with some areas of woodland immediately adjacent to the West of the site.

3. Climate

- 3.1 "Climate has a major, and in places overriding influence on land quality irrespective of favourable soil or site conditions" (MAFF 1988). Therefore, climate should be considered first.

- 3.2 "Metdata" computer programs were used to obtain climatic data for the site. These programs carry out the same function as the landIS climatic interpolations. The following information was obtained for the site:

Average Annual Rainfall(AAR)	838 mm
Accumulated Temperature above 0°C January to June (ATO)	1207 day °C
Field Capacity Days (FCD)	204 days
Moisture Deficit Wheat	68 mm
Moisture Deficit Potatoes	50 mm

- 3.3 From this information it can be established that the site is limited by climate to Subgrade 3a. This means that no matter what soil properties are encountered upon the site, no profiles can be of Grade 1 or 2 quality.

4. **Site Limitations**

- 4.1 The assessment of site factors is primarily concerned with the way in which topography influences the use of agricultural machinery. These include gradient, microrelief and flooding.
- 4.2 Gradient is a limiting factor in the West and North West of the site where slopes are between 7 and 18 degrees - thus limiting this area to Grades 3b and 4.
- 4.3 Microrelief and flooding did not impose any limitations.

5. **Geology and Soils**

- 5.1 The solid geology of this site consists of Bunter Sandstone and Conglomerates (BGS Sheet 123 Stoke-on-Trent 1").
5. The above factors have contributed towards the development of soils which are, in the main, sandy in nature.

6. **Agricultural Land Classification**

- 6.1 Sub-Grade 3a: This grade occupies 29 ha (66.8%) of the survey area. It is found to the East of the site.

6.1.1

Profiles within this grade are of two types. Firstly, there are the soils which are of a sandy loam topsoil over a subsoil of sandy loam and sand to depth. Occasionally the topsoils may be of a sandy silt loam texture. The profiles are slightly stony in the topsoil, with many subsoil stones in places. These free draining soils are limited by climate and topsoil stone content.

6.1.2

Secondly, there are the soils which are of a sandy loam topsoil over a gleyed subsoil of sandy clay loam (sometimes gradating to sandy clay) to depth. Again the topsoil may be of a sandy silt loam texture. This type of profile is slightly stony in the topsoil, with many subsoil stones in places. These soils are limited by climate, wetness and topsoil stone content.

- 6.2 Sub Grade 3b - This grade occupies 9.7 ha (22.3%) of the survey area. It is found as a central strip across the site and as a discreet block in the North West.

6.2.1

Profiles are typified by a sandy loam or sandy silt loam topsoil over a subsoil of sandy loam and sand. Occasionally there is a sandy clay loam upper subsoil within this profile. Topsoil stones are many in occurrence with many subsoil stones. These profiles are limited by gradient and topsoil stone content.

6.2.2

In the South East of the site, this grade is typified by a clay loam topsoil over a sandy silt loam, sandy clay loam and clay to depth. There are many topsoil stones. This profile is limited by topsoil stones and wetness.

- 6.3 Grade 4 - This grade occupied 3.7 ha (8.5%) of the survey area. It is found in the West of the site near Schoolhouse Wood.

6.3.1

Soils are similar to those described in 6.2.1, the only difference being that these profiles are limited to this grade by gradient.

- 6.4 Farm Buildings - These occupy 0.4 ha (0.9%) of the survey area and are found in the vicinity of Moddershall Grange.
- 6.5 Woodland - This occupies 0.3 ha (0.7%) of the survey area and is found to the south of Schoolhouse Wood.
- 6.6 Urban - This occupies 0.3 ha (0.7%) of the survey area and is found as a trackway at Moddershall Grange.
- 6.7 Open Water - This occupies 0.03 ha (0.1%) of the survey area and is found in the South West of the site.

6.8 Summary of Agricultural Land Classification Grades

Grade	Area in hectares	% of the survey area	% of agricultural area
3a	29.0	66.8	68.4
3b	9.7	22.3	22.9
4	3.7	8.5	8.7
Farm Buildings	0.4	0.9	-
Woodland	0.3	0.7	-
Urban	0.3	0.7	-
Open Water	0.03	0.1	-
Total	<u>43.43</u>	<u>100.0</u>	<u>100.0</u>

7. Soil Units

7.2 Soil Unit 1 - occupies 25.4 ha (58%) of the survey area

7.2.1 This variable unit is typified by a medium sandy loam or medium sandy silt loam topsoil to a depth of 30 cm, which overlies a subsoil of medium sandy silt loam and/or sandy clay loam to depth. Below 75 cm the sandy clay loam may gradate to sandy clay.

7.2.2 Topsoil stones greater than 2 cm range from 5 to 15% with up to 5% of these being greater than 6 cm. Subsoil horizons may become moderately stony.

7.2.3 A typical profile is described below:-

Pit 3 -

0 to 30 cm - 10YR32/33, medium sandy loam, moderately developed coarse subangular blocky structure, friable, porous, common stones greater than 2 cm.

30 to 120 cm - 5YR46, 75YR54, sandy clay loam, moderately developed fine subangular blocky structure, friable, porous, many stones greater than 2 cm.

7.3 Soil Unit II - occupies 18.1 ha (42%) of the survey area.

7.3.1 This unit is typified by a topsoil of medium sandy loam or sandy silt loam which overlies an upper subsoil of medium sandy loam to 80cm. The lower subsoil is medium sand to depth.

7.3.2 Topsoil stones may become many in occurrence with the subsoil being slightly stony.

7.3.3 A typical profile is described below:-

Pit 4 -

0 to 34 cm - 10YR32/33, medium sandy loam, well developed fine subangular blocky structure, firm, porous, common hard stones greater than 2 cm.

34 to 80 cm - 5YR46, medium sandy loam, moderately developed fine angular blocky structure, firm, porous, common hard stones greater than 2 cm.

80 to 120 cm - 5YR34, medium sand, moderately developed fine angular structure, friable, porous, few hard stones greater than 2 cm.

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