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Land South of A38
Wellington
Agricultural Land Classification

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LAND SOUTH OF A38, WELLINGTON

AGRICULTURAL LAND CLASSIFICATION

CONTENTS

LAND SOUTH OF A38, WELLINGTON

AGRICULTURAL LAND CLASSIFICATION SURVEY

SUMMARY

The survey was carried out by ADAS on behalf of MAFF as part of its statutory role in the preparation of the West Deane Local Plan. The fieldwork at Wellington was completed in December 1994 at a scale of 1:10,000. Data on climate, soils, geology and previous ALC Surveys was used and is presented in the report. The distribution of grades is detailed below and illustrated on the accompanying ALC map. Information is correct at this scale but could be misleading if enlarged.

Distribution of ALC grades: Land South of A38, Wellington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	0.1	0.1	0.1	
3a	33.1	34.4	45.5	
3b	34.2	35.5	47.0	
4	5.3	5.5	7.3	
Urban	6.7	7.0	0.0	
Non Agricultural	0.4	0.4	0.0	
Agricultural Buildings	1.4	1.5	0.0	
Not surveyed	15.0	15.6	0.0	
TOTAL	96.2	100.0	100.0	(72.7 ha)

46% of the agricultural land surveyed was found to be best and most versatile. The majority of the site is limited by wetness problems, although in places the soils are well drained. A block of land in the middle of the site was not surveyed because access was not granted. It is expected that this area would be either Subgrade 3a or 3b.

1. INTRODUCTION

An Agricultural Land Classification (ALC) Survey was carried out in December 1994 at Wellington on behalf of MAFF as part of its statutory role in the preparation of the West Deane Local Plan. The fieldwork covering 96 ha of land was conducted by ADAS at a scale of 1:10,000 (approximately one boring per hectare of agricultural land). A total of 96 auger borings were examined and 4 soil profile pits used to assess subsoil conditions.

The published provisional one inch to the mile ALC map of this area (MAFF 1971) shows the grades of the site at a reconnaissance scale. Most of the site was mapped as being Grade 3, with an area of Grade 1 land to the east of Robin's Close and an area of Grade 2 land to the north and north-east of Burts Farm.

The recent survey supersedes this map 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 120 cm of the soil profile. A description of the grades used in the ALC system can be found in Appendix 2.

2. 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 interpolated from the published agricultural climate dataset (Meteorological Office 1989). The parameters used for assessing overall climate are accumulated temperature (a measure of the relative warmth of a locality) and average annual rainfall (a measure of overall wetness). The results shown in Table 1 indicate there is no overall climatic limitation.

Table 1: Climatic Interpolations: Wellington

Grid Reference		ST 192 192	ST 207 203	ST 200 197
Altitude (m)		110	65	85
Accumulated Temperature (day °)		1456	1507	1484
Average Annual Rainfall (mm)		912	882	893
Overall Climatic Grade		1	1	1
Field Capacity Days		190	186	187
Moisture deficit (mm):	Wheat	93	100	97
	Potatoes	82	90	87

Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat and potatoes are also shown. These data are used in assessing the soil wetness and droughtiness limitations referred to in later sections.

3. RELIEF AND LANDCOVER

The site is on the southern edge of Wellington and is gently undulating, with a high point of 110 m AOD at Robin's Close and a low point of 60 m AOD at Hayward's Bridge. There are no significant areas of slopes with gradients greater than 7°. At the time of survey the land was being used as permanent pasture, ley grassland, cereal cultivation and maize cultivation.

4. GEOLOGY AND SOILS

The geology of the site is shown on the published 1:50,000 scale drift geology map, sheet 311, Institute of Geological Sciences 1976. The whole of the site is underlain by Upper (Keuper) Marls except for a small area which is underlain by valley gravels at Chelston Nurseries and a second small area at Haywards Bridge which is underlain by alluvium.

The soils were mapped by the Soil Survey of England and Wales in 1983 at a reconnaissance scale of 1:250,000. This shows the whole site to consist of soils from the Whimple 3 Association. These are described as being reddish fine loamy or fine silty over clayey soils with slowly permeable subsoils and slight seasonal waterlogging. Some similar clayey soils may be found on brows. Slowly permeable seasonally waterlogged fine loamy and fine silty over clayey soils occur on the lower slopes.

The soils found during the recent survey were similar with slowly permeable layers and mottling apparent throughout the site. In a few places the slowly permeable layers were absent and the profiles are well drained.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades is shown in Table 2 and on the accompanying ALC map. The information could be misleading if shown at a larger scale.

Table 2: Distribution of ALC grades: Wellington

Grade	Area (ha)	% of Survey Area	% of Agricultural Land	
2	0.1	0.1	0.1	
3a	33.1	34.4	45.5	
3b	34.2	35.5	47.0	
4	5.3	5.5	7.3	
Urban	6.7	7.0	0.0	
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TOTAL	96.2	100.0	100.0	(72.7 ha)

Grade 2

A small area of Grade 2 has been shown on the map to link with a larger area of Grade 2 shown on a previous ALC survey (Jurston Farm site, 1989). Other isolated profiles found to be Grade 2, with a minor workability limitation, have been included in a Subgrade 3a mapping unit.

Subgrade 3a

A few profiles have a moderate workability limitation where the topsoil is a heavy clay loam and the profiles have been assessed as Wetness Class I. These profiles either have no evidence of wetness or are gleyed below 40 cm with no slowly permeable layer present. The majority of this grade have a moderate wetness limitation and were assessed as Wetness Classes II and III depending on the combination of whether the profile is gleyed above or below 40 cm and at what depth the slowly permeable layer starts if there is one. The Wetness Class II profiles have a mixture of medium and heavy clay loam topsoils, where as the Wetness Class III profiles only have medium clay loam topsoils. The stone contents are variable but do not impose an overall limitation.

Subgrade 3b

All but a couple of the Subgrade 3b profiles, which have a moderate wetness limitation, have been assessed as Wetness Class III. These profiles either have gleying present above 40 cm and a slowly permeable layer starting above 78 cm but below 52 cm or gleying starting below 40 cm and a slowly permeably layer starting above 67 cm. The topsoils are medium clay loams. The stone contents are variable but do not impose an overall limitation.

Grade 4

The two small areas of Grade 4 land suffer from severe wetness limitations. They are gleyed above 40 cm with slowly permeable layers starting above 50 cm and were assessed as Wetness Class IV. On the whole they have heavy clay loam topsoils and although the stone content is variable it does not impose an overall limitation.

Other Land

Areas of housing and roads are shown as urban. A small area of non-agricultural land and agricultural buildings are so marked. 15 ha in the middle of the site was not surveyed because access was not granted. A proportion of this will be of 'best and most versatile' quality.

Resource Planning Team
Taunton Statutory Unit
January 1995

APPENDIX 1

REFERENCES

INSTITUTE OF GEOLOGICAL SCIENCES (1976) Drift Edition, Sheet 311, Wellington 1:50,000

MAFF (1971) Agricultural Land Classification Map, Sheet 164, 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) Climatological Data for Agricultural Land Classification.

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

APPENDIX 2

DESCRIPTION OF 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 landcover types, eg buildings in large grounds, and where 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 70 cm depth for more than 30 days in most years.

Wetness Class II

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

Wetness Class III

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

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

The soil profile is wet within 40 cm 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).

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
South of A38, Wellington	Pit 1	3° North	Ploughed	Av Rainfall: 893 mm ATO: 1484 day °C	Keuper Marl
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 187 Climatic Grade: 1 Exposure Grade: 1	SOIL SAMPLE REFERENCES
129/94	29/12/94	ST 138 174	HLJ/PB		RPT/HLJ/108

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	25	MCL	7.5YR43	5% HR Total (vis)	None	None	-	-	-	G	Common Fine + Very Fine	-	Abrupt smooth
2	41	HCL	7.5YR54	10% HR Total (vis)	None	None	MCSAB	Friable	Good	G	Few, Very Fine	-	Clear smooth
3	55	C	10YR63	10% HR Total (vis)	CDMO (7.5YR56)	Common	MCAB	Friable	Moderate	G	Few, Very Fine	-	Clear smooth
4	80	C	2.5YR46 (2.5YR54)	0% (vis)	None	Common	WCAB	Friable	Moderate	P	Few, Very Fine	-	Gradual smooth
5	100+	C	2.5YR46	0% (vis)	None	Common	MMAB	Friable	Moderate	P	None	-	-

Profile Gleyed From: 41 cm

Depth to Slowly Permeable Horizon: 55 cm

Wetness Class: III

Wetness Grade: 3a

Available Water Wheat: 142 mm

Potatoes: 118 mm

Moisture Deficit Wheat: 97 mm

Potatoes: 87 mm

Moisture Balance Wheat: 45 mm

Potatoes: 31 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

Spl stops at 80cm because of structure. Small areas of good porosity in the spl.

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SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
South of A38, Wellington	Pit 2 (ASP 5)	3° South	PGR	Av Rainfall: 893 mm ATO: 1484 day °C FC Days: 187 Climatic Grade: 1 Exposure Grade: 1	Keuper Marl
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
129.94	29.12.94	ST 157 203	PB/HLJ		RPT/HLJ/111

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	18	MCL	7.5YR43	5% HR (Vis)	None	None	-	-	-	-	MF, VF	-	Clear smooth
2	33	HCL	7.5YR54	30% HR (Vis)	FDFOM (10YR68)	F	MCSAB	Friable	M	Good	MF, VF	-	Clear smooth
3	65	C	7.5YR64	25% HR (Vis)	CDFOM (7.5YR58)	C	WCSAB	Friable	M	P but good fissures	CF, VF	-	Clear wavy
4	110	C	2.5YR54 (10YR63)	5% HR (Vis)	CDFGM (10YR63)	C	MCAB	Firm	P	Poor	FVF	-	-

Profile Gleyed From: 33 cm

Depth to Slowly Permeable Horizon: 65 cm

Wetness Class: III

Wetness Grade: 3a

Available Water Wheat: 115 mm

Potatoes: 94 mm

Moisture Deficit Wheat: 97 mm

Potatoes: 87 mm

Moisture Balance Wheat: 18 mm

Potatoes: 7 mm

Droughtiness Grade: 2 (Calculated to 120 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wetness

Remarks:

Pit dug to 80 cm, augered to 110 cm.

NL336k

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
South of A38, Wellington	Pit 3	1° North East	PGR	Av Rainfall: 893 mm ATO: 1484 day °C FC Days: 187 Climatic Grade: 1 Exposure Grade: 1	Keuper Marl
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
129/94	29/12/94	ST 150 198	HLJ/PB		RPT/HLJ/110

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	26	MCL	7.5YR43	2% HR Total (Vis)	None	None	-	-	-	Good	MF+VF	-	Clear smooth
2	53	HCL	05YR54	2% HR Total (Vis)	None	None	WCSAB	Friable	M	Good	CF+VF	-	Clear smooth
3	73	C	7.5YR54 (05YR64)	2% HR Total (10YR64)	CDFO (10YR64)	Common	MCAB	Firm	P	Good	FVF	-	Gradual smooth
4	100+	C	2.5YR54 (05YR64)	0% Total (Vis)	CDFG (10YR63)	Common	WCSAB	Firm	P	Good	None	-	-

Profile Gleyed From: 53 cm

Depth to Slowly Permeable Horizon: No SPL

Wetness Class: I

Wetness Grade: 2

Available Water	Wheat:	133 mm
	Potatoes:	110 mm
Moisture Deficit	Wheat:	97 mm
	Potatoes:	87 mm
Moisture Balance	Wheat:	36 mm
	Potatoes:	26 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 2

Main Limiting Factor(s): Workability

Remarks:

Pores in the H4 are few and large therefore nearly an spl (wetness Grade 3a).

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SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
South of A38, Wellington	Pit 4	0°	PGR	Av Rainfall: 893 mm ATO: 1494 day °C FC Days: 187 Climatic Grade: 1 Exposure Grade: 1	Keuper Marl
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY		SOIL SAMPLE REFERENCES
129/94	29/12/94	ST 148 197	HLJ/PB		RPT/HLJ/109

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	20	C	10YR43	<1% HR (vis)	None	None	-	-	-	Good	MF+VF	-	Clear smooth
2	38	C	7.5YR44	<1% HR (vis)	None	None	MCPr breaking to MCAB	Friable	M	Good	CF+VF	-	Clear smooth
3	62	C	7.5YR63	<1% HR (vis)	CDFO (10YR58)	C	WCSAB	Friable	M	Good	FVF	-	Gradual smooth
4	100+	C	05YR54	<1% HR (vis)	CFFG (10YR63)	F	WCPr breaking to WCAB	Firm	P	Poor	FVF	-	-

Profile Gleyed From: 38cm

Depth to Slowly Permeable Horizon: 62cm

Wetness Class: III

Wetness Grade: 3b

Available Water	Wheat:	131 mm
	Potatoes:	111 mm
Moisture Deficit	Wheat:	97 mm
	Potatoes:	87 mm
Moisture Balance	Wheat:	34 mm
	Potatoes:	24 mm

Droughtiness Grade: 1 (Calculated to 120 cm)

Final ALC Grade: 3b

Main Limiting Factor(s): Wetness

Remarks:

H3 is only just porous

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SOIL PLASTICITY RECORDING SHEET

ANNEX 2

SITE DATA

Grid Ref	ST 11 NW, NE		Site Name	Wellington, South of A38		LPA	Taunton Deane		
AAR	893	ATO	1484	FCD	187	MD (wheat)	97	MD (potatoes)	87

SOIL PIT DATA

	PIT ONE ST 11, NW, NE SOIL SERIES Whimple 3			PIT TWO ST 148 197 SOIL SERIES Whimple 3			PIT THREE ST 150 198 SOIL SERIES Whimple 3		
DEPTH	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS	TEXTURE	PLASTIC Y/N	COMMENTS
10 cm	HCL	Y	Worm Just	MCL	N	No Ball	MCL	Y	
20 cm	HCL	Y	Worm Just	MCL	N	No Worm	MCL	Y	
30 cm	HCL	Y	Worm Just	HCL	N	Cracking worm	HCL	Y	
40 cm	HCL	N	Ball No Worm	HCL	N	Cracking worm	HCL	Y	
50 cm	C	N	Ball No Worm	HCL	Y	Worm	HCL	Y	
60 cm	C	N	Ball No Worm	HCL	Y	Worm	HCL	Y	

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