VALIDATION OF COUNTRYSIDE PLANNING AND MANAGEMENT'S REPORT ON LAND QUALITY PREPARED FOR LICKHILL QUARRY, STOURPORT ON SEVERN

1. INTRODUCTION

1.1 ADAS Statutory have been commissioned by MAFF to carry out a validation of the Agricultural Land Classification (ALC) report prepared for land at Lickhill Quarry by Countryside Planning and Management (CPM).

1.2 The site has been restored to agriculture following sand and gravel extraction, and has completed a five year aftercare period.

1.3 The original topsoil and subsoil recources at Lickhill Quarry were stripped together and were replaced as a mixed topsoil material over a subsoil forming material (SFM).

2. SUMMARY

2.1 The ALC survey undertaken by CPM classifies the 12.9 ha site as 7.0 ha (54.3%) grade 2 land, 4.0 ha (31.0%) Subgrade 3a land and 1.9 ha (14.7%) subgrade 3b land. The main limitation to the Grade 2 and Subgrade 3a land being soil droughtiness, and the main limitations to the Subgrade 3b land being gradient and topsoil stone content.

2.2 The survey undertaken by ADAS Statutory in February 1997 found the site likely to comprise no Grade 2 land, and more Subgrade 3a and Subgrade 3b land than that identified by CPM.

3. VALIDATION OF CPM REPORT

3.1 A verification survey was carried out by the Resource Planning Team, ADAS Statutory on the 13.0 ha at Lickhill Quarry in February 1997. Several auger borings were made across the site and two soil pits were dug.

3.2 At the time of survey the site was under grass.

4. CLIMATE

4.1 The following interpolated data are relevant for the Lickhill site:

Factor	Units	Values
Grid Reference	N/A	SO 795 731
Altitude	m, AOD	42
Accumulated Temperature	day °C	1452
Average Annual Rainfall	mm	694
Field Capacity Days	days	159
Moisture Deficit, Wheat	mm	103
Moisture Deficit, Potatoes	mm	94
Climatic Grade	N/A	1

4.2 There is no overall climatic limitation on the site.

5. SITE

5.1 CPM identified only a small area of land limited by gradient .ADAS Statutory found gradients of 9 -11° over a significant area of the site This area covers nearly 50 % of the site and is of Subgrade 3b in quality.

5.2 Contours in the south of the site are similar to those slopes identified in the pre-working MAFF survey (1985) . Soil resource across this area was limited and as such the original contours were changed very little during stripping and only a limited depth of soil was replaced. ADAS Statutory identified topsoil depths of 25cm to 40cm in this area over a 25cm to 30cm depth of SFM.

6. GEOLOGY

6.1 ADAS Statutory agree with the description of the geology given by CPM.

7. SOILS

7.1 Soil profile information is given by CPM at Appendix CPM 4 .The moisture balances calculated by CPM for the auger borings are inaccurate, however this only affects the grade of one of the auger borings, boring D2 becomes Subgrade 3a not Grade 2.

7.2 The CPM report identifies at paragraph 2.5.3, the restored soil profiles at Lickhill Quarry as having 30cm topsoil overlying a sandy loam or loamy sand subsoil to 120cm,and all but three of the auger boring descriptions given by CPM at Appendix CPM 4 identify medium sandy loam as the subsoil texture as does the soil pit description given by CPM at Appendix CPM 3.

7.3 From observations of auger borings and two soil pits ADAS Statutory found the soils to be considerably more variable in depth than those described by CPM . ADAS Statutory identified topsoil depths of 25cm up to 75cm, overlying the red (25YR 4/6) subsoil forming material generally to a depth of 75cm to 85cm before extreme compaction of this soil forming material prevented both auger and spade penetration. ADAS Statutory did not record a full soil depth of 120cm in any area of the site.

7.4 ADAS Statutory describe the replaced soils as having a stony medium sandy loam topsoil texture of variable depth, this overlies the subsoil forming material which has a fine sandy loam texture. The textures and % stone contents have been confirmed in laboratory analyses.

7.5 From observations across the site ADAS Statutory found the fine loamy sand subsoil forming material to very consistent in its nature and did not identify any area where the texture of this material could be described as a medium sandy loam as was obseved by CPM.

7.6 The soil pit description given by CPM at Appendix CPM3 has been dug in an area described by CPM as Subgrade 3a and as such there is no pit description to substantiate the Grade 2 land which CPM describe as covering more than half the site.

7.7 This Subgrade 3a soil pit identifies a medium sandy loam topsoil texture to 29cm overlying a medium sandy loam subsoil texture to a depth of 83cm, however since the soil pit has only been dug to a depth of 83cm, soil structures below this depth cannot have been accurately assessed if as stated by CPM full soil depth was observed to 120cm. CPM make no mention of any deep subsoil compaction.

7.8 ADAS Statutory dug two soil pits in the area of land described by CPM as Grade 2. ADAS Statutory found a variation in topsoil depth of 30cm in Pit 1 to 73cm in pit 2 and subsoil depth varied from 86cm in Pit 1 to 75cm in Pit 2 . The soil was found to have a stony medium sandy loam topsoil texture overlying a fine loamy sand subsoil, below the stated subsoil depths the subsoil material was found to be extremely compact.

7.9 This compacted layer at depth was observed by ADAS Statutory to hold up water in the two pits and would be likely to be impenetrable to root growth and hence limit moisture availability for crop growth. Since this deep subsoil compaction would be very difficult to alleviate ADAS Statutory consider that the area of land desribed by CPM as Grade 2 should be graded as Subgrade 3a.

7.10 In the southern half of the site the subsoil compaction was found at shallower depths and again any Grade 2 soils would be unlikely.

7.11 In comparison with the results of the 1985 MAFF report a strip of land in the extreme south of the site near to Lickhill Road North appears not to have been disturbed. From observation of these undisturbed profiles ADAS Statutory believe that the replaced topsoil material is more equivalent in quality to the upper subsoil material of the natural soils. In mixing the topsoil and subsoil materials from the site the benefits of a much higher quality topsoil have been lost

8. AGRICULTURAL LAND CLASSIFICATION

8.1 The 12.9 ha of agricultural land at Lickhill Quarry has been classed by CPM as 7.0 ha (54.3 %) Grade 2, 4.0 ha (31.0 %) Subgrade 3a and 1.9 ha (14.7 %) Subgrade 3b

8.2 ADAS Statutory find that :

- it is unlikely that there is any land of Grade 2 quality at Lickhill Quarry,
- that the area of Grade 2 land identified by CPM should be graded as Subgrade 3a, the main limitation to the agricultural use of the land being soil droughtiness
- that the area of Subgrade 3b land covers at least 50 % of the site. The main limitation to the agricultural use of the land is gradient.

9. CONCLUSIONS

9.1 ADAS Statutory found the Lickhill Quarry site likely to comprise Subgrade 3a and Subgrade 3b quality land.

9.2 The Subgrade 3b land could cover at least half of the site and the main limitation is gradient.

9.3 The depths of the replaced topsoil/subsoil material is very variable.

9.4 The lower subsoils have been compacted to the extent that the compaction will prevent root penetration, and this deep compaction is almost impossible to alleviate.

Resource Planning Team
ADAS Statutory Group
WOLVERHAMPTON