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**A40 LONGFORD TO M50 (GORSLEY)
IMPROVEMENT
AGRICULTURAL LAND CLASSIFICATION
REPORT OF SURVEY**

A40 LONGFORD TO M50 (GORSLEY) IMPROVEMENT

AGRICULTURAL LAND CLASSIFICATION (ALC): REPORT OF SURVEY

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Agricultural Land Classification Maps, Six sheets

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A40 LONGFORD TO M50 (GORSLEY) IMPROVEMENT

AGRICULTURAL LAND CLASSIFICATION (ALC): REPORT OF SURVEY

1. Introduction

In June and July 1991 a detailed Agricultural Land Classification was conducted along the preferred route of the improvement in the A40 between Longford and Gorsley in Gloucestershire. The maps illustrating the distribution of ALC grades are attached at a scale of 1:10,000 and show the variation in land quality within a 250 metre corridor.

Observations were made at an approximate density of one boring per hectare; a total of 268 borings and 10 soil pits was examined. The ALC information shown supersedes any previous information at a less detailed level; it is accurate at the scale shown, but any enlargement would be misleading. The total area surveyed was 487 hectares of which 382 ha is in agricultural production.

The classification follows MAFFs revised guidelines and criteria for grading the quality of agricultural land (1988) and illustrates the extent to which physical or chemical characteristics of the land impose long-term limitations on agricultural use. The principal physical factors influencing agricultural production are climate, site and soil. These factors together with interactions between them form the basis for classifying land into one of five grades. A general description of these grades is attached in Appendix I. A description of the actual grades mapped along the route is contained in Section 3; Appendix II contains the detailed soil pit descriptions.

2. Climate

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

Estimates of local climate and how it changes along the route were obtained for 21 representative locations by interpolation from a MAFF/Met Office five kilometre grid database. Appendix III provides details of these interpolations.

The two parameters used in an assessment of an overall climatic limitation are accumulated temperature (a measure of the relative warmth of a locality) and average annual rainfall (a measure of overall wetness). Together these values show that for the survey area overall climate is not a limiting factor.

The interpolations also give information on two other important parameters, field capacity days (FCD) and moisture deficits (MDs). The field capacity days determine the influence of climate on soil wetness and workability. The moisture deficits are used in the calculation of a

droughtiness limitation. Many of the final grades have either soil wetness or soil droughtiness as the single most limiting factor.

3. ALC Grades

The table below provides the ALC statistics for the corridor route as a whole.

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Survey Area</u>	<u>% of Agricultural Land</u>
1	41.6	8.9	10.9
2	109.8	23.3	28.8
3A	59.0	12.5	15.4
3B	166.0	35.3	43.5
4	5.4	1.2	<u>1.4</u>
			100% (381.7 ha)
Urban)	99.8		
Non-Agric)		17.6	
Agric Bldgs	2.9	0.6	
Open Water	<u>2.9</u>	<u>0.6</u>	
	487.4 ha	100%	

Grade 1:

Significant areas of Grade 1 land occur around Newent and westwards along the line of the route. At Newent these soils are developed over sandstone and are typically deep red sandy loams which are stone-free and exhibit no evidence of soil wetness. Given these textures and the good subsoil structural conditions, these profiles contain adequate reserves of available water for crop roots.

West of Newent the soils have developed over mudstones and have produced heavier profiles which exhibit a typical textural sequence of medium clay loam topsoil, heavy clay loam upper subsoil and clay lower subsoil. Despite the presence of a clay horizon these red soils show evidence of good subsoil structure, with little sign of soil wetness. Much of the area is adjacent to a stream floodplain, but flooding is not believed to be a significant limitation.

Grade 2:

Some of the soils developed on alluvium in the Severn floodplain have been placed in this high grade (see Pit 4, for example). Soil workability is the critical limiting factor for these soils which possess heavy clay loam topsoils and clay subsoils. The subsoils exhibit moderate structural conditions, they are porous and have no

evidence of prolonged waterlogging. The heavy nature of the topsoil limits the type and frequency of machinery operations; structural damage would result from excessive trafficking in autumn and spring.

Other areas of Grade 2 which occur out of the floodplain also represent soils with a workability limitation related to heavy topsoil textures.

Sub-grade 3A:

Areas of this sub-grade have been mapped with soil wetness as the most limiting factor (see Pits 1 and 2). The degree of wetness is affected by the depth to heavy slowly permeable clay horizons that cause waterlogging both in these horizons and above. This wetness places a restriction on the versatility of the land as it adversely affects plant growth and imposes restrictions on cultivations and grazing by livestock.

Sub-grade 3B:

3B map units delineate soils with a more severe wetness limitation than the 3A profiles outlined above. The extra degree of soil waterlogging is related to shallow slowly permeable horizons in combination with very heavy topsoil textures (either clay or heavy clay loam). Pits 3, 5, 7 and 8 are typical of the range of profiles that this sub-grade includes.

The 3B map units may also include areas where gradient is locally limiting (ie $>7^\circ$). Such land is not suitable for specialised agricultural machinery including precision seeding and harvesting equipment.

Grade 4:

All these map units identify areas of locally steep slopes (ie $11-19^\circ$).

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APPENDIX I

DESCRIPTION OF THE ALC GRADES AND SUB-GRADES

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 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 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.

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APPENDIX II
SOIL PIT DESCRIPTIONS

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

(i) TEXTURE:-

Soil texture classes are denoted by the following abbreviations (all Upper case*):

S	Sand
LS	Loamy Sand
SL	Sandy Loam
SZL	Sand Silt Loam
ZL	Silt Loam
MZCL	Medium Silty Clay Loam
MCL	Medium Clay Loam
SCL	Sandy Clay Loam
HZCL	Heavy Silty Clay Loam
HCL	Heavy Clay Loam
SC	Sandy Clay
ZC	Silty Clay
C	Clay

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 $\frac{2}{3}$ of sand less than 0.2 mm)
C	coarse (more than $\frac{1}{3}$ of sand greater than 0.6 mm)
M	medium (less than $\frac{2}{3}$ fine sand and less than $\frac{1}{3}$ coarse sand)

The sub-divisions 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)

Other possible texture classes include:

P	Peat
SP	Sandy Peat
IP	Loamy Peat
PL	Peaty Loam
PS	Peaty Sand
MZ	Marine Light Silts

* There are two exceptions to the Upper Case rule:-

- The prefix "Calc" is used to identify naturally calcareous soils containing more than 1% Calcium Carbonate
- For organic mineral soils, the texture of the mineral fraction is prefixed by "Org".

(ii) STRUCTURE:-

Nature and size of structural units are denoted by the following abbreviations:

SAB Subangular Blocky
AB Angular Blocky
P Prismatic

(single grain, granular and platy are not abbreviated)

F Fine
M Medium
C Coarse
VC Very Coarse

eg Weak MSAB = Weakly developed medium subangular blocky

(iii) OTHER

f = few = less than 2% of the matrix or surface described
c = common = 2-20% of the matrix or surface described
m = many = 20-40% of the matrix or surface described
vm = very many = +40% of the matrix or surface described

f = faint = indistinct mottles, evident only on close examination
d = distinct = although not striking, the mottles are readily seen
p = prominent = the mottles are conspicuous, and the mottling is one of the outstanding features of the horizon

gm = grey mottling
om = ochreous mottling

eg cdom = common distinct ochreous mottles

ppf = pale ped faces
mn = manganese

st = stones 6 cm
sst = stones 2-6 cm
vsst = stones 2 cm

WC = Wetness Class (use Roman numerals, eg WC IV)
SPL = Slowly Permeable Layer
WT = Water Table
I = Impenetrable if used in Depth Column
IMP = Impenetrable if used in soil profile notes
(IMP 2 x 40 cm = 2 additional borings, both impenetrable at 40 cm)
ASP = Auger Sample Point.

SITE NAME A40/M50	PROFILE NUMBER I	SLOPE AND ASPECT 3° NW	LAND USE Temp Grass	Av Rainfall :-	PARENT MATERIAL Mudstone
	DATE June 1991	GRID REFERENCE S0685265		ATO :-	
			FC Days :- 167	Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	0-23	5YR33	MCL	-	-								
Sub 1	23-45	5YR53 ppf	C	-	Not mottled Pale ped faces	Moderate VCSAB	<0.5%	Moderate	Firm	Common	-	Common	
Sub 2	45-105	25YR46 Pale Peds 25YR54	C	-	odom; 5YR66	Strong Medium CP	<0.5%	Poor	Firm	Few	-		

Depth to Slowly Permeable Horizon :- Gleyed <40 SPL at 45 cm	Available Water	Wheat :-	Final ALC Grade :- 3A
		Potatoes :-	
Wetness Class :- III	Moisture Deficit	Wheat :-	Main Limiting Factor(s) :- Wetness
		Potatoes :-	
Wetness Grade :- 3A	Moisture Balance	Wheat :-	
		Potatoes :-	Remarks :- Red Soil (Figure 7)
RPG23/WJC	Droughtiness Grade	:-	

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :-	PARENT MATERIAL
A40/M50	II	1° NW		ATO :-	
	DATE	GRID REFERENCE	Temp Grass	FC Days :- 167	Mudstone/Alluvium
	June 1991	S0686266		Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	5YR43	MCL	-									
Sub 1	28-60	5YR44 Pale Ped 5YR53	HCL	-	Not mottled	Weak MSAB	>0.5%	Good	Friable	Common	-	None	
Sub 2	60-78	2.5YR34 Pale Peds 5YR53	C	-	Not mottled	Weak MSAB	>0.5%	Good	Friable	Common	-	Common	
Sub 3	78-120	5YR54	C	10% msst	Not mottled	Weak MSAB	>0.5%	Good	Friable			Common	

Depth to Slowly Permeable Horizon :- Gleyed from 60 cm No SPL	Available Water	Wheat :-	Final ALC Grade :- 1
		Potatoes :-	
Wetness Class :- I	Moisture Deficit	Wheat :-	Main Limiting Factor(s) :- None
		Potatoes :-	
Wetness Grade :- 1	Moisture Balance	Wheat :-	
		Potatoes :-	
RPG23/WJC	Droughtiness Grade	:-	Remarks :- Red soil, gleyed > 40 cm but without SPL Floodplain; possible minor flood risk

SITE NAME A40/M50	PROFILE NUMBER III	SLOPE AND ASPECT Level	LAND USE Temp Grass	Av Rainfall :-	PARENT MATERIAL Alluvium
	DATE June 1991	GRID REFERENCE S0832207		ATO :-	
				FC Days :- 139	
				Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	0-25	10YR42	HCL								Non-C		
Sub 1	25-44	7.5YR54 ped=7.5YR64	C	-	mdom	Strong CSAB	<0.5%	Moderate	Firm	Common	-	-	
Sub 2	44-60	10YR53	C	-	abundant	Strong CAB	<0.5%	Poor	Firm	Few	-	-	

Depth to Slowly Permeable Horizon :- Gleyed <40 cm SPL at 44 cm	Available Water	Wheat :-	Final ALC Grade :- 38
		Potatoes :-	
Wetness Class :- III	Moisture Deficit	Wheat :-	
		Potatoes :-	
Wetness Grade :- 38	Moisture Balance	Wheat :-	Main Limiting Factor(s) :- Wetness
		Potatoes :-	
RPG23/WJC	Droughtiness Grade	:- (Not limiting)	Remarks :-

SITE NAME A40/M50	PROFILE NUMBER IV	SLOPE AND ASPECT Level	LAND USE Wheat	Av Rainfall :-	PARENT MATERIAL Alluvium
	DATE June 1991	GRID REFERENCE SOB18205		ATO :-	
				FC Days :- 141	
				Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	HCL								Non-C		
Sub 1	28-82	7.5YR52 and 7.5YR54 peds 7.5YR52	C		None	Moderate CSAB	>0.5%	Moderate	Firm	Common		-	

Depth to Slowly Permeable Horizon :- Not gleyed No SPL	Available Water	Wheat :-	Final ALC Grade :- 2
		Potatoes :-	
Wetness Class :- 1	Moisture Deficit	Wheat :-	Main Limiting Factor(s) :- Workability
		Potatoes :-	
Wetness Grade :- 2	Moisture Balance	Wheat :-	
		Potatoes :-	Remarks :-
RPG23/WJC	Droughtiness Grade	:- (Not limiting - Grade 2 or better)	

SITE NAME A40/M50	PROFILE NUMBER V	SLOPE AND ASPECT 3° S	LAND USE Permanent Grass	Av Rainfall :-	PARENT MATERIAL Mudstone
	DATE June 1991	GRID REFERENCE S0735259		ATO :-	
				FC Days :- 159	
				Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	0-20	10YR43	MCL		cdom								
Sub 1	20-38	7.5YR54	MCL		cdom			Moderate					
Sub 2	38-55	5YR44 Ped 5YR54	C		mdom	Strong CP	<0.5%	Poor	V Firm				

Depth to Slowly Permeable Horizon :- Gleyed <40 cm SPL at 38 cm	Available Water Wheat :- Potatoes :-	Final ALC Grade :- 3B
Wetness Class :- IV	Moisture Deficit Wheat :- Potatoes :-	Main Limiting Factor(s) :- Wetness
Wetness Grade :- 3B	Moisture Balance Wheat :- Potatoes :-	Remarks :- Red Soil, gleyed, Fig 7
RP23/WJC	Droughtiness Grade :- (Not limiting)	

SITE NAME A40/M50	PROFILE NUMBER VI	SLOPE AND ASPECT Level	LAND USE	Av Rainfall :- ATO :- FC Days :- 142 Climatic grade:-	PARENT MATERIAL Alluvium
	DATE June 1991	GRID REFERENCE S0809213	Temp Grass		

Horizon Number	Lowest Av Depth (cm)	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	0-30	10YR32	HCL	4% >2 cm hard rock									
Sub 1	30-120	10YR43	HCL	7% hard	None	Weak CSAB	>0.5%	Moderate	Friable				

Depth to Slowly Permeable Horizon :- Not gleyed No SPL	Available Water	Wheat :- Potatoes :-	Final ALC Grade :- 2
Wetness Class :- I	Moisture Deficit	Wheat :- Potatoes :-	Main Limiting Factor(s) :- Workability and Droughtiness
Wetness Grade :- 2	Moisture Balance	Wheat :- +34 mm Potatoes :- + 5 mm	Remarks :-
RPG23/WJC	Droughtiness Grade	:- 2	

SITE NAME A40/M50	PROFILE NUMBER VII	SLOPE AND ASPECT Level	LAND USE Permanent Grass	Av Rainfall :-	PARENT MATERIAL Mudstone
	DATE June 1991	GRID REFERENCE S0753245		ATO :-	
				FC Days :- 154	
				Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	0-24	10YR42	HCL		odm								
Sub 1	24-50	7.5YR52 Ped 5YR52	C	1% hard	mdm	Strong CSAB	<0.5%	Friable	Moderate				
Sub 2	50-70	5YR53 Ped 10YR61	C	1% hard	mdgm	Strong VCAB	<0.5%	Firm	Poor				

Depth to Slowly Permeable Horizon :- Gleyed from surface SPL at 50 cm	Available Water	Wheat :-	Final ALC Grade :- 3B
		Potatoes :-	
Wetness Class :- III	Moisture Deficit	Wheat :-	Main Limiting Factor(s) :- Wetness
		Potatoes :-	
Wetness Grade :- 3B	Moisture Balance	Wheat :-	
		Potatoes :-	Remarks :- The 1% stones do not aid the porosity in the SPL
RPG23/WJC	Droughtiness Grade	:- (Not limiting)	

SITE NAME A40/M50	PROFILE NUMBER VIII	SLOPE AND ASPECT Level	LAND USE Potatoes	Av Rainfall :-	PARENT MATERIAL Mudstone
	DATE June 1991	GRID REFERENCE S0778224		ATO :-	
				FC Days :- 148	
				Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	0-30	7.5YR42	HCL	1% hard									
Sub 1	30-48	5YR44 Ped 5YR46	C	-	Not mottled	Weak MP	<0.5%	Poor	Firm			Common	
Sub 2	48-120	2.5YR46 Ped 5YR46	C	-	Not mottled	Moderate CAB	<0.5%	Moderate	Firm			Common	

Depth to Slowly Permeable Horizon :- Not gleyed SPL at 30 cm	Available Water	Wheat :-	Final ALC Grade :- 3B
		Potatoes :-	
Wetness Class :- IV	Moisture Deficit	Wheat :-	Main Limiting Factor(s) :- Wetness
		Potatoes :-	
Wetness Grade :- 3B	Moisture Balance	Wheat :-	
		Potatoes :-	Remarks :- Red Soil, not gleyed, Fig 7
RPG23/WJC	Droughtiness Grade	:- (Not limiting)	

SITE NAME A40/M50	PROFILE NUMBER IX	SLOPE AND ASPECT Level	LAND USE Cereals	Av Rainfall :-	PARENT MATERIAL Blue Lias
	DATE June 1991	GRID REFERENCE S0794220		ATO :-	
				FC Days :- 145	
				Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	0-30	7.5YR34	HCL	5% hard									
Sub 1	30-59	7.5YR46	HCL	5% hard	cdom	Moderate CSAB	>0.5%	Moderate	Friable				
Sub 2	59-90	2.5YR34	HCL	-	cdom	Moderate CSAB	>0.5%	Moderate	Friable				
Sub 3	90-120	5YR54	C	-	cdom	-	<0.5%	Moderate				Common	

Depth to Slowly Permeable Horizon :- Not gleyed <70 No SPL <80	Available Water	Wheat :-	Final ALC Grade :- 2
		Potatoes :-	
Wetness Class :- I	Moisture Deficit	Wheat :-	Main Limiting Factor(s) :- Workability Droughtiness
		Potatoes :-	
Wetness Grade :- 2	Moisture Balance	Wheat :-	Remarks :- Plg dug to 90 cm SPL assumed beneath
		Potatoes :-	
RPG23/WJC	Droughtiness Grade	:-	

SITE NAME	PROFILE NUMBER	SLOPE AND ASPECT	LAND USE	Av Rainfall :-	PARENT MATERIAL
A40/M50	X	Level		ATO :-	
	DATE	GRID REFERENCE	Temp Grass	FC Days :- 151	Mudstone
	June 1991	S0770231		Climatic grade:-	

Horizon Number	Lowest Av Depth (cm)	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	0-24	10YR43	HCL	2% hard									
Sub 1	24-43	10YR54	HCL	10% hard	cdom			Moderate					
Sub 2	43-60	5YR44 Ped 5YR53	C	10% hard	Not mottled			Moderate				Many	
Sub 3	60-80	5YR44	C	-	Not mottled	Moderate CAB	<0.5%	Moderate	Friable			Common	

Depth to Slowly Permeable Horizon :- Gleyed >40 cm SPL at 60 cm	Available Water	Wheat :-	Final ALC Grade :- 3A
		Potatoes :-	
Wetness Class :- II	Moisture Deficit	Wheat :-	Main Limiting Factor(s) :- Wetness
		Potatoes :-	
Wetness Grade :- 3A	Moisture Balance	Wheat :-	
		Potatoes :-	Remarks :- Red Soil, gleyed, Fig 8
RPG23/WJC	Droughtiness Grade	:- (Not limiting)	

A40 LONGFORD TO M50 (GORSLEY) IMPROVEMENT

**APPENDIX III
CLIMATIC INTERPOLATIONS**

A40 LONGFORD TO M50 (GORSLEY) IMPROVEMENT

Climatic Interpolations

Grid Reference (ALC Sheet)	Height (m)	Average Annual Rainfall (mm)	Accumulated Temperature (° days)	Overall Grade	Field Capacity (days)	Moisture Deficit(mm)	
						Wheat	Potatoes
S0675266 (1)	75	765	1438	1	165	101	92
S0687266 (1)	45	712	1455	1	167	105	96
S0695264 (1)	45	768	1472	1	166	105	97
S0708264 (2)	35	759	1483	1	164	106	98
S0715265 (2)	25	744	1494	1	162	107	100
S0725264 (3)	25	732	1494	1	160	108	100
S0736258 (3)	30	730	1488	1	159	106	99
S0743253 (3)	17	705	1503	1	155	109	102
S0756244 (4)	17	702	1503	1	154	109	102
S0765234 (4)	15	688	1506	1	152	110	104
S0775226 (5)	15	676	1506	1	149	111	104
S0784222 (5)	20	672	1500	1	148	110	104
S0795220 (5)	15	654	1506	1	145	112	106
S0804218 (5)	40	670	1477	1	146	109	101
S0804216 (5)	15	640	1506	1	142	113	107
S0816206 (6)	10	635	1512	1	141	114	108
S0825207 (6)	7	630	1515	1	139	115	110
S0836207 (6)	7	631	1514	1	139	116	110
S0770230 (4)	16	681	1507	1	151	111	104
S0769233 (4)	16	684	1505	1	151	110	104
S0773229 (4)	18	683	1502	1	150	110	104

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