



Agricultural Land Classification Land at Forest Farm Chippenham

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1 Executive Summary

The Agricultural Land Classification of approximately 43ha of land to the east of Chippenham, Wilts, was assessed by ADAS UK Ltd (ADAS) in January 2016.

The site which is proposed for development lies in one block on the eastern edge of Pewsham, a suburb on the eastern side of Chippenham. The land is almost level to gently sloping and the land lies at an altitude of approximately 55 metres A.O.D in the east, rising to 65m on the hill top in the north-west. At the time of the survey the fields supported grass leys and permanent pasture, some of which were being grazed by sheep. There was evidence of historic cattle grazing but the cattle were housed at the time of the site visit.

The majority of the site is underlain by Oxford Clay, but the south western end of the site is mapped as Kellaways Formation; there are no superficial geological deposits overlying the solid geology. The fieldwork undertaken for this report indicates that the majority of the site is Agricultural Land Classification Subgrade 3b due to the limitations imposed on crop growth by soil wetness; Subgrade 3a land was located on the lighter textured land in the north.

2 Introduction

ADAS was instructed by Acorus Rural Property Services Ltd to undertake an Agricultural Land Classification (ALC) survey on a site situated east of Pewsham, on the eastern outskirts of Chippenham, to inform a planning application for development.

The land was classified using the system outlined in the Ministry of Agriculture, Fisheries and Food (MAFF, now Defra) publication: 'Agricultural Land Classification of England and Wales - Revised guidelines and criteria for grading the quality of agricultural land' (October 1988).

3 Methodology

3.1 Fieldwork

A desk study of soils and climatic information was undertaken using reference material held by ADAS, followed by detailed fieldwork to study soil and site limitations.

Fieldwork was undertaken with a hand-held 50 mm diameter "Dutch" auger and/or spade to a depth of 1m. In addition, soil pits were excavated to determine subsoil characteristics which could not be identified from the auger sample.

A total of 49 auger borings and five soil pits were examined to determine the quality of the land and the results are shown on the plan at **Appendix 1**. A brief description of the soil pits and auger profiles are given in **Appendix 2** and the results of laboratory analysis for topsoil particle size distribution are shown at **Appendix 3**.

The fieldwork was carried out on 5th - 6th January 2016.

3.2 The Agricultural Land Classification System

The Agricultural Land Classification (ALC) system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The limitations can operate in one or more of four principal ways.

They may affect:

- *the range of crops which can be grown*
- *the level of yield*
- *the consistency of yield*
- *the cost of obtaining the crop*

The classification system gives considerable weight to flexibility of cropping, whether actual or potential, the ability of some land to produce consistently high yields of a somewhat narrower range of crops is also taken into account.

The principal physical factors influencing agricultural production are climate, site (including relief) and soil. By assessing these factors, it is possible to assign land into one of five land classification grades, Grade 1 land being the highest quality and Grade 5 the lowest quality land. Grade 3 is sub-divided into Subgrades 3a and 3b, to identify good quality agricultural land from moderate quality land (see **Appendix 4** for a description of the grades used in the ALC system). By considering site specific climate, site and soil factors the land can be classified into 1 of 5 agricultural grades or certain non-agricultural grades, the results of which are detailed in sections 6.4 and 6.5.

4 Geology, Soils and Present Land Use

4.1 Geology

The majority of the site is underlain by Oxford Clay, but the south western end of the site is mapped as Kellaways Formation, both were laid down in shallow seas between 156 – 165 million years ago in the Jurassic Period; there are no superficial geological deposits overlying the solid geology. The soils vary between the sloping land in the north and the lower land in the south.

4.2 Soils

The resulting soils are mapped on the soil maps¹ of the area as Wickham 3 in the west of the site, with Denchworth on the lower lying land in the east.

Wickham 3 soils have formed in Oxford Clay and thin drift deposits to include fine loamy and coarse loamy soils over clay; they are slowly permeable and seasonally waterlogged. These soils fall into Wetness Classes (WC) 3 and 4 (WCs are a measure of the duration of waterlogging at specified depths in the soil profile, ranging from WC 1 which is freely drained to WC 6 is very poorly drained). The soils contain few stones.

Denchworth soils have formed in Oxford Clay deposits to include deep clays; they are slowly permeable and seasonally waterlogged. These soils fall into WC 4. The soils contain few stones.

Fieldwork for this survey has confirmed the presence of these soils and also located a disused canal which crosses the southern end of the site; it has been infilled with a clayey subsoil. The disturbed soils are waterlogged and gleyed (a sign of seasonal wetness) to the surface.

4.3 Present Land Use

At the time of survey in January 2016, the site supported grass leys and permanent pasture, some of which were grazed by sheep and recently by cattle.

The site is adjacent to the A4 in the north-west and north, but against agricultural land in the south and east. A narrow wood with ponds forms the south western boundary.

5 Previous Agricultural Land Classification Surveys

The Provisional Agricultural Land Classification maps show the site and surrounding land as an area of Grade 3. The Provisional Maps only give an indication of land quality on larger sites and should not be relied on for site specific assessment of land quality. In addition they do not classify land into Subgrades 3a and Subgrade 3b to differentiate between better quality (Subgrade 3a) and lower quality (Subgrade 3b) land.

The Magic websiteⁱⁱ indicates that none of the site or immediately surrounding land has been subject to a detailed ALC survey. There is a detailed ALC of land to the north of Pewsham which indicates that Wickham 3 soils are mapped as a mix of Subgrade 3a and Subgrade 3b in that area.

6 Results

The sections below illustrate the main considerations and limitations to the grading of the land.

6.1 Climate

The site climatic variables have been interpolated from grid point data surrounding the site, as follows:

Table 1: Climatic Variables

Grid Reference	ST936719	ST940715
Altitude (m)	65	55
Accumulated Temperature (day °C)	1468	1479
Average Annual Rainfall (mm)	747	734
Overall Climatic Grade	1	1
Field Capacity Days	167	165
Moisture deficit (mm): Wheat	104	106
Moisture deficit (mm): Potatoes	96	99

The site lies south of the M4 motorway; it has a warm moist climate. Accumulated Temperature (January–June), a measure of the relative warmth of the area, is 1468°C on the higher ground and 1479°C on the lower ground. The average annual rainfall is 747-734 mm. The height variation on site does not have a major effect on climatic variables.

This combination of rainfall and temperature indicates that the area is warm and moist, making it good for crop growth so long as the soils hold sufficient water to protect crops against drought and so long as the soils are freely drained. There is no overriding climatic limitation to the classification of the land.

6.2 Site Limitations

Slope: The site lies at an altitude of more than 65m on the northern boundary and falls gently to a valley on the southern boundary which lies at an altitude of approximately 55m. Most of the site is very gently sloping towards the south but in the area of the infilled canal there is a steeper bank to the valley floor. Gradient is a neutral factor in the classification of the land.

Flooding: The Cocklemore Brook lies to the south of the site whilst the River Avon lies to the west and north of Pewsham; the site lies above either floodplain. There is record on Environment Agency flood mapsⁱⁱⁱ of significant surface water ponding in the lower ground in the east of the site especially by the canal and within the woodland on the southern boundary.

6.3 Soil and Interactive Limitations

All of the soils show some signs of seasonal wetness in the form of pale and grey colours and mottling in the subsoils. The soils are mainly medium textured in the topsoil and heavy textured in the subsoil. The depth to clay has determined where the slowly permeable layer is encountered. The Wickham soils have a slowly permeable layer starting within 350mm - 650mm of the surface and so fall into WC 3 and WC 4. The Denchworth soils are slowly permeable within 350mm - 450mm of the surface and so fall into WC 4.

The main factor affecting land quality in this area is:

- *Soil wetness and workability due to the presence of slowly permeable subsoils.*

All other limitations are less severe and have not affected the final grading of the land.

6.4 Land Quality

The land quality of the site is shown on the attached plan (**Appendix 1**).

Grade 1

No land has been placed in this grade.

Grade 2

No land has been placed in this grade.

Grade 3, Subgrade 3a

This Grade accounts for 19.1% of the survey area. The land is very gently sloping and the soils have:

- *A medium sandy clay loam or medium clay loam topsoil over similar and heavier textured subsoils. They are gleyed and mottled within 300mm of the surface and have a slowly permeable layer starting at depths between 450mm - 720mm of the soil surface and so fall into WC 3.*

In this location soil with a medium clay loam/ sandy clay loam topsoil which falls into WC 3 cannot be graded higher than Subgrade 3a.

Soil wetness and workability are the main limitations to the classification of this land. This land is capable of producing moderate to high yields of a narrower range of crops.

Grade 3, Subgrade 3b

This Grade accounts for 79.1% of the survey area. The land is very gently sloping over most of the site but flat in the valley bottom in the south. The land is classified as Subgrade 3b either because the soils have:

- *A sandy clay loam or medium clay loam topsoil overlying similar and heavier textured subsoils or*
- *Heavy clay loam topsoils over clay subsoils.*

Both soils types are gleyed and mottled close to the surface and have a slowly permeable layer starting within 450mm and so fall into WC 4.

In this location soils with a sandy clay loam or clay loam topsoil which fall into WC 4 cannot be graded higher than Subgrade 3b. The area which has been disturbed by canal infilling is of Grade 4 quality but the area involved is not sufficiently large to map separately.

Soil wetness and workability are the main limitations to the classification of this land. This land is capable of producing moderate yields of a narrow range of crops.

Grade 4

No land has been placed in this grade

Grade 5

No land has been placed in this grade.

Non agricultural and Urban

This classification is placed over the roadside verges in the north of the site.

6.1 Summary of Land Quality in the Survey Area

Table 2: Agricultural Land Classification Measurements

Grade	Area (ha)	% of Total Area
1	-	-
2	-	-
3a	8.211	19.1
3b	34.069	79.1
4	-	-
5	-	-
Non Agricultural/Urban	0.765	1.8
Total	43.045	100.0

7 Conclusions

- *The Provisional ALC maps, produced in the 1970s, classified the site as Grade 3 land. However the provisional mapping exercise was not meant to give a detailed grading of small parcels of land and so the site has been classified again, using the current ALC guidelines.*
- *There are no known detailed ALC surveys of the site shown on the Magic website.*
- *Fieldwork undertaken for this report located soils which were medium to heavy textured and land quality was limited by soil wetness and workability limitations predominantly to Subgrade 3b with a smaller area of Subgrade 3a.*
- *If the land is developed surplus soil should be kept on site or used to restore other sites which are short of soil, to preserve the soil and retain soil functions such as water and carbon storage.*

Appendix 1: Agricultural Land Classification Map and Location Plan

See following page

Document Path: N:\Projects\Vegetation Ecology South\PEDM12_David_Middleditch_under_3k\Forest_Farm_Chippenham\A3L_Forest_Farm_ALC_Whole.mxd



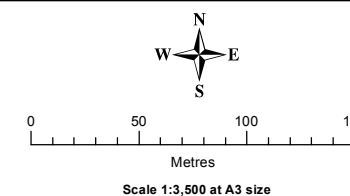
ADAS

Forest Farm,
Chippenham, Wiltshire

Agricultural Land Classification Survey

- Auger boring
- Soil pit
- Grade 1
- Grade 2
- Grade 3a
- Grade 3b
- Grade 4
- Grade 5
- Non Agricultural
- Urban
- Other

Drawn by Andy Frost 28/01/2016, Verified by Rosemary Peel 28/01/2016



Scale 1:3,500 at A3 size

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Appendix 2: Soil Descriptions

See following page

APPENDIX - PIT AND BORING DESCRIPTIONS

SITE: Forest Farm, Chippenham

Keys common to all tables

Gradient

AL = almost level
GS = gentle slope
SS = steep slope

VGS = very gentle slope
MS = moderate slope

Texture Key

S = sand
Z = silt
C = clay
L(y) = loam(y)

F = fine
M = medium
C = coarse
Pt(y) = peat(y)

Structure Key

(V)Wk = (very)weak
F = fine
SG = single grain

M = moderate
M = medium
GR = Granular
AB = angular blocky

S = strong
C = coarse
SAB = subangular blocky
PR = prismatic

Colour key

Br = brown
Rd = red
Ol = olive

Bl = black
Or = orange

Yl = yellow
pl = pale

Main Limitation

DR = Drought
GR = Gradient

WE = Wetness
MR = Microrelief

CL = Climate
TX = Texture

Land use

Wht = wheat

Bar = barley

perm past = permanent
pasture
r&f = ridge and furrow

Osr = oil seed rape

fal = fallow

Others abbreviations

ab = abundant
MB = moisture balance
occ = occasional/ly
pot = potatoes
SPL = slowly permeable layer
OM = organic matter

cons = concretions
Mn = manganese
och = ochreous
sat = saturated
na = not applicable
rrm = rusty root mottles

imp = impenetrable
mot = mottles
pok = pockets

Site:

PIT DESCRIPTIONS

Pit	Depth (mm)	Colour	Texture	Structure	Drainage /Porosity (0.5% pores)	Total Stone
1	210 Sample taken	10YR4/2, dk gr br; gr ped faces	SCL/MSL; 5% OM, more OM at base of topsoil	M,M,SAB to gr	Rrm / > fri	<1
	470	10YR6/4,lt yl br	SCL	M,M,SAB	Och many / > fri	<1
	580	10YR6/4 + 6/2	HCL	PR breaking to M,C,AB	Och ab / <, firm	<1
	1000 augered	10YR 6/2	C	-	Och many	<1
	Gleyed at: 0	SPL at: 470	Wetness class: 3/4	Wetness grade: 3a 2 if MSL WC3 3b if SCL WC4	Comments: surface has sealed making it very wet. Water seeping into pit along base of SCL.	
		MB wheat: MB pot:	DR Grade:	Main limitation. WE		ALC grade 3a



Pit	Depth (mm)	Colour	Texture/	Structure	Drainage /Porosity (0.5% pores)	Total Stone
2	200 Sample taken	10YR4/2, dk gr br	HCL	M,M,SAB from M,PR	Rrm few / >	<1
	410	10YR5/3 (pl) br	HCL	M,C,AB	Och many / >	<1
	570	10YR6/3 pl br	C	Wk,C,PR to Wk,VC,AB and massive	Och many /<	<1
	1000 augered	10YR 6/2	C	-	Och many	
	Gleyed at: 200	SPL at: 410	Wetness class: 4	Wetness grade: 3b	Comments: Water seeping into pit along base of topsoil.	
		MB wheat: MB pot:	DR Grade:	Main limitation. WE		ALC grade 3b



Pit	Depth (mm)	Colour	Texture/	Structure	Drainage /Porosity (0.5% pores)	Total Stone
3	200	10YR4/3 dk br	C, 7% OM	M,M,SAB	Rrm	<1
	Sample taken 380	10YR 5/3 br	C, firm	M,C,PR	Och many/ >	<1
	600	10YR5/4 yl br, with 5/2 gr br ped faces	C	M,M,PR more C,PR with depth	Och many /<	<1
	Gleyed at: 200	SPL at: 380	Wetness class: 4	Wetness grade: 3b	Comments: saturated surface, poached by sheep. Slightly undulating but level overall	
		MB wheat: MB pot:	DR Grade:	Main limitation. WE		ALC grade 3b



Pit	Depth (mm)	Colour	Texture/	Structure	Drainage /Porosity (0.5% pores)	Total Stone
4	270 Sample taken	10YR3/3 dk br	SCL	M,M,SAB	Rrm	<1
	400	10YR 5/3 br (pl)	SCL	Wk,M,PR to M,M,AB	Och com+ fe cons/ >	<1
	650+	10YR6/3 pl br	C	M,M,PR more C,PR with depth	Och many /<	<1
	Gleyed at: 270	SPL at: 400	Wetness class: 4	Wetness grade: 3b	Comments: very gentle slope on slight ridge, drier surface	
		MB wheat: MB pot:	DR Grade:	Main limitation. WE		ALC grade 3b



Pit	Depth (mm)	Colour	Texture/	Structure	Drainage /Porosity (0.5% pores)	Total Stone
5	200	10YR4/2 dk gr br	HCL/C sl org	M,M,PR to ST,M,SAB	Rrm + och com	<1
	330	10YR 6/3 p br	C, friable	M,C,PR	Och many/ >	<1
	600+	10YR5/4 with 5/2 ped faces	C, firm	Wk,C,PR to Wk,C,AB mor PR with depth	Och many /<	<1
	Gleyed at: 200	SPL at: 380	Wetness class: 4	Wetness grade: 3b	Comments: Very gentle slope above valley flood. Infilled canal to north west	
		MB wheat: MB pot:	DR Grade:	Main limitation. WE		ALC grade 3b



AUGER BORING DESCRIPTIONS

Land use: Grass mainly leys some currently grazed by sheep
Soil surface is saturated over most of the site but soils drier below.
Often saturated above heavier textured subsoil horizons.

[illegible]

8 VGS	280	SCL heavy	Br, gr ped faces	Rrm	Few				
	350	SCL, firm	Yl br	Och few, sat at 350	Few				
	850	HCL, firm	Lt yl br	Och many	Few				
	1000	LMS + C, v firm	Yl + gr	Och many	Few		4	We	3b
Disturbed profile close to route of pipeline									
9	270	HCL	Br	Rrm	Few				
Hill top	400	HCL	Pl br	Och many	Few				
	1000	C gritty	Lt yl br	Och many	Few		4	We	3b
10 VGS	220	HCL	Dk gr br	Rrm few	Few				
	350	HCL	Pl br	Och many by 300	Few				
	850+	C	Lt yl br more gr with depth	Och many	Few		4	We	3b
11 VGS	130	SCL	Br	Rrm	Few				
	380	SCL	Pl br	Och many	Few				
	420	HCL gritty	Lt yl br	Och ab	Few				
	1000	HCL/C	Gr br	Och many	Few		4	We	3b
12 VGS	180	SCL/MSL sl org	Dk br	Rrm	Few				
	350	SCL/MSL	Pl br	Och many	Few				
	400	SCL	Lt yl br	Och many	Few				
	470	HCL	Yl br + gr br	Och many	Few				
	1000	C	Yl br + gr	Och com	Few		4	We	3b
13 VGS	230	SCL heavy	Br, gr ped faces	Rrm, sat at surface and at 230mm	Few				
	550	SCL heavy	Pl br	Och many	Few				
	1000	C	Lt yl br more gr br with depth	Och many	Few		3	We	3a
14 AL	280	MSL, sl org	Br,	Rrm	Few				
	480	MSL/SCL	Yl br	Och com	Few				
	650	MSL, pok LMS firm	Yl br	Och many, at at 600; sat	Few				
	1000	C, firm	Lt yl br	Och many	Few		3	We	3a
15 AL	270	HCL	Br	Rrm, och com	Few				
	350	HCL	Pl br	Och many	Few				
	620	HCL/C, firm	Gr br	Och com	Few				
	750	HCL gritty	Pl yl br	Och many	Few				

	1000	LMS + MSL	Yl + gr	Och many, sat	Few		4	We	3b
16 AL	190	HCL	Dk gr br	Rrm	Few				
	250	C	Gr br	Och com	Few				
	1000+	C	Gr	Och many	Few		4	We	3b
17 AL	250	mCL	Dk gr br	Rrm	Few				
	450	C	Gr	Och many					
	750+	C	Gr	Och com	Few		4	We	3b
18 VGS	220	HCL	Dk gr br	Rrm	Few				
	350	HCL	Lt yl br	Och many	Few				
	1000	C	Gr br + gr	Och many	Few small		4	We	3b
19 VGS	250	SCL, sat	Dk br	Rrm	Few				
	400	SCL, sat	Pl br	Och many	Few				
	620	HCL	Lt gr br	Och ab	Few				
	1000	C	Lt gr br	Och many	Few		4	We	3b
20 VGS	230	SCL, org	Dk br	Rrm	Few				
	440	Heavy SCL	Lt yl br	Och many	Few				
	500	HCL	Lt yl br	Och many	Few				
	800+	C	Lt yl br	Och many	Few		4/3	We	3b/a
21 VGS	120	SCL, org	Br, gr ped faces	Rrm	Few				
	250	FSCL, friable	Yl br	Och com	Few				
	500	FSCL, friable	Lt yl br	Och many	Few				
	680	HCL, firm	Lt yl br	Och many	Few				
	1000	C, firm	Gr br	Och com	Few		3	We	3a
22 VGS	230	SCL	Br	Rrm, sat surface	Few				
	500	SCL, friable	Lt yl br	Och many	Few				
	650	MSL	Lt yl br	Och ab, sat	Few				
	1000	C, firm	Yl br + Gr br	Och com	Few		3	We	3a
23 AL	270	HCL	Dk gr br	Rrm, sat at surface; och few	Few				
	350	C, firm	Pl br	Och many	Few				
	1000	C	Lt yl br more gr br with depth	Och many	Few		4	We	3b
24 AL	230	HCL/C	Br, gr ped faces	Rrm	Few				

[illegible]

[illegible]

[illegible]

Appendix 3: Laboratory Analysis

See following page



ANALYTICAL REPORT

Report Number	93437-16	X922	ROSEMARY PEEL
Date Received	15-JAN-2016		ADAS ENVIRONMENT GROUP
Date Reported	26-JAN-2016		PARKFIELD COTTAGE
Project	SOILS		POLLARDS LANE
Reference	ROSEMARY PEEL		SOUTHWELL
Order Number			NOTTS NG25 0TL

Laboratory Reference		SOIL294538	SOIL294539								
Sample Reference		PIT 1 0-250MM	PIT 3 0-250MM								
Determinand	Unit	SOIL	SOIL								
Sand 2.00-0.063mm	% w/w	68	26								
Silt 0.063-0.002mm	% w/w	14	30								
Clay <0.002mm	% w/w	18	44								
Organic Matter WB	% w/w	5.2	7.0								
Textural Class **		SCL/SL	C								

Notes	
Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.

Reported by	** Please see the attached document for the definition of textural classes. <i>Joe Cherrie</i> Natural Resource Management, a trading division of Cawood Scientific Ltd. Coopers Bridge, Braziers Lane, Bracknell, Berkshire, RG42 6NS Tel: 01344 886338 Fax: 01344 890972 email: enquiries@nrm.uk.com
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ANALYTICAL REPORT

Report Number	93438-16	X922	ROSEMARY PEEL
Date Received	15-JAN-2016		ADAS ENVIRONMENT GROUP
Date Reported	26-JAN-2016		PARKFIELD COTTAGE
Project	SOILS		POLLARDS LANE
Reference	ROSEMARY PEEL		SOUTHWELL
Order Number			NOTTS NG25 0TL

Laboratory Reference		SOIL294540	SOIL294541								
Sample Reference		PIT 2 0-250MM	PIT 4 0-250MM								
Determinand	Unit	SOIL	SOIL								
Sand 2.00-0.063mm	% w/w	40	60								
Silt 0.063-0.002mm	% w/w	29	18								
Clay <0.002mm	% w/w	31	22								
Textural Class **		HCL	SCL								

Notes	
Analysis Notes	The sample submitted was of adequate size to complete all analysis requested. The results as reported relate only to the item(s) submitted for testing. The results are presented on a dry matter basis unless otherwise stipulated.
Document Control	This test report shall not be reproduced, except in full, without the written approval of the laboratory.

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Textural Class Abbreviations

The texture classes are denoted by the following abbreviations:

Class	Code
Sand	S
Loamy sand	LS
Sandy loam	SL
Sandy Silt loam	SZL
Silt loam	ZL
Sandy clay loam	SCL
Clay loam	CL
Silt clay loam	ZCL
Clay	C
Silty clay	ZC
Sandy clay	SC

For the *sand*, *loamy sand*, *sandy loam* and *sandy silt loam* classes the predominant size of sand fraction may be indicated by the use of prefixes, thus:

F	Fine (more than 2/3's of sand less than 0.2 mm)
C	Coarse (more than 1/3 of sand greater than 0.6 mm)
M	Medium (less than 2/3's fine sand and less than 1/3 coarse sand).

The subdivisions of *clay loam* and *silty clay loam* classes according to clay content are indicated as follows:

M	medium (less than 27% clay)
H	heavy (27-35% clay)

Organic soils i.e. those with an organic matter greater than 10% will be preceded with a letter O.

Peaty soils i.e. those with an organic matter greater than 20% will be preceded with a letter P.

Appendix 4: Description of the Grades and Subgrades

The ALC grades and Subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. In practice, the grades are defined by reference to the land's physical characteristics, for which the cut-offs are described in Section 3. The most productive and flexible land falls into Grades 1, 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is either of moderate quality (Subgrade 3b) or poor quality (Grade 4). Although less significant on a national scale, such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.

Descriptions are also given of other land categories which may be used on ALC maps.

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 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 (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 agriculture land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Appendix 5: References

ⁱ SSEW 1983 Soils of South West England

ⁱⁱ magic.defra.gov.uk/

ⁱⁱⁱ <http://apps.environment-agency.gov.uk/wiyby/37837.aspx>