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**WEST OXFORDSHIRE LOCAL PLAN  
Land at West Witney**

**Agricultural Land Classification  
ALC Map and Report**

**November 1998**

**Resource Planning Team  
Eastern Region  
FRCA Reading**

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# AGRICULTURAL LAND CLASSIFICATION SUMMARY REPORT

## WEST OXFORDSHIRE LOCAL PLAN LAND AT WEST WITNEY, OXFORDSHIRE

### INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 65.4 hectares of land on the western edge of Witney, in Oxfordshire. The survey was carried out during October 1998.
2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)<sup>1</sup> on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF). The survey was carried out in connection with MAFF's statutory input to the West Oxfordshire Local Plan. A large section of the site (the northern half) was previously surveyed in 1983 (FRCA Ref: 3305/042/83). This present survey therefore supersedes previous ALC information for this land.
3. The work was conducted by members of the Resource Planning Team in the Eastern Region of FRCA. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.
4. At the time of survey, land use on the site was either in grassland production (both permanent and ley) or had been recently ploughed. The area mapped as 'Other land' included a small section of woodland in the north-west of the site.

### SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.
6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1.

**Table 1: Area of grades and other land**

Grade/Other land	Area (hectares)	% surveyed area	% site area
3b	64.3	100	98.3
Other land	1.1	N/A	1.7
Total surveyed area	64.3	100	98.3
Total site area	65.4	-	100

<sup>1</sup> FRCA is an executive agency of MAFF and the Welsh Office

7. The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land. In total, 60 borings and 5 soil pits were described.
8. The entire site is classified as Subgrade 3b (moderate quality agricultural land). The main limitation is soil droughtiness, with soil wetness being more restricting in two small areas in the north-west and south-east of the site.
9. The majority of the area comprises soils developed over fine-grained limestone deposits (Cornbrash). Where soil droughtiness is limiting, profiles typically comprise shallow medium loamy or fine loamy soils which overlie limestone at shallow depths. The high volume of hard rock in the subsoil severely restricts the amount of water available in the soil for plant growth as well as reducing the potential rooting depth for crops.
10. Where soil wetness is restricting, profiles typically comprise medium loamy topsoils which overlie clayey horizons at shallow depths. Soil drainage is impeded by the presence of these clayey horizons. The resultant waterlogging will restrict seed germination and growth as well as limit the timing of cultivations. Wet soils such as these are susceptible to structural damage through trafficking by agricultural machinery and grazing livestock.
11. A small part of the survey area (adjacent to the A40) in the south-west of the site is disturbed and comprises a mixture of shallow, stony, and clayey soil profiles. Gradient is also limiting in places. Given the evidence of disturbance and the degree of variability of these soils, this land has also been placed in Subgrade 3b.

## FACTORS INFLUENCING ALC GRADE

### Climate

12. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.
13. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

**Table 2: Climatic and altitude data**

Factor	Units	Values		
		SP332 096	SP333 092	SP328 097
Grid reference	N/A	100	95	103
Altitude	m, AOD	1402	1408	1399
Accumulated Temperature	day°C (Jan-June)	719	716	722
Average Annual Rainfall	mm	157	157	158
Field Capacity Days	days	100	101	99
Moisture Deficit, Wheat	mm	90	91	89
Moisture Deficit, Potatoes	mm			
Overall climatic grade	N/A	Grade 1	Grade 1	Grade 1

14. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.
15. The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR), as a measure of overall wetness, and accumulated temperature (ATO, January to June), as a measure of the relative warmth of a locality.
16. The combination of rainfall and temperature at this site means that there is no overall climatic limitation. In addition, the site does not suffer from any local climatic factors such as exposure or frost risk. As such, the site may be considered as being climatically Grade 1. Climatic factors do, however, interact with soil properties to influence soil wetness and soil droughtiness.

#### Site

17. The site lies approximately 100m AOD and is mainly flat-lying. However, the land does dip very gently in a north-west - south-east direction. In the south-west corner of the site, the land has undergone some disturbance and locally there are some excessive gradients which do restrict agricultural land quality. Nowhere on the site do microrelief or flooding adversely affect agricultural land quality. However, potential groundwater problems exist along the northern boundary where a natural spring exists. Furthermore, recent housing development along Deer Park Road has led to 'Coral Spring' being capped, which may have some influence on potential groundwater levels on land adjacent to Colwell Brook in the south-east of the site.

#### Geology and soils

18. The most detailed published geological information for this area (BGS, 1971) maps the majority of the site as Cornbrash limestone. However, along the northern, eastern and southern edges, areas of Forest Marble have been mapped.
19. The most recent published soils information covering the area (SSEW, 1983) shows the site to consist of soils from the Elmton 1 Association. These soils are described as 'Shallow well-drained brashy calcareous fine loamy soils over limestone. Some similar deeper soils and some non-calcareous and calcareous clayey soils' (SSEW, 1984). More detailed soils information for the area (Jarvis and Hazelden, 1982) indicates that the majority of the site comprises soils of the Sherborne Series. However, along the northern, eastern and south-western edges, areas of Evesham/Hornton and the Didmarton Series have been mapped. Sherborne Series soils are likely to consist of clay loam or clay, stony or very stony topsoils with limestone occurring at shallow depths. Soils of the Evesham/Hornton series comprise clay loam topsoils over clay, being either slightly stony or stoneless, with Wetness Class III usually being appropriate. Detailed survey work found soils similar to those described here.

## AGRICULTURAL LAND CLASSIFICATION

20. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.
21. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

### Subgrade 3b

22. The whole site has been classified as Subgrade 3b (moderate quality agricultural land), with the main limitation being soil droughtiness. However, in the north-western and south-eastern corners of the site, agricultural land quality is restricted by soil wetness. A small area in the southwest of the site, adjacent to the A40, has undergone some disturbance and this land has also been classified as Subgrade 3b, due to a high degree of variability and excessive gradients.
23. Where soil droughtiness is limiting, the profiles typically comprise very slightly to slightly stony calcareous heavy clay loam topsoils overlying clay, being impenetrable to the auger at varying depths where the Cornbrash occurs. In some profiles, the clay upper subsoil is absent and the topsoil lies directly over the impenetrable limestone. Such profiles are typified by soil pits 1P, 2P, 4P and 5P. The pit evidence indicates that the upper subsoils are very stony (55–60% stone by volume), which causes a reduction in the reserves of water in the soil. In the local climate this acts to impart a soil droughtiness limitation which may lower the level and consistency of crop yields. In terms of soil wetness, these soils have been placed in Wetness Class I. However, they did show some signs of waterlogging during fieldwork. After periods of heavy rain, the combination of heavy textures and flaggy stones leads to periodic surface ponding above the stony horizons. The duration of waterlogging, however, is insufficient to produce any significant evidence of gleying.
24. Where soil wetness is limiting, profiles typically comprise calcareous heavy clay loam topsoils over heavy clay loam upper subsoils over clay lower subsoils. Such profiles are typified by Pit 3. Observations from both the borings and the pit show signs of soil wetness present within 40cm, in the form of ochreous mottles set against a pale coloured matrix. The clay lower subsoil was assessed as being poorly structured and slowly permeable. Therefore, in the local climate, Wetness Class IV is appropriate which, in combination with the heavy clay loam topsoils, gives a classification of Subgrade 3b. The slowly permeable layer is sufficient to restrict water movement through the soil profile, which will impart a restriction on access to the land for cultivations and/or grazing. The imperfect drainage will also restrict the range of crops that can be produced and the level and consistency of yields.
25. On the south-western part of the site, adjacent to the A40, there was evidence of soil disturbance. The profiles in this area were either medium or heavy textured clay loams over a pale coloured upper subsoil clay. The clay showed signs of wetness in the form of ochreous mottles and the borings were impenetrable to the auger at variable depths. Soil movement in the area had taken place and consequently gradients of between 7 and 11° were present. Such gradients would impart a restriction on agricultural land quality, since they will have an

influence on the safe and efficient use of agricultural machinery. Due to the degree of soil variability and the presence of steep gradients, the land in this area has been included in the Subgrade 3b mapping unit.

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## SOURCES OF REFERENCE

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Soil Survey of England and Wales (1983) *Sheet 6, South East England*.  
SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*  
SSEW: Harpenden

## APPENDIX I

### DESCRIPTIONS OF THE 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 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 or horticultural crops can usually be grown but on some land of this 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 land.

#### **Grade 3: Good to Moderate Quality Land**

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When 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 the 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 Agricultural Land**

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



**APPENDIX II**

**SOIL DATA**

**Contents:**

**Sample location map**

**Soil abbreviations - explanatory note**

**Soil pit and soil boring descriptions (boring and horizon levels)**

## SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

### Boring Header Information

1. **GRID REF:** national 100 km grid square and 8 figure grid reference.

2. **USE:** Land use at the time of survey. The following abbreviations are used:

<b>ARA:</b>	Arable	<b>WHT:</b>	Wheat	<b>BAR:</b>	Barley
<b>CER:</b>	Cereals	<b>OAT:</b>	Oats	<b>MZE:</b>	Maize
<b>OSR:</b>	Oilseed rape	<b>BEN:</b>	Field beans	<b>BRA:</b>	Brassicae
<b>POT:</b>	Potatoes	<b>SBT:</b>	Sugar beet	<b>FCD:</b>	Fodder crops
<b>LIN:</b>	Linseed	<b>FRT:</b>	Soft and top fruit	<b>FLW:</b>	Fallow
<b>PGR:</b>	Permanent pasture	<b>LEY:</b>	Ley grass	<b>RGR:</b>	Rough grazing
<b>SCR:</b>	Scrub	<b>CFW:</b>	Coniferous woodland	<b>OTH:</b>	Other
<b>DCW:</b>	Deciduous woodland	<b>BOG:</b>	Bog or marsh	<b>SAS:</b>	Set-Aside
<b>HTH:</b>	Heathland	<b>HRT:</b>	Horticultural crops	<b>PLO:</b>	Ploughed

3. **GRDNT:** Gradient as estimated or measured by a hand-held optical clinometer.

4. **GLEYSPL:** Depth in centimetres (cm) to gleying and/or slowly permeable layers.

5. **AP (WHEAT/POTS):** Crop-adjusted available water capacity.

6. **MB (WHEAT/POTS):** Moisture Balance. (Crop adjusted AP - crop adjusted MD)

7. **DRT:** Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column:

<b>MREL:</b>	Microrelief limitation	<b>FLOOD:</b>	Flood risk	<b>EROSN:</b>	Soil erosion risk
<b>EXP:</b>	Exposure limitation	<b>FROST:</b>	Frost prone	<b>DIST:</b>	Disturbed land
<b>CHEM:</b>	Chemical limitation				

9. **LIMIT:** The main limitation to land quality. The following abbreviations are used:

<b>OC:</b>	Overall Climate	<b>AE:</b>	Aspect	<b>ST:</b>	Topsoil Stoniness
<b>FR:</b>	Frost Risk	<b>GR:</b>	Gradient	<b>MR:</b>	Microrelief
<b>FL:</b>	Flood Risk	<b>TX:</b>	Topsoil Texture	<b>DP:</b>	Soil Depth
<b>CH:</b>	Chemical	<b>WE:</b>	Wetness	<b>WK:</b>	Workability
<b>DR:</b>	Drought	<b>ER:</b>	Erosion Risk	<b>WD:</b>	Soil Wetness/Droughtiness
<b>EX:</b>	Exposure				

### Soil Pits and Auger Borings

1. **TEXTURE:** soil texture classes are denoted by the following abbreviations:

<b>S:</b>	Sand	<b>LS:</b>	Loamy Sand	<b>SL:</b>	Sandy Loam
<b>SZL:</b>	Sandy Silt Loam	<b>CL:</b>	Clay Loam	<b>ZCL:</b>	Silty Clay Loam
<b>ZL:</b>	Silt Loam	<b>SCL:</b>	Sandy Clay Loam	<b>C:</b>	Clay
<b>SC:</b>	Sandy Clay	<b>ZC:</b>	Silty Clay	<b>OL:</b>	Organic Loam
<b>P:</b>	Peat	<b>SP:</b>	Sandy Peat	<b>LP:</b>	Loamy Peat
<b>PL:</b>	Peaty Loam	<b>PS:</b>	Peaty Sand	<b>MZ:</b>	Marine Light Silts

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

<b>F:</b>	Fine (more than 66% of the sand less than 0.2mm)
<b>M:</b>	Medium (less than 66% fine sand and less than 33% coarse sand)
<b>C:</b>	Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content:

**M:** Medium (<27% clay)    **H:** Heavy (27-35% clay)

2. **MOTTLE COL:** Mottle colour using Munsell notation.

3. **MOTTLE ABUN:** Mottle abundance, expressed as a percentage of the matrix or surface described:

F: few <2% C: common 2-20% M: many 20-40% VM: very many 40% +

4. **MOTTLE CONT:** Mottle contrast:

F: faint - indistinct mottles, evident only on close inspection

D: distinct - mottles are readily seen

P: prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED, COL:** Ped face colour using Munsell notation.

6. **GLEYS:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. **STONE LITH:** Stone Lithology - one of the following is used:

HR: all hard rocks and stones

ZR: soft, argillaceous, or silty rocks

MSST: soft, medium grained sandstone

SI: soft weathered igneous/metamorphic rock

FSST: soft, fine grained sandstone

CH: chalk

GS: gravel with porous (soft) stones

GH: gravel with non-porous (hard) stones

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8. **STRUCT:** the degree of development, size and shape of soil peds are described using the following notation:

Degree of development

WK: weakly developed

MD: moderately developed

ST: strongly developed

Ped size

F: fine

M: medium

C: coarse

Ped shape

S: single grain

M: massive

GR: granular

AB: angular blocky

SAB: sub-angular blocky

PR: prismatic

PL: platy

9. **CONSIST:** Soil consistence is described using the following notation:

L: loose

FM: firm

EH: extremely hard

VF: very friable

VM: very firm

FR: friable

EM: extremely firm

10. **SUBS STR:** Subsoil structural condition recorded for the purpose of calculating profile droughtiness:

G: good M: moderate P: poor

11. **POR:** Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

12. **IMP:** If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

13. **SPL:** Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC:** If the soil horizon is calcareous, a 'Y' will appear in this column.

15. Other notations:

APW: available water capacity (in mm) adjusted for wheat

APP: available water capacity (in mm) adjusted for potatoes

MBW: moisture balance, wheat

MBP: moisture balance, potatoes

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	SP32900987	PL0		20 20	4 38	83	-17	95	5	3A			WE	3B	170 LST SEE 3P
2	SP33000990	PL0		30 50	3 38	98	-2	102	12	3A			WE	3B	170 LST SEE 3P
3	SP32900980	STB		25 25	4 38	95	-5	98	8	3A			WE	3B	180 LST SEE 3P
4	SP33000980	STB		28 28	4 38	72	-28	83	-7	3B			WE	3B	168 LST SEE 3P
5	SP33100980	STB			1 2	44	-56	44	-46	4			DR	3B	130 LST SEE 2P
6	SP33300980	STB	NE	2 25	1 2	52	-48	52	-38	8			DR	3B	138 LST SEE 2P
7	SP32800970	FLW			1 1	37	-63	37	-53	4			DR	3B	125 ALSO STONE
8	SP32800970	FLW			1 2	32	-68	32	-58	4			DR	3B	122 ALSO STONE
9	SP33000970	STB			1 2	74	-26	74	-16	3B			DR	3B	150 LST SEE 2P
10	SP33100970	STB			1 2	56	-44	56	-34	3B			DR	3B	135 LST SEE 2P
11	SP33200970	PL0			1 2	46	-54	46	-44	4			DR	3B	130 LST SEE 2P
12	SP33300970	PL0			1 2	39	-61	39	-51	4			DR	3B	125 LST SEE 2P
13	SP32800960	FLW			1 2	47	-53	47	-43	4			DR	3B	130 LST SEE 2P
14	SP32900960	FLW			1 2	75	-25	75	-15	3B			DR	3B	150 LST SEE 2P
15	SP33000960	STB			1 2	28	-72	28	-62	4			DR	3B	120 ALSO STONE
16	SP33100960	STB			1 2	59	-41	59	-31	3B			DR	3B	140 LST SEE 2P
18	SP33300960	PL0			1 2	46	-54	46	-44	4			DR	3B	130 LST SEE 2P
19	SP33400960	PL0		25	1 2	44	-56	44	-46	4			DR	3B	130 LST SEE 2P
20	SP32800950	LEY			1 2	66	-34	66	-24	3B			DR	3B	142 LST SEE 1P
21	SP32900950	LEY			1 2	54	-46	54	-36	3B			DR	3B	132 LST SEE 1P
22	SP33000950	PL0			1 2	46	-54	46	-44	4			DR	3B	130 LST SEE 1P
23	SP33100950	STB			1 2	44	-56	44	-46	4			DR	3B	130 LST SEE 1P
24	SP33200950	STB		28	1 2	61	-39	61	-29	3B			DR	3B	140 LST SEE 2P
26	SP33400950	PL0		24	1 2	44	-56	44	-46				DR	3B	130 LST SEE 2P
28	SP32700940	LEY			1 1	52	-48	52	-38	3B			DR	3B	130 LST SEE 1P
29	SP32800940	LEY			1 2	74	-26	74	-16	3B			DR	3B	145 LST SEE 1P
30	SP32900940	LEY			1 2	65	-35	65	-25	3B			DR	3B	140 LST SEE 1P
31	SP33000940	LEY			1 2	59	-41	59	-31	3B			DR	3B	136 LST SEE 1P
32	SP33110942	STB		38 38	4 38	85	-15	93	3	3A			WE	3B	165 LST SEE 3P
33	SP33200940	STB			1 2	29	-71	29	-61	4			DR	3B	120 LST SEE 1P
34	SP33310942	PL0			1 2	56	-44	56	-34	3B			DR	3B	130 LST SEE 5P
35	SP33400940	PL0			1 2	33	-67	33	-57	4			DR	3B	120 LST SEE 5P
36	SP33500940	PL0			1 2	49	-51	49	-41	4			DR	3B	130 LST SEE 5P
37	SP32800930	PGR			1 2	65	-35	65	-25	8			DR	3B	145 LST SEE 1P
38	SP32900930	LEY			1 2	50	-50	50	-40	3B			DR	3B	130 LST SEE 1P
39	SP33000930	LEY			1 2	66	-34	66	-24	3B			DR	3B	138 LST SEE 1P
40	SP33100930	LEY			1 2	47	-53	47	-43	4			DR	3B	130 LST SEE 1P
41	SP33200930	LEY			1 2	53	-47	53	-37	3B			DR	3B	130 LST SEE 4P
43	SP33400930	PL0			1 2	47	-53	47	-43	4			DR	3B	130 LST SEE 5P
44	SP33500930	PL0			1 2	49	-51	49	-41	4			DR	3B	130 LST SEE 5P
45	SP32800920	PGR	W	2 30 40	4 38	107	7	105	15	2			WE	3B	185 LST
46	SP32900920	PGR			1 2	58	-42	58	-32	3B			DR	3B	135 LST SEE 1P

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M.REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS	
			GRDNT	GLEY	SPL	CLASS	GRADE	AP	MB	AP						MB
47	SP33000920	LEY			1	2	69	-31	69	-21	3B			DR	3B	I40 LST SEE 1P
48	SP33100920	STB			1	2	49	-51	49	-41	4			DR	3B	I30 LST SEE 1P
49	SP33200920	STB			1	2	81	-19	81	-9	3A			WD	3A	I50 WET 45CM
50	SP33300920	LEY			1	2	36	-64	36	-54	4			DR	3B	I20 LST SEE 4P
51	SP33400920	PLO			1	2	77	-23	77	-13	3B			DR	3B	I50 LST
52	SP33500920	PLO			1	2	33	-67	33	-57	4			DR	3B	I20 LST SEE 5P
53	SP33600920	PLO			1	2	33	-67	33	-57	4			DR	3B	I20 SEE 5P
54	SP32900910	PGR		10	2	2	50	-50	50	-40	3B		Y	DR	3B	I40 DISTURBED
55	SP33000910	PGR		10	1	2	35	-65	35	-55	4		Y	DR	3B	I25 DISTURBED
56	SP33100910	STB			1	2	36	-64	36	-54	4			DR	3B	I26 SEE 4P
57	SP33200910	STB			1	2	45	-55	45	-45	4			DR	3B	I30 LST SEE 4P
59	SP33400910	LEY			1	2	36	-64	36	-54	4			DR	3B	I20 LST SEE 4P
60	SP33480912	PLO			1	1	49	-51	49	-41	4			DR	3B	I30 LST SEE 5P
61	SP33600910	PGR	NE	1	35	35	4	3B	92	-8	103	13	3A	WE	3B	SEE 3P
62	SP33400900	PGR			1	1	53	-47	53	-37	3B			DR	3B	I30 LST SEE 4P
63	SP33500900	PLO			1	2	93	-7	103	13	3A			DR	3A	I65 LST SEE 3P
64	SP33600900	PGR	E	1	50	50	3	3B	88	-12	95	5	3A	WE	3B	I65 LST SEE 3P
65	SP33700900	LEY	E	1	70	70	2	3A	120	20	109	19	2	WK	3A	WET 50CM
1P	SP33000930	LEY			1	2	70	-30	76	-14	3B			DR	3B	I65 WET 65CM
2P	SP33040970	STB			1	2	64	-36	67	-23	3B			DR	3B	I60 WET 30CM
3P	SP32930982	STB		29	29	4	3B	82	-12	90	0	3A		WE	3B	
4P	SP33200910	STB			1	2	50	-50	51	-39	3B			DR	3B	I40 LST
5P	SP33500930	PLO	SE	1			1	2	68	-32	73	-17	3B	DR	3B	WET AT 35CM



SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS						
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR	POR	IMP	SPL	CALC	
20	0-27	HCL	10YR43						0	0	HR	8							
	27-42	C	10YR54						0	0	HR	12		M					IMP LIMESTONE
21	0-28	HCL	10YR43						0	0	HR	5							
	28-32	C	10YR54						0	0	HR	12		M					IMP LIMESTONE
22	0-30	HCL	10YR54						7	3	HR	15							WET AT 5CM
23	0-30	HCL	10YR54						12	8	HR	20							WET AT 15CM
24	0-28	HCL	10YR54						8	0	HR	12							
	28-40	C	25Y 72 73	10YR58	C	D		Y	0	0	SLST	20		M			Y		IMP LIMESTONE
26	0-24	HCL	10YR54						10	5	HR	16						Y	
	24-30	C	25Y 62	10YR58	C	D		Y	0	0	HR	5		P			Y		IMP LIMESTONE
28	0-30	MCL	10YR43						0	0	HR	3							WET AT SURFACE
29	0-32	HCL	10YR43						0	0	HR	5							
	32-45	C	75YR56						0	0	HR	10		M					IMP LIMESTONE
30	0-27	HCL	10YR43						0	0	HR	5							
	27-40	C	10YR54						0	0	HR	12		M					IMP LIMESTONE
31	0-28	HCL	10YR43						0	0	HR	5							
	28-36	HCL	10YR54						0	0	HR	12		M					IMP LIMESTONE
32	0-25	HCL	10YR54						6	2	HR	10							
	25-38	C	10YR44						0	0	HR	10		M			Y		WET AT 40CM
	38-65	C	05Y 62 72	10YR58	M	D		Y	0	0	SLST	5		P		Y	Y		PLASTIC
33	0-20	HCL	10YR54						10	0	HR	20						Y	WET AT 10CM
34	0-30	HCL	10YR54						6	2	HR	10						Y	
	30-35	C	10YR44	10YR46	58	C	D	S	0	0	HR	10		M			Y		IMP LIMESTONE
35	0-20	HCL	10YR43						5	0	HR	8							
36	0-20	HCL	10YR43						5	2	HR	10							
	20-30	C	10YR64						0	0		0		M					IMP LIMESTONE
37	0-30	HCL	10YR32						0	0	HR	10						Y	
	30-45	C	25Y 66						0	0	HR	25		M			Y		+10%SLST
38	0-25	HCL	10YR43						0	0	HR	5							
	25-30	C	10YR54						0	0	HR	12		M					IMP LIMESTONE
39	0-26	HCL	10YR43						0	0		0							
	26-38	C	10YR54						0	0		0		M					IMP LIMESTONE





SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED		----STONES----			STRUCT/ CONSIST	SUBS		SPL	CALC	
				COL	ABUN	CONT	COL.	GLE	>2	>6	LITH		TOT	STR			POR
59	0-20	HCL	10YR43						0	0	0					IMP LIMESTONE	
60	0-25	MZCL	10YR43						6	2	HR	12				Y	
	25-30	HCL	10YR44						0	0	HR	10		M		Y	IMP LIMESTONE
61	0-25	HCL	10YR43						0	0		0				Y	
	25-35	HCL	10YR54	10YR56	F	F			0	0	HR	2		M		Y	
	35-70	C	05Y 61 62	10YR56	M	D		Y	0	0	HR	5		P	Y	Y	PLASTIC+5%SLST
62	0-25	MCL	10YR43						0	0		0					
	25-30	HCL	10YR54						0	0		0		M		IMP LIMESTONE	
63	0-25	HCL	10YR42						5	0	HR	8				Y	
	25-55	HCL	10YR54						0	0	HR	2		M		Y	
	55-65	C	10YR54						0	0	HR	10		M		Y	IMP65 LIMESTONE
64	0-20	HCL	10YR42 43						0	0	HR	2				Y	
	20-50	C	10YR54	10YR56	46	C	D	S	0	0	SLST	5		M		Y	+2% HR
	50-65	C	05Y 62 63	10YR58	M	D		Y	0	0	SLST	10		P		Y	PLASTIC+5%HR
65	0-23	HCL	10YR42 43						0	0	HR	2				Y	
	23-70	HCL	10YR53						0	0	HR	5		M		Y	WET AT 50+5%SLST
	70-100	C	05Y 62 63	10YR56	M	D		Y	0	0		0		P	Y	Y	PLASTIC
1P	0-21	HCL	10YR43						5	0	HR	7				Y	
	21-30	C	10YR54	10YR56	58	C	D	S	0	0	HR	5		M		Y	POROUS
	30-65	C	10YR54	10YR56	58	C	D	S	0	0	HR	55		M		Y	ROOTS 60CM WET 60
2P	0-25	HCL	10YR43						0	0	HR	5					
	25-60	C	75YR56						0	0	HR	60		M			WET AT 30
3P	0-18	HCL	10YR43						0	0	HR	5				Y	
	18-29	HCL	10YR54						0	0	HR	10	MDCSAB	FR	M	Y	PLASTIC +3%HR
	29-65	C	05Y 71 61	10YR46	56	M	D	Y	0	0	SLST	10	WKCP	FM	P	Y	Y
4P	0-20	HCL	10YR43						0	0	HR	5				Y	
	20-40	C	10YR56						0	0	HR	60		M		Y	ROOTS VISIBLE
	40-70	HR							0	0		0		P			
5P	0-30	HCL	10YR43						8	5	HR	15					
	30-36	HCL	10YR44	10YR56	58	F	F		0	0	HR	25		M		Y	POROUS
	36-70	C	10YR54 44						0	0	HR	60		P		Y	ROOTS TO 70CM