

**LAYHAM QUARRY,
NEAR HADLEIGH, SUFFOLK**

**Agricultural Land Classification Map &
Soil Physical Characteristics Report**

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**Resource Planning Team
Eastern Region
FRCA Cambridge**

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AGRICULTURAL LAND CLASSIFICATION & SOIL PHYSICAL CHARACTERISTICS REPORT

LAYHAM QUARRY, NEAR HADLEIGH, SUFFOLK

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 14.3 ha of land at Layham Quarry, Near Hadleigh, Suffolk. The survey was carried out during April 1998.
2. The survey was carried out by the Farming and Rural Conservation Agency (FRCA) for the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with an application to extend the existing quarry. This survey supersedes previous ALC information for this land.
3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.
4. At the time of survey the land use on the site was winter cereals.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10 000; it is accurate at this scale but any enlargement would be misleading.
6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% site area
2	10.2	71
3a	4.1	29
Total site area	14.3	100

7. The fieldwork was conducted at an average density of one boring per hectare. A total of 19 borings and 2 soil pits was described.
8. The majority of the area has been graded 2 (very good quality agricultural land). This land is limited by slight wetness and workability constraints and/or slight droughtiness. Very locally topsoil stone also limits this land to grade 2. Two small areas of subgrade 3a land (good quality agricultural land) have been mapped, in the north west and south. These areas are limited by a moderate wetness and workability constraint.

FACTORS INFLUENCING ALC GRADE

Climate

9. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

10. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5 km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TM 010 394
Altitude	m, AOD	55
Accumulated Temperature	day°C (Jan-June)	1402
Average Annual Rainfall	mm	594
Field Capacity Days	days	106
Moisture Deficit, Wheat	mm	118
Moisture Deficit, Potatoes	mm	113
Overall climatic grade	N/A	Grade 1

11. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

12. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (AT0, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site mean there is no overall climatic limitation to this land. The climatic grade is 1.

Site

14. The site is 1 km south east of Polstead Heath village and is bounded to the north and south by minor roads. The existing quarry is to the north of the site and some old workings have occurred to the north west. Agricultural fields lie to the west and east of the site. The land is almost flat at approximately 55m AOD. Within the site are three hollows which may have been old small scale quarry workings in the past. Gradient and microrelief do not constitute any limitation to the agricultural quality of the land.

Geology and soils

15. The 1:50 000 solid and drift edition geology map, sheet 207, Ipswich (British Geological Survey, 1990) maps the whole site as boulder clay which covers the underlying solid geology of Red Crag and Norwich Crag.

16. The 1:250 000 reconnaissance scale soils map (sheet 4, Soil Survey of England & Wales 1983) shows the whole area as the Hornbeam 3 Association. This is briefly described as deep fine loamy over clayey and clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Some slowly permeable seasonally waterlogged fine loamy over clayey soils. Calcareous subsoils in places. During the detailed survey two soil types were identified.

Soil Type I (11.9 ha)

17. This is the main soil type found on the site and typically comprises very slightly stony (occasionally slightly stony) non calcareous medium sandy silt loam or medium clay loam topsoils. The upper subsoil comprises very slightly stony non calcareous medium clay loam (occasionally medium sandy silt loam) and typically extends to 50/60 cm. Occasionally at the base of the upper subsoil stony layers are encountered with >20% flint. The lower subsoil comprises a very slightly to moderately stony non calcareous clay which is slowly permeable.

Soil Type II (2.4 ha)

18. This soil type covers a small area in the south of the site and comprises medium clay loam topsoils which are slightly stony and non calcareous. The subsoil comprises a very slightly stony non calcareous clay. This clay is slowly permeable immediately below the topsoil.

AGRICULTURAL LAND CLASSIFICATION

19. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

20. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

Grade 2

21. Land graded 2 covers the majority of the site. Profiles typically have slowly permeable clay at 50/60 cm and have been assessed as Wetness Class II. This in combination with fine loamy topsoils limits the land to this grade. Droughtiness also limits this land to this grade as the combination of soil properties and climatic conditions results in there being a slight shortfall in the amount of available water for plant growth. Thus the land suffers from slight droughtiness in the summer. Locally topsoil stone also limits the land to this grade.

Subgrade 3a

22. Two small areas have been mapped as subgrade 3a land. The combination of the fine loamy topsoils and slowly permeable clay immediately below this horizon (assessed as Wetness Class III) result in a moderate wetness and workability limitation. A very small area in the north of the site has been subject to tipping and bricks and other debris are notable on the surface.

Roger Orpin
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SOURCES OF REFERENCE

British Geological Survey (1990) *Sheet No. 207, Ipswich, Solid and Drift Edition*.
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land*. MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification*.
Met. Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 4, Soils of Eastern England*.
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in Eastern England*
SSEW: Harpenden

APPENDIX I

DESCRIPTIONS 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 includes 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 or horticultural crops can usually be grown but on some land of this 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 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When 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 the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist 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 severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

STATEMENT OF SOIL PHYSICAL CHARACTERISTICS IAYHAM QUARRY, NEAR HADLEIGH, SUFFOLK

SOIL TYPE I (11.9 HA)

Topsoil

Texture:	medium sandy silt loam or medium clay loam
Colour:	10YR4/3
Stone Content:	very slightly, occasionally slightly stony, (range 1-10%)
Roots:	many fine and very fine roots
Calcareous:	non calcareous
Depth:	30 cm
Boundary form:	abrupt, smooth

Upper subsoil

Texture:	medium clay loam, occasionally medium sandy silt loam
Colour:	10YR5/4, 5/3, 4/4 and 6/3
Stone Content:	typically very slightly stony (range 1-5%). At base of horizon a layer with >20% flint is often encountered
Structure:	weakly developed very coarse subangular blocky
Porosity:	>0.5%
Consistence:	friable
Structural condition:	good to moderate
Roots:	common fine and very fine
Calcareous:	non calcareous
Depth:	typically 50/60cm
Boundary form:	clear, wavy

Lower subsoil

Texture:	clay
Colour:	10YR 5/4, 5/5, 5/3 and 7.5YR5/5 and 5/4
Stone Content:	very slightly to moderately stony (range 2-20%)
Structure:	weakly developed coarse angular blocky
Porosity:	<0.5%
Consistence:	firm
Structural condition:	poor
Roots:	few fine and very fine
Calcareous:	non calcareous
Depth:	120 cm

Notes:

Assessed typically as Wetness Class II

SOIL TYPE II (2.4 HA)

Topsoil

Texture:	medium clay loam
Colour:	10YR4/3
Stone Content:	slightly stony (range 5-8% flint)
Roots:	many fine and very fine
Calcareous:	non calcareous
Depth:	30 cm
Boundary form:	abrupt, smooth

Subsoil

Texture:	clay
Colour:	10YR 5/4 and 5/3
Stone Content:	very slightly stony (range 2-5% flints)
Structure:	moderately developed coarse angular blocky
Porosity:	<0.5%
Consistence:	firm
Structural condition:	poor
Roots:	common fine and very fine
Calcareous:	non calcareous
Depth:	120 cm

Notes: assessed as Wetness Class III