Agricultural Land Classification

Alkerton Ironstone Quarry
Banbury Oxfordshire

ALKERTON IRONSTONE QUARRY, BANBURY, OXFORDSHIRE
AGRICULTURAL LAND CLASSIFICATION REPORT OF SURVEY

1 Introduction

In May 1992 a detailed Agricultural Land Classification (ALC) was carried out at part of Alkerton Ironstone Quarry near Banbury in Oxfordshire The site had been worked under a 1970s consent with the majority of the area restored to a low level Following an application by British Steel to strip the soils and raise the levels with inert fill ADAS was commissioned to determine the land quality of the initial restoration

Fieldwork was conducted by members of the Resource Planning Team at a scale of 1 10 000 with a total of 25 borings and 2 pits described across the site Land quality was assessed using MAFF s revised guidelines and criteria for grading the quality of agricultural land (October 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 distribution of the grades is shown on the attached ALC map and the areas of each grade are given in the table below The map is accurate at the scale shown but any enlargement may be misleading

Soil wetness is the main limitation affecting the soils of the site as a result of significant compaction in the upper subsoils causing shallow slowly permeable layers which place the profiles in a poor wetness class Subgrade 3B is the predominant grade but worse conditions exist in settlement hollows where severe wetness problems have prevented any crop establishment

Table 2 Distribution of Grades and Subgrades

Grade	Area (ha)	% of Agricultural Area
3B	28 5	96
4	1 3	4
Non Agric	1 7	100% (29 8 ha)
Not Restored	17 9	
	49 4 ha	

2 Climate

A detailed assessment of the prevailing climate was obtained for the site by interpolation from a 5 km grid point dataset 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 soil or site conditions The main parameters used in the assessment of the climatic limitation are average annual rainfall as a measure of overall wetness and accumulated temperature as a measure of the relative warmth of a locality Together these parameters show that for this site there is no overall climatic limitation Details of the interpolation are given in the table below In addition no local climatic factors are significant at the site

Table 2 Climatic Interpolation

Grid Reference	SP388421
Altitude (m)	160
Accumulated temperature (deg)	1318
Average annual rainfall (mm)	717
Field capacity (days)	162
Moisture deficit wheat (mm)	95
Moisture deficit potatoes (mm)	83

3 Agricultural Land Classification

Subgrade 3B The majority of the soils on the site have been placed in this grade with soil wetness as the main physical limitation Pit 1 is typical of these soils and describes a medium clay loam topsoil overlying a significantly compacted subsoil Structures in the subsoil are poor and are typically coarse angular blocky breaking down to coarse subangular blocky and show evidence of platy structure in places These structures in combination with very low porosity and slight evidence of wetness produce slowly permeable layers which severely restrict the wetness and the workability of the profiles The soils are placed in Wetness Class IV and can therefore be graded no higher than Subgrade 3B given the topsoil textures and the prevailing FC days

Pit 2 describes the better soils in this map unit Some individual borings are classified as Subgrade 3A with soil droughtiness as the main limitation but the presence of adjacent wetter and compacted hollows limits the practical management of such soils to Subgrade 3B

A minor area in the north west of the site has gradients in the range of 7-11 where the land rises up to the original level adjacent to the road

Grade 4 An area in the extreme south has been placed in this grade as a result of a severe wetness limitation Standing water in the area has resulted in a complete loss of the crop At the time of survey the upper subsoil was saturated at shallow depths

The north eastern section of the application area has not yet been restored and was therefore not included in the survey An additional area of soil heaps has been classified as non agricultural

SOIL PIT DESCRIPTION

Site Name ALKERTON MINERALS OXON Pit Number 1P

Grid Reference SP427 422

Average Annual Rainfall 717 mm
Accumulated Temperature 1318 degree days
Field Capacity Level 162 days
Land Use Barley
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 20	MCL	75YR44 00	0	5		
20- 45	HCL	10YR52 53	0	10		MCAB

Wetness Grade 3B

Wetnesss Class IV
Gleying 000 cm
SPL 020 cm

Drought Grade 3B

APW 062mm MBW -33 mm
APP 062mm MBP -21 mm

FINAL ALC GRADE 3B
MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name ALKERTON MINERALS OXON Pit Number 2P

Grid Reference SP389 423

Average Annual Rainfall 717 mm
Accumulated Temperature 1318 degree days
Field Capacity Level 162 days
Land Use Barley
Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT STONE	MOTTLES	STRUCTURE
0- 30	MCL	10YR41 00	0	3		
30- 50	HCL	10YR44 00	0	15		WKCSB
50- 80	HCL	10YR44 00	0	30		

Wetness Grade 1

Wetnesss Class I
Gleying 000 cm
SPL No SPL

Drought Grade 3A

APW 088mm MBW -7 mm
APP 091mm MBP 8 mm

FINAL ALC GRADE 3A
MAIN LIMITATION Droughtiness

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 an 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 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 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 golf courses, private parkland 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