WEST DEANE LOCAL PLAN: WELLINGTON SUB-AREA

AGRICULTURAL LAND CLASSIFICATION

REPORT OF SURVEY

(1) Introduction:

In January and early February 1990 a detailed Agricultural Land Classification (ALC) survey was carried out over land to the North East and South West of the town of Wellington in Somerset. Several distinct blocks of agricultural land were examined and a total of 350 hectares covered.

The request for detailed ALC information was made in connection with MAFF's statutory input to the West Deane Local Plan; the Plan was still at the confidential stages of preparation when the decision was taken to acquire detailed ALC information around a broad area of the town in order to incorporate land quality decisions into the First Draft of the Plan.

The ALC system provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on its use for agriculture. Classification was made according to MAFF's revised guidelines and criteria for grading the quality of agricultural land which have been operational from 1 January 1989.

Fieldwork was conducted by Resource Planning Group staff at an approximate auger sampling density of one auger sample point (ASP) per hectare; a total of 345 borings and 16 soil pits were examined, distributed through the following areas:-

North and East of Wellington: Cade's, Chelston, Jurston Farms Area
Longforth Farm Area
West of Nynehead Road

South and West of Wellington: Trinity and Nowers Farms and Foxdown Hill
Pitt Farm, Exeter Road

The distribution of the ALC grades and the location of the various soil borings and soil pits are shown on the accompanying ALC and ASP maps which have been produced at a scale of 1:10,000. The information is accurate at this scale, but any enlargement of the ALC information would be misleading.

(2) Climate:

Detailed assessments of the prevailing climate were made at representative locations in each of the sites. These assessments were made by interpolation from a 5 km database and are outlined in the relevant sections below.

The agricultural effects of overall climate are assessed by reference to the two important climatic parameters, average annual rainfall (a measure of the overall wetness of a site) and accumulated temperature (a measure of the relative warmth of a locality). At each of the sites there is no overall climatic limitation and no local climatic factors such as exposure or frost risk were noted.

(3) Land North and East of Wellington

3.1 Cade's, Jurston and Chelston Farms Area

A total of 114 borings and 3 soil pits were examined.

Table 1: Distribution of ALC Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
1	1.7	1.5	1.6
2	19.3	16.8	17.7
3A	75.7	65.7	69.3
3B	12.5	10.9	11.4
Non-Agric	2.3	2.0	100% (109.2 ha)
Urban	0.9	0.8	
Farm Buildings	2.7	2.3	
	115.1 ha	100%	

The survey area occupies the undulating land on the eastern fringe of Wellington, bounded to the north by the main Taunton Road and to the south by the West Buckland Road. Soils are developed over Keuper Marl geology with minor bands of sandstone, and with limited areas of alluvium fringing the streams that flow through the site. Climate varies little, as can be seen from the three climatic interpolations detailed below.

Table 2: Climatic Interpolations

Grid Reference	ST 148200	ST 150213	ST 156204
Height (m)	85	53	70
Accumulated Temperature (° days)	1486	1522	1503
Average Annual Rainfall (mm)	899	870	886
Field Capacity (days)	187	183	185
Moisture Deficit, Wheat (mm)	94	99	96
Moisture Deficit, Potatoes (mm)	84	89	87
Climatic Grade	1	1	1

Grade 1: A slight sandstone ridge adjacent to Cade's Farm has given rise to deep sandy profiles, significantly different from the surrounding soils, with no physical limitation. This map unit extends into the Longforth Farm Area.

Grade 2: Much of the land fringing the urban area has been placed in this grade as a result of a soil wetness limitation. The soils typically have Medium Sandy Silt Loam topsoil textures which grade into heavy red clays in the lower subsoil. These clays may be slowly permeable at depth with evident gleying and are therefore placed in Wetness Class II (ie the profiles are wet within 70 cm for more than 30 days in most years). The soil pit for this map unit shows the variability in this area; some soils are sandy and well drained at depth but, overall, the variation in wetness makes Grade 2 the most appropriate classification.

Sub-grade 3A: The majority of the site has been placed in this category, with soil wetness as the common limitation. The soils exhibit Medium Clay Loam topsoil textures developed over Heavy Clay Loam and Clay subsoils. Although red, the profiles show clear evidence of gleying between 40-70 cm and Slowly Permeable Layers (SPLs) at depths which place the profiles in Wetness Class III.

Sub-grade 3B: Minor map units of 3B soils have been picked out within the broad 3A classification where much shallower SPLs create a harsher wetness limitation (WC IV) which restricts the flexibility of the land in terms of workability and crop response.

3.2 Longforth Farm Area

A total of 85 auger sample points and 4 soil pits were examined.

Table 3: Distribution of ALC Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
1	35.2	41.9	47.9
2	11.2	13.3	15.2
3A	15.6	18.6	21.2
3B	11.3	13.4	15.3
4	0.3	0 4	0.4
Non-Agric	6.2	7.4	100% (73.6 ha)
Urban	3.4	4.0	
Farm Buildings	0.9	1.0	
	84.1 ha	100%	

This area includes all the land bounded to the south by the main Taunton Road, to the east by the Nynehead Road and the land on either side of the railway line up to the Grand Western Canal boundary in the north.

The geology changes significantly in this area, with the eastern edge still on Keuper Marl deposits which change westwards into Upper Sandstone. Land quality reflects this difference, with the higher quality land concentrated around the western edge.

Table 4: Climatic Interpolation

Grid Reference	ST 140215
Height (m)	55
Accumulated Temperature (° days)	1520
Average Annual Rainfall (mm)	868
Field Capacity (days)	183
Moisture Deficit, Wheat (mm)	98
Moisture Deficit, Potatoes (mm)	89
Climatic Grade	1

The topography slopes gently towards the canal, with gradients less than 7° throughout except for some limiting slopes in the extreme north-west.

Grade 1: Three soil pits were placed in the west of the site to confirm this large map unit of Grade 1. These deep red sandy loams have no SPLs in the profile and show no evidence of gleying. They have low topsoil and subsoil stone contents (less than 5%) and grade into a loamy sand deep in the profile and, as such, do not suffer from any droughtiness limitation.

Grade 2: At the time of field survey, some of the sandy soils showed clear evidence of a water table within the top 70 cms, caused presumably by a local groundwater problem. Given this evidence of waterlogging in mid-winter during a not-exceptional season it was felt that these soils were likely to be wet within 70 cm for more than 30 days a year, ie they could not be placed in Wetness Class I. As a result, they have been placed in Wetness Class II and Grade 2.

Sub-grade 3A: The eastern edge contains soils with much heavier subsoils (heavy clay loam and clay) with evident slowly permeable layers (similar to the Cade's, Jurston, Chelston Farm Areas) which restrict the profiles to Wetness Class III. Again, there is some variability within the map unit, with occasional better drained Wetness Class II soils.

Sub-grade 3B: A lowlying area to the south of the railway in the centre of the site has been designated 3B due to an obvious wetness problem. This area acts as a receiving site for the surrounding high land to the south and east; local knowledge suggests that old victorian culverts drain towards the railway at Hobby Pond and that these are now in disrepair. A local groundwater problem has therefore developed and is exacerbated by a variation in microrelief which has given rise to waterlogged hollows and drier ridges. Evidence of the potential problems in this area are seen in the fact that at one point in this field the surface has actually collapsed to reveal an underground stream flowing towards Hobby Pond.

Given this background, the area is very difficult to grade. It is felt that if the wetness problem results from a deterioration of an ancient drainage system then this is something that could only be rectified by major works in the area, bearing in mind the obstruction caused by both the railway and the canal. As such, the land has been graded as it was observed in the field - towards Wetness Class IV. This area is felt to be significantly worse from a workability point of view than the nearby 3A land.

A similar wetness problem exists on part of the land immediately north of the railway between the railway and the canal.

An area of 3B gradient has been identified in the extreme north-west.

Grade 4: The small unit in the north-west has been delimited on gradient.

3.3 Land West of Nynehead Road

This includes the land east of the sewage works and north of the Grand Western Canal. A total of 35 auger sample points and 3 soil pits were examined.

Table 5: Distribution of ALC Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
2	4.7	13.5	17.2
3A	10.1	28.9	37.2
3B	12.1	34.6	44.5
4	0.3	0.9	1.1
Non-Agric	7.7	22.1	100% (27.2 ha)
	34.9 ha	100%	

Much of the site comprises the flat lowlying land of the Tone floodplain where the soils are developed over alluvium, but the central section comprises an elevated sandy ridge. The climatic interpolation of Table 4 applies.

Grade 2: The sandy soils of the central ridge have been downgraded as a result of high topsoil stone contents. The soils are essentially an extension of the sandy soils mapped as Grade 1 south of the canal at Longforth Farm. Auger sample points 18 and 19 take the form of topsoil stone measurements. Locally, contents reach 12%, but were generally assessed in the range 5-10%.

Sub-grade 3A: In the east of the survey area the floodplain soils are classified as 3A and are significantly better than the soils on the floodplain in the west of the site. Although clearly gleyed at shallow depths these deep clay subsoils with medium clay loam topsoils are not slowly permeable within 80 cm. Only detailed pit examination reveals that the subsoil structure is sufficiently well developed to ease subsoil drainage. The soils therefore fall into Wetness Class II.

Sub-grade 3B: In contrast to the 3A floodplain soils, the western section falls into Wetness Class IV as a result of shallow gleying in combination with very evident slowly permeable clay layers in the upper subsoil.

Minor elements of 3B gradient have been mapped where the land rises sharply from the alluvial floodplain.

Grade 4: This limited map unit has been identified on the basis of local gradient.

No information on flooding was available for the area adjacent to the Tone. It has been assumed that flood risk would not in fact cause the land to be graded any worse than 3A.

(4) Land South and West of Wellington

4.1 Pitt Farm Area, Exeter Road

A total of 42 borings and one soil pit were examined, revealing grades ranging from 1 to 3B.

Table 6: Distribution of ALC Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
1	10.7	24.3	31.9
2	1.7	3.8	5.1
3A	14.6	33.0	43.6
3B	6.5	14.7	19.4
Non-Agric	1.4	3.2	100% (33.5 ha)
Urban	7.4	16.7	
Farm Buildings	1.9	4.3	
	44.2 ha	100%	

Table 7: Climatic Interpolations

Grid Reference	ST 120197	ST 124203
Height (m)	83	65
Accumulated Temperature (° days)	1489	1509
Average Annual Rainfall (mm)	922	886
Field Capacity (days)	191	186
Moisture Deficit, Wheat (mm)	93	96
Moisture Deficit, Potatoes (mm)	83	86
Climatic Grade	1	1

The complicated geology of this area which includes Upper Sandstone, Valley Gravels and Rainwash and Keuper Marl has given rise to soils that are variable over quite short distances.

Grade 1: These soils are typical of those developed elsewhere over the Sandstone - deep, red sandy loams which grade into loamy sand at depth with no evidence of soil wetness or soil droughtiness. Pit 1 is representative of these soils.

Grade 2: A minor area of this grade has been identified along one of the tributaries of the Westford Stream which flows north-westwards under the railway line. These are Wetness Class II soils which have subsoils of medium or heavy clay loam and which exhibit clear evidence of wetness but have no slowly permeable layers within 80 cm. Profiles may be affected by groundwater within the top 70 cm.

Sub-grade 3A: This map unit includes a range of soils with either sandy or clayey subsoils, most of which have been downgraded on the basis of soil wetness, either as a result of shallow water tables or where profiles contain SPL-like clay horizons.

Sub-grade 3B: Two minor areas of 3B gradient occur either side of the tributary of the Westford Stream. The remainder of the 3B red soils exhibit slowly permeable clays which limit the profiles to Wetness

Class IV and produce a significant workability limitation. Much of the area had waterlogged surface layers at the time of survey as a result of high water levels in the local water courses.

4.2 Nowers Farm, Trinity Farm and Foxdown Hill Area

A total of 67 auger sample points and 5 soil pits were examined in this complicated area.

Table 8: Distribution of ALC Grades

Grade	Area (ha)	% of Survey Area	% of Agricultural Area
1	10.4	13.5	17.6
2	2.3	3.0	3.9
3A	19.1	24.7	32.2
3B	23.7	30.6	39.9
4	3.8	4.9	6.4
Non-Agric	3.7	4.8	100% (59.4 ha)
Urban	13.2	17.1	
Farm Buildings	1.1	1.4	
	77.3 ha	100%	

Altitude ranges between 65 and 95 metres in this area, but the climatic interpolations below reveal that the climate, particularly FC Days, varies little.

Table 9: Climatic Interpolations

Grid Reference	ST 127193	ST 129200	ST 135199
Altitude	90	65	93
Accumulated Temperature (° days)	1481	1509	1477
Average Annual Rainfall (mm)	921	898	913
Field Capacity (Days)	191	187	189
Moisture Deficit, Wheat (mm)	93	97	92
Moisture Deficit, Potatoes (mm)	82	87	82
Climatic Grade	1	1	1

The geology and topography of this area is similar to the northern and eastern fringes of the town. Keuper Marl dominates much of the lower lying and gently undulating land of the south and west; river alluvium fringes the stream that flows northwards through the site to Rockwell Green; Upper Sandstone underlies the higher land and steeper slopes of Foxdown Hill in the north.

Grade 1: These soils are similar to those found elsewhere around Wellington on the sandstone. There is a distinct change of topography onto the higher land underlain by sandstone and an associated and often abrupt change in soil type and land classification. The soils show no evidence of wetness and are not limited by droughtiness.

Grade 2: A minor area of this grade is identified in the extreme south-west of the site. Possible clay layers at depth cause a slight wetness limitation in the base of the subsoil which places these deep sandy silt loams in Wetness Class II and Grade 2.

Sub-grade 3A: The variability of the western edge of the site is one main reason why 3A is the appropriate grade for this section. It is possible, for example, at particular auger sample points to observe sandy clay loam or clay subsoils which are restricting drainage (SPLs) and causing shallow gleying; elsewhere only shallow gleying and the presence of a water table within 80 cm at the time of survey may indicate a wetness problem. As a result, these soils have been mapped as 3A because it is felt that Wetness Class III is an appropriate assessment of their degree of waterlogging.

Soil variability also characterises the central area of 3A. Here, the soils generally exhibit SPL structures at depths which limit the profiles to Wetness Class III; topsoil textures are generally medium clay loams with a browner hue.

Sub-grade 3B: Soil wetness and soil workability are significant limitations in the south and east of the site. Here, shallow subsoil clays with poor structure cause impeded drainage and shallow waterlogging. A band of 3B, based on gradient, in the north marks the steep slopes of Foxdown Hill and divides up the Grade 1 map unit.

Grade 4: Heavy clay loam and clay topsoil textures in combination with prolonged waterlogging (Wetness Class IV) shallow SPLs) severely restrict the flexibility and range of cropping in this area on the eastern floodplain.

Table 10: Land North and East of Wellington, Distribution of Grades

Grade	Area (ha)	% of Area
1	36.9	17.6
2	35.2	16.8
3A	101.4	48.2
3B	35.9	17.1
4	0.6	0.3
	210.0 ha	100.0%

Table 11: Land South and West of Wellington, Distribution of Grades

Grade	Area (ha)	% of Area
1	21.2	22.7
2	4.0	4.3
3A	33.7	36.4
3B	30.2	32.5
4	3.8	4.1
	92.8 ha	100.0%

Table 12: All Agricultural Land Surveyed, Distribution of Grades

Grade	Area (ha)	% of Area
1	58.0	19.2
2	39.2	12.9
3A	135.1	44.6
3B	66.1	21.8
4	4.4	1.5
	302.8 ha	100.0%

Table 13: Agricultural and Non-Agricultural Areas

Grade	Area (ha)	% of Area
1	58.0	16.3
2	39.2	11.0
3A	135.7	38.1
3B	66.1	18.6
4	4.4	1.2
Non-Agric	21.3	6.0
Urban	24.9	7.0
Farm Buildings	6.6	1.8
	356.2 ha	100%

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
Wellington 8FCS 3422 (Jurston Farm Area)	1			Av Rainfall :- 870 mm ATO :- 1522 FC Days :- 183 Climatic grade:- 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	25	5YR43 Red	MCL										Sharp Consistent
2	40	5YR 44 No pale colours	MCL				+ 0.5%					Common	10 cm thick in parts
3	63	5YR54 and 10YR74 (Pale)	HCL		Some ochreous colours (Mottling or weathering?)	Moderate CSAB	+ 0.5%			Common		Common	Varies 51-76 cm
4	80+	2.5YR44 ppf5YR53	C		No evidence	Moderate CP (Breaking to Moderate CSAB)	- 0.5%			Few		Common	

Depth to Slowly Permeable Horizon :- 63 cm
Gleyed 40-70 cm

Wetness Class :- III

Wetness Grade :- 3A

RPG0023/WJC

Available Water Wheat :-

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Soil Wetness

Remarks :-

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
Wellington (Jurston Farm Area)	2			Av Rainfall :- 870 mm ATO :- 1522 FC Days :- 183 Climatic grade:- 1	

Horizon Number	Lowest Av Dept	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	21	5YR43	MCL										
2	41	5YR44 No pale Colours	MCL				+ 0.5%					Common	
3	61	7.5YR64	HCL		cdom Waterlogged Soil Water Table from 50 cm	Moderate CSAB	+ 0.5%			Common Good Penetration		Common	
4	80+	5YR44	C		No evidence of Mottling or PPF	Moderate CAB	- 0.5%					Common	

Depth to Slowly Permeable Horizon :- 61 cm
Gleyed 40-70

Wetness Class :- III

Wetness Grade :- 3A

Available Water Wheat :-

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3A

Main Limiting Factor(s):- Soil Wetness

Remarks

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
West Dean Local Plan Wellington 8FCS 3422 (Jurston Farm Area)	3		Grass	Av Rainfall :- 870 mm ATO :- 1522 FC Days :- 183 Climatic grade:- 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	24	5YR43	MSZL	Stone-free	No mottles							Few	
2	51	5YR44 No PPF	MSZL	Stone-free	No mottles	Weak CSAB	+ 0.5% Common E Worms	Good	Friable	Common through Peds		Few	
3	80+	5YR56 With patches of 2.5YR34 SCL and a lot of Mn from 70 cm Variation to 5YR64 (Pale) Possible PPF (not clear on ped faces due to high S content)	MSL	Stone-free		Moderate CSAB	+ 0.5%	Moderate	Friable	Common		Common	

Depth to Slowly Permeable Horizon :- None present within 80 cm; Possibly Gleyed

Wetness Class :- 40-70 cm WC 1

Wetness Grade :- 1

RPG0023/WJC

Available Water Wheat :-

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 1

Main Limiting Factor(s) :-

Remarks :- Gleying difficult to assess because of high sand content. The identification of Gley features, 40-70, makes no difference to the Wetness Class. This pit is within a Grade 2 map unit; variability in ASPs; some with SPL and WC II.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- 868 ATO :- 1520 FC Days :- 183 Climatic grade:- 1	PARENT MARIAL
Wellington Local Plan Longforth Farm Area	1				

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	20	5YR43	MSZL	Stoneless	Mottle-free	-	Common	-	-	Common	Non-C	None	Gradual
2	60	still 5YR43	MSL	Stoneless	Mottle-free	Moderate MSAB (from 35 cm)	Common	Good	Friable	Common	Non-C	Few	Varies around pit sides
3	80+	5YR53 Poor colour match	SCL with clay patches	Stoneless	Possible brown mottling Some green/yellow weathering colours	Moderate CSAB	Less than 0.5% pores greater than 0.5 mm (but common pores less than 0.5 mm) Moderate		Firm	Few	Non-C	Very Common	

Some ped faces distinctly 5YR53

Pit dug to 80 cm;augering to 100 cm revealed similar characteristics
Water Table from 65 cm

Depth to Slowly Permeable Horizon :- None defined

Degree of development prohibits SPL

Wetness Class :- I*
(* See notes)

Wetness Grade :- 2

RPG0023/WJC

Available Water Wheat :- Droughtiness not limiting

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 2

Main Limiting Factor(s) :- Wetness
The soil technically falls into Wetness Class 1. However, the presence of the WT within 70 cm in mid-January and the strong evidence of gleying in this Red soil within 70 cm make WC2 more appropriate (ie the profile fails the WC1

Remarks :-
definition: "Not wet within 70 cm for + 30 days". Local wetter hollows nearby tend to confirm this downgrading.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
Wellington Local Plan Langforth Farm Area	2			Av Rainfall :- ATO :- FC Days :- Climatic grade:- See Pit 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	22	5YR43	MSL	less than 2% sst, hard (visual)	Mottle-free							None	
2	72	5YR44	MSL	ditto (sieve)	ditto	Weak MSAB	+0.5%	Good	Friable	Common		Few from 60cm	
3	+100	2.5YR36	LMS	ditto (visual)	ditto	Weak MSAB breaking easily to FSAB	ditto	Good	Very Friable	Common		Common	

Pit dug to 100 cm; augering to 120 cm revealed the continuation of Subsoil 2

Depth to Slowly Permeable Horizon :- None Present

Wetness Class :- I

Wetness Grade :- 1

RPG0023/WJC

Available Water Wheat :- 154 mm

Potatoes :- (potatoes not limiting)

Moisture Deficit Wheat :- 98 mm

Potatoes :-

Moisture Deficit Wheat :- +56mm

Potatoes :-

Droughtiness Grade :- 1

Final ALC Grade :- 1

Main Limiting Factor(s) :-

Remarks :- Surface stone content was estimated at 2 locations close to Pit 2. Content was less than 2% and was measured by sieve method.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- ATO :- FC Days :- Climatic grade:-	PARENT MARIAL
Wellington Local Plan Longforth Farm Area	3			See Pit 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	27	5YR43	MSL	Stone-free	Mottle-free							None	
2	80	5YR44	MSL	ditto	ditto	Weak MSAB (breaking to FSAB)	+0.5%	Good	Friable	Common,	through peds	Few	
		Some greying of ped faces at depth but not mottled or enough Mn - not gleyed within 70cm											
3	+90	2.5YR46	MLS	Stone-free	Mottle-free	Weak Granular	+0.5%	Good	Loose			None	
		Pit dug to 90cm; augering to 120cm revealed continuation of Subsoil 2.											

Depth to Slowly Permeable Horizon :- None present

Not gleyed within 70 cm

Wetness Class :- I

Wetness Grade :- 1

RPG0023/WJC

Available Water Wheat :- 160mm

Potatoes :- (not limiting)

Moisture Deficit Wheat :- 98mm

Potatoes :-

Moisture Deficit Wheat :- +62mm

Potatoes :-

Droughtiness Grade :- 1

Final ALC Grade :- 1

Main Limiting Factor(s) :-

Remarks :-

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- See ATO :- Pit 1 FC Days :- Climatic grade:-	PARENT MARIAL
Wellington Local Plan Longforth Farm Area	4	3°			

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	26	5YR34	MSL	Stone-free	Mottle-free							None	Gradual
2	85	5YR43 Possible paling of	MSL	ditto matrix below	ditto 60 cm	Weak CSAB (breaking to MSAB)	+0.5%	Good	Friable			Few	
3	110	5YR44 Possible pale ped	MSL	Stone-free faces	Mottle-free	Weak MSAB	+0.5%	Good	Friable			Few	
		Pit dug to 110 cm; augering to 140 cm revealed 5YR54 LMS, and Water Table at 140 cm											

Depth to Slowly Permeable Horizon :- None Present

Not gleyed within 70 cm

Wetness Class :- I

Wetness Grade :- 1

RPG0023/WJC

Available Water	Wheat :-	170 mm
	Potatoes :-	(Not limiting)
Moisture Deficit	Wheat :-	98 mm
	Potatoes :-	
Moisture Deficit	Wheat :-	+72 mm
	Potatoes :-	
Droughtiness Grade	:-	1

Final ALC Grade :- 1

Main Limiting Factor(s) :-

Remarks :-

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
West of Nynehead Road (N of canal)	1	0°	Arable	Av Rainfall :- 868 ATO :- 1520 FC Days :- 183 Climatic grade:- 1	Keuper Marl

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
Topsoil	0-28	7.5YR42	MCL	Negligible	cdom							None	Sharp
Sub 1	28-65	10YR63	C	-	vmdom	Moderate CSAB (from 35 cm)	+ 0.5% - 0.5% from 50 cm					Common	Gradual change in porosity within horizon
Sub 2	65-80+	5YR44	C	-	cdom	Moderate CSAB	- 0.5%					Common	Sharp

Depth to Slowly Permeable Horizon :- None present
Gleyed within 40 cm

Wetness Class :- II

Wetness Grade :- 3A

RPG0023/WJC

Available Water Wheat :- Not limiting

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Soil Wetness

Remarks :- Although the lower clays look like SPLs in the auger sample, the pit proves that no SPL is present - the degree of development is moderate, not weak

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- ATO :- FC Days :- 183 Climatic grade:- 1	PARENT MARIAL
West of Nynehead Road (N of canal)	2	0°	Arable - Cereals		

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
Topsoil	0-27	10YR42	MZCL	Negligible	cdom, possible							None	Sharp
Subsoil	27-60+	10YR62 Evident grey ped skins	C	-	vmpom	Moderate C Prismatic	- 0.5%			Common roots but tend to go between structural units		Common	

Depth to Slowly Permeable Horizon :- from 35 cm Gleyed within 40 cm

Wetness Class :- IV

Wetness Grade :- 3B

RPG0023/WJC

Available Water Wheat :- Not limiting

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3B

Main Limiting Factor(s) :- Wetness

Remarks :- Any flood risk from the R Tone would not be high enough to cause further downgrading.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- ATO :- FC Days :- Climatic grade:-	PARENT MARIAL
West of Nynehead Road (N of canal)	3				

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
Topsoil	0-28	7.5YR44	FSL	5-10% sst hard visual	Mottle-free							None	Sharp
Sub 1	28-83	5YR44	MSL	5% sst hard hard visual	Mottle-free	Weak MSAB	Good	Good	Friable			None	
Sub 2	83-120	2.5YR44	LMS	2% sst hard visual	Mottle-free	Not assessed	Assumed	Good	V Friable			None	

Depth to Slowly Permeable Horizon :- None present
Not gleyed

Wetness Class :- I

Wetness Grade :- 1

RPG0023/WJC

Available Water Wheat :- 153 mm
Potatoes :-

Moisture Deficit Wheat :- 98 mm
Potatoes :-

Moisture Balance Wheat :- +55 mm
Potatoes :-

Droughtiness Grade :- 1

Final ALC Grade :- 1*

Main Limiting Factor(s) :-

Remarks :- *Nearby seive measurements of topsoil stone content revealed a variation throughout the field, with pockets+10%. The pit is therefore in a Grade 2 unit.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
Wellington Local Plan Trinity Farm, Nowers Farm Foxdown Hill	1			Av Rainfall :- ATO :- FC Days :- 187 Climatic grade:- 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	0-27	10YR42	MSZL	2% sst hard, visual	None							None	
2	27-35	7.5YR42	MSZL	2% sst hard, visual	None							None	
3	35-67	10YR63 Common red Weathering colours	MSL	15-20% sst hard, visual	Common ochreous mottles	Structure largely governed by high stone content; difficult to assess; towards Weak MSAB	+ 0.5%					None	
4	67-80+	5YR54 Common weathering colours	SCL (with clay pockets)		cdom	Weakly developed CAB	-0.5%					None	
	At the time of observation, the soil was saturated at depth												

Depth to Slowly Permeable Horizon :- 67 cm
Gleyed within 40 cm

Wetness Class :- III

Wetness Grade :- 3A

RPG0023/WJC

Available Water Wheat :- Not limiting
Potatoes :-

Moisture Deficit Wheat :-
Potatoes :-

Moisture Balance Wheat :-
Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Soil wetness

Remarks :- Although a red soil at depth, there is clear evidence of gleying above the SPL.

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
Wellington Local Plan Trinity Farm, Nowers Farm, Foxdown Hill	2			Av Rainfall :- ATO :- FC Days :- 187 Climatic grade:- 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
Topsoil	0-22	7.5YR42	MSZL	Negligible	None							None	
Sub 1	22-32	10YR52	MSZL	Negligible	None					Common		None	
Sub 2	32-61	Colour variation Mainly 10YR62 with 10YR64	MSL	50% stone hard, flaggy + 6cm	Mottling and weathering colours			Presumed good because of high stone content		Few		None	
Sub 3	61-90+	10YR63 10YR64 7.5YR64	LMS	None	Possible mottling amidst the colour variation	Weak MSAB	+0.5%	Good				None	
	Pit dug to 90 cm; augering below revealed continuation of Sub 3 to 100 cm; Gleyed SC from 100-120 (Poss SPL)												

Depth to Slowly Permeable Horizon :- None present within 80 cm
Gleyed within 40 cm; water table at 78 cm

Wetness Class :-

Wetness Grade :- II*

Available Water Wheat :- Not limiting
Potatoes :-

Moisture Deficit Wheat :-
Potatoes :-

Moisture Balance Wheat :-
Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 2

Main Limiting Factor(s) :- Soil wetness

Remarks :- * The clear evidence of shallow gleying and the presence of the water table suggest that the soil is wet within 70 cm for + 30 days (ie WCII is preferable)

RPG0023/WJC

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- ATO :- FC Days :- 187 Climatic grade:- 1	PARENT MARIAL
Wellington Local Plan Trinity Farm, Nowers Farm, Foxdown Hill	4				

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	17	5YR43	MSL	None	None							None	
2	58	5YR44	MSL	None	None	Moderate C/VCSAB	>5% .5mm (earthworm channels)	Moderate	V Friable			None	
3	79	2.5YR36	MSL	None	None	Weak MSAB	>5% .5mm (earthworm)	Good	V Friable			None	
4	120	10R46	LMS	None	None	Moderate cp		Moderate	V Friable			None	

(Pit dug to 85 augered to 120; horizon 4 continues to 120 cm)

Depth to Slowly Permeable Horizon :- None present
Not gleyed

Wetness Class :- I

Wetness Grade :- 1

Available Water Wheat :- 139

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :- 46

Potatoes :-

Droughtiness Grade :- 1

Final ALC Grade :- 1

Main Limiting Factor(s) :- None

Remarks :-

RPG0023/WJC

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
Wellington Local Plan Trinity Farm, Nowers Farm, Foxdown Hill	3			Av Rainfall :- ATO :- FC Days :- 187 Climatic grade:- 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	28	7.5YR44	MZCL	-	Some surface mottling	-	Good	-	-	Common	-	-	
2	38	5YR54	MZCL	2% sst (visual)	cfom	Weak CSAB	<0.5%	Moderate	Friable	Through peds	-	mn	
3	46	5YR54	MZCL	2% sst (visual)	cdogm	Weak/Moderate CSAB	<0.5%	Moderate	Friable		-	vcmn	
4	64	7.5YR64 and 5YR53 ppf	C		cdogm	Moderate C/VCAB	>0.5%	Poor	Firm		-	vcmn	
5	80+	2.5YR46 ppf	C	2% st + 6 cm	cdogm	Moderate MSAB	<0.5%	Good	Firm	Roots through peds	-	vcm	
	Augered to 100cm; horizon 5 continues												

Depth to Slowly Permeable Horizon :- Gleyed within 40 cm 46 cm

Wetness Class :- 3/4

Wetness Grade :- 3 A/B

RPG0023/WJC

Available Water Wheat :- Not limiting

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :-

Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Soil Wetness

Remarks :-

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :- ATO :- FC Days :- 187 Climatic grade:- 1	PARENT MARIAL
Wellington Local Plan Trinity Farm, Nowers Farm, Foxdown Hill	4				

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	17	5YR43	MSL	None	None							None	
2	58	5YR44	MSL	None	None	Moderate C/VCSAB	>5% .5mm (earthworm channels)	Moderate	V Friable			None	
3	79	2.5YR36	MSL	None	None	Weak MSAB	>5% .5mm (earthworm)	Good	V Friable			None	
4	120	10R46	LMS	None	None	Moderate cp		Moderate	V Friable			None	
	(Pit dug to 85 augered to 120; horizon 4 continues to 120 cm)												

Depth to Slowly Permeable Horizon :- None present
Not gleyed

Wetness Class :- I

Wetness Grade :- 1

RPG0023/WJC

Available Water Wheat :- 139

Potatoes :-

Moisture Deficit Wheat :-

Potatoes :-

Moisture Balance Wheat :- 46

Potatoes :-

Droughtiness Grade :- 1

Final ALC Grade :- 1

Main Limiting Factor(s) :- None

Remarks :-

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE		PARENT MARIAL
Wellington Local Plan Trinity Farm, Nowers Farm, Foxdown Hill	5			Av Rainfall :- ATO :- FC Days :- 187 Climatic grade:- 1	

Horizon Number	Lowest Av Depth	Matrix and Ped Face Colours	Texture	Stoniness: Size, Shape, Type, and Field Method	Mottling Abundance, Contrast Size and Colour	Structure: Development Size and Shape	Pores and Fissures	Structural Condition	Consistence	Roots Abundance Size and Nature	Calcium Carbonate Content	Mangan Concs etc	Horizon Boundary: Distinctness and Form
1	24	5YR43	MSZL	None	None							None	
2	38	5YR44 poss ppf	HCL	None		Moderate CSAB [not SPL]	>5% .5mm	Moderate	Firm			cmn	
3	55+	2.5YR46 ppf	C	None	cdom	Moderate CAB mottles tending to prismatic	<5% .5mm		V Firm			cmn	

Depth to Slowly Permeable Horizon :- Gleying at 38 cm
SPL at 55 cm
40 cm

Wetness Class :- 3

Wetness Grade :- 3A

RPG0023/WJC

Available Water Wheat :- Not limiting
Potatoes :-

Moisture Deficit Wheat :-
Potatoes :-

Moisture Balance Wheat :-
Potatoes :-

Droughtiness Grade :-

Final ALC Grade :- 3A

Main Limiting Factor(s) :- Soil wetness

Remarks :-