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Whelpley Farm, Whiteparish, Wiltshire

**AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY**

Resource Planning Team
Taunton Statutory Unit

November 93

ADAS 

WHELPLEY FARM, WHITEPARISH, WILTSHIRE

AGRICULTURAL LAND CLASSIFICATION AND SITE PHYSICAL CHARACTERISTICS

Report of Survey

1. SUMMARY

Twenty five hectares of land at Whelpley Farm, Whiteparish, Wiltshire were surveyed using the Agricultural Land Classification (ALC) System in October 1993. The survey was carried out for MAFF as part of its statutory role in connection with a planning application made to Salisbury District Council under the Town and Country Planning Act 1990.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000. The information is correct at this scale but any enlargement would be misleading. Details of the findings of the survey and the distribution of grades are detailed below.

Distribution of ALC grades: Whelpley Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	15.8	62.5	62.5
3b	<u>9.5</u>	<u>37.5</u>	<u>37.5</u>
TOTAL	25.3	100%	100%

Over half of the land surveyed was found to be of best and most versatile quality.

2. INTRODUCTION

Twenty five hectares of land at Whelpley Farm, Whiteparish, Wiltshire were surveyed using the Agricultural Land Classification (ALC) System in October 1993. The survey was carried out for MAFF as part of its statutory role in connection with a planning application made to Salisbury District Council under the Town and Country Planning Act 1990.

The fieldwork was carried out by ADAS (Resource Planning Team, Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at this scale but any enlargement would be misleading. A total of 25 auger sample points and two soil profile pits were examined. Three soil samples were taken for particle size distribution analysis.

The published Provisional one inch to the mile ALC map of this area (MAFF 1974) shows the site to be Grade 3. The recent survey supersedes the all previous maps having been carried out at a more detailed level and using the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988).

These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120cm of the soil profile. A description of the grades used in the ALC System can be found in Appendix 2.

3. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to a lower grade despite other favourable conditions.

Estimates of climatic variables were obtained for the site by interpolation from the Agricultural Climate Dataset (Meteorological Office 1989). The data are shown in Table 1.

The parameters used for assessing overall climatic limitations are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections. Descriptions of the Wetness Classes used can be found in Appendix 3.

Table 1 Climatic Interpolation: Whelpley Farm

Grid Reference	SU 229 244	SU 225 252
Altitude (m)	90	135
Accumulated Temperature (deg days)	1453	1401
Average Annual Rainfall	837	829
Overall Climatic Grade	1	1
Field capacity (Days)	185	182
Moisture Deficit, Wheat (mm)	99	94
Potatoes (mm)	89	83

4. RELIEF AND LANDCOVER

The site occupies a dry valley with gently sloping gradients which are not limiting. The lowest point in the valley is at 90m AOD and the highest point is at 135m AOD.

At the time of survey the majority of the site had cereal stubble, but the northern field had been ploughed.

5. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:63,360 scale solid and drift geology map, sheet 298 (Geological Survey of England and Wales 1976). Similarly, the soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000.

The whole site is underlain by Upper Chalk, a soft chalk with flints.

The site mainly consists of the Andover 1 Association, with Carstens Association to the north. Andover 1 soils are described as shallow well drained calcareous silty soils over chalk on slopes and crests and deep calcareous and non calcareous fine silty soils in valley bottoms. Carstens soils are plateau drift clay with flints and are well drained fine silty over clayey, clayey and fine silty soils.

The recent surveys found the soils to be typical of the mapped Associations, with variable thicknesses of soils above the chalk.

6. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Table 2 and shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Table 2 Distribution of ALC grades: Whelpley Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
3a	15.8	62.5	62.5
3b	<u>9.5</u>	<u>37.5</u>	<u>37.5</u>
TOTAL	25.3	100%	100%

Subgrade 3a

The majority of the site has been mapped as Subgrade 3a. These soils are well drained and are Wetness Class I. The main limitation to these soils is workability. The topsoil texture of these soils is a heavy clay loam as confirmed by particle size distribution analysis. For such soils in an area with Field Capacity Days of 185 these soils cannot be graded better than 3a. This limitation means that the times when access onto the land can be made without causing damage to the soil structure are limited. This reduces the versatility of the land. Over much of the area mapped as 3a there are only shallow or no subsoils over chalk. There is sufficient available water in these soils to be at least Subgrade 3a. The topsoils have a mixture of chalk and flint stones in low percentages.

Subgrade 3b

The rest of the site has been mapped as Subgrade 3b. These soils are similar in part to those described above but have clay topsoils. Particle size distribution confirmed these textures. In the northern part of the site the soils are much stonier with stone content in the subsoil measured to be 25% in a soil profile pit. The rest of the areas of Subgrade 3b have clay over chalk. The soils are well drained and Wetness Class I. The main limitation to these soils is also workability, but with a heavier topsoil than that in the 3a area the soils are downgraded.

7. SOIL RESOURCES

The areas referred to can be found on the accompanying Soil Resources map.

"Topsoil" is defined as the organic rich surface horizon. The topsoils across the site are calcareous. A broad distinction can be made between the topsoils with heavy clay loam and those with clay topsoil texture. These distinct topsoils should be handled separately as they are significantly different in terms of workability. The heavy clay loams vary in depth from 25cm to 35cm but a median depth is 30cm. The structure of this topsoil is moderately developed coarse subangular blocky and it is friable in consistence. The depth of the clays varies between 25cm to 40cm deep, but again 30cm is the median. The topsoil structure of the clay is less well developed and is a weakly developed coarse

subangular blocky structure with friable consistence. The topsoils generally have a stone content of about 5% mixture of chalk stones and flint.

A total topsoil resource of 75900m³ is available, distributed as shown in Table 3.

Table 3 Topsoil Resources

Map Unit	Depth (cm)	Area (ha)	Soils	Volume (m ³)
1,5	30cm	9.2	C	27600
2,3,4,6	30cm	16.1	HCL	<u>48300</u> 75900

"Subsoil" is defined as the less organic rich lower horizons.

Not all parts of the site have subsoil, because the chalk is often found near to the surface directly below the topsoil. In other parts of the site the subsoils are deep and there are profile between these extremes. Where subsoils are found they are calcareous.

Unit 1 has little or no subsoil above the chalk. In places there is up to 10cm of clay subsoil containing chalk and flint stones. This clay has a colour of 7.5YR46.

Unit 2 has no subsoil, with the heavy clay loam topsoil directly above the chalk.

Unit 3 has heavy clay loam subsoil above the chalk. This subsoil horizon varies in depth but has an average depth of 55cm. The colour of this horizon is 10YR64.

Unit 4 has deep heavy clay loam subsoils with low stone contents. The colour of these moderately structured subsoils is 75YR46.

Units 5 and 6 have deep stony clay subsoils with stone contents of about 25% hard stones. These subsoils have moderately developed coarse subangular structure with friable consistence leading to a moderate structural condition. The subsoils are ochreous in colour.

A total subsoil (soil with <70% chalk) resource of 57900m³ is available, in addition to 169800m³ of chalk, distributed as shown in Table 4.

Table 4 Subsoil Resources

Map Unit	Depth (cm)	Area (ha)	Soils	Volume (m ³)
1	30-120	7.0	chalk	63000
2	30-120	9.7	chalk	87300
3	30-55	3.0	HCL	7500
3	55-120	3.0	chalk	19500
4	30-120	1.4	HCL	12600
5	30-120	2.2	C	19800
6	30-120	2.0	C	<u>18000</u>
				227700

SOIL RESOURCES: Soil Units

TEXTURE	DEPTH (cm)	STONES	AREA (ha)	VOLUME (m³)
Unit 1				
C	0-30	5%CH/HR	7.0	21000
Chalk	30-120	100%CH	7.0	63000
Unit 2				
HCL	0-30	10%CH/HR	9.7	29100
Chalk	30-120	100%CH	9.7	87300
Unit 3				
HCL	0-30	5%CH/HR	3.0	9000
HCL	30-55	30%CH	3.0	7500
Chalk	55-120	100%CH	3.0	19500
Unit 4				
HCL	0-30	5%CH/HR	1.4	4200
HCL	30-120	5%HR	1.4	12600
Unit 5				
C	0-30	5%CH/HR	2.2	6600
C	30-120	25%HR	2.2	19800
Unit 6				
HCL	0-30	5%CH/HR	2.0	6000
C	30-120	25%HR	2.0	18000
				303600

Abbreviations

HCL Heavy clay loam
 C Clay
 HR Hard rock
 CH Chalk

APPENDIX 1

REFERENCES

GEOLOGICAL SURVEY OF ENGLAND AND WALES (1976 Solid and drift edition. Sheet 298 Salisbury, 1:50,000 scale

MAFF (1974) Agricultural Land Classification Map sheet 167 Provisional 1:63,360 scale

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

METEOROLOGICAL OFFICE (1989) Published climatic data extracted from the agroclimatic dataset, compiled by the Meteorological Office

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5 Soils of South West England 1:250,000

APPENDIX 2

DESCRIPTION OF THE GRADES AND SUBGRADES

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 include 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 cereals, 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 most 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: private park land, 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.

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.

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

APPENDIX 3

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years.

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for between 31 and 90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not within 40cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years.

Notes: The number of days specified is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.

Source: Hodgson, J M (in preparation) Soil Survey Field Handbook (revised edition).